Annual Report 2005-2006

Princeton University
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Letter from the Vice President

This annual report for FY05-06, OIT’s fifth full year, summarizes and celebrates our continuing efforts to support the University’s information technology needs. Among the various achievements of the past year, I would like to highlight a few of those that can be found within the pages of this report.

This past year, OIT worked closely with research faculty across the institution to plan for the evolution of Princeton’s IT infrastructure, ensuring that it will meet the needs of the research community. The University increased its Internet and Internet2 bandwidth five-fold to facilitate such things as: transferring large data sets, conducting interactive or remote research projects, and sending, or receiving, live lectures over the network. Partnering with PICSciE, SEAS and a number of individual faculty members, OIT acquired an IBM high-performance supercomputer named “Orangena.” The new supercomputer placed the University at number 79 on the 2005 “Top 500” list of supercomputers worldwide. During the year, OIT staff worked with researchers to adapt their codes to run on Orangena, with 25 researchers from 7 academic departments using the system. Two research papers resulting from this work were presented at conferences with many more in progress.

Later in the year, OIT again partnered with researchers to purchase an additional high-performance supercomputer to support researchers at Princeton. The new Dell high-performance cluster, named “Della,” brought Princeton’s overall research computing processing power to over 15 trillion floating point operations per second (teraflops), putting Princeton’s research computing infrastructure among the highest ranks of research universities in the country.

In the administrative area, the University completed the implementation of the new PeopleSoft Student Administration System. By replacing the last of its legacy systems, the University was able to retire its mainframe computer. Throughout the year, the University received nearly 11,000 student applications for admission from the popular “Common Application” and another 3,100 online applications through its custom-built undergraduate admission web application. The popularity of these online services highlighted the need to continue to develop online, web-based services across all areas of the University.

Also this past year, responding to a growing demand from students and faculty for expanded wireless coverage on campus, OIT continued to work on deploying a ubiquitous wireless infrastructure throughout the University. The project is scheduled for completion in the fall of 2007. Implementation of the wireless network supports OIT’s goal of providing a robust, reliable and secure information technology infrastructure that serves the needs of the University community.
Over the coming year, we will be conducting a university-wide planning process to identify those IT strategic directions that will be critical to Princeton’s success over the next five years. In its initial phase, this planning effort will help to identify issues or questions we should be asking ourselves about the use of IT at Princeton and determine which IT areas are most important to focus on first.

We in OIT are grateful for the opportunity to serve the University. We will continue to look for ways to enhance Princeton’s IT infrastructure and services and are thankful for the continued support of the students, faculty, and staff we serve.

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 support 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.

OIT Core Values

We strive to provide excellent service to the University community. We value *professionalism, communication, respect, and integrity* and we commit ourselves to:

**Excel**—We aim for excellence in everything we do. We endeavor to exceed the expectations of our customers and colleagues. We recognize exceptional performance.

**Learn**—We are committed to the professional development and personal growth of our members. We encourage collaboration and take advantage of learning opportunities.

**Listen**—We value the opinions of all stakeholders and give fair consideration to their perspectives. We listen and learn from each other, as good ideas can come from anyone.

**Inform**—We disseminate accurate information in a timely manner. We promptly share decisions with those affected by them.

**Participate**—We strive for inclusive processes and to reach decisions by consensus when appropriate. We are responsible for staying involved and informed.

**Show Respect**—We are honest, responsible, reliable, thoughtful, responsive, and well mannered. We act with integrity.

**Enjoy**—We foster an environment where creativity, diverse ideas, humor, and fun are encouraged. We enjoy what we do and celebrate our successes.
## FY06 OIT Timeline

### July 2005

OIT completes a major initiative to install wireless network services in all undergraduate and graduate dormitories. Recognizing the importance of a ubiquitous wireless infrastructure, OIT and the Provost’s Office initiate a plan that centralizes the funding of wireless and complete the rollout of wireless to the rest of campus. OIT extends wireless services to Henry House, McCosh Hall, 71 University Place and additional locations within the Frist Campus Center.

OIT’s Communications Services produces a Freshman Scholars Institute publications packet for students who arrive on campus in mid-July.

OIT introduces the OIT New Staff Orientation Program, an OIT-specific program that aims to make new staff members feel more welcome by introducing them to OIT’s organization, practices, and services. New staff members meet individually with OIT’s Director of Human Resources and with Betty Leydon, CIO.

During FY05, the TSM backup and restore system backs up more than 8,300 systems. To accommodate increased data requirements that had taxed the capacity of existing servers, OIT replaces all five TSM servers in July. OIT also purchases additional disk and tape capacity for the system.

OIT begins to provide services to support a new Facilities Department/Public Safety initiative called the Campus Video Monitoring System (CVMS). The first of these deployments takes place at 200 Elm.

OIT replaces the mainframe-based system for setting up accounts with a new Account Provisioning System (APS). The new system functions as an interface between administrative systems and the various password and account systems including LDAP, Windows Active Directory, mail and file services.

### August 2005

OIT creates a technology resource web site for parents and incoming students.

The Educational Technologies Center (ETC) enhances the University’s Blackboard course management system by adding a precept scheduling tool to Blackboard.

Students can now select precept sections online (70 courses use the tool in the fall, and 95 use it in the spring). The tool can automatically assign students to precepts and other sections, including labs, based on these preferences and the student’s current schedule.

OIT continues to upgrade the network in all campus buildings. The last of the dormitories are rewired. Academic and administrative buildings include Forbes Annex/Addition, Art Museum, 201 Nassau St, Dodge Hall, Maclean House, 194 Nassau St, 199 Nassau St, 201 Nassau St, Prospect House, 71 University Place, and Baker Rink.

OIT completes the last phase of the redundant fiber ring installation. The ring will function in the event of a failure of the primary fiber infrastructure in order restore computing services quickly to buildings designated “most critical.”

The University completes the implementation of the new PeopleSoft Student Administration System. By replacing the last of its legacy systems, the University is able to retire the mainframe computer, for a savings of more than $400K annually.

OIT forms a working group to “Make OIT a More Welcoming Organization.” The group assembles a range of ideas including more open job ads, college and high school intern programs, an OIT employee newsletter, creativity workshops, and birds-of-a-feather sessions to bring together staff members with shared interests.

### September 2005

Open to all University students, the Student Computer Initiative (SCI) offers for sale aggressively priced, and highly capable computers customized for academic work at the University. During the year, the program sells a total of 1,077 computers, an increase of 25% from last year.

The OIT back-to-school effort includes booths in the Residential Colleges during the New Student brunch, the first-year-student and the Graduate Student sign-in events, and extended office hours at the OIT Solutions Center.

Technology Resources for Students is distributed to incoming students in the University’s Admissions matriculation mailing. A new Get-started pamphlet helps students to set up their computers in the dormitories.

For the first time, incoming freshmen are directed to a web site where they enter their personal information themselves. The new system validates the data and uses it to update other systems. The automated form serves as a prototype for future electronic data collection forms related to the matriculation process.

OIT contracts with IBM to acquire a “Blue Gene/L” high-performance computing system. Acquired through joint funding from OIT, PICSciE, SEAS, and a number of individual faculty members, “Orangena” consists of a cluster of 1024 small computers, each containing two processors. The system is capable of executing nearly 5.6 trillion floating-point operations per second (teraflops).

Ben Fry presents Computational Information Design in the /@rts lecture series

October 2005

OIT begins a new blog, IT’s Academic, with stories of interest to the academic community. During the year, the blog features stories about Brian Kernighan, the University Channel, the Princeton Laptop Orchestra, and Professor Martin Wikelski’s work on the radio tracking of rainforest animals.

Throughout FY06, nearly 11,000 student applications for admission interface directly from the “Common App” to the Princeton on-line application. Of the Common Apps’ 250+ customer universities, Princeton is one of only two that builds and uses an automated feed.

OIT establishes a committee, the Architectural Review Board [ARB], to ensure that new systems meet security and other key standards. During the year, the ARB evaluates 12 system initiatives.

OIT acquires an automated tool used to check applications and web sites for well-known exploits and security holes. During the year, the tool is used to detect and correct flaws in six application systems before the systems are made available to the University community.

In the /@rts speaker series, Margit Rosen presents An Intellectual and Physical Companion of Man: The Beginnings of Computer-Based Arts in Europe and the USA

Lunch ’n Learn seminars include Internet2 and Next Generation Network Applications in Higher Education by George Laskaris from NJEdge, Tech Tools for Academic Writers: RefWorks and EndNote by Audrey Wright, and Are Higher Education and Open Source Ready for Each Other by Ira Fuchs.

November 2005

Princeton’s new supercomputer system, Orangena, places the University at number 79 on the November 2005 “Top 500” list of supercomputers, http://www.Top500.org/list/1005/11/100

At the ribbon cutting celebration for Orangena, Professor Stone from Astrophysical Sciences presents preliminary results for a model of hydrodynamic turbulence in astrophysical accretion disks with 64 times the previously achievable resolution. The increased resolution reveals significant detail in the physical structure that could not be seen before. These results are achieved within three weeks of initial access to the system.

OIT joins forces with the Library and Chris Mackie from the Politics Department to offer a new learning series on campus: Academic Productivity 501. Offered weekly several times during the day, each AP501 session is a one-hour lecture/demonstration that helps academics get the most out of common desktop tools. The series aims at scholars, including faculty, graduate students, and undergraduates pursuing independent work. Topic sessions included: Word, Reference Management (EndNote and RefWorks), Data Analysis using Stata or Matlab, Online Research via Virtual Scholarship, Data Visualization, and LaTeX.

/@rts features Mickey Hart and Zakir Hussain: Drumming on the Edge


December 2005

Educause, the leading nonprofit higher-education organization for information technology, publishes a report documenting Princeton’s collaborative research computing facility.

The University provides additional resources to OIT in order to improve its ability to make widely-used academic software available to academic departments through campus-wide site licenses. In addition, a new Student Option on the University’s Mathematica site license permits students to install Mathematica on their personal computers for $25 a year.

To help graduating students to “pack up” their intellectual property, OIT launches the Digital Student Suitcase project. OIT staff plan, create, and test applications, design a web site, create explanatory web pages, and coordinate communication to students about the new service.

A new service provides a no/low-cost platform to assist departments, programs, and centers to develop websites within the popular Linux, Apache, MySQL, and PHP environments.

OIT starts the “Getting to Know You” series, informal activities and programs designed to help OIT staff get to know each other better. Activities included lunches with Betty, a tour of the University Art Museum, and a tour of PPPL.

Lunch ’n Learn presentations are Better Than Google, Part II: The Library’s PUL QuickSearch by Nancy Pressman Levy and Using Blog Technology to Enhance Student Writing by Kate Stanton and Kay Chubbuck.
January 2006

As a test on January 31st, staff disconnect the Computing Center at 87 Prospect from the Internet. The test confirms that the backup location in New South can sustain Internet connectivity to critical buildings, as well as standard authentication services, access to the main Princeton web site, and e-mail service.

OIT staff upgrade the University’s Events Management application. New custom features enable event planners to process payments and assign resources more effectively.

Two new groups, the DeSC Business Application Administrative Contacts and the DeSC Business Application Technical Contacts are created to improve business application testing.

Several new efforts help to integrate OIT’s Core Values into the daily workplace. New “best practices” are posted on the organization’s intranet to clarify expectations. Staff progress reports now weight Core Values criteria more heavily. The reports contain both a quantitative rating as well as a text area where specific instances of adherence (or non-adherence) can be listed.

In the Lunch ’n Learn series, History of Science Professor Michael Mahoney presents **20 Years of Academic Computing: What Have We Learned?**

February 2006

OIT again partners with PICSciE, Astrophysical Sciences, the Lewis-Sigler Institute for Integrative Genomics, and Princeton faculty members to acquire a significant new high-performance supercomputer for the University. The new system, dubbed “Della,” is a Dell high-performance cluster made up of many individual, small computers. Della comprises 256 individual Dell computers, each containing two 3.2 gigahertz processors, for a total of 512 individual processors. Each processor has 4 gigabytes of RAM, adding up to a total of 2 Terabytes of RAM. The cluster also has 3 terabytes of disk space for storing results and data.

The University receives approximately 10,700 applications for admission through the “Common App”. They are loaded automatically, eliminating the need for central office staff to type them in manually. The University also receives approximately 3,100 online applications through the Princeton Undergraduate Admission Web system.

OIT distributes a history of Princeton Computing on its intranet. Apart from building up the base chronology, the early focus of the effort is on organizing and annotating the relevant documents and interviewing those who worked in computing and IT support before 1985. The history summarizes the building of John von Neumann’s computer at the Institute for Advanced Studies as well as early computing efforts in the period from 1945-1985.

OIT begins work on an “OIT Playbook” that aims to increase efficiency in communications during both planned and unplanned technical outages.

**February Lunch ’n Learns include**


March 2006

The Language Resource Center’s use of technology in language learning is featured in the Spring publication *Princeton with one Accord*.

OIT pilots the ePay module of PeopleSoft HRMS for approximately 450 users, including all of the Treasurer’s office, all of OIT, Human Resources, and the Office of the Dean of the Faculty employees. Employees with access to ePay can view their pay statements for the last three years, reprint their W-2 statements for the last four years, and update their W-4 information.

With the recent addition of a Preestek Dimension 400 Computer-to-Plate System, Printing and Mailing sells the ECRM Imagesetter which had been used to produce negatives and film positives. As a result, the graphics and prepress area is now chemical free.

Dean of the Engineering School, Maria Klawe presents “Sex, Lies and Videogames: the Truth About Females and Computing,” a session that is shared over Internet2 with Montclair State University and Passaic Valley High School. Lunch ’n Learn lectures are now being recorded and pod-cast.

/@rts features Ricardo Dominguez on **Mayan Technology: A Polyspatial Tale**.

Lunch ’n Learn seminars are

**Scientific Computational Clusters at PPPL** by Paul Henderson, **Portable Media: Funs Players and Phones** by Douglas Dixon, and **Automated Radio Tracking: A Pilot System for a Proposed National Observatory Network**.
April 2006

More than 1,200 graduate students successfully use a new web-based system to apply to graduate housing room draw.

OIT concludes a multi-year effort to prevent passwords from being distributed over network without encryption by removing “FTP,” an older, insecure file transfer program that contained a potential security vulnerability. FTP is the last major OIT service that permitted passwords to travel over the network “in the clear.” The change requires substantial coordination and communication because many users are required to alter their desktop applications.

The Educational Technologies Center implements a set of Language Placement tests in Blackboard that replace a separate vendor product for which support was ending. ETC also implements a system for delivering freshman seminar evaluations out of Blackboard.

May 2006

To further strengthen campus security, OIT kicks off a password education campaign that urges users to follow “best practices” in creating and using passwords.

OIT’s Hardware Support group begins to install wireless networking throughout every remaining campus location.

OIT staff use a planned outage to test and refine the steps necessary to recover from a complete loss of power to the 87 Prospect data center.

Preparations begin for next year’s upgrade of PeopleSoft applications to version 9, the upgrade of the Advance/Stripes application used by the Development office, the standardization of the Almagest database infrastructure, and the beginning of the process of upgrading to Oracle version 10.2.

Labor Accounting phase I goes live on May 30th. Improvements to existing Labor Accounting functions include automation of previously manual processes and new features that address gaps in the Standard Business Model. The application delivers Commitments and Project Distribution for the Graduate School and new functionality for Summer Salary distribution for faculty.

Printing and Mailing adds an AutoCreaser Precision Channel Scorer to the production area. By scoring covers and cards, the new system eliminates image cracking. The new capability is especially important in toner-based digital printing.

June 2006

In an effort to make network access free to academic departments and most other units, the University simplifies the funding and accounting for basic network connectivity costs. For all academic departments, non-endowed academic research units, and most administrative units, the University will provide centralized funding for all “Tigernet” port and host ID costs.

The University increases its combined bandwidth of Internet and Internet2 service from 315 megabits per second. The basic internet service grows to 1 gigabit per second and the Internet2 connection increases to 500 Megabits/second. The total represents a five-fold increase in bandwidth that will facilitate the transferring of large data sets, conducting interactive or remote research projects, and sending, or receiving, live lectures or classes over the network.

Research computing staff continue to assist researchers with porting and tuning codes on Orangena. By the end of the year, 25 researchers from 7 academic departments have codes running on the system. Two research papers with results generated on Orangena result in presentations at conferences, and a number of others papers are in process.

A new 750-kVA transformer is added to the 87 Prospect machine room to provide additional power, bringing the capacity to nearly 1.5 megawatts. Considerable time is spent addressing other infrastructural needs and working with the Facilities department to develop an interim strategy to handle the growing load.

The PeopleSoft’s eBenefits module is implemented. This piece of self service functionality now permits faculty and staff members to select their benefits elections online at the time of hire, life change event, or during open enrollment.
OIT by the Numbers, FY05

136,000,000,000,000 Bytes of storage maintained by the University’s TSM backup system
2,756,000,000,000 Bytes of storage in the University’s supercomputer complex
1,428,986,883,318 Intrusion attempts blocked (more than 45,000 per second)
1,000,000,000 Bits per second in combined Internet and Internet2 bandwidth
48,900,000 Files stored by the University community on OIT’s Central File Server
18,523,200 Telephone calls with a system reliability of 99.9993 uptime
1,922,064 Log-ins to the file storage and printing services
1,087,000 Images delivered by the Almagest image-management system
600,000 E-Mail messages processed daily by OIT e-mail servers
541,912 Logins made to OIT cluster machines in 32 computing and print facilities
354,000 Dollars in software sales
294,252 Records back to 1985 converted into the new undergraduate admissions system
240,000 Dollars saved by use of the conference bridge by 33 departments
58,786 Help Desk responses to phone inquiries and e-mail inquiries
10,700 Common Applications received and loaded automatically
9,505 Jobs scheduled on average each week by the Tivoli Workload Scheduler
7,996 Customers served by the Solutions Center’s Clinic
5,258 Videos and DVDs in the Language Resource Center library
4,000 Exchange E-mail and calendaring accounts supported
3,100 Princeton applications received online via the Undergraduate Admissions Web system
2,600 DeSC machines supported (including TSM backup service)
2,794 Jobs performed by Media Services
2,237 Members of the University community attended 293 IT Training classes
1,389 Quota increases processed
1,200 Graduate students successfully used the new web-based room draw system
1,077 Computers sold in the Student Computer Initiative (633 Dell and 414 Apple)
894 Work orders involved 3,873 changes to telephone service or equipment
703 Visitors to the New Media Center
450 People involved in a trial of the ePay module of PeopleSoft HRMS
300 UNIX and Windows servers maintained
200 New solutions added to the OIT KnowledgeBase
195 Official copyright infringement complaints addressed by the Policy Officer
173 Computers purchased through the Faculty Computer Purchase program
165 Courses used the new Precept Scheduling Tool
95 Percent of first year students used the Parental Address Information web application
89 Projects completed (25 were classified as “key”)
79 out of 500: The University’s position in the list of top supercomputer centers
52 Departments or programs with SCAD members
45 Print publications produced by OIT Communications Services
13 Topics in Academic Productivity 501 aimed at improving use of desktop software
11 Project Management Made Easy workshops taught for 110 staff members
8 Foreign language channels offered on the Dish Network
1 EDUCAUSE Leadership Award for Distinguished Performance and Outstanding Service awarded posthumously to Howard Strauss, former manager of academic outreach in OIT
0 IBM mainframe (shutdown November 1, 2005)
2005-2006 Achievement Award Recipients

For contributing significantly to their departments and OIT in one or more of the following categories:

* Creativity & Innovation
* Customer Service & Outreach
* Teamwork & Collaboration
* Technical Excellence
* Demonstrating Core Values

Jeff Fitzwater
George Fleming
Charles Kruger
Chris Vitale
Charlayne Beavers
Kelly Cole
Shachi Gawande
David Herrington
Todd Whitaker

2005-2006 CIO Award Recipients

For outstanding service to OIT and Princeton University

Matt Petty
IT Governance Model

- Provost
- Senior Advisory Group for IT (SAGIT)
- Administrative Systems Planning Group (ASPG)
- DeSc
- Academic Managers Group (AMG)
- Administrative Departments
- Project Managers Team (PMT)
- Committee on Academic Technology (CAT)
- Faculty Committee on the Library & Computing (FCLC)
- Research Computing Advisory Group (RCAG)
Senior Advisory Group on IT

The Senior Advisory Group on IT (SAGIT) advises the Provost on those administrative and academic systems projects that have been endorsed by the Administrative/Academic Systems Planning Group (ASPG) and considers budgetary matters related to those projects. The specific charge of the group is to:

- Evaluate administrative and academic systems project proposals and review the proposed funding mechanisms for capital and operating expenditures required for such systems;
- Assess steady state costs of maintaining current systems and required IT infrastructure;
- Identify new systems opportunities that should be evaluated;
- Ensure projects are fiscally responsible and assess whether proposed funding mechanisms are satisfactory;
- Advise the Provost with regard to budgetary or other issues posed by projects.

During FY06, members of SAGIT were:

Chris Eisgruber, Provost (Chair)
Mark Burstein, Executive Vice President
David Dobkin, Dean of the Faculty
Betty Leydon, Vice President for Information Technology and Chief Information Officer
Jed Marsh, Vice Provost for Institutional Research (Executive Secretary)
Christopher McCrudden, Vice President for Finance and Treasurer

Highlights

During the past year, SAGIT:

- Reviewed the impact of the Oracle Corporation acquiring Peoplesoft. As a result, SAGIT approved undertaking a major upgrade to version 9.0 of Peoplesoft Human Resources, Student Administration and Campus Community beginning in the fall of 2006 (FY07);
- Reviewed the University’s disaster recovery and business continuity plans.
**Administrative Systems Planning Group**

The Administrative/Academic Systems Planning Group (ASPG) critically assesses all administrative and academic systems efforts, determines existing needs, and identifies key opportunities to build on our systems investments. The specific charge of this group is to:

- Evaluate the University’s current administrative and academic systems to identify gaps, needs, and opportunities;
- Recommend the appropriate distribution of resources for new, maintenance, upgrades, and development efforts that will enhance the University’s administrative and academic systems;
- Ensure that the University’s administrative and academic systems meet the needs of faculty, staff, and students;
- Endorse project proposals that need to be passed to the Senior Advisory Group on IT (SAGIT) for further review.

During FY06, members of ASPG were:

Greg Bressler for Mike McKay, Vice President for Facilities
Janet Dickerson, Vice President for Campus Life
Charlaine Claxton, for the Academic Managers Group
Lianne Sullivan-Crowley, Vice President of Human Resources
Ben Hammond for Mark Burstein, Senior Vice President for Administration
Karen Jezierny for Robert Durkee, Vice President for Public Affairs
Betty Leydon, Vice President for Information Technology and Chief Information Officer
Nancy Malkiel, Dean of the College
Jed Marsh, Vice Provost for Institutional Research
Sandra Mawhinney for William Russel, Dean of the Graduate School
Kris Miller for David Dobkin, Dean of the Faculty
Christopher McCrudden, Treasurer
Julie Shadle for Brian McDonald, Vice President for Development
Karin Trainer, University Librarian

**Ex Officio:**
Nancy Costa, Director, Finance, Administration and Planning, and Associate CIO, OIT
Colin Currie, Director, Administrative Information Services, OIT
Serge Goldstein, Director, Academic Services, OIT

**Highlights**

During the past year, the ASPG:

- Provided oversight of the FY06 Project Portfolio and endorsed the FY07 Project Portfolio;
- Reviewed the impact of the Oracle Corporation acquiring Peoplesoft. As a result, recommended undertaking a major upgrade to version 9.0 of Peoplesoft Human Resources, Student Administration and Campus Community beginning in the fall of 2006 (FY07);
- Reviewed the University’s disaster recovery and business continuity plans;
- Endorsed plans to expand employee self-service and implement PeopleSoft eBenefits (online benefits open enrollment).
The Project Managers Team (PMT) provides leadership and guidance on the delivery of administrative products and services, and continues to support the application and data management principles established under Partnership 2000. The PMT acts as the “working group” in support of the efforts of the Administrative/Academic Systems Planning Group (ASPG). The specific charge of the group is to:

- Identify, assess, and prioritize mandatory maintenance (regulatory updates, software upgrades, service packs) and enhancements (to fill gaps in current functionality and/or deliver new functionality) to administrative systems;
- Coordinate administrative requirements across offices and departments;
- Facilitate activities that foster the improved use of administrative products and services at the University;
- Achieve the highest level of customer satisfaction in meeting the needs of the University community.

During FY06, the members of the PMT were:

Marvin Bielawski, Library
Maria Bizzarri, Treasurer’s Office
Chris Brock & Inge Radice, Athletics
Ted Bross, Data Warehousing and Integration, OIT
James Castillo, Graduate School
Michelle Christy, Research and Project Administration
Nancy Costa, Finance, Administration and Planning, OIT
Jason Knoch, Office of Development
Colin Currie, Administrative Information Services, OIT
Janet Finnie, University Health Services
Patty Gertz, Custom Software Solutions, OIT
Kim Hoeritz, Registrar’s Office
Dave Herrington, Database Application Services, OIT
Paula Hulick, Educational Technologies Center, OIT
Andrew Kane, Housing Office
Lauri McVicker, Office of Human Resources
Kris Miller, Office of the Dean of the Faculty
Craig Richmond, Treasurer’s Office
Terri Riendeau & Glen Wemple, Undergraduate Admission
Dave Tierney, Tigercard Office
Russell Wells, Packaged Software Solutions, OIT
Mike Williamson, Facilities
Highlights

During the past year, the PMT:

- Continued to invite several ex officio members covering OIT support areas to ensure that all resources required are involved in the planning of the projects;
- Reviewed and updated monthly, the status of projects in the OIT Project Portfolio. Key projects included PeopleSoft Student Administration, Undergraduate Admission, Online Permanent Address Information (PAI), eBenefits, Web Room Draw, Labor Accounting, Princeton Receivables, and the Information Warehouse. Most importantly, discussed interdependencies across projects;
- Streamlined the process of testing desktop changes to ensure administrative system compatibility;
- Piloted a “Blackout Calendar” to document the business cycles of key administrative systems, so as to identify the most convenient and inconvenient times to perform system enhancements, patches and upgrades;
- In collaboration with all administrative offices and academic departments, assembled a comprehensive list of FY07 project proposals for ASPG review.
Committee on Academic Technology

The Committee on Academic Information Technology (CAT) facilitates communication and collaboration between IT providers and the University offices most directly responsible for the curriculum. The specific charge of the committee is to:

- Serve as an informational clearinghouse, so that those responsible for technology and those responsible for the curriculum are well-informed of each other’s initiatives;
- Develop new initiatives that may enhance the curriculum through information technology;
- Help evaluate IT initiatives that affect the curriculum and prioritize the distribution of resources;
- Take leadership to assure that the use of academic technologies in the curriculum receives appropriate assessment, both evaluative and formative.

During FY06, members of CAT were:

Peter Quimby, Associate Dean of the College, Director, Freshman Seminars in the Residential Colleges (chair)
Kevin Barry, Acting Associate University Librarian for Public Services and Head, Social Science Reference Center and Industrial Relations Librarian
Lin Ferrand, Associate Dean, Office of the Dean of the Faculty
Serge Goldstein, Director, Academic Services, OIT
Linda Hodges, Director, McGraw Center for Teaching and Learning
Clayton Marsh, University Counsel and Assistant Secretary, Office of General Counsel
Jed Marsh, Vice Provost for Institutional Research
David Redman, Associate Dean for Academic Affairs, Graduate School
Janet Temos, Director, Educational Technologies Center, Academic Services, OIT
Alberta Noon, Assistant to the Director, Academic Services, OIT (minutes)

CAT met six times during FY06 (September, October, November, February, March, May)
Highlights

VideoTaping Classroom Lectures
CAT reviewed several requests to videotape classroom lectures. Demand remains low (4-5 classes per semester). The committee agreed to draft a standard agreement that would cover the intellectual property rights associated with such recordings, and, in the absence of a standard agreement, that there should be a published policy statement to which to refer faculty members. The committee will work on these policies in FY07.

Long-Term Direction for Course Management System
The University’s Blackboard license extends through June, 2007. Blackboard is used by more than half of the faculty and provides the infrastructure for a number of other systems including precept scheduling. The committee agreed that renewal of the contract was likely because the competing products, particularly the open-source products, are not yet competitive, and conversion would be highly disruptive. However, the committee agreed to follow developments in this area closely.

The Committee also discussed and agreed to explore the possible use of Sakai (open-source CMS) as a collaborative tool. The Committee will see a demo of Sakai and Moodle (another open-source CMS) during FY07.

Plagiarism Detection
CAT received a demonstration of Safe Assignment, a plagiarism-detection software system that works with Blackboard. The committee agreed that the issue of plagiarism-detection was complex and will need to be taken up by the Office of the Dean of the College. Subsequent discussions reported to CAT from that office indicated that the University was not interested in using such a system centrally; it was also agreed that there was little value-added in such a system over what one could get from a Google search. However, these is interest in making such software available in a University administrative office to which faculty could submit “suspected” cases.

IT Fluency
The committee discussed the IT Fluency meetings sponsored by the Teagle foundation via a grant to Hank Dobin (formerly Chair of this Committee). There was general agreement that IT Fluency is an increasingly important issue for students (both undergraduate and graduate), particularly in the areas of copyright/IP and the use of online resources. There will be a follow-up report to the committee once the Teagle meetings are completed and a report has been written.

PRUs (clickers)
The committee discussed the possible use of “clickers” in the classroom, particularly by faculty members in the physics department and MOLBIO. These are pedagogically useful devices and may have broader appeal in the curriculum. The committee agreed that use of clickers should be encouraged and that OIT support such use wherever possible. OIT will explore clicker models. OIT will also make available a set of clickers in the coming year as a trial, and, based on the results, will make a recommendation to the Committee on standardization.

Wireless in Classrooms
Some faculty members have expressed concern about the growing availability of wireless in classrooms and the potential for distraction. The committee overwhelmingly agreed that each faculty member would need to manage this issue in his/her own way. It was agreed that it will not be feasible to limit the spread of wireless into classroom spaces, and the instructor in a class must be prepared to handle the issue, when necessary by requesting students to close their laptops.

Blogs
Princeton use of Blogs within teaching and general discussion is increasing. OIT supports a Moveable Type blog server that is used for academic (course) blogs. The committee agreed that users need to be aware that these blogs will not be maintained once the semester has ended before they commit to using MT.

Dspace
The Astrophysics department has requested support for storing large datasets generated by student and faculty research. OIT is investigating possible use of Dspace (open-source software from MIT) for this purpose. The Library could potentially use Dspace to store dissertations and theses.

Digital Media Center
The committee learned that OIT requested Priorities Committee support for a new position in a digital media center that would serve as a “one-stop-shopping” center for faculty interested in using digital media in their teaching.
Research Computing Advisory Group

The Research Computing Advisory Group [RCAG] advises and collaborates 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.

During FY06, members of the RCAG were:

Curt Hillegas, Manager, Academic Applications, OIT (chair)
Mary Lynn Baeck, Senior Technical Staff Member, Civil and Environmental Engineering
Robert Barnett, Assistant Director, Physical Planning
Robert Calderbank, Professor of Electrical Engineering, Mathematics, and Applied and Computational Mathematics. Director, Program in Applied and Computational Mathematics
Roberto Car, Professor, Chemistry and Princeton Institute
Emily Carter, Professor, Mechanical and Aerospace Engineering and Applied and Computational Mathematics
Kara Dolinski, Senior Technical Staff Member, Lewis-Sigler Institute for Integrative Genomics
Bruce Draine, Professor, Astrophysical Sciences
Hank Farber, Professor, Economics
Sal Fattoross, Ecology and Evolutionary Biology staff
Chris Floudas, Infrastructure Operations Analyst, Chemical Engineering
Serge Goldstein, Director, Academic Services, OIT
Scott Karlin, Research Associate, Computer Science
Daniel Marlow, Professor, Physics. Chair, Department of Physics
Pino Martin, Assistant Professor, Mechanical and Aerospace Engineering
John Matese, Senior Technical Staff Member, Lewis-Sigler Institute for Integrative Genomics
Aleksandr Oganesov, Manager, Computer Services, Molecular Biology
Robert Ortego, Environmental Compliance Officer, Engineering and Construction
Jerry Ostriker, Professor of Astrophysical Sciences. Director, Princeton Institute for Computational Science and Engineering
Josko Plazonic, Infrastructure Operations Analyst, Mathematics
James Stone, Professor, Astrophysical Sciences and Applied and Computational Mathematics
Daniel Trueman, Assistant Professor, Music
Chris Tully, Assistant Professor, Physics
Doug Welsh, Senior Technical Staff Member, Molecular Biology
Bill Wichser, Infrastructure Operations Analyst, Princeton Materials Institute
Highlights

IBM Blue Gene, Orangena
In support of faculty needs and in the interest of efficient use of University resources, RCAG favored the centralization of the University’s High Performance Computing resources. RCAG provided advice on the selection of IBM as the vendor and the IBM Blue Gene/L as the platform for this new facility. The purchase of this 2048 processor, 512 GB system placed Princeton University at number 79 on the November 2005 “Top 500” list of supercomputers, http://www.Top500.org/list/1005/11/100.

Dell Beowulf Cluster, Della
RCAG provided input both to determine the need for a system to complement the IBM Blue Gene/L, Orangena and the SGI Altix, Hecate, and to decide on Dell as the vendor. Della consists of 256 dual 3.2 GHz Xeon processor systems each with 8 GB of RAM connected by a gigabit Ethernet network. Sixty four of the systems are connected by a high speed Infiniband network.

Other recommendations
RCAG provided information to demonstrate the need for upgrading the campus Internet and Internet 2. The upgrades will accommodate the increasing demands for high bandwidth that are required to stay competitive in the area of research computing. RCAG also provided justification in support of the purchase of a Matlab site license.
Desktop Systems Council

The Provost formed the Desktop Systems Council [DeSC] to standardize the University’s administrative desktop computer environment. By choosing one hardware model and a standard software suite, the University is positioned to negotiate better pricing and maintenance fees, and computing support staff are better able to provide the best possible assistance to DeSC customers. Launched originally as the Princeton Desktop Initiative in 1996, the program was an essential part of the success of the new administrative computing applications then under development. The goals of the Council are to:

- Streamline the costs associated with application development, software installation, computing support, system administration, and software licensing;
- Ensure that the standard administrative computing environment is sustained;
- Enhance regularly the delivery of key administrative systems and productivity tools.

During FY06, members of DeSC were:

Steven Sather, Associate Chief Information Officer and Director, Support Services, OIT (Chair)
Charlayne Beavers, DeSC Coordinator, Technology Integration Specialist, OIT
Marvin Bielawski, Deputy University Librarian
Joseph Crouthamel, Technical Support Analyst, Computer Science
Nancy Costa, Associate Chief Information Officer and Director, Finance, Administration and Planning, OIT
Colin Currie, Director, Administrative Information Systems, OIT
Ellen Kemp, Director, Computing Services, Woodrow Wilson School (DeSC Hardware Leader)
Dave Morreale, Manager, Desktop Computing Support, OIT
Steven Niedzwiecki, Manager, PC Systems, OIT
Vikki Ridge, Senior Human Resource Manager, Facilities
Leila Shahbender, Manager, Student Computing Services, OIT
Barbara Sutton, Associate Director, Population Research
Chris Mackie, Technical Support Specialist, Politics
Highlights

DeSC Software Deployment
During FY06, DeSC created a more efficient and less resource intensive strategy for software deployment and configuration for managing clients when the DeSC environment is migrated to Vista/Office 2007.

Windows laptops
During the year, DeSC established procedures and policies to manage centrally mobile devices including Windows laptop machines within the DeSC environment.

Managing administrator passwords
DeSC coordinated and implemented the LAPM System which monitors and maintains the local administrator password on all DeSC machines and provides view access to department SCAD/DCS members. In October, DeSC began to distribute “Mass Quarterly Local Admin Password Updates.”

Energy conservation
DeSC adopted energy conservation measures. For example, DeSC approved the phasing out of CRTs within the DeSC program and prohibited Dell from offering CRTs as an option for DeSC purchases. DeSC also distributed EZ-GPO within DeSC environment. The program increases monitor downtime. DeSC also deployed TSM Journaling which decreases network congestion by reducing the amount of time that it takes a DeSC machine to run a daily backup from approximately an hour to 10 minutes.
OIT initiated the OIT Ambassador Program in January 2003 to improve communication and customer service with the University community. The program’s mission is to:

- Provide an ambassador for every non-OIT department;
- To ensure excellent communication between the Ambassador and the department while maintaining a high level of service and satisfaction;
- Increase communication between OIT and non-OIT departments;
- Represent OIT to our customers, notably by disseminating information about OIT services;
- Represent customer needs and issues to OIT by listening and gathering information from customers.

The OIT Ambassador program is open to academic departments as well as certain undergraduate and graduate student groups. A total number of 71 Departments and programs are served by the program and enrollment growth is steady. Approximately 90 departments and programs do not currently have an Ambassador.

**Highlights**

During FY2006, the Ambassadors worked with their departments and OIT to resolve 1,580 problems and questions and assisted with many undocumented matters. Most concerns regarded upgrades, training opportunities, and conversion to new software applications.

Given the value of these relationships, Ambassadors typically meet with their department(s) once every month. The program has assembled a list of expectations for Ambassadors. Ambassadors are required to attend meetings, to have at least quarterly contact with their departments, and to publish their meeting minutes.
The OIT Leadership Group is charged with assisting in resolving cross-functional problems, serving as an advocate for improving the OIT work environment, providing cross-functional support for OIT projects, and promoting camaraderie within OIT leadership.

At regular sessions, colleagues shared workplace issues and used these as topics for small round table discussions that explored possible causes and solutions. A guest speaker, Lianne Sullivan-Crowley, Vice President of Human Resources, shared her thoughts about personnel issues. The result was an informative discussion session that also generated topics for future round table discussion.

During FY06, after revisiting its charter and discussing how it might work more effectively in the future, the OIT Leadership group embarked on several new initiatives. One was the formation of the OIT Diversity Task Force. This group was charged with making OIT a more “welcoming place to work” and was part of a much broader campus-wide initiative to make Princeton University a more diverse community. During the year, the Task Force developed a set of recommendations that were subsequently reviewed and prioritized with Betty Leydon, CIO. The recommendation will be further vetted with the entire OIT Leadership Group as well as the OIT Cabinet. It is expected that the top recommendations will be implemented in the next fiscal year.

The Leadership Group also created a Project Communication Task Force that recommended ways to improve project communication across OIT and to facilitate communication across the various departments within OIT. After several sessions of lively discussion, the Task Force approved a set of recommendations and subsequently shared them with the OIT Cabinet for their endorsement.
OIT Cross Functional Teams

Established in 2003, OIT Cross Functional Teams have become integral to addressing cross-functional information technology issues, that otherwise would not be addressed as effectively.

During FY06, seven OIT Cross Functional Teams focused on IT Architecture, Communications, Disaster Recovery, Facilities and Office Management, Software Coordination, Training, and Video Coordination. The following excerpts from the team’s annual reports illustrate the depth and breadth of the activity.

IT Architecture

Mission
The IT Architecture Team works collaboratively with staff throughout OIT and other campus departments to define and articulate the standards, technologies, processes, interfaces and best practices which form the University’s IT architecture.

Members
Deborah Becker
Colin Currie (Co-sponsor)
Dan Oberst (Co-sponsor)
Jon Edwards
Serge Goldstein
David Herrington
Robert Knight
Paul Lynn & Steve Niedzwiecki (Co-team Leaders)
Dave Morreale
Peter Olenick
Anthony Scaturro

Highlights
The main purpose of the IT Architecture Team and the various sub-teams was to document the different components of the Princeton architecture. The team continues to maintain that documentation. The team also makes recommendations to the OIT Cabinet in the form of IT architecture documents.

The various sub-teams have consisted in the past of multiple individuals. During FY06, the team agreed that “points of contact” for each area were sufficient. The revised list of areas, with their points of contact is:

- Academic Computing Infrastructure - Serge Goldstein
- Administrative Distributed Computing Infrastructure - Paul Lynn
- Architectural Review Board - Paul Lynn
- Desktop Computing Infrastructure - Dave Morreale
- Directories - Chris Kranz
- Networking, Wired and Wireless - Peter Olenick
- Production Databases - Debby Becker
- Web Application Services - Dave Herrington
- Documentation/Website Coordination - Jon Edwards
Several sub team documents were updated:

- IT Standards
- Networking
- Administrative Distributed Computing Infrastructure
- Production Database Architecture
- Web Access to Databases

The Architecture Review Board sub-team reviewed several applications and infrastructure projects:

- Demo of Tk20
- Web Services interface to Blackboard
- Alert Notification System
- Voice Messaging System
- Cognos / Reportnet
- Development – Strategic Review
- Web Parental Information Form (PAI)
- Housing Room Draw

Communications

Mission
The Communications Team continued to focus on external, customer communications. The team’s mission is to improve the face and voice of OIT to its customers.

Members
Marion Carty
Nancy Costa (Co-sponsor)
Steven Sather (Co-sponsor)
Jon Edwards
Ash Hadap
Laurie Larson
Lorene Lavora
Linda Mulé
Annie Saunders (Team Leader)
Velga Stokes
Laura Strickler

Highlights
The OIT Editorial Review Board is a group of volunteers, charged by the OIT Cabinet and the sponsors of the OIT Communications Cross-Functional Team, who provide an editorial service to all OIT staff who send e-mail messages to recipients outside of OIT. The service is intended to be utilized for e-mail messages that go to large audiences (e.g., listservs). The OITedit Service Review sub-team continued to work on the promotion of the service, as well as its process. During the year, the sub-team refined the submission/edit/response mechanism with each submission, to one which worked well for the team and the customer. The service was used more than fifteen times by OIT staff during the year. Most of the suggestions were taken, and the quality of the final mailings improved. OITedit has had an important, positive impact on the quality of OIT’s external communications.

The Styles and Standards sub-team continued to work on standardization details for an OIT identity for written communications; including formal, informal, and e-mail methods. The sub team:

- Designed a choice of graphic identities for the OIT Cabinet to approve.
- Designed and received final approval from the sponsors for the set of formal and informal ‘stationery’ samples for OIT letterhead.
- At the request of team sponsors and Cabinet, the sub-team extended the initial scope of the e-mail portion of ‘standard stationery’ to include OIT broadcast e-mail communications and a message archive as a means for users to confirm official e-mail. The team worked on design, process, and technical specifications and tools.

The Outreach sub-team continued to expand the presence of OIT brochures, packets, and information presentations in many areas:

- Worked with the Dean of the Faculty’s Office, in order to provide welcome packets to new faculty and visiting faculty.
- As a major presentation mechanism for “Introduction to PU Computing” efforts, members of the team worked on the OITtros (Tigers10) technology section of the core Princeton Web site.
- Improved the graduation campaign for outgoing students through the launch of the Digital Student Suitcase.
- Investigated mechanisms for presenting the data from the Master Calendar of Communications in other formats.

The Communications Process sub-team continued to work with the Project Office to incorporate streamlined communications tools into the OIT project process, as well as to increase awareness of communications planning and requirements as part of the overall OIT project planning endeavors.

- Forwarded a formal recommendation to the OIT Leadership Group, requesting that all projects in OIT that are cross-functional and within the organization itself, are required to follow the Princeton Project Office methodology. Through the adoption of this recommendation, Communications Services will be able to request project snapshots and detailed plans without recourse before proceeding with communications plans.
- Continued the collaboration of Communications Services with the Princeton Project Office to incorporate customer communications into project planning.
- Finalized the consolidation of communications tools (Customer Communications Menu of Options and the Support Services checklist) for OIT project planning.
Disaster Recovery

Mission
The Disaster Recovery Team has the charge of enumerating the resources and actions needed to restore the campus network and computing infrastructure if the current facilities are impaired. Special attention is given to changes in the structure of existing computing facilities or OIT operational procedures that would enhance our ability to restore services. The team reviews and updates OIT’s disaster recovery plans by March 31 annually.

Members
Chuck Augustine (Team Leader)
Deborah Becker
Colin Currie (Co-sponsor)
Dan Oberst (Co-sponsor)
Dave Herrington
Charles Kruger
Kevin Mills
Steven Niedzwiecki
Peter Olenick
Harris Otubu
Anthony Scaturro
Donna Tatro
Russell Wells
Dave Wirth

Highlights
- Presented an overview of the current plan, with recovery time estimates for major administrative applications to the Emergency Preparedness Taskforce, the Administrative Systems Planning Group and the Project Managers Team.
- Completed work to allow New South to be a warm site for both IMAP and Exchange e-mail and tested this during the June 8-10 outage.
- Successfully tested New South as a warm site for Roxen web sites and “tilde” pages during June and July power outages.
- Successfully tested an alternate network core.
- Completed planning for use of New South as an alternate site for all production services. The proposal for funding of this work is moving through the facilities project approval process.
- Established a disaster recovery web site hosted by a commercial ISP to provide a repository for disaster recovery documents. The site also includes a BLOG that was used successfully during the June 8-10 outage.
- Participated in development of initial proposal for cooperation with Carnegie-Mellon for providing an off-site fail-over location for some critical infrastructure services.

Facilities and Office Management

Mission
The Facilities and Office Management Team is charged with identifying and implementing improvements to OIT administrative practices; assisting with office/work area changes and relocations using OIT Space Principles; fostering better communication among OIT administrative staff and with University administrative staff.

Members
Joyce Bell
Lorraine Chambers
Shane Farrell
Betty Leydon (Sponsor)
Carol Morea
David Morreale
Alberta Noon
Andy Rosenau (Team Leader)
Leah Targon
Sally Van Fleet

Highlights
- Developed the OIT New Staff Orientation Program. Since July of 2005, 18 orientation programs have been conducted.
- Developed the OIT “Get to Know You” series and offered two activities – a tour of the Art Museum and a tour of Princeton Plasma Physics Laboratory.
- Assisted with the implementation of the OIT Tax Exempt Best Practice.
- Dealt with numerous facility maintenance issues in OIT Buildings.

Software Coordination

Mission
The Software Coordination Team represents OIT departments that share responsibility for providing software to the University community. The team addresses software incompatibilities, problems, testing, availability, and distribution.

Members
Gary Eshbaugh
Ian Finch
Serge Goldstein (Co-sponsor)
Steven Sather (Co-sponsor)
Becky Goodman
Curt Hillegas
Phil Immordino
Charles Kruger
Steve Niedzwiecki
Kevin Perry
Leila Shahbender (Team Leader)
Highlights

- The team drafted a software retention policy that the OIT Cabinet endorsed.
- The group continued to serve as a forum to share information about new and updated software versions, installations and availability.
- With sponsorship from the team, a group of Support Services staff evaluated different ways to distribute software using GPOs and MSIs.
- The team sponsored a test to determine whether to distribute Firefox and Thunderbird from a central server to DeSC users. The alternative, proving patches for these applications, requires complete reinstalls, an impractical maintenance model for DeSC. The group recommended that Firefox and Thunderbird not be made available via centralized servers.

Training

Mission
The University Training Team seeks to create a holistic and integrated framework for management and staff learning and development that meets all institutional expectations.

Members
Kathleen Applegate - Academic Managers Group
Marilyn Ham - Academic Managers Group
Greg Cantrell - Environmental Health and Safety
Nancy Costa (Sponsor) - OIT
Nick Diehl - Ombuds Office
Janice Guarneri (Team Leader)
Lorene Lavora - OIT
Laurel Harvey - Compliance
Maureen McWhirter - Compliance
Maureen Imbrenda - Human Resources
Scott Willet - Human Resources
Luisa Pastor - Library
Hannah Ross - Legal Counsel

Highlights
During FY06, the team sought to transform the OIT Cross Functional Training Team into a University-wide Training Cross Functional Team. The team reviewed University expectations and developed comprehensive programs that will address new hire and academic manager training and information needs. The group began the effort by performing a needs/gap analysis and training inventory.

Video Coordination

Mission
The Video Coordination Team is a cross-functional effort among OIT, the Office of Communications, and the Woodrow Wilson School. The team is charged with addressing intellectual properties issues and copyrights, keeping current with new video production and distribution requirements and methods; and developing better ways to fulfill the campus’s video expectations.

Members
Julia Cheung - Woodrow Wilson School
Donna Liu - Woodrow Wilson School
Cindy Parvesse - Woodrow Wilson School
Marianne Crusius - OIT
Serge Goldstein (Sponsor) - Director, Academic Services, OIT
David Hopkins (Team Leader) - OIT
Kris Kauker - OIT
Mike Mills - OIT
Domingo Monet - OIT
Lauren Robinson-Brown - Office of Communications

Highlights

Classroom Lecture Recordings
Last year, two courses were recorded with a single camera taping the professor and the data projector. Requests have been made for a more sophisticated presentation system that would provide a better view of the presenter and the presentation. Anystream software provides such functionality. The team tried a trial version of the software during the spring semester. Some technical difficulties were experienced, but the group was able to record the events and edit/publish them to the server.

Four other vendors will be evaluated as possible end-to-end streaming and archiving solutions.

Princeton Server Group (PSG)
During the year, OIT purchased 11 multimedia PSG video network appliances. These units range from broadcast video servers to video file encoders / transcoders. The PSG MPEG2 encoder and decoder systems are replacing the VBRICK systems at half the cost. The PSG delivery system will more effectively broadcast live events to the campus television network.

New Broadcast Forms
The team worked with the Office of General Council to create an updated version of the broadcast release form. The new version includes the release of presentations to podcasts. The team also worked on a new video recording request form. A sub-team met to discuss the contents of the form and the database integration. The team plans to have the form “go live” in the fall.

WebMedia
A newly formed sub-team reviewed a new web design and the future of the WebMedia service. The group submitted a report describing the current production and distribution workflow of the streaming service. Additional discussions will develop a total end-to-end solution for the entire streaming service.
Lewis Library Broadcast Center and the Woodrow Wilson Satellite Studio

Videolink is working with Woodrow Wilson School and the Office of Public Affairs on installing a “satellite studio” in Robertson Hall. The converted space will be used initially for special interviews with the major TV networks. The space was created in response to the move of the Gallup Organization studio to Washington D.C.

When the Lewis Library Broadcast Center goes online, it will be the primary space for interviews. The studio in Woodrow Wilson School will be the secondary space when there are scheduling conflicts. OIT worked with Verizon on the installation of the fiber/TVOne connection and linking the fiber from Washington Road to 87 Prospect. Fiber connections will be installed from 87 Prospect to the Woodrow Wilson School studio and the Broadcast Center.
Academic Services

Academic Services supports the University community in the use of information technology in teaching, learning, and research. Academic Services brings together within a single OIT department those units and staff members who are primarily involved with support of Academic Computing.

Within Academic Services, the Educational Technologies Center supports the use of instructional technology to create learning modules and other computer-based teaching resources, including course web pages and learning modules for use in University courses; Media Services supports the use of instructional technology (audio, video, overheads, slides, and computer-based presentations) in the classroom; The Language Resource Center supports use of instructional technology in language courses, and manages the University’s video collection and its digital video server; The New Media Center runs a laboratory that makes sophisticated instructional technology hardware and software available for student and faculty use, and assists the University’s Communications Office in building departmental web sites; Computation Science and Engineering Support provides support for the use of information technology in science and engineering research, including the operation of a number of Beowulf computing clusters; Desktop Support builds desktop applications for University departments and works to develop, support, and document the tools it uses for this purpose; Education and Outreach Services supports efforts to inform the University community about Academic Services initiatives and services and provides training and instruction in the use of Academic Technology.

Highlights

Meeting the high performance computing needs of the research community

With three, large central supercomputers dedicated to research computing, Princeton is today a leader among higher education institutions worldwide in providing central support for researchers. This past year, EDUCAUSE, the leading nonprofit higher-education organization for information technology, published a report documenting Princeton’s success in creating this collaborative research computing facility. The first step in this collaborative effort came in September 2005, when OIT contracted with IBM to acquire a “Blue Gene/L” high-performance computing system. Acquired through joint funding from OIT, PICSciE, SEAS, and a number of individual faculty members, “Orangena” consists of a cluster of 1024 small computers, each containing two processors (for a total of 2,048 processors). The system is capable of executing nearly 5.6 trillion floating-point operations per second (teraflops). The purchase of this system placed Princeton University at number 79 on the November 2005 “Top 500” list of supercomputers, http://www.Top500.org/list/1005/11/100.

By November, OIT was hosting two large high-performance computing clusters, “Orangena” and “Hecate,” an SGI cluster purchased by PICSciE, but now jointly run by PICSciE and OIT. Meetings with faculty determined that, while these two clusters provided a significant computing capability, the campus would benefit by having a third computational engine with a different performance profile to complement Orangena and Hecate. In March 2006, OIT again partnered with PICSciE and Princeton faculty members to acquire an additional, significant new high-performance supercomputer for the University. The new system, dubbed “Della,” is a Dell high-performance cluster made up of many individual, small computers. Della comprises 256 individual Dell computers, each containing two 3.2 gigahertz processors, for a total of 512 individual processors. Each processor has
4 gigabytes of RAM, adding up to a total of 2 Terabytes of RAM. The cluster also has 3 terabytes of disk space for storing results and data. The individual computers are interconnected using high-speed (gigabit) Ethernet networking.

Each of the three high-performance machines, Della, Orangena, and Hecate, has a different performance profile suitable for handling different kinds of computational tasks. Orangena is used primarily for computations that can take advantage of its large number of processors (2,048), but do not require considerable per-processor memory. Hecate, an SGI 64-processor cluster, is for computations that require large amounts of per-processor memory, but few processors. Della falls in-between; it has fewer processors than Orangena, but each processor is faster and has more memory than the Orangena processors. It is therefore suitable for problems that can take advantage of numerous processors, each with significant amounts of RAM. Together, these three machines provide Princeton faculty a world-class computational research environment and solidify the emerging partnership between OIT and faculty in support of research computing at Princeton.

Enhancing Blackboard to meet demand for academic technology productivity tools
The Educational Technologies Center (ETC) continued its efforts to enhance the University’s Blackboard course management system to meet evolving Academic IT needs. During the year, ETC added a precept scheduling tool to Blackboard, which makes it possible for students to select precept sections online (70 courses used the tool in the fall, and 95 used it in the spring). The tool can now automatically assign students to precepts and other sections, including labs, based on these preferences and the student’s current schedule. Late in the year, ETC implemented a set of Language Placement tests in Blackboard, replacing a separate vendor product for which support was ending. ETC also implemented a system for delivering freshman seminar evaluations out of Blackboard, and added a set of Web Services to Blackboard that made it possible for the Computer Science department to include student enrollment information in it’s Whiteboard CMS system.

Enhancing Almagest
ETC made major improvements to the Almagest image-management system, including a completely re-designed user interface. Almagest currently contains 243 projects, spanning 166 courses in 33 departments. In FY06, Almagest delivered 1,087,000 images (up from 946,000 in FY05 and 757,000 in FY04).

Media Services (MS)
Media Services [MS] provides a full range of audio-visual equipment and technical support for University classes and events. More than just support for conventional media, services include providing support for videoconferences, simulcasts on the University’s cable television system and Patriot Media channel 27, videotaping, and consulting on the design and installation of data projection systems.

Highlights
MS assisted in the planning and renovations of multimedia AV systems for the nine rooms in the Frist Campus Center, Blair T3 & T5, McCormick 101, Bendheim 103, four rooms in the Engineering School, Bowen 222, Wilcox 204, and four rooms in McDonnell Hall. During the year, in direct response to concerns brought about by the Trustees, MS notably assisted in the planning and implementation of a sound system in the Nassau Hall Faculty Room.

As part of the group’s continuing association with the Office of Design and Construction, MS has added twenty more classroom spaces to RoomView with Crestron Control Systems. As a result, MS staff can now monitor and control a total of fifty seven classroom spaces across the campus. These capabilities will now be added to new renovation or installation, facilitating the continuing expansion of the campus.

With assistance from the New Media Center, MS will introduce new hardware that will locally video record MPEG2 files at select campus locations, as well as broadcast to webmedia and simulcast locations. The new facility will ease the distribution of special events or public campus lectures.

MS activities are summarized in Table 1.

Table 1: Media Services jobs in FY06

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<th>Category</th>
<th>Fall 05</th>
<th>Spring 06</th>
<th>Total</th>
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<tbody>
<tr>
<td>Jobs</td>
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<tr>
<td>Total jobs</td>
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<td>Course-support Jobs</td>
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<td>312</td>
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<tr>
<td>Non-course Jobs</td>
<td>896</td>
<td>1168</td>
<td>2064</td>
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<tr>
<td>Course Jobs Requiring Operator</td>
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<td>136</td>
<td>300</td>
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<tr>
<td>Non-course Jobs Requiring Operator</td>
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<td>295</td>
<td>490</td>
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<td>Videotaping Orders</td>
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<td>140</td>
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<tr>
<td>Non-billable Tasks</td>
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<tr>
<td>Networking</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>
Language Resource Center (LRC)

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

Highlights

Of note, the LRC’s use of technology in language learning was featured in the Spring publication ‘Princeton with one Accord.’

Most language courses do not show significant changes in enrollment. The single exception is Swahili which increased 215% from 13 students last year to 41 this year. As in the past, the highest number of enrolled students is in Spanish courses (915 students during the academic year). French classes had 463 students, and Chinese was third with 343 students. During the year, more than 3,000 students were enrolled in language courses.

The LRC continues to be a popular facility. Usage numbers are similar to the past academic year. According to tracking software used to monitor the usage of the LRC computers, 1,879 unique users logged on in fall 2005 (total logons were 13,453 or 673 per week) and 1,917 in spring 2006 (total logons 14,444 or 850 per week). 2,500 entries were recorded at the circulation desk for access to books, Interactive CDs, and the viewing rooms for scanning and video editing.

The LRC’s video library continues to grow as more courses use more media in instruction. During FY06, the number of videos in the LRC’s collection increased by 300 titles to 3,530. DVDs grew by 643 titles to 1,728. 1,642 titles were placed on reserve. 7,813 transactions were recorded in the video checkout department.

Use of the LRC’s Video on Demand (VoD) Service expanded to more courses and more titles. The number of classes using VoD grew from 220 to 230 and the number of titles assigned increased from 908 to 1442.

Education and Outreach Services (EOS)

Education and Outreach Services continued this year to expand its offerings in support of training and promotion of academic technology services. That position was not replaced, though some time has been allocated from an FAP position.

Highlights

AP501/The Productive Scholar Series
During FY06, EOS contributed to a new series, “Academic Productivity 501,” that offered time-saving tips on using desktop applications for scholarly work. With the series’ originator having left Princeton, its oversight has become an EOS function. The transition and preparation for this coming academic year’s program has been a large part of the group’s activities.

Lunch’ n Learn program
These brown bag presentations have become very well-attended. One session was particularly notable. Then Dean of the Engineering School, Maria Klawe presented “Sex, Lies and Videogames: the Truth About Females and Computing,” a session that was video-conferenced and offered over Internet2 with Montclair State University and Passaic Valley High School. Lunch ‘n Learn lectures are now being recorded and pod-cast.

Office Visits Program, Training
The Office Visits Program, now known as STAT (Student Technologists and Trainers), had a successful year, having a small but dedicated core of student workers. In addition, EOS has established a small training room and portable training kit (four laptops and travel case) in order to do small group training sessions.

GAIT
The Graduate Associates in Instructional Technology [GAIT] continued to help aid departments and faculty this year with trained graduate students. GAITs worked at Woodrow Wilson, the English (Professor Michael Wood), Music and French (Francois Rigolot) departments.

“IT’s Academic”
The IT’s Academic blog has continued, featuring stories of interest to the academic community. During the year, it has featured stories about Brian Kernighan, the University Channel, the Princeton Laptop Orchestra, Professor Martin Wikelski’s work on radio tracking, and much more.

Slasharts speaker series
The Slasharts speaker series has had a very successful year, with eight sponsored events. One packed Taplin Auditorium with more than 200 people. Another sponsor Paul Muldoon has joined the series for the coming year with a contribution on behalf of the Performing Arts initiative.

Technology Grants
The group has begun to provide assistance with technology grants. One was submitted to the state of New Jersey for funding in support of OIT’s media initiatives.
Database Application Services (DAS)

DAS concentrates on small to medium scale projects, most often involving creating websites that are data-driven. Projects requiring more than eight hours staff time are charged, and work agreements outlining the scope and timeframe are prepared and signed before work begins. DAS provides OIT customers with an alternative for customers desiring quick turnaround in lieu of the long-term planning involved getting a project completed through the AIS/ASPG pipeline, and also provides non-AIS customers a place to go with their requests. In addition to their work on projects, DAS staff also serve as a secondary level of consulting support in the areas of their expertise for customers and other OIT staff.

Highlights

Staff assembled a conference registration and seminar management system for the American Comparative Literature Association (ACLA) ’06. This system supported conference registration as well as management of seminars by a central conference staff.

DAS staff have traditionally assisted OIT’s Support Services by adding new features to the Faculty Computing Program system. During FY06, DAS staff added automatic updating of FCP information and direct Apple computer processing.

During the year, DAS staff create the Politics departmental intranet using Roxen. Working with Politics and Communications, DAS staff coded a back-end system that will permit Politics faculty, staff, and graduate students to update their professional information on the Politics website. Departmental Intranet Administrators can also update the information.

The group introduced a production-quality LAMP service for Princeton departments, programs, and centers. The “WebLamp” service provides a no/low-cost platform that assists members of the campus community to develop websites within the popular Linux, Apache, MySQL, and PHP environments.

Staff developed the Lewis-Sigler Institute online ordering system. The new system permits people in the institute to submit purchase orders to the accounting department, who then fulfill them using traditional means.

Staff developed the Life Sciences Research Foundation (LSRF) post-doc fellowship application site. This system permits applicants to LSRF to name five references. The references are automatically sent invitations via e-mail to submit recommendations for the applicants. The recommendations are uploaded via the web and can be accessed by those judging the applications.

Staff assisted the programming of the Office of Population Research (OPR) conference registration system

Staff developed the Online Community Auditing Program (CAP) registration system, phase 1. This project permits auditors to register and to pay for attending Princeton courses online. Credit card payments are taken.

Staff developed an online registration system for the WWS Program on Science and Global Security’s Bioterrorism Preparedness conference.

Staff assembled the Princeton Center of Theoretical Physics (PCTP) post-doc fellowship application site.

In order to assist the Registrar’s Office to retire their last VM/370 application, staff rewrote in Perl the Single Transferable Vote (STV) algorithm.

During FY06, DAS assisted in automating the process of uploading and processing of scanned alumni ballots for Alumni Council. The new processes replaced hand tabulation of ballots.

DAS FY06 Statistics

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
<td>Work requests active</td>
<td>7</td>
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<tr>
<td>Work requests cancelled</td>
<td>5</td>
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<tr>
<td>Work requests on hold</td>
<td>5</td>
</tr>
<tr>
<td>Work requests referred to other OIT groups</td>
<td>3</td>
</tr>
<tr>
<td>Work requests categorized as projects</td>
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<tr>
<td>Work requests categorized as tasks</td>
<td>87</td>
</tr>
<tr>
<td>Depts/programs/centers served</td>
<td>55</td>
</tr>
</tbody>
</table>

Computational Science and Engineering Support

For FY06, “Research and Academic Applications Support” was renamed “Computational Science and Engineering Support” [CSES] to reflect better the refined mission of the group. CSES provides hardware and software facilities for the research community. The group assists other University departments to install and support their own high performance computing facilities. CSES also provides programming assistance and training for those developing in-house research applications.

Building on the strong foundation the group has established in its three prior years and collaborating with PICSciE, the Research Computing Advisory Group [RCAG], the administration, and the faculty, CSES has taken on a role to facilitate the centralization of the University’s high performance computing resources. By working with the faculty to determine their needs and preferences, the group made great progress building a set of HPC systems to optimize the University’s resources and researchers’ grant funds. The result has been a significant advancement in the level of infrastructure available for computational science and engineering research at Princeton. The university’s progress was documented in a

**Highlights**

**Orangena – IBM Blue Gene/L**
During the end of FY05 and the beginning of FY06, CSES worked with the Research Computing Advisory Group (RCAG), the Princeton Institute for Computational Science and Engineering (PICSciE), and faculty from a number for departments to determine a vendor for a centralized high performance computing (HPC) resource. IBM was chosen as the vendor and the IBM Blue Gene/L supercomputer was chosen as the architecture for the new facility. The system has a total of 2,048 processors and 512 GB of RAM. The acquisition of the supercomputer placed Princeton at number 79 on the November 2005 “Top 500” list of supercomputers [http://www.Top500.org/list/2005/11/100].

Funds were contributed by OIT, PICSciE, the School of Engineering and Applied Science (SEAS), and four individual faculty members to purchase the system in late September 2005. Orangena was installed in October 2005, and users began accessing the system in November. At the ribbon cutting celebration in late November, Professor Stone from Astrophysical Sciences presented preliminary results for a model of hydrodynamic turbulence in astrophysical accretion disks run on Orangena with 64 times the previously achievable resolution. The increased resolution revealed significant detail in the physical structure that could not be seen before. These results were achieved within three weeks of initial access to the system.

IBM visited campus to present a training program for research groups contributing to the Blue Gene/L system helping researchers port their computational codes to the system. CSES has continued to assist researchers with porting and tuning codes on Orangena. By the end of FY06 25 researchers from 7 academic departments had codes running on the system. By the end of FY06, a number of papers with results generated on Orangena were in process, and there have been at least two presentations at conferences.

**Della**
To complement Orangena, the IBM Blue Gene/L, and Hecate, a 64 processor SGI Altix purchased by PICSciE and some academic departments, we determined with PICSciE and a number of faculty members that a Beowulf cluster was needed. This system would be ideal for many of the applications – especially those requiring very large total memory – that are not ideally suited for either of the other two HPC resources. An analysis of the price / performance for clusters available from a number of vendors showed that Dell’s solution was the best choice. In February of 2006, a cluster of 256 dual processor computers was ordered from Dell with funds pooled from OIT, PICSciE, Astrophysical Sciences, and the Lewis-Sigler Institute for Integrative Genomics. The systems provide 512 3.2 GHz Xeon processors and 2 TB of RAM. All of the nodes are connected with a gigabit per second Ethernet network, and 64 of the nodes are connected with a high speed Infiniband network. The hardware installation of the system was completed in May of 2006. The system was made available to contributing users in late June of 2006.

**Adroit**
The 32 node Beowulf cluster, adroit, acquired during FY03 from Dell continued providing a production computing environment to the research community during FY06. 30 users from 10 academic departments and the Class of ’06 submitted 5,958 jobs totaling 356,590 cpu hours for a total utilization of 70% this year. Details are presented in the ‘Adroit Usage’ chart below.

<table>
<thead>
<tr>
<th>Month</th>
<th>Used</th>
<th>Available</th>
<th>Percentage</th>
<th>Hr per node</th>
<th>Nodes</th>
</tr>
</thead>
<tbody>
<tr>
<td>July</td>
<td>31137.79</td>
<td>47616</td>
<td>65.39%</td>
<td>48</td>
<td>1488</td>
</tr>
<tr>
<td>August</td>
<td>37319.16</td>
<td>47616</td>
<td>78.38%</td>
<td>1488</td>
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<tr>
<td>September</td>
<td>30456.19</td>
<td>46080</td>
<td>66.09%</td>
<td>1440</td>
<td>32</td>
</tr>
<tr>
<td>October</td>
<td>33895.94</td>
<td>47616</td>
<td>71.19%</td>
<td>1488</td>
<td>32</td>
</tr>
<tr>
<td>November</td>
<td>25721.41</td>
<td>40320</td>
<td>63.79%</td>
<td>1440</td>
<td>28</td>
</tr>
<tr>
<td>December</td>
<td>24960.70</td>
<td>41664</td>
<td>59.91%</td>
<td>1488</td>
<td>28</td>
</tr>
<tr>
<td>January</td>
<td>19654.57</td>
<td>41664</td>
<td>47.17%</td>
<td>1488</td>
<td>28</td>
</tr>
<tr>
<td>February</td>
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<td>37632</td>
<td>71.21%</td>
<td>1344</td>
<td>28</td>
</tr>
<tr>
<td>March</td>
<td>34506.81</td>
<td>41664</td>
<td>82.82%</td>
<td>1488</td>
<td>28</td>
</tr>
<tr>
<td>April</td>
<td>30354.00</td>
<td>40320</td>
<td>75.28%</td>
<td>1440</td>
<td>28</td>
</tr>
<tr>
<td>May</td>
<td>33288.50</td>
<td>41664</td>
<td>79.90%</td>
<td>1488</td>
<td>28</td>
</tr>
<tr>
<td>June</td>
<td>28495.48</td>
<td>40320</td>
<td>70.67%</td>
<td>1440</td>
<td>28</td>
</tr>
</tbody>
</table>

**Princeton Software Repository Webstore**
In FY05, CSES worked with Software Sales to develop the Princeton Software Repository (PSR) Webstore, an online store where students, faculty, staff, and departments can purchase software using credit cards, departmental project grants, student accounts, and cash. The webstore processed 2,427 sales transactions for 1,348 unique customers from 145 departments and all four undergraduate classes during FY06, the webstore’s first full fiscal year of production.

Staff upgraded the PSR webstore’s underlying accounting software, Compiere, during FY06 in order to improve reliability and to facilitate possible future upgrades and enhancements.
New Media Center

The New Media Center [NMC] offers a walk-in facility that permits faculty, students, and staff to work with sophisticated computer and audio-visual equipment. NMC staff members assist customers in the use of this equipment and the associated software. Major activities during FY06 included the recording of University events and the creation of special purpose web sites.

Highlights

Visits to the NMC sustained an active pace throughout FY06. There were 2,220 visits (177 faculty, 1,558 students, and 474 staff) from 703 different people (60 faculty, 466 students, and 173 staff). 1,641 visitors came to use the NMC’s sophisticated media equipment. 218 came for consultation on varied projects. Major activities included Video Capture and Editing (712 visits), DVD Burning (183 visits), use of graphics applications (149 visits), web design (143 visits), color printing (133 visits), scanning slides (128 visits), and audio capture and editing (87 visits).

Video and audio production projects
The NMC continued to serve as one of the University’s prime video production units. During FY06, the group was involved in 21 shoots. Post production involved 56 projects.

Among many projects recording University events as well as in the production of special purpose videos, the NMC videotaped the final competition of CarLab and incorporated it into a promotional video for the course.

Video Streaming
Streaming video has become an increasingly popular way for departments to share lectures and other activities on the Web. During FY06, the NMC streamed more than 246 lectures onto the Web, an increase of more than 150 from last year.

NMC recorded the following courses, and streamed and posted the lectures to their respective Blackboard and Whiteboard courses:

- CHM 231: 53 Lectures
- CHM 233: 57 Lectures
- CHM 235: 25 Lectures
- CHM 236: 21 Lectures
- COS 116: 22 Lectures

Web design projects
The NMC is a prime locale for the creation of departmental and special purpose web sites. NMC staff assisted six departments and programs to design and implement their web sites. Major sites included the Virtual Tour on the UHS website, the Milberg Collection of Irish Theater, ALA website content changes, the CSBMB website, the OIT Interim Page, and the web site for the Program in Near Eastern Studies.

Educational Technologies Center (ETC)

The Educational Technologies Center [ETC] helps Princeton faculty to build multimedia tools for the classroom. ETC’s designers collaborate with faculty members to share their scholarship with a wider audience of students, alumni, and other members of the University community, and ETC administers the campus Blackboard learning management system and the Almagest multimedia database.

Highlights

Precept Scheduling Tool
The new precept scheduling tool permits faculty and staff to assign students to precept sections using a web-based interface. During FY06, staff enhanced the tool that permits students to indicate their precept assignment preferences using a web interface.

The precept sectioning tool was used in 70 courses in the fall and 95 courses in the spring. During the spring, 2,025 students used the system to submit 2,717 student preferences. 692 students used it in more than one course.

Almagest
During FY06, ETC upgraded Almagest to Oracle 10, delivered a new Lecture Builder, improved the PowerPoint export tool, installed a Flash-based image zoom tool, and created a public Almagest site, Almagest Exchange. Almagest usage in FY06 included 243 projects spanning 166 courses in 33 departments. A total of 1,087,000 image and media files were delivered by Almagest in FY06, compared with 946,000 in FY05 and 757,000 in FY04.

Blackboard
In addition to the creation of the precept sectioning tool, EMC staff upgraded Blackboard to version 7.0, delivered Language Placement Tests in 7 languages, and oversaw the delivery of Freshman Seminar evaluations.
Administrative Information Services

Administrative Information Services (AIS) implements, maintains and supports the University’s administrative systems. The mission of AIS is to provide the best possible technical foundation upon which the University’s automated business processes run. Services also include project planning, design, development, integration, testing, and deployment of administrative applications. Core competencies include PeopleSoft, Java, PowerBuilder, ReportNet, and the Oracle relational database management system.

Administrative Information Services is comprised of four groups: Enterprise Resource Planning (ERP) Systems; Packaged Solutions; Custom Development, Data Warehousing and Integration; and Collaborative Solutions.

Highlights

PeopleSoft Student Administration
After a six-year, phased approach, the University completed the implementation of the new PeopleSoft Student Administration System in August, 2005. By replacing the last of its legacy systems, the University was able to retire the mini-mainframe, for a savings of more than $400K annually. This successful project would not have been possible without the outstanding, cooperative efforts of dozens of people across OIT and numerous functional offices.

The initial phases included the Graduate Admission System in the Fall of 2000, the Course Information System in January 2001, Student Records for the Graduate School in June 2002, and the Student Course Online Registration Engine (SCORE) in the fall of 2002. The completion of a major upgrade of the PeopleSoft System in August 2003 made the student application available over the Web. Development teams then focused on converting all remaining legacy system functions to PeopleSoft. Faculty and student advisers are now able to view their student records and enter grades online through “StuView.”

The Undergraduate Admission Office will use PeopleSoft Student Administration to manage their prospect and applicant pools. The Undergraduate Admission Web Application, a custom system developed by the University, enhances PeopleSoft functionality. This new, comprehensive application system is now the point-of-entry for undergraduate application information. A significant portion of this year’s applicants used the system to enter and to submit their application for admittance to the University.

PeopleSoft HRSA Upgrade Decision
During FY06, the University undertook significant efforts to determine the next step with respect to its PeopleSoft environment. Oracle’s acquisition of PeopleSoft required careful planning around upgrade cycles. Many institutions are rethinking their upgrade plans in the wake of adjustments to previously-announced upgrade dates and statements about functionality changes. Oracle’s announcement that PeopleSoft will, within the next few years, be replaced by a yet-to-be-developed suite of applications (referred to by Oracle as Project Fusion) has obviously also had an impact upon the University’s upgrade plans.

In September 2005, Oracle announced that it would extend support for HRSA 8.0 by a year, taking it to August 2008. Based on this announcement, the University undertook an exhaustive examination of its options and conducted a broad, extensive discussion of its alternatives with all of our functional customers from
end-users and developers through Deans, Vice Presidents, the Provost, and the CIO. Ultimately, the University agreed unanimously to forego the 8.9 upgrade altogether and move directly from 8.0 to 9.0 during 2007/08 with a planned go-live on August, 2008.

**Common Application Feed**
The University uses several methods to receive applications from prospective undergraduates. Students submit applications via paper, Princeton’s custom on-line application, as well as the Common Application (Common App). The Common App is a central website that gathers and distributes application data for more than 250 colleges and universities.

All applications, regardless of their source, are fed through the Princeton on-line application and then interfaced into the University’s host student system, PeopleSoft. In the past, all applications received via paper or the Common App had to be re-keyed into the Princeton on-line application. The number of applications received on paper is relatively small, but last year approximately 9,000 applications were received via the Common App. All of these applications would have needed to be re-keyed into our host system.

Starting with regular decision students in Fall 2005, all applications received via the Common App were interfaced electronically into Princeton’s on-line application thereby eliminating the need to re-key them. Not only does the enhancement reduce effort on the Admission Office side, it also results in far more accurate applicant data in the host system. Throughout FY06, nearly 11,000 applications interfaced directly from the Common App to the Princeton on-line application. The number of applications received via the Common App is expected to grow in the coming years. Of the Common App’s 250+ customer universities, Princeton is one of only two that has built and is using an automated feed.

**Permanent Address Information (PAI) Online Form**
The University has begun to use a new Permanent Address Information (PAI) form to automate the collection of address and other personal information from entering first year students. Rather than keying in the information by hand, the information is now forwarded automatically to other University systems such as student bill and grade distribution. In the past, matriculating students hand-entered information on a paper form and mailed it back to Princeton where it was manually keyed into administrative systems. The old process was time consuming, error prone, and required the hiring of temporary summer staff.

Starting this year, incoming freshmen were directed to a website where they entered the information themselves. The new system automatically validates the data and uses it to update host administrative systems. In this first year, more than 96% of incoming first year students participated. The automated form serves as a prototype for future electronic data collection forms related to the matriculation process.

**ERP Systems**
The ERP Systems group is responsible for the maintenance, enhancement and operational support of the University’s PeopleSoft suite and our third-party recruiting application. In particular, these applications include:

- PeopleSoft Human Resources Management System (HRMS)
- PeopleSoft Student Administration System
- PeopleSoft Campus Community
- PeopleSoft CRM (HR helpdesk)
- PeopleSoft Financials (UFINSI)
- PeopleAdmin (Recruiting)

**PeopleSoft Human Resources**
During the year, the group further extended the functionality of PeopleSoft HR, migrating the HR reports to the new Data Warehouse and stabilizing the system in anticipation of the upcoming upgrade.

A significant accomplishment during FY06, the group implemented PeopleSoft’s eBenefits module. This piece of self service functionality now permits faculty and staff members to make their benefits elections online at the time of hire, life change event, or during open enrollment. The new module will greatly simplify, in particular, the open enrollment process both for Human Resources as well as for University employees. Princeton customizations include a new page for dependant/beneficiary summary, workflow e-mail notifications to new employees and employees with qualifying life events changes in development, and quality assurance environments.

**Payroll**
During the fall of 2005, the group piloted the ePay module of PeopleSoft HRMS for approximately 450 users, including all of the Treasurer’s office, all of OIT, Human Resources, and the Office of the Dean of the Faculty employees. Employees with access to ePay can view their pay statements for the last three years, reprint their W-2 statements for the last four years, and update their W-4 information. During FY06, staff added printer-friendly forms for check/direct deposit view, increased check history to three years, changed W-2 reprint forms, and added e-mail confirmation for W-4 updates.

**PeopleSoft Student System**
The PeopleSoft Student Administration system for the Undergraduate College and Undergraduate Admission completed the implementation of the University’s PeopleSoft administrative software suite and placed the Undergraduate College’s records in the same administrative system environment as Human Resources, Payroll, the Treasurer’s office, and the Graduate School. Throughout FY06, staff validated every major business process in the new system within a live environment. This large and complex system functioned very well throughout the year. Very little additional development or corrective coding was required.
Faculty members are now able to use the Web to submit grades and to view Advisee’s information. In addition, staff implemented a much improved “STUVIEW” in PeopleSoft for the academic Deans and departments to view Student Administration. Staff customized PeopleSoft-delivered processes to meet Princeton’s business needs and wrote several interfaces and reports to support Princeton’s Student Administration.

Staff also implemented interfaces from Princeton’s Undergraduate web application, Undergraduate Common Application, and prospect inquiry forms to PeopleSoft. A customized PeopleSoft Undergraduate Admissions module now meets Princeton’s Business processes. Staff also wrote several interfaces and reports for the Undergraduate Admission office that enable one time data entry via the web application into PeopleSoft while applying business data validation rules. The new system provides improved population identification, tracking, and the ability to communicate with applicants and prospects (by geographic regions, ASC, high schools, email, etc.). The University will now have better data quality owing to the online validation of data and improved functionality to manage recruitment activities.

Finally, staff converted 294,252 Undergraduate Admissions’ applicant records going back to 1985 and 387,676 prospect records going back to 2001. The historical data resides in the Data Warehouse for Undergraduate Admission reporting purposes.

Campus Community

Most of the work in Campus Community during FY06 dealt with the clean up of existing data and reconciliation of data with those stored in LDAP [Lightweight Directory Access Protocol]. The effort served as the basis for the initial attempts at making sure that inactive student and employee records were no longer active in the University Directory.

During the year, staff made two enhancements to Campus Community. The first was the addition of a Location Table to assist in the Essential Communications project. The second was the addition of new security for Service Indicators for students.

University Financials

During FY06, staff began design and construction on the new Financials Data Warehouse project, the migration of all financials reports in the DataMall to the Data Warehouse. The project is expected to be completed during FY07.

Staff implemented real time interfaces between the Facilities Department’s inventory and order management system, Maximo, and PeopleSoft Financials. As a result, it is now possible to create real time messages from PS to Maximo with information on vendors, chart fields, items and voucher/payment changes. It is also now possible to receive messages from Maximo on purchase orders and receipts changes.

Staff also wrote an interface that connects the Princeton-designed website with corporate vendors. As a result, vendors are now able to enter their direct deposit information into the PeopleSoft Accounts Payable Vendor tables. In turn, the status of these vendors is now available to the University from within PeopleSoft.

Packaged Software Solutions

The Packaged Software Solutions group is responsible for the maintenance, enhancement and operational support of multiple vendor-supplied, packaged administrative systems. These applications include:

- Stripes (Alumni Records)
- Resource 25/Schedule 25 (Classroom Scheduling)
- COEUS (Grants Management – Office of Research and Project Administration)
- FsaAtlas (Student Visa Services)
- Diebold (Housing)
- Telephone Management

STRIPE

During FY06, the primary focus was on campaign preparation. In support of the campaign’s integrated prospect strategy, staff completed several reporting and data maintenance projects that will unify and track prospect data effectively across all Development fundraising units. The group created new functions to track and report on the progress of campaign donations. Staff expanded the prospect data inventory through data collected from asset research vendors and peer input. The group installed increased data auditing functions in order to improve gift entry data quality. The quality of demographic data quality was enhanced through posting of vendor data searches for alumni addresses, including e-mail. Staff also completed the redefinition of giving purposes and other allocation attributes in order to track better how donations are supporting specific fundraising priorities.

The group rolled out an upgraded Events Management application in January 2006. Staff implemented two additional phases of custom features during the spring, enabling event planners to process payments and assign resources effectively. The group added a new customization that enabled a context-based launch of OnBase. The effort facilitated the quick retrieval of critical donor documents. The group also expanded the Stripes interface to Campus Community in order to receive data that originated in the web-based PAI forms and PeopleSoft Student records.

The group completed the project to merge Art Museum and Library fundraising processes into the Stripes system. The effort included new workflow for the creation of membership appeals and the recording of donations in response to these appeals. Staff developed new entity profile reports and query tools for the Museum and Library, as well as e-mail notifications and tracking reports to keep staff apprised of fundraising progress.
The group also improved integration between Advance Web Community (AWC) and Stripes by loading name and address data collected from AWC online giving page. The group also completed modifications for the Financials feed to support special year end processing. Staff automated the Stripes feed to Alumni LDAP point-to-point, removing the interim .DIF file processing that had been performed on the mainframe. Staff also implemented several critical enhancements including a modification that enables Stripes, (more specifically PowerBuilder) to interact properly with the Adobe upgrade now part of the current DESC image.

Resource 25/Schedule 25
AIS assisted in the candidate search for a new Associate Director of University Scheduling/Resource 25. Staff partnered with Software Support to develop procedures so that R25 users do not have to be Powerusers under XP. During FY06, staff also updated the application to prevent WebViewer users from creating their own Web userIDs.

COEUS
During FY06, the group made considerable progress towards the migration to the Java version of COEUS. Staff rewrote all Princeton reports, the conversion to Apache Tomcat is in progress, and staff configured COEUS 4 to handle Princeton proposal development forms. The AIS team worked with end users on testing the grants.gov interface. Staff also continued the beta testing of MIT’s Java rewrite of the Princeton-developed award budget module. Members of the team attended classes for XMLSpy and StyleVision, set up a test environment, and began comparing sponsor forms from this system to the University’s current system. Staff also performed beta testing on the award budget portion of COEUS 4.1 which MIT wrote from our specifications. Finally, the group put the Institute Review Board functionality for COEUS into production. The application is now being used to run protocol meetings.

FsaAtlas
During FY06, the group successfully tested and upgraded FsaAtlas from version 7.0.1 to 7.1. The change permits our Visa office to remain compliant with federal regulations.

Diebold Housing
Beginning this year, graduate students used the new web-based process to apply to graduate housing room draw. More than 1,200 graduate students successfully used the new system during the year.

The group also completed the development of the undergraduate version of the web-based application process. Staff fully tested the system and made it ready for roll out. Full scale development is now in progress for the web-based room selection system phase. Design has begun for the remaining modules of the web-based housing system including electronic contracts, wait list, and room improvement processes.

In support of current processes, the group installed a major upgrade of CS Housing to Oracle 9, Windows XP, and CS Housing release 3.03.10. Staff created an automatic update for freshmen meal plans, wrote additional room draw supporting reports, and enhanced automatic feeds from Campus Community. Staff also added views to the housing DataMall and added more data to existing views.

Telephone Management
The team completed the Migration to Progress 9.1/Oracle 9.2. The student calling plan Tiger 400 was put into production. Fraud calls tracking report was implemented. Telephone interfaces were expanded for EZ Communication and Data Warehouse.

Custom Development, Data Warehousing and Integration
Custom Development, Data Warehousing and Integration is responsible for the development, maintenance, and support of the University’s custom administrative applications. Responsibilities include Java-based custom applications as well as the University’s data warehouse and related interface and reporting infrastructure. The applications supported by the group include, but are not limited to:

- Information Warehouse
- Interface hub
- Labor Accounting
- Loans & Receivables, and its replacement system, Princeton Receivables
- Time Collection
- Undergraduate Admissions Web
- Permanent Address Information (PAI) form

Information Warehouse
The Information Warehouse replaces the Data Mall and serves as the University’s primary reporting environment for administrative applications. The multiyear conversion effort is nearing its FY07 completion. The University is now using the Information Warehouse to perform data analysis and produce predefined or ad hoc reports in virtually all administrative areas except financials. In addition to the Oracle database engine, the key piece of technology for Princeton’s Information Warehouse is Cognos’ ReportNet, a web-based, front-end reporting tool.

During FY06, the group achieved major development with the Information Warehouse. Staff added new collections of reports for Time Collection, the Student and Employee telephone booths, Undergraduate Admissions, Student Records, BlackBoard, the hub Interface, Graduate Admissions, ORPA, TigerCard, Labor Accounting, PAI, and Investments. Members of the University community are carrying out almost all non-real-time reporting for both Admissions Offices and for the Office of the Registrar in the Warehouse. In addition, most PS Queries used by the Dean of the Faculty Office were rewritten in ReportStudio.

The group continued development work on the Financials packages with a phased go-live scheduled between
September and January 2007. The security tables developed for Labor Accounting will also be used for the roll out of the Financials packages.

Staff created new Princeton-specific documentation for both Introductory and Advanced Report Studio training. Training classes for both offerings were held.

**Interface hub**
During FY06, the group further developed the interface hub. Staff made enhancements for Graduate Student prospects and Undergraduate Student prospects and applicants, badging, accounts payable, phone system, housing, financial aid, undergraduate student records, financials, COEUS, Faculty Computer Purchase, Financial Aid, SEVIS, Student Report and Web Voters, and Student Health. A new view was created for use by the Facilities’ Maximo application.

The group made changes to the interface hub software in order to support the implementation of the new grad student DCE status, the new Essential Communications system, the automated PAI form, and the new UG graduation process that is now run from PeopleSoft. The group also created new data tables for use by Financials and Labor Accounting. The group also supported the implementation and testing phases of the Princeton Receivables system that is pulling data from the Interface hub tables in the Data Warehouse.

**Labor Accounting**
Since 1997, the Labor Accounting System had been running on a Sun Server with an operating system that had not been supported for at least five years. Accordingly, staff installed a replacement that incorporates several new business processes, including improvements to existing Labor Accounting functions, automation of previously manual processes, and entirely new features that address gaps in the Standard Business Model. Some of the new features include:

- Requests to pay faculty summer salaries and the related salary commitments input directly into the system;
- A replacement for the Graduate Assistantship in Instruction Appointment (AI) Form by permitting departments to enter the AI form information online;
- The ability to pay academic year support for the months of May and June in advance;
- The ability to pay summer support in advance.

Labor Accounting Phase I went live on May 30. Commitments and Project Distribution for Graduate School and faculty & staff were delivered in this phase. The group also delivered new functionality for Summer Salary distribution for faculty. Further rollout of Labor Accounting functionality will continue into FY07 when the project will be completed.

**Loans & Receivables/Princeton Receivables**
The new Loans and Receivables system, a multiyear effort, will improve business practice flows, correct security vulnerabilities and an underlying architecture that complicates maintenance, and permit increased web functionality, impossible within the current architecture.

Owing to the protracted nature of the rewrite, development work was required on the existing system. The group therefore added new feeds from Parking and Tiger Card. The system has become increasingly difficult to support. Staff were therefore required to spend considerable effort extracting Constellar transformation software from the system and rewriting more than 50 inbound and outbound feeds. The group also reengineered the process by which the University reports to the Federal Government on the status of Perkins Loans.

During FY06, work on the replacement system, Princeton Receivables, concentrated on the first three deliverables: Client, Security, and Computer Loans. All three are expected to go live in Q1 FY07. The Computer Loans code base is well-positioned as a starting baseline for other “loan” type receivables.

**Time Collection**
The final piece of Time Collection Phase II, Maintain Employee Task, went live in September 2005. Staff also made several enhancements to the Time Collection system including differentials, pay rate changes, and handling employees affected by the FLSA transfer from exempt to non-exempt. New functionality included the ability for the Time Collection Administrator to view all timesheets back to 2001. For time clocks, the group added increased security and more flexibility for swiping and scheduling.

**Undergraduate Admission Web Application**
In addition to annual changes to the application and the summary sheets, the group expanded the Undergraduate Admission Web Application to support the electronic, validated load of Common App applications into the UA Web, as well as an automated feed from there to PeopleSoft. Approximately 10,700 Common Applications were received and loaded automatically, eliminating the need for central office staff to type them in manually.

In addition, the University received approximately 3,100 Princeton online applications through the UA Web system. Interestingly, there were more Princeton UA Web applications during Early Decision, probably because the value of the Common App is in applying to multiple schools. During regular decision, the Common Apps outnumbered the Princeton Online applications nearly 5 to 1.

**Permanent Address Information form (PAI)**
The group developed the Permanent Address Information [PAI] form web application in order to collect parental information of incoming freshmen via the Web.

The team included a back office function that permits administrative users to enter data from the PAI paper
forms received through the mail. After the application went live in May, more than 95% of incoming freshmen used the form to report their information.

**Collaborative Solutions**
Collaborative Solutions provides service internal to AIS. These services include:

- Database administration expertise specific to application development
- Middleware expertise including Apache, Tomcat, Weblogix, and Oracle Fusion
- Training and documentation assistance
- Project planning and coordination
- Desktop support
- Production management
- Special projects
Enterprise Infrastructure Services

Enterprise Infrastructure Services (EIS) provides support for University servers and middleware services such as database administration, e-mail, directory, and authentication services, backup and restore services, systems management, job scheduling, output management, architecture, and security. EIS groups include Systems and Data Management Services, the University’s IT Security Officer, and Computing Services.

Systems and Data Management Services is responsible for the University’s enterprise management systems. They maintain e-mail, monitor the performance of the network and key applications (e-mail, backup and restore file services, calendaring, authentication, provisioning, and directories), and install and manage University servers and other computer systems. Computing Services supports more than 300 Unix and Windows servers upon which infrastructure, academic, and administrative services depend.

Highlights

Backup and Restore Service
OIT continues to provide backup and restore services for members of the University community. Research and administrative work is automatically backed up over the network. While the number of clients has remained constant at 8,300 systems, data backed up is now growing at 30% per year, three times last year’s growth rate. Replacements for aging servers have helped meet the load, but expanded disk capacity will soon be needed.

Disaster Recovery Planning
Over the course of the past several years, the University has established an alternate data center at New South that can provide minimal services in case of an outage at 87 Prospect Avenue.

As a test on January 31st, staff disconnected the Computing Center at 87 Prospect from the internet. An alternate internet connection to New South successfully activated along with the handful of servers at that location. During the test, the backup Princeton web server was “on the air” to the internet. Staff members were able to gain access to resources at New South from off campus, as well as to connect from one of the designated “critical buildings” over the network to services at New South and off-campus.

In addition to internet connectivity, campus connectivity to critical buildings, and standard authentication services, the New South hub also provides access now to the main Princeton web site as well as e-mail service. During a prolonged power outage this summer, staff were able to test the facility and sustain these services throughout the weekend. Planning is under way to add additional administrative services.

Exchange Electronic Mail and Calendaring Services
During FY06, Molecular Biology and the Princeton Investment Company had their e-mail services moved to the OIT server environment. In addition, given the lack of vendor support for the University’s OnTime calendaring program, most departments using that service, beginning with OIT, were transferred to Exchange. The migration of two additional large departments, the number of Exchange accounts will soon climb to 4,000.
Account Provisioning
During the fall, OIT replaced the mainframe-based “WHALE/CARPROC” system for accounts with a new Account Provisioning System (APS). During the year, the new system has been functioning as an interface between administrative systems, such as Campus Community, and the various password and account systems including LDAP, Windows Active Directory, mail and file services, etc. A follow-up effort to identify gaps in the new system is under way.

Machine Room Growth and Research Computing
The University’s 35-year old computing center reached maximum electrical capacity this year. Growth in infrastructure services, administrative computing and, especially, research computing have put tremendous strains on space, cooling, electrical, and UPS systems in the center. The addition of three major high performance research computers in the machine room has strained the underlying electrical and cooling infrastructure. The installation of a third unit, an 8-rack, 512 node Beowulf cluster, nearly doubling the power required by the building and overtaxed the capacity of the building’s uninterruptible power supply (UPS) that supplies power in the event of short outages.

In June, a new 750-kVA transformer was added to provide additional power, bringing the center’s capacity to nearly 1.5 megawatts. Considerable time was spent addressing infrastructural needs and working with the Facilities department to develop an interim strategy to handle the growing load. Plans are finally underway to build a new machine room adjacent to the existing machine room. The new facility should be online by the end of 2009.

Rejecting SPAM
More than 70% of the e-mail messages destined for Princeton are rejected as SPAM at the University’s border. During the year, OIT implemented the second phase of the University’s defense against SPAM e-mail. Of the remaining mail that passes through, another 30% is tagged as possible SPAM and kept in quarantine. Members of the University community can inspect the suspect e-mail, request that the sender be added to a “safe” or “blocked” list, or simply let it expire. As a result, the University’s e-mail infrastructure no longer processes, stores, and backs up much of the unsolicited e-mail sent to the campus, and users no longer have to deal with it in their inboxes.

Information Technology Security
In April, OIT concluded a multi-year effort to prevent passwords from being distributed over network without encryption by removing “FTP,” an older, insecure file transfer program that represented a potential security vulnerability. This was the last major OIT service that permitted passwords to travel over the network “in the clear.” The change required substantial coordination and communication, since many users were required to make changes to their desktop applications. The improvement substantially secures the network because eavesdropping hackers on the network will no longer be able to view passwords.

Beginning this summer, to further strengthen campus security, OIT will kick off a password education campaign to urge users to follow “best practices” in creating, and using, passwords.

To improve security proactively, EIS has acquired an automated tool for checking applications and web sites for well-know exploits and security holes. During the year, six new applications were tested in advance of deployment, providing developers with early feedback on potential security risks.

Computing Services
The Unix Systems and Windows Systems groups provide systems and storage administration for the more than 200 Unix-based servers and 120 Windows-based servers. These systems house 769 “central processing units,” or CPUs. University business and academic applications operate on these OIT-managed servers.

In addition to the daily operations for administering these servers, the Systems groups tested and refined the steps necessary to recover from a complete loss of power to the 87 Prospect data center. Staff members were able to put these new disaster recovery plans into practice in June 2006 when the main data center was taken off line so that new electrical feeds could be added to the room.

Throughout the year, staff worked closely with customers and colleagues to complete testing and quality assurance work in advance of various software and hardware upgrades. Projects included a new disaster recovery system for Molecular Biology’s e-mail service, as well as upgrades and security patching for University databases, Blackboard, Exchange and IMAP e-mail, web services, and video streaming services.

The Computing Services groups provide the infrastructure for file storage and printing services. In 2005-2006, faculty, students and staff “logged in” to access these services 1,922,064 times.

One area of growth is disk storage. The Computing Services groups manage more than 66 Terabytes of disk, supporting a wide variety of services. During the year, faculty, students, and staff have stored more than 48,900,000 files on the main Central File Server.

Infrastructure Security
During FY06, Unix Systems staff continued to provide operational support for the specialized equipment designed to protect University systems and information. The University’s “intrusion prevention system” blocked 1,428,986,883,318 intrusion attempts, or “exploits.”

In addition, the intrusion prevention system reports on a second category of activity called “reconnaissance” attempts that are not immediate dangerous but nonetheless have implications for future intrusions.
During FY06, the system reported more than 20,000,000 reconnaissance activities. The top ten reconnaissance activities are listed below.

![Top 10 Reconnaissance Activities](image)

### Data Center Operations

Working with the Facilities department, OIT staff continued to participate in a study and evaluation of the current data center spaces. To handle the tremendous growth in servers supporting research, the University installed a new electrical transformer (see highlights).

### Systems and Data Management Services

#### Database Management

The Database Administration (DBA) group provides a robust, secure, and reliable development and production database environment. During the year, the group supported software upgrades and product installations, notably the new PeoplesSoft Student Records and Admissions systems. In addition to the existing Production On-Call DBA, the group initiated enhanced support for application developers by providing a Development On-Call DBA service.

The DBA staff support 50 different applications and 150 databases (a 10% increase from FY05), three different Database Management Systems (Oracle, Sybase and SQL Server), and several instances of the BEA Tuxedo application server software and BEA Weblogic web server software. The systems run on more than 40 Unix and Windows servers and encompass more than a terabyte of disk space.

In the last year, the DBA group supported the implementation of several new administrative applications. The most significant were the new Student Records and Undergraduate Admissions applications, which went live in August 2005. In addition, the DBAs supported the implementation of the first phase of the new Labor Accounting and Princeton Receivables applications, the continued roll-out of the new Data Warehouse and the ID Card and Parking applications. They also assumed support for the Almagest academic application.

While providing support for application development, deployment, and upgrades, the DBAs also worked to maintain and improve the database infrastructure. They completed the upgrade to Oracle version 9 for all administrative applications, and transfer of the administrative application data to the new disk subsystem.

The DBAs also began preparations for next year’s upgrade of Peoplesoft applications to version 9, the upgrade of the Advance/Stripes application used by the Development office, the standardization of the Almagest database infrastructure, and the beginning of the process of upgrading to Oracle version 10.2.

#### Collaboration Services Group

The Collaboration Services Group (CSG) is responsible for administering the infrastructure for campus e-mail, account provisioning, directory, authentication services, and web services. CSG operates the University’s e-mail services for receiving and sending e-mail, the web content management system that supports the core University web site, and the account provisioning system that controls the creation of computer accounts for all new University faculty, staff, and students.

### E-mail Services

In addition to daily operation of the University’s e-mail services, CSG transferred two major departments, Molecular Biology and the Princeton Investment Company, from their own Exchange servers to the centrally managed Exchange servers. Without requiring an increase in CSG staffing, this change provided these groups with an upgrade to the latest version of Exchange, and freed their support staff from the effort of managing their own e-mail infrastructure. CSG also supported the transition of all users of the OnTime calendaring service to Exchange beginning with the conversion of all OIT staff members.

During FY06, as part of the University’s disaster recovery effort, CSG built a redundant e-mail infrastructure in the 87 Prospect and New South machine rooms. During a weekend outage at 87 Prospect in early June, the redundant infrastructure continue to provide e-mail service, although some performance and configuration issues were discovered that will be remedied in FY07.

The number of incoming e-mail messages handled by OIT e-mail servers increased 50% this year, from 400,000 messages a day in FY05 to more than 600,000 a day in FY06. All of these messages pass first through an e-mail firewall, which blocks approximately half of the incoming messages simply by blocking messages from known spam sources. A second layer of filtering then quarantines between 50-55% of the remaining e-mail messages. Members of the University community have the opportunity to review these likely spam messages before they are deleted.
Web services
CSG staff continued to provide infrastructure support for various web service technologies. During FY06, the group worked with the Office of Communications to support their use of the Roxen content management system for the core University web site. They also assisted the Development Office in using Roxen to support a major web initiative that is part of the upcoming capital campaign.

In other web-related work, CSG staff continued to support streaming media services. CSG administered hardware and software that was used for web distribution of both live and archival video and/or audio of 186 lectures, public events, and sporting events.

Account provisioning
In August 2005, a commercial product replaced the locally developed account provisioning system that ran on the University’s mainframe computer. During the year, CSG staff developed their knowledge of the system, monitored for correct operation, fixed errors, reported bugs to the vendor, and prepared for a follow-on project to provide a number of fixes and enhancements.

CSG staff also participated in a major project to collect requirements for a major upgrade to the directory services required by application demands for managing a larger population of affiliated individuals, and a goal for the coming year is to initiate a project to implement these requirements.

Infrastructure Management Services
The Infrastructure Management Services (IMS) group has a diverse portfolio of responsibilities that includes backup and restore services, system monitoring, job scheduling and Unix printing.

Backup and Restore Services
IMS maintains the Tivoli Storage Manager (TSM) backup system for the University. Any computer on the campus network except those owned by undergraduates is eligible for the service. TSM currently backs up more than 8,300 systems, approximately the same number as last year. Although the number of accounts has not grown, the amount of data backed up has grown even faster than last year and is nearly 136 Terabytes. The growth rate for total data backed up has increased in a year from 10% to 30%.

To accommodate increased data requirements that had taxed the capacity of existing servers, OIT replaced all five TSM servers during FY06. Careful preparations insured a minimum of downtime for the application. All of the new servers are expected to be implemented before the start of the fall semester. OIT also purchased additional disk and tape capacity which will be implemented once the new servers are in operation.

OIT also implemented off-site storage for backup tapes. During FY06, staff evaluated vendors and developed a process for managing the movement of tapes between two machine rooms at Princeton and the off-site location. Initial tape pickup began in July 2006. The service will be fully in place this fall.

Job Scheduling
Tivoli Workload Scheduler (TWS) provides job scheduling services for all administrative systems on 32 Unix and Windows hosts. In a typical week, the system runs 9,505 jobs grouped into 2,854 job streams, nearly double the load from last year.

System Monitoring
IMS also has the responsibility for system monitoring. The group uses the IBM Tivoli product to monitor 217 Unix servers, 36 web sites, and 22 e-mail related services. During FY06, the group improved delivery of alert notifications to users of monitored services. The enhancements include more sophisticated capabilities such as automatic escalation of alerts and automated on-call schedules.

Printing and Faxing
The group operates a central Unix printing service and a central faxing service. Print volume has declined from 72,033 in FY05 to 69,052 in FY06. Fax volume declined by about 8%, which was about half the decline in the previous year. The central fax service still processes an average of 1,253 faxes per month.

Information Security
During FY06, the group completed the effort to eliminate programs from our central systems that send passwords across our network “in the clear,” essentially in a form that could be read and subsequently used by individuals to compromise our systems and data. Four widely used programs were replaced with secure alternatives.

In addition, the group took significant steps to improve the protection of University applications against attack. First, OIT established a committee, known as the Architecture Review Board. The new Board reviews the design of systems being implemented to ensure that they meet standards in a number of areas, including security. During FY06, the Architecture Review Board evaluated 12 system initiatives.

Secondly, the group purchased an automated tool that that can evaluate the ability of every application system to withstand security attacks over the internet. The new tool became the centerpiece of a new service, established and run by the University IT Security Officer, who used the tool in conjunction with application developers to detect and correct flaws in application systems before the systems were made available to the University community. During the year, six University applications were evaluated prior to implementation. In cases where flaws were found, the service provided application developers with valuable remediation advice that they then used to correct the flaws, significantly reducing the risk of compromise when the systems were moved into production.
Finance, Administration and Planning

Finance, Administration and Planning (FAP) is a “catalyst” for OIT organizational change, enabling and facilitating organizational efficiency and effectiveness. FAP is responsible for internal and external communication, staff recognition and development, project planning and management practices, and effective administrative processes and support. FAP also provides a comprehensive IT training curriculum and cost-effective printing and mailing services to the University community.

The Finance, Administration and Planning department contains five groups: Human Resources and Administration, Project Office, Process Improvement, Budget and Finance, and Training.

Highlights

Service Enhancements

As a result of changes in the University’s spending rule, it will be possible during the next 15 months to provide a five-fold increase in the University’s combined Internet and Internet2 bandwidth, to eliminate bills to academic departments and most other units for basic network connectivity, to complete the campus wireless network, and to provide additional support for central software licensing costs.

Increasing Internet Bandwidth

The University’s combined bandwidth of Internet and Internet2 service is 315 megabits per second. During the summer of 2006, the University’s basic connection will increase to 1 gigabit per second and the Internet2 connection will increase to 500 Megabits/second.

Eliminating bills to academic departments

Years ago when network connectivity might reasonably have been viewed as a discretionary expense, Princeton began to use a cost-recovery model to fund network access with the University community. Under that model, academic and administrative units were billed for each connection and had to monitor their bills and determine the sources from which to pay them. Today, of course, connections are ubiquitous and an indispensable part of teaching, research, and administration.

In an effort to make network access free to academic departments and most other units, as of July 1, 2006, the University will simply the funding and accounting for basic network connectivity costs. For all academic departments, non-endowed academic research units, and most administrative units, the University will now provide centralized funding for all Tigernet port and host ID costs that are currently charged to sponsored research and other departmental funds.

Completing the wireless network

The University has allocated funds to permit OIT to expedite its plans to expand the campus wireless network to cover all academic buildings, administrative buildings, and the libraries. Completion of the wireless project is now projected by the fall of 2007.

Support for central software licensing

Additional University funding will permit OIT to improve its ability to disseminate widely used academic software to academic departments though campus-wide software licenses. In the past, one or two academic units bore the responsibility for
license costs. Sharing the benefits of such software became cumbersome and inefficient. New resources will facilitate access to the software applications that have become important to the University’s educational and research mission.

OIT Process Improvement

As predicted in FY05 at its inception, the Process Improvement group has become a catalyst for continual improvement of OIT’s operational and management processes. The group delivers value to OIT project managers and support staff, as well as to OIT’s customers by tracking and communicating OIT Interdepartmental Project Portfolio (IPP) information both internally and externally. The group also proposed and distributed a number of Best Practices for OIT staff; created and implemented procedures and guidelines for use of the University’s tax exempt status. During FY06, the group also proposed and analyzed the idea of an OIT Playbook to increase efficiency in communications during both planned and unplanned technical outages.

The Project Portfolio

During FY06, to improve communication and collaboration across the organization, the group continued to maintain and improve the OIT Interdepartmental Project Portfolio. OIT projects are classified as “key” when they are critical to the success of the organization, when they have resource requirements across OIT groups, and when their impact upon the University community is significant (i.e., high visibility owing to the number of users affected and significance of the change). Project Managers and Resource Managers with such projects are required to submit their project information to the portfolio.

136 projects were carried from FY05 or newly approved for work in FY06 (25 were Key). 89 Projects completed in FY06 (25 were Key). 14 of the completed Key projects were initiated in FY05. 11 of the completed Key projects were initiated in FY06.

By the end of the fiscal year, the OIT IPP, located at www.princeton.edu/oitportfolio, documented the status of the more than 350 projects managed by OIT staff. To share the information on a regular basis among OIT staff and customers, the IPP is reviewed monthly with the OIT Cabinet, distributed at OIT Leadership Group, and shared with the Project Managers Team (PMT). The IPP Coordinator gathers information to update the IPP on a regular basis by attending OIT meetings and reaching out to project managers and facilitates meetings to disseminate the updates.

Figure 1: A partial snapshot of the OIT’s Interdepartmental Project Portfolio showing key projects that were completed in FY06.
During FY06, the group began to leverage the IPP within the ASPG process by coordinating the CIO’s Call for Projects in January and monitoring discussions of resources and University needs in preparation for the ASPG and SAGIT meetings which determine the slate of administrative systems projects each year.

**Procedures and Guidelines**

During the year, the group implemented a process for the "Effective Use of PU Tax Exempt Status for OIT." Preparation included research into the current University policies and requirements for tax exempt travel through the United States. The group coordinated communication about the new guidelines with the OIT Administrative Cross-Functional Team and created a process for the OIT Budget and Finance office to administer the Tax Exempt status.

**Playbook**

The group researched and made a proposal to implement an OIT Playbook, a definitive source of system/service information to aid OIT when communicating and responding to planned and unplanned outages.

The Project Team spent a significant amount of time meeting with OIT focus groups to gather the business requirements for the Playbook, including the important dependency of OIT’s disaster recovery plan. The final recommendation of the Project Team was to build a custom database that is stand-alone, web-accessible, and hosted off-site in order to store contact information for our key application and infrastructure resources. The proposal was accepted by the OIT Cabinet and will be designed and implemented in FY07.

**Towards a History of Princeton Computing**

During FY06, FAP began a project to document and archive a history of Princeton computing. Apart from building up the base chronology, the early focus of the effort has been to organize and annotate the relevant documents and to interview those who worked in computing and IT support before 1985. Many of these former faculty staff and retired or retiring. A few have been hard to locate and, unfortunately, a few have died.

A 200+ page chronology has been drafted and placed on the OIT’s Blackboard intranet site. A summary of the history to 1969 has also been drafted.

The time periods for the history thus far are:

<table>
<thead>
<tr>
<th>Year Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1945-1957</td>
<td>Building an electronic computing instrument [John von Neumann]</td>
</tr>
<tr>
<td>1952-1969</td>
<td>Early computing at the University [Foreman Acton, Ed McCluskey, and Roald Buhler]</td>
</tr>
<tr>
<td>1969-1985</td>
<td>Emerging possibilities [Jim Poage]</td>
</tr>
</tbody>
</table>

More than 20 people have been interviewed for the project. The collection of documents and related materials includes the blueprints and specifications for “Maniac,” the computer designed and built at the Institute for Advanced Study by John von Neumann, more than 2,000 slides, and most of the organization’s Annual Reports and Priorities Committee Reports from 1962. The collection will eventually be transferred to the University’s Mudd archive.

**Project Office**

The OIT Project Office (PPO) has helped to establish a project management culture within OIT so that the organization can regularly deliver projects on time, within budget, and with expected results. The methodology is also increasingly seen as a model in project management in higher education. PPO provides project management support and mentoring, facilitates project reviews, and shares project management best practices. All key OIT projects follow the Princeton Project Management Methodology (PPMM).

During the past fiscal, the Project Office worked with more than 26 project teams to facilitate project planning and reviews and to consult and mentor them in using the project management methodology. Staff taught 11 workshops, “Project Management Made Easy.” More than 110 people from departments and offices across the campus attended.

Seminars on the Princeton project management methodology were also provided to other Universities as well as national and international conferences such as EDUCAUSE and Museums and the Web.

**IT Training**

OIT continues to provide free courses on a wide range of IT topics for members of the University community. During the past year, OIT offered a comprehensive IT training curriculum to support the effective use of University administrative systems and desktop productivity tools. Participation in OIT class offerings increased by 13% during FY06. The number of employees trained increased by 15%.

The chart below illustrates the increased use of the OIT training database over the past 3 years.

<table>
<thead>
<tr>
<th>Training Database Entries</th>
<th># Classes</th>
<th># Attendees</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY04</td>
<td>341</td>
<td>3016</td>
</tr>
<tr>
<td>FY05</td>
<td>433</td>
<td>3643</td>
</tr>
<tr>
<td>FY06</td>
<td>553</td>
<td>4966</td>
</tr>
<tr>
<td>Increase over FY05</td>
<td>28%</td>
<td>36%</td>
</tr>
<tr>
<td>Increase since FY04</td>
<td>62%</td>
<td>64%</td>
</tr>
</tbody>
</table>
Classes for new University systems
During the year, the IT training effort offered several new classes in response to the implementation of new University systems, notably Student Records and Online Grading, Labor Accounting, ReportNET (The Data Warehouse reporting tool which is replacing the Datamall), and Outlook Exchange in support of the OIT migration from IMAP Mail to Exchange Mail.

<table>
<thead>
<tr>
<th>University Delivered Training</th>
<th># Classes</th>
<th># Attendees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative Systems</td>
<td>137</td>
<td>870</td>
</tr>
<tr>
<td>Desktop Productivity Tools</td>
<td>135</td>
<td>1199</td>
</tr>
<tr>
<td>Custom Classes</td>
<td>21</td>
<td>168</td>
</tr>
<tr>
<td>Total</td>
<td>293</td>
<td>2237</td>
</tr>
</tbody>
</table>

OIT continued to offer flexible training schedules. Staff sustained the Early Bird classes and increased the number of segment classes that permit staff to attend shorter classes that are less disruptive to the work day.

University-wide training team
During the year, OIT Training coordinated the implementation of a University wide Training Team composed of campus groups that have a major interest in staff training, including Compliance, Library, Legal, Environmental Health and Safety, Human Resources, and the Academic Managers Group. The goal of the new team is to provide leadership and guidance in developing a holistic and integrated training curriculum for University departments, managers, and staff. By year’s end, the team was in the process of conducting a University wide training inventory and needs/gap analysis with an initial concentration on Compliance issues. The second phase of the project will focus on other technical and management related areas.

As part of the effort, staff transitioned the OIT web based training registration database to a University-wide site that maintains class and attendance information for offerings by Human Resources, Facilities, Ombuds Office, Registrar, SCAD/DCS, as well as OIT. The new effort has resulted in a much more comprehensive listing of offerings and one stop shopping for University staff. Staff are preparing additional enhancements to the database including training histories, training management reports, and a calendar view of offerings.

Academic Productivity 501 Learning Series
In the fall of 2006, FAP joined forces with the Library and Chris Mackie from the Politics Department to offer a new learning series on campus: “Academic Productivity 501.” Offered weekly several times during the day, each AP501 session was a one-hour lecture/demonstration that focused on how academics can get the most out of a common desktop tool with the least effort. The series was aimed at working scholars, including faculty, graduate students, and undergraduates pursuing independent work. Topic sessions included: Word, Reference Management (EndNote and RefWorks), Data Analysis using Stata or Matlab, Online Research via Virtual Scholarship, Data Visualization, and LaTeX.

Making OIT a more welcoming and inclusive organization
Several new initiatives helped to integrate OIT’s Core Values into the daily workplace and to encourage the organization to value diversity and to become more inclusive.

In 2006, OIT introduced the OIT New Staff Orientation Program, an OIT-specific orientation program that aims to make new staff members feel more at-ease working in OIT by introducing them to OIT’s organization, practices, and services. Building on the University’s staff orientation program, new staff members meet individually with OIT’s Director of Human Resources and Administration and then with Betty Leydon.

In 2006, OIT started the “Getting to Know You” series, informal activities and programs designed to help OIT staff get to know each other better. Activities included lunches with Betty, a tour of the University Art Museum, and a tour of PPPL. A full schedule of events will be in place for 2007.

Several new efforts helped integrate OIT’s Core Values into the daily workplace. New “best practices” posted on the organization’s intranet clarify expectations. Staff progress reports now weight Core Values criteria more heavily. The reports contain both a quantitative rating as well as a text area where specific instances of adherence (or non- adherence) can be listed.

OIT also formed a working group to “Make OIT a More Welcoming and Diverse Place.” The group assembled a range of ideas including more open job ads, college and high school intern programs, an OIT employee newsletter, creativity workshops, and birds of a feather sessions to bring together staff members with shared interests.

Office of Printing and Mailing
FY06 was a challenging year for Printing and Mailing. Despite the retirement of its director of more than 24 years, the group managed a smooth transition and continued to provide a broad base of cost-effective, cost-recovery services to the University community. One notable trend is a slight increase in the number of publications that moved from print to the Web.

Graphics and Prepress
Printing and Mailing continues to offer a range of integrated services, including design, illustration, typesetting, scanning, and Toshiba composite color output for proofing and copying. The Epson Stylus Pro 9600 wide format color printer prints posters and banners up to 44 inches in width by 20+ feet in length on various materials. The posters can be dry mounted; banners can
have grommets applied for hanging. The production of large format posters and banners increased substantially during the year.

With the addition last year of a Presstek Dimension 400 Computer-to-Plate System, the ECRM Imagesetter (which had been used to produce negatives and film positives) was sold in April 2006, making the graphics and prepress area chemical free.

**Offset Printing Production**
Printing and Mailing continues to print a wide variety of printed work, from single color to process color: letterheads, business cards, flyers, note cards, books, pamphlets, manuals, pocket folders, and posters. The bindery area has capability for perfect bound, saddle-stitched, and spiral bound books, and support for cutting, collating, punching, perforating, folding, scoring, and laminating up to 12x18 inches. New to the production area in FY06 was the addition of an AutoCreaser Precision Channel Scorer. This system scores covers and cards, virtually eliminating image cracking. The new capability is especially important in toner-based digital printing.

**Digital Networked Printing Center**
Digital printing continues to be the major source for on-demand, quick copy color and black and white documents. The Xerox DocuTech 6180 provides printing in black on paper up to 11x17 inches; the Xerox iGen3 Digital Production Press provides printing in color on paper up to 14.3x20.5 inches. The center has the capability for scanning and printing a wide variety of work including personalized laser letters and postcards.

**Mailing Production**
Mailing continued to offer a full range of mailing services including inkjet addressing, automatic inserting, sorting for first class, third class, and international mail, mailing list standardization, metering, wafer sealing, live stamp affixing, bulk mailing, packaging, shipping, and mass e-mail notices to the campus. During FY06, the group installed an IJ90 Mixed Mail Feed System. This new mail system can process 220 pieces of mail per minute in varying sizes.
Support Services

Support Services provides direct customer support for the University’s information technology infrastructure. Support Services is comprised of five man groups. Network Services sustains the data infrastructure. Customer Support provides in person, telephone, e-mail, print, and web-based IT support for students and sustains their access to workstations and shared printers in public University spaces. Desktop Support, which includes both the Hardware and Software Support groups, maintains and enhances the University’s desktop computing infrastructure. Telecommunications Services supports the University’s telephone and voice mail systems.

In FY06, Support Services reorganized. An expanded Help Desk now includes general computing support, University business application support, the University (telephone) operators, and telecommunications support (trouble resolution and move/add/change coordination). The technical staff within Telecommunications joined the Networking group to create a new Networking and Telecommunications group. A new group subsumes Software Sales, telephony support at the OIT Solutions Center, the Telecommunications Finance Office, Copy Centers, Voice Mail, OIT Communication Services, support for FCP and DeSC, and vendor relations. Desktop Computing Support has taken on complete responsibility for the Solutions Center Tech Clinic.

Support Services also subsumes a range of smaller support programs and services, including SCAD and DCS programs, the OIT Ambassador Program, Policy Office, Software Sales, Software Licenses, Software and Service Contracts, Software Deployment, Faculty Computer Program, and the University Copy Centers.

Highlights

Support for central software licensing costs
During FY06, the University provided additional resources to OIT in order to improve its ability to make widely-used academic software available to academic departments through campus-wide site licenses. In the past, individual units, alone or in cooperation with one another, sometimes bore responsibility for purchasing such licenses. In areas where the licenses were crucial and benefits were widely shared, this process was cumbersome and inefficient. While we do not expect that we will be able to meet every need, we hope that these new resources will facilitate access to widely-used software that is important to the University’s educational and research mission.

Completing the campus wireless telecommunications infrastructure
During the summer of 2005, OIT installed wireless networking throughout the residential colleges and other dormitories. Since 90% of undergraduates have wireless laptops purchased through the University’s SCI program, the University maximized its investment in this technology by placing the wireless infrastructure first within spaces that housed the highest concentration of wireless-capable computers.

By the fall, the University’s wireless infrastructure covered approximately 40% of campus. Recognizing the importance of a ubiquitous wireless infrastructure, OIT and the Provost’s Office initiated a plan that centralizes the funding of wireless and completes the rollout of wireless to the rest of campus. OIT has worked aggressively again this summer to install wireless in academic buildings, administrative buildings, and the libraries. Ubiquitous wireless coverage for the campus will be completed by the fall of 2007.
Increased networking capacity
Princeton has network connections to the Internet, as well as Internet2. Our connection to the Internet provides general connectivity, while the connection to Internet2 provides a direct link to other research institutions. The University is increasing its connection to the Internet to 1 gigabit per second (Gbps) and raising its Internet2 connection speed to 500 megabits per second (Mbps). This total represents a five-fold increase in bandwidth that will facilitate such activities as transferring large data sets, conducting interactive or remote research projects, and sending, or receiving, live lectures or classes over the network. The increased capacity will also position Princeton well among our peer institutions.

Network infrastructure
The group upgraded two of the four core switches and began to run the native IOS operating system. The final two core switches will be upgraded in the summer of 2006.

Staff also improved the visitor wireless service by removing the need for a WEP key. The group completed the long process of converting the Princeton University Press’ private physical network and services to campus network. In addition, staff configured the campus network to support multicast traffic in support of the Video Furnace evaluation.

Networking
The Networking group works to sustain a cost effective data network capable of supporting the University’s academic and administrative needs. Towards that goal, the group insures the correct and efficient operation of the campus network, maintains the University’s access to the Internet and other external networks, manages the various remote access facilities, and evaluates new network technologies for possible deployment on campus.

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

Highlights
Disaster Recovery
The group conducted a simulated outage of the network at 87 Prospect. The alternate network core at New South became operational as planned. The test was very successful and demonstrated the viability of the procedure.

Ring Fiber
During FY06, the Networking Group installed additional ring fiber optic cabling in order to connect each of the 11 campus network hubsites. The new infrastructure provides a method of connecting the critical buildings to the alternate network core at New South (in case of a disaster at 87 Prospect) and provides an alternate path from the fiber hubsite to the core at 87 Prospect. The group tested all fiber optics cables and required electronics as part of the project.

Internet Bandwidth
The group administered an increase in Internet bandwidth by adding a 100Mbs of Internet access from Patriot Media. The new Patriot link was used to support Dormnet and the wireless network. This separation of traffic also provided increased Internet access for the campus.

Telecommunications Services
Telecommunications Services provides the University with reliable and cost-effective telephone and voice messaging services. With FY06 revenues of slightly more than $3,400,000, Telecommunications Services is the largest cost recovery unit within the Office of Information Technology.

2,935 student telephone lines, 8,770 academic and administrative telephone lines, and more than 12,500 voice mailboxes are in service. Every telephone line on campus has Caller ID enabled and Caller Originated Trace (for threatening or harassment calls). Console attendants respond on average to more than 400 inquiries a day. The call volume for FY06 was 18,523,200 total telephone calls (6.4 million inbound calls, 4.5 million outbound calls, and 7.6 million intra university calls). System reliability in FY06 was rated by Nortel at 99.9993% uptime.

Highlights
Infrastructure
During FY06, the group issued more than 894 work orders for telephone work that involved some 3873 changes to telephone service or equipment. In addition, the group processed 965 work orders for voice mailboxes. Staff achieved a 98% success rate in meeting requests for new or changed services.

Rates
The monthly service rate was increased by $0.50 per month in FY06. No rate increase was recommended for FY07. The domestic long distance rate of $0.07/minute and the international rates of $0.10/minute to Canada and the United Kingdom keep the University competitive in the marketplace. A drop in long distance usage (and revenue) during FY06 is attributable to increased cell phone usage (mostly by the student community). Our estimate is that more than 90% of students are coming to campus with cell phones.

Telephone Conference Bridge
During FY06, use of the Conference Bridge increased from 29 to 33 departments. The largest user realized savings of more than $80,000 during the year. Overall,
were on the Macs. The statistics revealed that the cluster information for the cluster Macs; 39,945 of the total logins FY06 was the first year we have been able to capture login 541,912 total logins to OIT cluster machines. During the year, there were (supporting both Macintosh and Unix environments), 39 Windows machines, 67 OS X Macintosh computers the University's computer clusters contained a total of 282 facilities in 32 University buildings. At the end of the year, SCS maintained computing and printing assistance for students, and coordinates the Student Computing Consulting program that provides in-room IT public workstations and printers, manages the Residential Student Computing Services (SCS) sustains access to computing and printing services in 32 University buildings. At the end of the year, the University’s computer clusters contained a total of 282 Windows machines, 67 OS X Macintosh computers (supporting both Macintosh and Unix environments), 39 printers, and 7 scanners. During the year, there were 541,912 total logins to OIT cluster machines. FY06 was the first year we have been able to capture login information for the cluster Macs; 39,945 of the total logins were on the Macs. The statistics revealed that the cluster Macs are used for an average of 58 minutes while a cluster PC is used on average for 33 minutes. Web browsers, Microsoft Office and Adobe Reader were the most common applications used.

New Services
During FY06, Telecommunications Services implemented an international cell phone loaner service for faculty and researchers going abroad on short trips. The program proved to be a very successful offering.

The group is also offering a new service to cell phone users who have a need to call international locations. A prepaid service permits them to call more than 80% of the international locations for $0.07 per minute. Cell phone users who want to use domestic long distance can do so at a rate of $0.05 per minute. The new service is available to all University community phone users.

Automatic Call Distributor (ACD) Systems
Three ACD systems have been in use for more than two years. The anticipated life of these systems is five years.

Reorganization of the Telecommunications Staff
With the announcement of retirement by the Telecommunications Manager (end of 2007 calendar), the Telecommunications Services group was realigned into three separate areas. The Business Office group is now a part of the Customer Services group; the Voice Messaging, Student Services, and Finance Coordinator are now a part of the Administrative Services group; the Technical Operations group is now a part of the Networking and Telecommunications group. The outside technicians are expected to become part of the Desktop Support group. The current Telecommunications Manager will become a Senior Telecommunications Advisor for calendar year 2007.

Student Computing Services
Student Computing Services (SCS) sustains access to public workstations and printers, manages the Residential Computing Consulting program that provides in-room IT assistance for students, and coordinates the Student Computer Initiative (SCI) that sells computers to students.

Highlights

Computer Clusters
During FY06, SCS maintained computing and printing facilities in 32 University buildings. At the end of the year, the University’s computer clusters contained a total of 282 Windows machines, 67 OS X Macintosh computers (supporting both Macintosh and Unix environments), 39 printers, and 7 scanners. During the year, there were 541,912 total logins to OIT cluster machines.

Inpatient facility.

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Print accounting
During FY06, a total of 7.4 million pages were printed on cluster printers, an increase of 6% over FY05. SCS implemented UnipriNT, a print accounting system in FY01. Requiring that students select their print jobs at the printer continues to save a considerable amount of paper. In an effort to understand this year’s increase in printing, the group sent personalized e-mail messages to students who had printed more than three standard deviations above the mean. The messages reminded them of the number of pages they had printed and asking why they had printed so much. Most of the responses indicated that more course materials were being distributed electronically. The students had chosen to print the readings.

Information Kiosks
SCS continues to provide and support 20 information kiosks in the Frist Campus Center and at Dillon Gym. SCS converted two of the cluster Macs in the Brush Gallery into kiosks. Students had been using the clusters machines during breaks between classes to check their e-mail quickly. The conversion to Kiosks better addressed their needs.

Residential College Consultants
During FY06, 34 students worked as Residential Computing Consultants (RCCs) providing network and
computing support for their peers in the dormitories, including the Graduate College, Lawrence Apartments, and the Graduate Annexes. The RCCs participated in OIT activities during the fall Orientation week, and they provided help sessions at every Residential College during the first week of classes.

In addition to their outreach efforts, the RCCs responded to 2,085 tickets in OIT’s job tracking system.

**Back to School**
SCS coordinated the OIT back-to-school effort. With assistance from other OIT groups, SCS manned booths in the Residential Colleges during the New Student brunch, participated in the first-year-student and the Graduate Student sign-in events, and extended the office hours at the Solutions Center.

**Student Computer Initiative**
Open to all University students, the Student Computer Initiative (SCI) offers for sale aggressively priced, and highly capable computers customized for academic work at the University. During FY06, the SCI program sold a total of 1,077 computers: 633 Dell (61.6%) and 414 Apple (38.4%), an increase in market share from last year’s 25%.

**Customer Service**

**The Help Desk**
The OIT Help Desk continues to provide comprehensive e-mail, phone, and web assistance. The Help Desk serves as the single point of contact for all campus computing inquiries 24 hours a day, five days a week. Staff members continue to provide emergency coverage on the weekends.

During FY06, the Help Desk staff responded to 34,786 individual customer phone inquiries and slightly more than 24,000 e-mail inquiries. In addition, staff processed 1,389 quota increases, updating quota project grants records in preparation for billing, updated 489 computer accounts, and manually terminated 175 netIDs.

During the year, Help Desk staff continued to provide support and training for the SCAD/DCS members and maintained and supported the University’s Listserv e-mail service and OnTime calendar services. The Help Desk also supported the University’s web-based admissions and financial aid applications, SCORE, and all the University Business Applications and computer purchase programs.

In addition, during the past year, the Help Desk provided support for the password security project, front line support for scheduled and unscheduled major machine room outages, assisted in the digital suitcase project, assisted with XP Service Pack Tuesdays, assisted in the Undergraduate Housing Room Draw Application testing, and assisted Conference and Event Services with guest host registrations. The Help Desk has assisted with the On Time to Exchange migration for OIT, as well as for general campus clients. The Help Desk also administered the Register mailing to 2,155 faculty and 1,824 administrative staff members.

**Desktop Support**
Desktop Computing Support (DCS) provides quality, timely walk-in and in-office hardware and software computing support as well as cable television services for 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. DCS is composed of four groups, a Business Office, Hardware Support, Software Support, and the Solutions Center (Tech Clinic).

**Business Office**
The Business office provides a wide range of internal services that enable the Desktop Support technical teams to complete their work effectively. Efforts include managing a very extensive inventory of networking materials and computer parts and a tool room operation at 171 Broadmead, as well as a remote inventory at the OIT Solutions Center. The total value of items disbursed for use by our Desktop Support operation during FY06 was $2,085,000. The Business Office also maintains 171 Broadmead facilities and provides a wide range of other administrative support functions such as ordering supplies, administering monthly billing, and processing payroll.

**Hardware Support**
Hardware Support provides a range of services, including renovation support, warranty and non-warranty equipment repair, installation and configuration of hardware, and maintenance of the University’s hardwired network, wireless network, and Tiger TV infrastructure. Throughout the year, Hardware Support set up, configured, and repaired computers and printing equipment in hundreds of campus locations. By request, the group activated network and cable television services and, on a daily basis, provided routine maintenance for the underlying telecommunications infrastructure. Given the growing size and complexity of the network, much of servicing is now carried out during off-hours.

**Highlights**

**Building Project Support**
During FY06, Hardware Support assisted the Facilities Planning Office during the renovation and new construction of campus buildings. The effort involved removing and later upgrading data cabling, network equipment, and computer clusters. In most sites,
Hardware Support designed and installed hardwired and wireless cabling systems. During FY06, project sites included: Holder, Hamilton, Boiler House (200 Elm), Aaron Burr, Clio, Cogen Plant, Jones, Whitman College, and the Lewis Library.

**Network Upgrades**

The project to upgrade network wiring and Ethernet switching electronics in all campus buildings continued during FY06. The last of the dormitories were rewired. Academic and administrative buildings included Forbes Annex/Addition, Art Museum, 201 Nassau St, Dodge Hall, Maclean House, 194 Nassau St, 199 Nassau St, 201 Nassau St, Prospect House, 71 University Place, and Baker Rink.

The group completed the last phase of the redundancy fiber ring installation. The ring will function in the event of a failure of the primary fiber infrastructure in order to restore computing services quickly to the fifteen buildings designated “most critical.”

The group completed a major initiative to install wireless network services in all undergraduate and graduate dormitories. Responding to requests from departments, staff also installed wireless services in several other locations, including: Henry House, McCosh Hall, 71 University Place and additional locations within the Frist Campus Center. By year’s end, Hardware Support had begun to install wireless systems throughout every remaining campus location.

**Cable Television**

During FY06, Hardware Support completed a project to transition the campus TigerTV infrastructure from an aging broadband coaxial cable to a new fiber based system. One new Channel (MTVU) was added to the channel lineup.

**Special projects**

In support of the ongoing campus proximity card system, Hardware Support extended the Princeton Private network to many additional locations. The group began to provide services in support of a new Facilities Department/Public Safety initiative called the Campus Video Monitoring System (CVMS). The first of these deployments took place at 200 Elm. The group also assisted OIT’s Student Computing Services to replace many computers and printers in OIT clusters.

**Software Support**

Software Support responds to numerous requests for software installation and troubleshooting assistance in campus offices. The group provides proactive support for the University’s 2,600 DeSC machines, as well as TSM backup and restore assistance for Windows and Macintosh computers. Software Support staff are involved in the creation of the software image for campus machines in DeSC, the computer clusters, and the Faculty Computer Program. They also maintain the computers in the Armory and 120 Alexander training room, as well as the computers in the “cluster-in-a-box” program.

**Highlights**

**Customer Contacts**

During FY06, Software Support processed a total of 3,348 OPM incidents. Of those tickets, staff touched or updated a total of 15,092. The top five departments serviced were OIT (1,824 tickets, 29.66%), Woodrow Wilson School (224 tickets, 3.64%), Office of the Dean of Religious Life (137 tickets, 2.23%), Residential Colleges (129 tickets, 2.10%), and Facilities, Design and Construction (124 tickets, 2.02%).

**Special Projects**

During the year, Software Support worked to migrate OIT and other departments to the Exchange e-mail/calendaring service. One the main drivers was the need to replace the OnTime calendaring service during FY07. During FY06, the group sustained a slow but steady migration of departments to Exchange. By year’s end, there were more than 2,000 subscribers to OIT’s Exchange service and more than 200 Blackberry users.

During FY06, the group also assumed full responsibility for managing all computers in the Princeton domain. The effort entailed creating, deleting, resetting, and moving machine accounts within the domain, as well as preparing, testing and administering all SMS software pushes, WSUS updates, GPO deployments. The group worked with other OIT staff to evaluate a new long term strategy for software deployment for the DeSC program, including the possibility of creating and maintaining a small foot print image and a greater emphasis on deploying MSI packaged software via GPO. A secondary goal of the project included assessing the viability of introducing laptops and Apple computers into a future DeSC program.

During FY06, Software Support also completed the upgrade of most campus Windows computers to XP SP2. Staff worked with Cert team members and the community to resolve various computer compromise incidents, copyright infringements, and network disturbances. Staff also helped to maintain the Keyserver for DeSC and developed and tested new SAV 10 antivirus client updates.

**The Solutions Center**

The Solutions Center continues to provide access to computing sales, computing support and hardware repair. During FY06, the Clinic, the hands-on computing consulting area, assisted 7,996 customers. The major areas of support involved helping customers whose computers were plagued with viruses and spyware infestations, registering and configuring computers for the Princeton network, and working with customers who had experienced hardware failures. Sixty-six percent of the customers serviced in the Solutions Center Clinic were undergraduates.
Software Sales
Software Sales in FY06 remain steady with a small increase over last year’s receipts.

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<thead>
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<th></th>
<th>FY06</th>
<th>FY05</th>
</tr>
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<tbody>
<tr>
<td>Institutional Sales</td>
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</tr>
<tr>
<td>Faculty/staff (personal)</td>
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</tr>
<tr>
<td>Students (personal)</td>
<td>$69K</td>
<td>$63K</td>
</tr>
<tr>
<td>Total</td>
<td>$354K</td>
<td>$349K</td>
</tr>
</tbody>
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Software Licensing
MATLAB: The University now has an expanded site license that includes MATLAB, SIMULINK and thirteen toolboxes. In addition, there are 16 volume licensed toolboxes that are available. All components of this license are freely available to faculty, staff and students.

Mathematica: During FY06, a new Student Option on the site license permits students to install Mathematica on their personal computers for $25 a year.

Adobe: The University now deals directly with Adobe rather than purchasing product through a reseller. As a result, members of the community get the lowest pricing available for Adobe products. In addition, the University signed the Student Licensing option, which provides deep discounts for students on licenses for selected Adobe products.

Microsoft/SCI: The University now offers the Student Campus Agreement Microsoft software to purchasers of SCI computers.

Microsoft/PPPL: After a year of discussion, Microsoft has forced PPPL to acquire Microsoft licensing through a federal channel. PPPL will no longer be covered under the University’s academic Campus Agreement.

Apple/PPPL: Apple requested that PPPL make purchases through a federal channel because they are trying to create a strong government sales team. Apple has assured PPPL that they will receive educational pricing.

Contracts: A significant amount of time was spent on agreements related to the IBM Blue Gene computer purchase, Google Video Distribution, Communications Facilities on Fine Hall for cell phone carriers, AT&T internet service, and Oracle licensing changes.

Faculty Computer Program (FCP)
During FY06, 173 computers were ordered under the FCP program. 62% were ordered from Dell; and 38% were from Apple.

During the year, a new Dell punchout system replaced the FCP catalog. The new system requires far fewer resources on the University’s end and provides better service.

DeSC
The completion of Local Administrator Password Management (LAPM) has eased password enforcement on all DeSC machines.

Communications Services
In July, 2006, Communications Services joined the Software Services/Administrative Services group. During its second full year of operation, the OIT Communications Services group expanded its role within OIT to improve communications with the University community, working closely with OIT operational groups to coordinate information provided to customers. Communications Services has increased outreach efforts to its specific audiences.

Password security campaign
During the year, a major focus for the group were system and service upgrades and changes, especially those in support of a broad range of efforts to improve password security. Communications Services played an integral role in the Security Officer’s phased project to eliminate insecure password transmission. The group also assisted in project planning, identifying appropriate communication methods, writing targeted e-mail for various user groups, and updating KnowledgeBase solutions to document secure procedures. As a result of informing support staff about forthcoming changes and transitions, customer contacts to the Help Desk after each of the four project phases were minimal. Communications Services continues to participate in the next phase of the password security campaign: designing and maintaining a web site for the campaign, creating communications to inform the community of the importance of changing and protecting passwords, documenting best practices, and working actively with the project team.

XP SP2 upgrade
Communications Services worked with the Security Officer, the distributed computing support groups, and Student Computing Services to plan communications for a major security effort, a campus-wide upgrade to XP SP2 on Windows computers. The effort involved target e-mail messages to faculty, staff, and student, an ad campaign in the Daily Princetonian, as well as posters in the Frist Campus Center. The campaign resulted in the updating of hundreds of computers without a large volume of Help Desk contacts, again evidence of a successful communications strategy.

Digital Student Suitcase project
To assist graduating students to “pack up” their intellectual property, Communications Services participated in the Digital Student Suitcase project. Communications Services worked on the project and communication planning, tested newly created applications, designed a web site, created explanatory web pages, and coordinated communication to students about the new services.
OIT KnowledgeBase
The OIT Knowledgebase continues to be the recognized web location for providing answers to most customer questions. During FY06, Communications Services created nearly 200 new KB solutions for the OIT KnowledgeBase.

Student outreach
Communications Services initiated several new student outreach efforts last year. *Technology Resources for Students* was distributed to incoming students in the University’s Admissions matriculation mailing. The group produced a move-in mailing for entering students. A *Get-started* pamphlet helped students to establish themselves in the dorms. The group produced a Freshman Scholars Institute publications packet for students who arrived on campus in mid-July. An ad series in the Daily Princetonian summer Freshman Edition promoted the oitfrosh web site of technology resource information to parents and incoming students. Finally, new publication stations in Residential Colleges and graduate student residences made publications available where students live.

Print Publications
During FY06, Communications Services produced more than 45 printed publications. More than 25 of these publications were produced to support the Back-to-School effort and the organized events of orientation week. SIGUCCS, the ACM’s Special Interest Group for University and College Computing Services chose one of these publications, *Technology Resources for Students*, as the overall winner in the Quick Reference Guide category in the annual Communications Awards competition. The staff member responsible for the design of the publication has been invited to be the SIGUCCS Conference Publicity and Publications chair, and is responsible for all conference publicity and printed publications.

In addition to the Back-to-School publications, the group designed and wrote more than 20 other publications to inform the University community of various departmental services, projects, and events throughout the academic year. One of those publications illustrated the importance designing publication to meet a specific need. When Software Sales struggled with ads and notices to market its large supply of Adobe Creative Suite software for students, Communications Services created table tents for Frist tables. As a result, students streamed into the Tech Depot and the software sold out.

Other projects
Communications Services worked on more than 30 other projects, listed below. For each project, the group evaluated communication needs, identified the appropriate audience, created specific communications plans that offered a full menu of communications options, wrote and edited announcements, and ensured timely distribution of information to customers.

- OnTime Migration to Exchange for OIT
- Password Security Campaign
- Departmental web scripting environment
- OIT Outages RSS feed
- Extended UPS repair computing outage
- Central File Server disk space charging
- Student Dormnet Host name change
- Digital Student Suitcase
- E-mail quota increase and charging
- Password protection Phase 4: Insecure FTP elimination
- Password protection Phase 3: Insecure POP elimination
- Password protection Phase 2: Insecure rlogin elimination
- Password protection Phase 1: SSL authentication
- Student privacy
- Unix 64-bit upgrades
- Visitor Wireless upgrade Phase II: password elimination
- Listserve upgrade
- WebScript environment
- Visitor Wireless upgrade Phase I: network name broadcast
- SP2 upgrade project
- SAN upgrade
- Ntfileshare migration to Files
- oldsmtp retirement
- Novell server names retirement
- Samba server aliases migration to the FILES central file server
- WinFS file migration to the NAS
- AppleTalk termination
- New student records system from Registrar
- IT Guidelines web site for 2005-06
- Hats public linux server upgrade to Linux 4
- Search engine for Guidelines site
- KnowledgeBase evaluation project
- Roxen OIT web site re-design
- OIT home page interim redesign
- Standard OIT stationery and e-mail
- Telecommunications service card
- Academic 501 training publicity

Student publications
- Campus courtesy phones
- Data Recovery at OIT
- E-mail@Princeton: using Outlook
- E-mail@Princeton: using Thunderbird
- Getting Started: Setting up your computer in your room
- Graduate Housing IT Services
- “it matters” Student Edition
- Orientation information materials
- Software Sales Adobe table tent
- Student Computer Initiative program: why buy your computer through SCI?
- Student Support Resources: RCCs and more
- Student Telephone Services
- Student Voice Mail
- Technology Resources for Students
- TigerTV: Cable TV in your room

Faculty, Staff Publications
- “it matters” - Quick Start for Faculty & Staff
- Course Sectioning in Blackboard
Senior Policy Advisor

The OIT Policy Advisor strives to propagate knowledge of, and enforce University policies related to appropriate use of technology, and respect of copyright. The Policy Advisor serves as corresponding secretary to OIT’s computer and network emergency response team, acknowledging reports of network probes and abuses apparently originating at Princeton, and forwarding reports to appropriate personnel in other departments for investigation and resolution. The Policy Advisor also participates as a member of the University Institutional Review Panel for Human Subjects.

During FY06, the Policy Advisor addressed 195 official copyright infringement complaints filed with the University, and cooperated with the Office of General Counsel in notifying three students of pending subpoenas in lawsuits to be filed for alleged infringement. The office also collaborated with the Office of General Counsel and other University officials to increase awareness of the University’s policies regarding copyright and the technology.

Highlights

During FY06, the Policy Advisor cooperated with the Department of Public Safety regarding incidents involving criminal use of technology, harassing or threatening e-mail, “phishing” and other network scams, theft of computers, locating missing students, and significant cases of electronic stalking. The Policy Advisor provided Chief Healy, Department of Public Safety, with daily reports of incidents involving the technology and highlights of the daily intrusion detection report.

The Policy Advisor provided assistance to disciplinary authorities and distributed computing support personnel with interpretation of University IT policy to particular cases. In addition, the Policy Advisor provided assistance to victims of threatening or harassing e-mail, to those who perceived spam as originating within the Princeton.EDU domain, and to SCAD and distributed computing personnel who identified Princeton.EDU machines as attacking or infected.

The Policy Advisor acted as arbiter for those dissatisfied with algorithmically assigned University NetIDs. The Advisor also served as arbiter for requests from the Class of 2005 and affiliated degree-completing graduate students who desired additional extension of account access; vetted departmental computer user requests from academic and administrative departments; attended meetings of the University Data Managers’ Group; and assisted the project team developing specifications for Phase Two of the Account Provisioning System. The Policy Officer maintained secure building access, adding and deleting permissions for OIT employees requiring after-hours access to the Computing Center Building, and also arranged special lock-up and extended open hours schedules with the TigerCard Office for the OIT units requiring such adjustments.

Support for Computing in Academic Departments and Distributed Computing Support (SCAD)

Support SCAD (DCS) programs that complement OIT’s central support by providing University departments a higher level of individualized advocacy and attention. Members gain priority access to the OIT Help Desk, special opportunities for training and the OPM tracking system.

During FY06, departmental consultants participated in monthly meetings that addressed common concerns and issues related to campus computing. Both program continued to grow at modest rates. During FY06, ten departments joined the SCAD program; four departments joined DCS. By the end of the year, there were 52 members of SCAD in 57 participating departments. DCS had a total of 35 members in 51 departments.

List of Departments in the SCAD Program

American Studies Program
Applied & Computational Mathematics
Architecture
Art & Archaeology
Astrophysics
Atmospheric and Oceanic Studies
Bendheim Center of Finance
Center for the Studies of Religion
Center of Human Values
Chemical Engineering
Chemistry
Civil Engineering
Classics
Comparative Literature
Computer Science
Council of Humanities
Creative Writing
East Asian Studies
Ecology and Evolutionary Biology
Economics
Electrical Engineering
English
European Cultural Studies
French and Italian Languages
Genomics
Geosciences
Index of Christian Arts
Human Resources
Language Resource Center
Nassau Hall
Office of General Council
Outdoor Action
Princo
Princeton-Blairstown Center
Princeton University Press
Program in Science and Global Security
Registrar's Office
School of Engineering & Applied Sciences
Study for Brain, Mind and Behavior
Telecommunication Services
Tiger Card Office
Undergrad Admission
University Financial Systems

Total Members of DCS Program - 35
Total Department - 51

There was an increase in staff among DCS departments.

List of Training Provided for SCAD Members for 2005
Mac OS X Server v10.4 Part I & Part II (week long training two sessions)
Mac OSX 101 Support Essentials Part I & Pat II (week long training two sessions)
Cascading Style Sheets Training Part I & Part II
Advanced PHP/MSQL (two day session)
Entourage Training Part I & Part II
Outlook Exchange migration training (two day)
Windows Vista Training and demo
Intro to XML & HTML (two day session)
Advance XML& HTML (three day session)
Virtual Training MCSE
Intro/Advance Security Training (two sessions)

Development of Improvements for the SCAD/DCS Program
SCAD/DCS Breakfast Club Meeting monthly
SCAD/DCS Monthly Training Sessions
SCAD/DCS Monthly Meetings

SCAD/DCS Security Meeting – SECOM
The Secom group meets monthly working along side with the OIT Security Group to help prevent and implement new ideas and concerns regarding security concerns on campus. The group has a membership of approximately 30 members from the SCAD/DCS program and members of OIT.
## Ambassador Program List of Departments

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<td>Vice President and Secretary Office</td>
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<td>Alumni Council</td>
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<td>Ombuds Office</td>
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<td>Frist Campus Center</td>
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</tbody>
</table>

New Ambassador Departments for fiscal year 2006 - 7
Total Number of Departments - 75
Computer Problems?

RCC SWAT teams are being deployed near you!

Teams of Residential Computer Consultants (RCCs) are scheduled to visit your Residential College next week. They will be knocking door to door to offer computer help from 8 p.m. to 11 p.m. at the following locations:

- Wilson - Sunday, Sept 12
- Rocky - Monday, Sept 13
- Mathey - Tuesday, Sept 14
- Forbes - Wednesday, Sept 15
- Butler - Thursday, Sept 16

Be there.

www.princeton.edu/rcc
rcc@princeton.edu

It only takes seconds to get infected when you’re connected.

Run the Scan & Patch CD!

Get protected! Don’t be disconnected!

Go ahead. Do it. Do it now.

Get your Scan & Patch CD at the OIT Solutions Center in Frist, from your RCC, and at your Residential College office.
IT questions?
KB answers at your fingertips
The OIT KnowledgeBase
www.princeton.edu/kb
Go ahead. Go look. IT’s in there.
When Science Meets Art...

These mysterious images were created in labs and studios throughout campus, the result of a competition designed to demonstrate the beauty in science. See page 3. Top row, left to right: Rendering showing the optimization of the flow of railroad freight; spreading liquids on a silicon wafer; wildebeest in the Serengeti; thin film with crystal formations. Middle row, left to right: Horsehead nebula; vortex cross sections; composite Princeton student; Cygnus nebula. Bottom row, left to right: Pentagonal fractal; crystalline patterns of dye on a thin film; pressed flowers and leaves; colliding galaxies.

(continued on next page)
When Science Meets Art

Research laboratories were transformed into art studios this spring as engineers and scientists probed the aesthetic possibilities of their work for a competition called the Art of Science.

The idea was to get scientists to see the beauty lurking in their studies — and to get artists to borrow tools or ideas from science. The result was more than 200 pieces of artwork — images of everything from viruses under a microscope to wildebeest in the Serengeti to colliding galaxies 30 million light years from the Milky Way.

"There is a shared language in art and science," said one of the organizers of the competition, Katalin Lovasz, a comparative literature graduate student.

The entries poured in from 16 departments and 100 individuals — undergraduates, graduate students, faculty and staff members. The largest single group of submissions came from the School of Engineering and Applied Science, but mathematicians, psychologists, molecular biologists and English majors let their creative energy loose, too.

The competition was sponsored by an equally wide-ranging group of eight departments and programs: the engineering school, the Lewis-Sigler Institute for Integrative Genomics, the Department of Computer Science, the Department of Comparative Literature, the Council of the Humanities, the Department of Molecular Biology, the Office of Information Technology and the Program in Visual Arts.

The $250 first prize went to Eleanor L. Starkman and Andrew Post-Zwicker, both of the Princeton Plasma Physics Laboratory, for "Plasma Table," a digital photograph of a half-inch, cone-shaped silica dust cloud suspended in plasma and illuminated by laser light. Post-Zwicker, head of science education for the lab, is working to understand the forces acting on dust immersed in plasma. Capturing both still and moving images of the dust assists him in this effort — which can have applications in research on everything from silicon chips to the tails of comets.

Post-Zwicker saw a potential prize-winning image in his clouds and asked Starkman, the lab photographer, to lend her expertise. It took her hours to get the perfect picture, she recalled, in part because she had to shoot through a small reflective window into a device where the dust was located. Students built a special mount on which she secured the camera.

"There’s a lot of art going on out there that scientists don’t think is art," Starkman said. "They don’t realize how pretty it is to other people."

"Plasma Table" and about 50 other works selected for an exhibition are on display in an online gallery within the competition Web site at http://www.princeton.edu/~artofsci/gallery.
Marion Carty, a Princeton staff member since 1983, has been promoted to director of the University’s printing and mailing department. She will lead the full-service operation, which offers University clients assistance with projects ranging from offset and digital printing to bindery to bulk mailing.

Carty joined the printing and mailing staff in 1983 as a graphic designer. She was named associate director in 1984 and acting director in 2004. A graduate of the College of New Jersey, she succeeds Skip Plank, who has retired after 24 years.

Mike Mills, a 20-year member of the Princeton staff, has been promoted to manager of media services. Mills began his work at Princeton in 1985 as a media technician and was named assistant manager of media services in 1998. The acting manager of media services for the past several months, he succeeds Donald Albury, who died May 22.

Mills will be responsible for classroom media at the University, including overseeing equipment, advising the University on media design and providing media support for academic and administrative activities. He holds an associate’s degree from Bucks County Community College.
Students enjoy freedom of wireless network in dorms

By Belda Chan
PRINCETONIAN STAFF WRITER

After OIT installed wireless points in dormitories over the summer and turned on wireless access earlier this month, student laptops have become more portable than ever.

The decision to install wireless Internet in the dorms was made partly because of student feedback, but also because OIT discovered that many students had installed their own wireless routers in their rooms, said Leila Shabbender, manager of Student Computing Services for the Office of Information Technology.

"We're not on the leading edge of technology, but we want to be one of the universities that people look to — doing things that are innovative. At the same time, we don't want to be too much on the edge because we don't want to provide services that don't work," she said.

Student response to wireless access has been positive, but some also noted that it hasn't really changed the way they connect to the Internet.

"I don't think there was much of a need for wireless in the rooms. If you're at your desk there's no reason you need it. The only reason I can think of is if you want to lay in bed and work or something," Alec Chapman '07 said.

Erika Kaneko '07 said, "I was told by an RCC that it's meant to be more of a convenience than to replace the old LAN connections. So, I still plug my computer into the wall, but it's really nice to be able to carry my laptop into the common room from time to time, or even bring it to a friend's room without interrupting."

Shabbender cautions that the wireless service is not as reliable as using an Ethernet connection. Variables such as the number of people on an access point, the thickness of walls and the furniture in a room can impact a wireless connection. Also, students should know that wireless is a shared service and not a secure network.

"Someone could, in theory, be listening to the traffic and picking up things like bank accounts and passwords, so anything you're concerned about not wanting other people to get, you might not want to conduct that business using the wireless network," Shabbender said.

As for the future of wireless at Princeton, Shabbender does not know if there are plans to make all of Princeton wireless, pointing out that there are areas such as athletic fields where students rarely bring their computers.

A wireless map of campus shows that many buildings on campus already have full or partial wireless access, which can benefit studious Princetonians, but also facilitate greater procrastination.

"I guess having wireless in classrooms is only a big deal for people who have tablets, mostly for when you get bored in class," Chapman said.
WWS launches University Channel

The Woodrow Wilson School of Public and International Affairs has launched the University Channel, a video project that makes public lectures from a consortium of universities available for viewing on TV and the Internet.

The University Channel collects video recordings of lectures on public and international affairs from many universities. The footage is minimally edited and available online for viewing, streaming and downloading at <uc.princeton.edu>.

Annie-Marie Slaughter, dean of the Wilson School, said the University Channel creates a much-needed public platform for the serious discussion of critical issues. "I feel it is important to create a media outlet under the direction of academics where intelligent viewers can find the kind of analysis and dialogue that rarely gets aired on commercial media," she said.

University Channel lectures can be viewed as streaming video directly from the Web site and also are being offered to TV stations for re-broadcast. In the Princeton area, Patriot Media distributes University Channel material on its cable TV video-on-demand service. Some community access channels are picking up programs for re-broadcast in Princeton and other areas of the country, including Chicago and Cambridge, Mass.

Plans include distributing lectures through IPTV systems — which provide interactive TV program services via the Internet — being deployed on university campuses. Some lectures are available as audio downloads for iPods and computers. Subscribers to online media services such as RSS and Podcast also may access some of the content.

"A growing number of universities recognize the value of recording and archiving their important ideas and discussions on video, but have yet to find a suitable way to get this material beyond their campus walls and out to the public," said Donna Liu, director of the University Channel. "The University Channel fills that need."
FILE-SHARING

RIAA launches new round of suits

By Tom Senn
PRINCETONIAN SENIOR WRITER

The Recording Industry Association of America (RIAA) filed copyright infringement lawsuits Thursday against 757 individuals, including one Princeton student, who allegedly engaged in music piracy, the record industry trade group said.

According to the University, the individual has been notified.

This announcement follows Wednesday’s news that the RIAA was planning to subpoena the University for information on a student allegedly engaged in illegal file-sharing. The RIAA must now wait for the judge assigned to the "John Doe" lawsuit to issue a subpoena.

See RIAA page 2

Music industry launches lawsuits

RIAA

Continued from page 1

na before it can approach the University.

Thursday’s litigation brings to 30 the total number of Princeton students sued by the RIAA, following the 25 federal copyright lawsuits filed against University students last April.

This latest round of lawsuits aims to individu- als illegally distributing copyrighted music online via peer-to-peer services such as Grokster, Kazaa, eDonkey and LimeWire, as well as students using the file-sharing application izhub to trade music on Internet2, a high-powered research network operated by universities and affiliated institutions nationwide.

Earlier this month, both the RIAA and the Motion Picture Association of America joined the Internet2 network, reportedly to research new ways of distributing music and movies online.

In a statement Thursday, RIAA president Cary Sherman warned students that downloading seemingly free music online may come at a price.

“Both the businesses that encourage theft and the individuals who download songs without permission can be held accountable for their illegal actions.”

Students at 17 colleges, including Columbia, Harvard, the Massachusetts Institute of Technology and the University of Pennsylvania, were singled out for lawsuits Thursday.
Lending a hand to victims of hurricane

By Chris D'Ambrosio

Computer specialist John Green spends two weeks volunteering for Red Cross in La.

Making his way through the halls of headquarters with a military bearing and brisk manner, Red Cross volunteer John Green looked like a man on a mission — except for the slightly confused look on his face. The keys to his supply truck were missing. It’s the small things that throw you, he said. He had been assigned to deliver a massive load of supplies to Monroe, La., but was four hours behind schedule. Green and his crew had spent hours looking for the keys, but they had no luck. They had been looking for the keys since they had been assigned to deliver the supplies.

After tracking down the keys in the hands of a volunteer who had forgotten to return them, a frustrated Green ran out of the Red Cross headquarters in Baton Rouge and kicked his parked truck into gear for the trip to Monroe. Green, a computer specialist for the College of the Arts and Sciences, had been trenches of Hurricane Katrina.

He saw people on TV pleading for food and water. He saw the governor and the mayor of New Orleans mayor breaking down into tears. The collective sense of these events made Green determined to help in any way he could. So Green found himself “going back to give back. Though he would have found a way to volunteer regardless, the generous University policy of allowing its employees to contact the volunteers section of the Red Cross even simpler.”
OIT employee logs 14-hour days bringing supplies to those in need

continued from page 1

"I would have gone anyway, but with this policy ..." he said, giving a thumbs-up and smiling.

A few days later, Green was making the 10-mile, 1.5-hour congested commute from a section of Baton Rouge to the interstate. Working for the Red Cross in the chaotic aftermath of Hurricane Katrina was teaching him patience.

But coping with traffic is not the same as dealing with a herd of just-off-the-plane, female teenage volunteers who needed to be transported, along with the supplies, to his destination. "I thought I was in day camp," he said.

Green could do nothing as they demanded a bathroom break every 30 minutes of the five-hour emergency supply run, and he was incredulous at their refusal to eat food served at McDonald's when people were starving mere miles away.

"Some folks thought this was a vacation," he said.

A taxing trip later, the teenage girls disembarked in Monroe city limits. Green made his way to an insurance company's abandoned corporate headquarters where thousands of people who had lost their livelihoods, possessions and family members were huddled in the hallways.

Walking through the floors of a building so massive that the pathways through the refugee crowds had street names, he watched as his supplies were disbursed.

After attending a Sept. 3 orientation, Green was sent home to pack with instructions to await an activation phone-call. Some of the volunteers who had gone through orientation would be activated; others would not.

A nervous but excited Green received the activation call the following day and was deployed immediately. His flight touched down in Baton Rouge on Sept. 5.

Not knowing where he was going to be assigned, what he was supposed to do or how he was to familiarize himself with the Red Cross operation, Mr. Green arrived at headquarters with nothing but a pack full of clothes and a willingness to do whatever was asked of him.

Because it was only day three of the organized relief effort, the headquarters was in chaos. Green was able to find a staffing post, make it known that he was there to help, and inform them that he had skills that the Red Cross might find useful. His experience with computers and the Internet earned him an immediate place on the Procurement Team in Material Support Services.

Cocooned in the interior of the Wal-Mart that had been transformed into Baton Rouge Red Cross headquarters, his team's responsibility was to purchase much needed supplies for the thousands of disaster-possessed citizens in shelters across Louisiana. "I had to think on a large scale.

Forklifts to handle pallets of water, diesel fuel to maintain refrigeration units, port-a-potties for refugee populations and showers for shelters were among the myriad supply requests that Green's team was designed to handle.

He worked 14-hour days, stopping only for breaks to eat and sleep. He was constantly reminded of the team's mission: Get the goods to the warehouses and then to the people by any means necessary as fast as possible.

Everyday a deluge of procurement requests would tear through his office, and at times it was not enough for him to make the phone calls, cajole suppliers, arrange delivery and ensure proper pick-up.

On some occasions, he would have to load the supply trucks and deliver the goods to the locations where they were desperately needed. With traffic, these supply runs became exercises in boredom punctuated by moments of sharp fear. "If anything were to go wrong with the truck or the supplies, the virtual lack of cell phone service ensured that drivers had nothing to rely on save their own wits.

The job wasn't the most glamorous, Green said, but it provided the people in the Lamar-Dixon Expo Center with their basic needs.

There, in a room the size of Jadwin Gymnasium, 1,000 people temporarily without jobs, homes or possessions slept in cots. They washed in hastily-assembled showers, used portable toilets and visited makeshift hospitals.

They relied on Green and the procurement team for showers, toilets, supplies and food and water.

Green left Louisiana after two weeks. He still dreams about it. "I was in a funk when I got back," he said. "I was warned by [University] Health Services that I would have dreams when I got back." Occasionally in his sleep, as he dozes off, he'll feel overwhelmed.

But he carries to Princeton more than just harried dreams.

The flight from Baton Rouge to Philadelphia, an exhausted Mr. Green was engrossed in a conversation with a soldier who had just returned from Iraq only to be sent to Louisiana for the relief effort. She would have only one week leave before having to report back to Iraq for duty.

As she and Green walked through the corridors of O'Hare International Airport in Chicago, he noticed two businessmen wearing suits, ties and hands-free cell phones moving easily through the walkways.

At one time, Green would have thought it was "so cool"
Tilghman welcomed onto corporate board

GOOGLE

(continued from page 1)

qualifications. "It happens to be a coincidence that I had met her through Princeton," he said.

Tilghman said the University board of trustees encouraged her to join at least one corporate board upon becoming president, and she suspects Google was actively recruiting academic leaders.

"It's an honor to welcome a woman of Dr. Tilghman's reputation to our board," Schmidt said in a statement. "Google is a company born out of university research, so we look forward to tapping into her extraordinary talents as an accomplished academic, and as a champion of discovery."

Google spokesperson Lynn Fox also cited Tilghman's academic leadership as a reason for her selection.

"We welcomed her onto the board because of her ability to lend her expertise as an academic who is deeply rooted in scientific research and discovery," Fox said in an e-mail. "She also has a solid track record of encouraging the progress of women in science. Overall, her background is a natural fit for Google's culture and values."
TECHNOLOGY

Google offers improved features for student users

By Beau Thomas
PRINCETONIAN CONTRIBUTOR.

Google announced new and enhanced capabilities for students in e-mail, instant messaging and web search in a conference call Wednesday to college newspaper representatives from across the country. A Google spokesperson outlined features including Gmail, Google Talk and Google Scholar, intended "specifically for university students."

Any student with a .edu address can now open a Gmail account. Google has also added "address masking," allowing students to send emails from Gmail under their .edu addresses.

Integrated with Gmail is Google Talk, a feature launched this past month which offers "superior voice quality" in its voice over IP (VoIP) feature. VoIP enables users to make free phone calls over the Internet.

Debbie Jaffe, Group Product Marketing Manager, suggested the VoIP feature could be used to practice foreign language skills with foreign students, without any advertisements.

Student researchers "overwhelmed by the vast resources in front of [them]" can start their search at Google Scholar, Jaffe said. Those worried about the credibility of the source can use the program to check if it has been cited by other publications.

Google Scholar is also linked to university libraries; it will show whether the found source is in Firestone's collection.

"We don't mind if you are eating pizza while researching, and we don't close at two a.m.," Jaffe said.

In response to a Daily Princetonian question, Jaffe said it was at the student's discretion not to plagiarize.

Yesterday, Google announced that President Tilghman had been added to their board of directors.
Online vehicle registration offered for first time this fall

Faculty and staff members will be able to register their vehicles for University parking through a convenient online form beginning Monday, Oct. 17.

The TigerCard/Parking Office is offering the online service for the first time this fall. Previously, faculty and staff were mailed paper forms that they then needed to complete and return.

The new online form is user-friendly, and intended to speed up the process and avoid past problems caused by lost and illegible paper forms.

Most faculty and staff existing parking permits are due to expire Tuesday, Oct. 18. This year, the expiration date will be extended until Friday, Nov. 18, to allow time for the new process to be implemented.

Beginning Oct. 17, faculty and staff can access the renewal form through the TigerCard/Parking Office Web site at: <http://web.princeton.edu/sites/tigercard/_parking/registration.html>. Those who register by Monday, Oct. 31, will get their permits hand-delivered to their departments. Those who register after Oct. 31 will be required to pick up their permits at the TigerCard Office on the A floor of New South.

The new parking decals will be active for three years. Lot assignments are made based on work location or campus mailing address as contained in Campus Community, the central University database.

Anyone not able to register online should contact the TigerCard/Parking Office for assistance. Those with questions may call 258-3157 or 258-5436; or e-mail <Tigercard@princeton.edu>. ☝️
Gates talks of hi-tech ‘golden age’

By Thomas Emmert
PRINCETONIAN SENIOR WRITER

Gates, the founder, chairman and chief software architect of Microsoft Corp. and the richest person in the world, spoke on campus as part of a six-college tour intended to ignite interest in the computer science potential to improve the lives of people around the world.

Tickets for the event were distributed through an online lottery. Seating was limited to 800, though 2,305 members of the campus community entered the lottery. University.

Bill Gates urged students to pursue careers in computing and technology during a speech in Richardson Auditorium Friday, painting a picture of a future in which software enables people to communicate and collaborate at the speed of thought. “This is the golden age of computing and software. Combined with new computing power, people can do more. Power tools enable them to change the way they work and empower them in their playtime,” Gates said. “There are great dreams about what software can do.”
Crystal Tiger recognizes Gates

GATES
Continued from page 1

spokesperson Cass Ciat’t96 said.
In an interview with The Daily Princetonian prior to his talk (see 'A Conversation,' page 1), Gates lamented the fact that computer science enrollment in the United States is on the decline.

"It's ironic that at the time when there are lots and lots of jobs for these people — lots of exciting work, well-paying work — that the field isn't growing the way one might expect," he said.

Noting that Microsoft, the company he founded with childhood friend Paul Allen, is celebrating its 30-year anniversary, Gates reminded students that the business has always depended on a constant influx of young minds passionate about technology's potential.

"Microsoft is older than you are and yet the vision that got Microsoft going all those years ago is the same one driving us today," he said during his speech.

That vision is of a world with six billion computers where the fabric of the work and home experience is drastically different than today's, he said.

President Tilghman introduced Gates and commended him for his technological achievements as well as his philanthropic activity. Gates and his wife Melinda have donated more than $27 billion to support initiatives in the areas of global health and education.

"We welcome not only an outstanding software architect and engineer but also someone who ... is striving to make the world a better place for everyone," she said.

Gates, dressed in charcoal slacks and a beige shirt, stood in front of a giant display screen as he spoke to the audience about how far computer technology has come and how far it still has to go.

"TV, as we know it today, will change," he said, envisioning news broadcasts where viewers can choose not only which subjects or issues are presented but also the depth of coverage given to each topic.

Gates also incorporated television into his presentation, beginning the talk with a video featuring orange-and-black clad Princeton graduates extolling their current jobs at Microsoft.

Another video showed Gates helping Jon Heder's Napoleon Dynamite character upgrade the technology at his family's company and ended with the computer pioneer joining Napoleon in his trademark dance.

Gates also enlivened his presentation by offering a glimpse of the next generation of technology. Trying out a racing game called "Project Gotham Racing 3" for the soon-to-be-released Xbox 360, Gates at first couldn't get his Porsche to move forward and then repeatedly ran it into barricades on the sides of the street.

After his talk, Gates fielded numerous questions from the audience on topics ranging from his thoughts on intellectual property to his decision to drop out of Harvard to whether he wanted to play Halo 2 with a student later in the day.

At the event's close, Gates was presented with the second annual Crystal Tiger Award, a prize bestowed on behalf of undergraduates to honor an individual who has improved society and affected their lives. Former Secretary of State Colin Powell received the inaugural award in February 2004.

Thomas Voute '06, a member of the award selection committee, praised Gates for being a driving force in many important issues and for embodying Princeton's motto of service to the nation and world.

"Though you are widely respected and hailed around the world, Mr. Gates, it is in particular our generation of students who identify with and admire you," Voute said. "Throughout the last two decades we have witnessed first-hand the major advances in technology that altered every aspect of our lives."
A conversation with the world's richest person

By Chandraya Sethi
PRINCETONIAN SENIOR WRITER

The Daily Princetonian sat down for an interview with Microsoft Chairman and Chief Software Architect Bill Gates before his speech Friday morning. The following is an edited transcript. Read the full text on the 'Princeton' website: www.dailyprincetonian.com.

Daily Princetonian: The number of computer science graduates in the United States isn't growing, while numbers are steadily rising in India and China. Why are numbers declining here and what, if anything, should be done about it? What does a Princeton graduate have to offer Microsoft that a Chinese or Indian student can't?

Bill Gates: Of the top 20 [computer science universities] in the world, somewhere between 18 and 19 of them are in the United States, and it's true that India and China are improving their universities. Microsoft itself will always do...

Continued from page 1...

...the vast majority of its development work in the United States, so it's very important for us to tap the field as a whole — to get the best and the brightest, and then for Microsoft to be able to draw on that to do the breakthrough work that we're focused on doing... Computer science enrollment in the United States is not flat; it's actually down. So, it's ironic that at the time when there are lots and lots of jobs for these people — lots of exciting work, well-paying work — that the field isn't growing the way one might expect.

DP: Princeton's informal motto is "in the nation's service and the service of all nations." What do you think Princeton graduates can do to make a difference in the world today? Might it involve working at Microsoft?

Gates: Well, obviously, when somebody chooses what they want to work on, the idea of what they enjoy doing and what they've been trained to do comes into that. You don't just say, "Oh yeah, you go make the malaria vaccine." You know, if the world worked that way, I'd take the first 1,000 Princeton graduates and say, "Go work on a malaria vaccine," and the next 1,000 on a TB vaccine and the next 1,000 on an AIDS vaccine.

It turns out the two technologies that are changing the world for the better are information technology and biology. Biologists are going to give us the medicine to solve these diseases, the tragedy of those things. Information technology is a lever. It takes any political regime that people try and makes that virtually impossible. It lets curious kids have way more material that even I had as a very privileged student some time ago.

These are two areas where you can have jobs that pay well, jobs that are interesting and jobs that impact the world in a very positive way.

DP: In recent years, Apple has done a lot to boost its image among young people with products like the iMac and the iPod. Do you think young people still perceive Microsoft as a "cool" company? Have you been edited?

Gates: Well, there's room for many cool companies. The software Microsoft is doing is cool. What Apple's doing is cool. The competition amongst all these companies leads to great products. We're a software company, and if you want to do breakthroughs in artificial intelligence or new databases or speech recognition or tablet computing, there's a depth of software understanding and research at Microsoft you don't find anywhere else.

DP: Some of your competitors are increasingly embracing open-source software as part of their development process. Do you see Microsoft moving in the same direction?

Gates: We encourage everyone to develop in our environment. Free software's nothing new...

But as times moved on, it's been the commercial programs that get the support, get the richness. The magic thing has been the high-volume, low-price approach that we've taken, where you can go to an employee of a corporation and say, "Hey, for a hundred dollars a year, you can have the very best software so your productivity, your communication and collaboration is the best possible." And of all the investments a corporation makes in an employee's productivity, that's almost a rounding error, and yet they get all of those capabilities.

We have lots of free software, as I said. In the educational realm we make tons of staff free. But we also have commercial software because in terms of giving people a career, you know, they want to send their kids to school, buy food and things like that. There'll always be a mix. Fortunately, with the commercial what we can do is a lot broader than what any other model can do.

DP: Do you think Microsoft is doing enough to expand access to new technologies in the developing world?

Gates: In developing countries we provide all our software free to schools, part of what we call Partners in Learning. We have over 100 countries we've done agreements with, where we not only provide the software, but also provide the training for the teachers.

Part of the key values at Microsoft are about empowerment — getting computing out to everyone. Our employees love what we're doing and we're pretty neat. There's no one else who's got agreements with these countries, doing donations like we are.

We believe that every kid should have access to a computer. First we go into the countries and get [computers and software] into the libraries — like we did in the United States, Canada, Mexico, Chile. We're doing that abroad in an increasing number of countries. Then we make sure it's in the schools. Then we make sure, eventually, it's cheap enough so everybody has it at home.
Continued from Page 2A

future literally desktop.

"You won't even think of the computer as being an isolat
ed device as it is today," he said. "You have a whole realm of computer activity that is very different."

Other developments under way are software-based lan
guage translation and advances in Internet-search engine soft
ware.

At moments, however, his presentation came off like a
tradehow demonstration of new Microsoft products, like the
Xbox 360 game console, an integrated entertainment unit
due out next month, that in
ccludes features for digital music and personalized photo albums.

Mr. Gates noted that this year marks the 30th anniversary of
Microsoft's founding, and said the vision on which the company
was founded was the same then as it is now — develop
ing easy-to-use software that also connects people around the
world.

"Today, we have a billion
personal computers in use," he
said. "We really won't have
achieved that original vision
that goes back 30 years ago un
til we have 6 billion personal
computers and devices of all
kinds working together in this
great way."

"Over the course of this
decade, most of that absolutely
will be achieved," Mr. Gates
said.

Princeton President Shirley
M. Tilghman, in her introduc
tion of Mr. Gates, also cited
the philanthropic work of the Bill
and Melinda Gates Foundation,
which supports health and educa
tion initiatives and outreach
to disadvantaged families.

"We welcome not only an
outstanding software architect
and entrepreneur, but also someone who, through actions
both locally and globally, is
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better place for everyone," Presi
dent Tilghman said.

Princeton senior Thomas
Volle, the Crystal Tiger Award
student coordinator, said in his
award presentation that Mr.
Gates reinvented the ways the
world accesses information and,
through his innovation and
leadership, improved the lives
of billions.

"Though you are widely re
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technology that altered every
aspect of our lives.

"Futuristic questions from the
students following his talk, Mr.
Gates weighed in on issues in
ccluding Internet security and
privacy, intellectual property
rights, computers and freedom
of speech, education, and tack
ling poverty, infrastructure and
health issues in developing
countries.

He also received an invita
tion to try his skills against
Princeton students in a round
of Halo, a video game manufac
tured by Microsoft, following
his lecture. And while Mr.
Gates politely declined the stu
dent's offer, he indicated he
might very well hold his own in
such a match-up.
Point: The evolution of a wall

By Aditi Elenwarapu
PRINCETONIAN CONTRIBUTOR

The advent of personal blogs, online Facebooks and other public forums has cultivated a fertile space for self-expression on the web. The University community — including those on Princeton's Facebook page — has found one such outlet at the Point Wall at point.princeton.edu, a public forum that elicits lighthearted banter, witty moral debates, and much that falls in between.

Point — a website designed to provide students with up-to-date information on local and campus events — has seen increasing numbers of hits since its November 2004 debut. Over 5,400 current students and members of the Class of 2005 have already accessed the site.

Given the site's popularity, USG Webmaster Ryan Walsh '06 formulated the idea for an open student forum, the Point Wall, last March.

Walsh wondered how students would make use of a captive "subway audience" of users who could not avoid reading Wall postings when browsing Point.

"I wanted to see what would happen if people had one location where their random thoughts were read by a lot of people," Walsh said.

Wall postings normally take on a lighthearted tone. Occasionally, however, students have initiated more serious discussions over religion and policy.

When Cody May '07 was offended by a Point poll regarding sex toys, he quickly voiced his discontent on the Wall, making numerous Biblical references.

"I was objecting to the contents of that particular Point poll, so the wall was the most immediate forum for the expression," May said in an e-mail.

Though Walsh said he has had to censor some postings that were trying to sell items, he has yet to censor any offensive comments. For his part, Associate Dean of Undergraduate Students Thomas Dunne does not monitor the Wall.

But for most students — even those who post about more serious issues — the Point Wall is all about fun. Aneesha Siddique '07, who often comments on the current political landscape, said the message board is a good way to pass the time.

"It is just something to do when you need a break from typing a paper," she said.
Gates: Today's students will drive the 'golden age' of technology

ERIC QUINONES

T
day's college students are poised to influence a "golden age" of technology that will change the way billions of people worldwide communicate, work and play, Microsoft Corp. founder Bill Gates told Princeton students Friday, Oct. 14.

Gates spoke to an audience of roughly 900 students in Richardson Auditorium as part of a college tour to share his views on new frontiers in technology. While at Princeton, Gates received the Crystal Tiger Award from students for his achievements in business and philanthropy. He also met with Princeton faculty members to discuss innovations in computer science education.

"It's really young people coming into this field, who look at things in a new way or are willing to innovate and drive the breakthroughs, who will be at the forefront of making this happen. The time frame right now is the golden age," said Gates, who serves as Microsoft's chairman and chief software architect.

"There are great dreams about what software can do, and the pace of the field will be determined by fresh young minds — people who have innovative ways of doing these things," he added.

Gates, who was of college age when he co-founded Microsoft with Paul Allen, said they envisioned developing software that would make it easier for people to use personal computers at work and at home, with a greater ability to connect with others around the world.

"Today we have a billion personal computers in use. We really won't have achieved that original vision that goes back 30 years ago until we have 6 billion personal computers and devices of all sorts working together in this great way," he said. "Over the course of this decade, most of that absolutely will be achieved."

Gates continued from page 1

During his address, Gates offered demonstrations of several new Microsoft technologies and provided an overview of the company's development efforts in areas such as Internet searching and automated language translation software.

Impact of technology

In a question-and-answer session with students, he commented on a broad range of subjects including education, copyright issues and civil liberties. He emphasized the importance of promoting education and tackling issues of poverty, infrastructure and health in developing countries and stressed the need to address the societal impact of technology advances.

"It's very important that this discussion about what technology is going to do be broadly known, so that it's not just the engineers deciding how we will apply these things," Gates said.

Following his address, senior Sarah Moore, a chemical engineering major, said, "I was really impressed with some of the new technology that Bill Gates presented. He was forward-thinking and brought up how he wanted to get technology out to everyone, not just to the privileged."

"The message that made me think, as a student in engineering, is how we can not just make technology, but improve technology that will help people in society as a whole," she added.

"We need to think about the problems he raised, such as world health and sanitation — not just the problems that are cool and fun — and how we are going to really help people," Maria Klawe, dean of the School of Engineering and Applied Science, added. "He really managed to convey how much there still is to happen with the impact of technology on society and how important software and computer science is going to be in terms of really changing how we work and how we live."

Crystal Tiger Award

In addition to his work with Microsoft, Gates established the Bill and Melinda Gates Foundation, which has committed billions of dollars to organizations working in global health and education. The foundation also established the Gates Millennium Scholars program, which provides scholarships to undergraduate and graduate students from minority backgrounds.

For these efforts, Gates was presented with the second Crystal Tiger Award, given by Princeton undergraduate students to an individual who has had a transformative impact on the world. Former U.S. Secretary of State Colin Powell received the inaugural award in February 2004.

"Through you are widely respected and hailed around the world, Mr. Gates, it is in particular our generation of students who identify with and admire you," senior Thomas Voute, the Crystal Tiger Award student coordinator, said in presenting the award. "Throughout the past two decades we have witnessed firsthand the major advances in technology that reshaped every aspect of our lives. Your success is not simply that of the innovator and businessman, but also leader in the global community."

In introducing Gates' address, President Tidghman said, "We welcome not only an outstanding software architect and entrepreneur, but also someone who, through actions both locally and globally, is striving to make the world a better place for everyone."

Earlier in the day, Gates met with faculty members from the Department of Computer Science, Klawe and Tidghman to learn about Princeton's efforts in developing new innovative opportunities for students interested in studying computer science and engineering. He was very engaged and really seemed to be very interested in what we were talking about."
U. plans to help fight FCC ruling

The American Council on Education plans to file an appeal challenging the decision and seeking a possible exemption for institutions of higher education, for which several university officials have announced their support. The university plans to support the ACE lawsuit based on the grounds that this mandate could potentially put many universities out of business. University spokesperson Cass Chitt '96 said, "University officials have expressed their concern for the potential financial strain this could bring."

The change in the 14-year-old law forced Internet providers, including universities, cities, and Internet communications companies, to provide access to law enforcement via wiretaps, according to the New York Times. Such an installation would require a significant overhaul of the University's IT services, DIT security officer Anthony Scutareno said. "It's going to cost a fortune." Scutareno said, pointing not only to the required equipment upgrades, but also to the increased staff that would be necessary to handle the new system.

"Our objection to this is that it would impose a large cost on higher education for a very small gain." - Mark Lieber, Crusade vice president

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The expenses incurred by colleges and universities could lead to increases in tuition. According to the law, schools must bear the financial burden of the technological upgrades, not the government. A front-page article in Sunday's New York Times cites a tuition increase of $400 at American schools as the most conservative estimate.

"Get ready to pay up more money for tuition at the end of the day, because it will rise significantly," Girardi said. "That's the crime."
RIAA sues two U. students for music piracy

By Tom Stern
PRINCETONIAN SENIOR WRITER

The Recording Industry Association of America (RIAA) has launched yet another round of litigation in its campaign to combat music piracy on college campuses. On Wednesday, it filed copyright infringement suits against 35 individual students allegedly engaging in illegal file-sharing, including two Princeton students. The latest round of suits involves 14 of the 17 colleges where students were targeted last month.

Known as “John Doe” lawsuits, the RIAA’s lawsuits refer to IP addresses rather than the names of the alleged violators. The two holders of the IP addresses in the suits have already been notified. University spokesperson Casi Chlett ‘07 said, “The RIAA has made it clear that they will be making suits throughout the country and we are not immune to that.”

The suits were filed in response to a subpoena issued last month by the RIAA, which was served on the University. The RIAA has asked the University to provide information on the identity of the students involved in the alleged violations.

The RIAA’s efforts to combat piracy and its aggressive legal tactics have been widely criticized by the entertainment industry. Critics argue that the RIAA’s approach to enforcing copyright law is too aggressive and that it is primarily motivated by its desire to suppress piracy.

The suits are part of a broader strategy by the RIAA to combat piracy and protect the music industry’s revenues. The RIAA has filed more than 100 lawsuits in recent years, targeting individual file sharers and ISPs.

The suits have been controversial, with many arguing that the RIAA’s approach is too aggressive and that it is primarily motivated by its desire to suppress piracy.

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ACADEMICS

Blackboard merger may yield benefits

By Mark Stefanski
PRINCETONIAN CONTRIBUTOR

The company that licenses the Blackboard course management system to Princeton expects regulatory approval of its acquisition of competitor WebCT by the end of the year.

Blackboard’s acquisition of competitor WebCT, announced Oct. 12, sparked a flurry of debate in the higher education information technology community, but it won’t have much of an effect on Blackboard services for over a year, University and Blackboard employees said.

“I would say that if there will be major changes, other than improvements and features that Blackboard already has planned, we won’t see them for a year or so,” said Dennis Hood, University manager of learning management systems. “[The acquisition] shouldn’t threaten anyone who’s afraid of changing services in the next year or two.”

“What people will see in the next year or two is more and improved features, but I think we would see them without this merger,” he added. Later on, Hood said, Blackboard will probably try to fuse its reputed easy-to-learn system with WebCT’s more complex, feature-rich system.

“For people who want to do more collaborative work in their teaching and research, I think [WebCT] facilitates that more easily,” he said. “It’s not a simple thing to learn how to do. I would say, for example, the learning curve for Blackboard is an hour as opposed to the full day to learn WebCT. I know that the WebCT folks say that WebCT is so much richer [in features].”

The acquisition’s true impact, Hood said, is the way it might encourage a bigger Blackboard to make its course management system interoperable with competing programs, particularly the open-source Sakai Collaboration and Learning Environment. If so, the University could borrow features from Sakai and integrate them into Blackboard.

Blackboard Public Relations Manager Melissa Chotiner also said a universal platform is emerging, likening the growing compatibility among course management systems to the current compatibility among word processing programs.

For now, Chotiner said, the acquisition will make Blackboard more attractive to universities. “We’ll have so many more resources to work with and more tools to bring products to market faster,” she said. “It will be easier and more effective for customers to collaborate down the road.”

But John Baker, president and CEO of Desire2Learn — a company that designs online learning systems — said he expects a turbulent acquisition for his company’s main competitor.

“I think the two companies are, in our experience, different in terms of culture, philosophy and their ways of building technology,” Baker said. “Merging those two companies together is going to present them with a lot of challenges. The key for us is that there is going to be lots of confusion in Blackboard and its client base.”
U. Channel begins ‘vodcasting’

Videos available for download through iTunes

By Jill Feffer
PRINCETONIAN CONTRIBUTOR

The University Channel expanded the Apple technology services it provides to subscribers Thursday by adding podcasts — shared videos to be watched using iTunes — to the podcasts, or downloadable sound files, it already offers.

Apple recently introduced vodcasting technology in conjunction with the video-enabled iPod as a way of sharing video files over iTunes. Subscribers are notified when podcasts and vodcasts are available directly on the website or for downloading onto a computer. Both options are free of charge.

Podcasts and vodcasts take advantage of “the Internet’s potential for distribution to a bigger audience for fantastic content not previously going anywhere,” University Channel Executive Director Donna Liu said. She added that the technology’s ability to contribute to democratic discussion in public and international affairs and promote this kind of discussion in the public sphere is a significant benefit for the Wilson School.

The Wilson School launched the University Channel this summer in an effort to grant widespread access to academic events for a broad audience. Liu said she first added podcasting because “commercial media doesn’t put out full-length presentations” of interesting lectures and speeches, using only short clips during news broadcasts instead.

While podcasts and vodcasts involve Apple technology, Liu explained that there is “not a specific relationship between Apple and the University.”

Participants register with Apple, but the media files are obtained directly from the University Channel website and can be accessed without an iPod.

Since the University Channel’s first podcast — computer science professor Ed Felten’s talk from the President’s Lecture Series in October 2004, entitled “Rip, Mix, Burn, Sue: Technology, Politics, and the Fight to Control Digital Media”— more than 80 podcasts and the first vodcast have been made available to the public on the website.

“In a world in which everything is increasingly privatized (Stanford has just put its lectures up on iTunes, but for a price), sharing the wealth both nationally and internationally is very consistent with the role Princeton aspires to play as a great university,” Wilson School Dean Anne-Marie Slaughter ’80 said in an e-mail.

Liu credited Slaughter and the Wilson School for supporting her initiative and the University’s Office of Information Technology for providing technical solutions.

 “[I am] pleased with having achieved a fair number of short-term goals” with the University Channel,” Liu said. “It’s not only iTunes, also community access TV, Internet protocol TV, and of course, standard webstreaming.”

Now, her plans for the burgeoning program include extending membership overseas, streamlining technical solutions and “simply getting the word out.”

Slaughter added that the University Channel is also looking for five charter members, “which will allow us to form a Board and then apply for further funding from foundations and other sources,” she said. “We expect to have those members in place within a month.”
Blue Gene, named for the genetics research for which it was initially designed, is made up of 2,048 processors per rack. It calculates problems almost 1,000 times faster than a typical desktop personal computer.

One of world's fastest supercomputers to aid Princeton researchers

by Cass Cluett - Posted November 10, 2005, 07:00 a.m.

IBM, University pair to bring 'Blue Gene' to campus

A unique partnership between Princeton scientists and information technology administrators has brought one of the world's fastest supercomputers to the University to spur advancements in research.

Working with IBM, the University's Office of Information Technology (OIT) collaborated with Princeton researchers to purchase and install a "Blue Gene" high-performance computer that will aid current and future research solving complex problems in areas including astrophysical sciences, engineering, chemistry and plasma physics. The University plans a ribbon cutting Nov. 22 to inaugurate the computer that was installed last month.

"We are excited about the possibilities for collaborative research among faculty that this extraordinary resource will allow," said Betty Leydon, Princeton's chief information officer and vice president for information technology. "Having OIT, the Princeton Institute for Computational Science and Engineering, the School of Engineering and Applied Science, and several individual faculty members contribute to the cost shows that we all recognize the value of working together to build the best possible IT infrastructure to support research at Princeton."

Princeton expects its new supercomputer to claim a spot in the top 100 of the world's highest performing computers on the "Top500 Supercomputer Sites" list that will be released by the computing industry next week.

Fewer than 10 other U.S. universities in the top 100 have supercomputers on their campuses not affiliated with federal agencies, according to the 2005 Top500 list compiled by computing labs at Germany's University of Mannheim, the University of Tennessee and the Office of Science in the U.S. Department of Energy.

"This supercomputer should enable research that will help Princeton build its reputation as a computational research center," said Maria Klawe, dean of Princeton's engineering school. "We will now have advanced resources for researchers who need them to process data for highly complex operations."

Curt Hillegas (right) of Princeton's Office of Information Technology and Frank Ingram of IBM Blue Gene Serviceability Development examine a node card from the new high-performance computer installed on campus. The Blue Gene, which is a little larger than a refrigerator, is one of the world's fastest supercomputers and is intended to support research solving complex problems.

The new supercomputer should also position the University to be a better funding target for science and research organizations attracted to institutions that can demonstrate the greatest computing efficiency, according to Curt Hillegas, manager of computational science and engineering support in OIT's academic services department.

"More of the funding can go directly to research because we have already pooled our resources to support the computing infrastructure needed for projects," said Hillegas, who has been leading the effort to provide centralized computing support to University researchers.

Blue Gene, named for the genetics research for which it was initially designed, is made up of 2,048 processors per rack. It calculates problems almost 1,000 times faster than a typical desktop personal computer and allows researchers to partition it to use part of its
capacity for less complex jobs or multiple tasks.

Astrophysics problems that involve modeling the universe, for example, or aerospace engineering computations to determine the forces that might act on the wing of a jet plane could occupy one part of the Blue Gene, while another part is modeling a chemical system that might require different processing capacity.

"The decision about what type of computer we would acquire was really done with the faculty taking the lead because they know what they need to model complex interacting forces," said Serge Goldstein, director of the academic services department in OIT. "This new computer will be available initially to the researchers who contributed funding as we get familiar with it, and then we'll make it available through an application process to the general campus community in a couple of months."

A little larger than a refrigerator and assembled and tested by engineers in IBM's Rochester, Minn. facility, the Blue Gene that administrators plan to call "Orangena" -- to incorporate aspects of its original name and one of Princeton's colors -- was installed for early testing by IBM engineers and consultants on Oct. 18 in the computing center at 87 Prospect Ave. on Princeton's campus.

The University had been working for three years to centralize computing support for researchers who typically have had to buy their own computers, and began working with IBM to bring the Blue Gene to campus last spring. Researchers selected IBM for the company's potential as a future partner in collaborative research, in addition to the features of its supercomputer.

"IBM Blue Gene has once again risen as the computational system of choice to tackle some of the most compelling, demanding problems facing scientists today," said Dave Turek, vice president of Deep Computing at IBM, the world's largest information technology company. "Princeton's important areas of study, such as astrophysical sciences, engineering, chemistry and plasma physics, are ideal applications for the world-record performance of the Blue Gene Solution."

While the Office of Information Technology paid for about half of the new Blue Gene in a unique collaboration, the Princeton Institute for Computational Science and Engineering, the School of Engineering and Applied Science and individual faculty members made significant contributions toward the purchase.

"My involvement began because I saw a use in my research for demanding computations in predicting structures for protein folding, computations in metabolic networks and other areas," Professor of Chemical Engineering Chris Floudas said.

Floudas is one of seven Princeton researchers who contributed personal grant funds to help buy the supercomputer. Academic administrators, such as Klawe of the engineering school, also supplied funds to support the research of their faculty.

William Tang, the chief scientist at the Princeton Plasma Physics Laboratory and a professor of astrophysical sciences, said he played a key role in selecting the Blue Gene because of the potential it will unleash for bringing scientific advancements about more quickly.

"Just because you have these super fast computers doesn't mean they're going to benefit society in any specific way, unless you're going to use them to accelerate the progress of scientific discovery," Tang said. "If you can accelerate the process of scientific discovery in a very cost effective way, everyone benefits."

Photo: John Jamieson

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Last update: November 9, 2005
An ‘Orangena’ vaults PU to elite supercomputer ranking

By David Campbell
Staff Writer

It doesn’t sound like a haunting voice like HAL, the murderous computer from “2001: A Space Odyssey,” but “Orangena,” recently installed at Princeton University, is one of the fastest supercomputers in the world.

Working with IBM, Princeton's Office of Information Technology collaborated with university researchers to purchase and install a “Blue Gene” high-performance computer — to be christened “Orangena,” which incorporates the Ivy League school's color into the name.

The computer will aid current and future research, solving complex problems in areas including astrophysical sciences, engineering, chemistry and plasma physics, the university said.

A little larger than a refrigerator and assembled and tested by engineers at IBM's labs in Raleigh, N.C., the Blue Gene was installed for early testing by IBM engineers and consultants last month in the university computing center at 87 Prospect Ave. Princeton plans a ribbon-cutting Nov. 22.

The university's new supercomputer is expected to claim a spot in the top 100 of the world's highest-performing computers on the “Top 500 Supercomputer Sites” list to be released by the computing industry next week.

Fewer than 10 other U.S. universities in the top 100 have supercomputers on their campuses not affiliated with federal agencies, according to the 2005 Top500 list, which is compiled by computing labs at Germany's University of Mannheim, the University of Tennessee, and the federal Department of Energy.

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Blue Gene, named for the genetics research for which it was originally designed, has 2,048 processors.

It calculates problems almost 1,000 times faster than a typical desktop personal computer and allows researchers to partition it to use part of its capacity for less complex jobs or multiple tasks.

On any given day, for example, “Orangena” could be preoccupied with an astrophysics problem having to do with modeling the universe, while at the same time employing an altogether different processing capacity to craft models for a chemical system.

The university worked for three years to centralize computing support for researchers, who typically have had to buy their own computers, and began its collaboration with IBM last spring to bring the Blue Gene to campus.

University spokesman Cass Clift said the price tag for these systems is about $2 million, but said the cost of the one at Princeton is still being finalized.

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Academic administrators, such as Maria Kioumourtzi, dean of Princeton's engineering school, also supplied funds to support the research of their faculty.

Serge Goldstein, director of the academic services department in OIT, said the new computer will be available initially to the researchers who contributed funding, and then will be made available to the campus community in coming months.
'Orangena' vaults Princeton University to elite supercomputer ranking

By: David Campbell, Staff Writer

IBM's 'Blue Gene' takes up residency at computer center

It doesn't talk in a haunting voice like HAL, the murder-prone computer from "2001: A Space Odyssey" — but "Orangena," recently installed at Princeton University, is one of the fastest supercomputers in the world.

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SCI-TECH
University purchases super-fast computer

Sanhita Sen
Princetonian Staff Writer

The University installed one of the 100 fastest computers in the world last month, becoming one of fewer than 10 universities in the world to own a supercomputer.

"Many fields of science and technology are increasingly dependent upon high-speed and high-volume computing power," President Tilghman said in an email. "This will be a tremendous tool for many of our colleagues."

Now running at 87 Prospect, the system requires five to 10 times less electrical and cooling work than the Beowulf computer clusters the University has used to conduct similar research in the past, said Curt Hillegas, manager of Computational Science and Engineering Support.

The supercomputer also offers a more efficient way for researchers to conduct research. Since the supercomputer's 2,048 processors interact and communicate more efficiently with each other than the processors in the clusters, it conducts calculations three times faster, allowing researchers to create models on a larger scale.

"As problems that are being addressed by research grow, [researchers] have found that one single computer isn't the most efficient way to do things," said Hillegas, who helped select and purchase the system. The supercomputer, one of IBM's family of Blue Gene supercomputers, is the "next step in the evolution of this idea."

Astrophysics professor William Tang noted that the system offers much more than speed.

"It is fast, but that is not such a big, dramatic part of it," Tang said. "What's interesting is that many of the applications, particularly the ones I'm involved in, scale very well."

In other words, the supercomputer allows researchers to work with technology that can connect to even larger processing units at IBM or other national laboratories. "It's like a bridge," Tang said.

Tang, who is also the chief scientist at the Princeton Plasma Physics Laboratory (PPPL), added that the system is especially helpful for fusion research.

"In the research here at the PPPL, we're involved in a very aggressive quest for harnessing fusion energy to address the energy needs of the world, which is very timely right now," he said. "On the simulation side, tools like the Blue Gene/L are very attractive as a platform for advancing science in this area."

Alan Gara, the Blue Gene's chief architect at IBM, also noted that the supercomputer is highly efficient for plasma computations.
"The importance of plasma simulations cannot be overstated now," Gara said. "Interactions with world-class researchers such as those at the PPPL are critical."

Though the PPPL is allowed to use the supercomputer, it is owned by the University, unlike most supercomputers in the world that are owned by or at least affiliated with national laboratories.

The purchase was funded by the Office of Information Technology, Princeton Institution for Computer Science and Engineering and the School of Engineering and Applied Science, as well as five faculty members from the astrophysics, chemistry, chemical engineering and mechanical and aerospace engineering departments, who contributed from personal research grants.

Initially, only those contributing faculty will have access to the supercomputer, but in a few months, it will be available to other researchers by application.

Tang, who is one of the contributing faculty members, noted that the list price for the supercomputer — which is in the millions — is higher than what the University paid for it.

"IBM gave us a very nice academic discount," he said.

Betty Leydon, vice president for information technology and chief information officer at the University, said in an email that the price is confidential, and that the purchase drew significant contributions from multiple sources.

"This shows that we recognize the value of working together to build the best possible IT infrastructure to support research at Princeton," Leydon said.

She added that this "extraordinarily rich research computing environment ... will facilitate collaborative research among faculty and open up new possibilities to researchers who, at this point, may not have thought about how they might use such a resource."

The supercomputer should hold a spot on the list of "Top 500 Supercomputer Sites" when the list is updated next Tuesday.
Biz Buzz: Princeton gets a new 5.7-teraflop toy

Friday, November 11, 2005

Orangena is all the rage at Princeton University.

We're not talking cold drinks. Think teraflops.

Professors pooled their grant money to help the university buy New Jersey's first IBM Blue Gene supercomputer, dubbed Orangena in a nod to the Ivy League school's colors. IBM created the Blue Gene line to unravel mysteries of human proteins. The world's most powerful supercomputer, and five of the top 10, are Blue Genes, according to Top500.org.

A bit larger than a refrigerator, Orangena comprises 2,048 PowerPC processors and can perform 5.7 trillion calculations per second, according to IBM. Prices start about $2 million.

The machine, which is equivalent to about 500 PCs and takes "lots of air conditioners and fans" to cool, may be used for aerospace engineering, population studies, protein research -- or even to model the universe, says Princeton spokesperson Cass Ciatt. "I think Einstein would have had a lot of fun trying to stump this supercomputer."

But the music industry can breathe easy: Students can't use this monster to download every song in the galaxy.

"It will only be accessible to researchers," says Serge Goldstein, director of academic services.

— Kevin Coughlin
Supercollaboration Yields Big Computing Cycles

Princeton University (NJ) researchers and the university’s Office of Information Technology are excited about the arrival of their new Blue Gene supercomputer from IBM.

“We will now have advanced resources for researchers that need them to process data for highly complex operations,” says Engineering School Dean Maria Klawe.

But it’s not just the engineering school that will benefit from the acquisition. A cross-campus consortium of scientists, researchers, and technicians pooled resources for the project, code-named “Orangena.”

CIO Betty Leydon comments on the collaboration: “Having OIT, the Princeton Institute for Computational Science and Engineering, the School of Engineering and Applied Science, and several individual faculty members all contribute to the cost shows that we all recognize the value of working together to build the best possible IT infrastructure to support research at Princeton.” The system is poised to tackle complex computations in areas such as astrophysics, engineering, chemistry, and plasma physics after a ribbon-cutting ceremony on November 22.

Pictured are Curt Hillegas, Manager of Computational Science and Engineering Support in the Academic Services Department of Princeton’s Office of Information Technology (at left), with Frank Ingram of IBM Blue Gene Serviceability Development.

Photo courtesy John Jameson, Princeton University 2005
PRINCETON BOROUGH - Getting close to one of the most powerful supercomputers in the world requires not only an ID card but also a fingerprint scan to reach Princeton University's machine room at 87 Prospect St.

The Blue Gene, a refrigerator-sized IBM supercomputer installed last month, is about 1,000 times faster than average computers.

It stands in a windowless, temperature-regulated, humidity-controlled machine room. A handful of professors contributed their own grant money to meet the Blue Gene's approximately $2 million price tag - and it will likely lose its princely status in three or four years, when something faster comes along.

"Ten years ago a supercomputer had the power of my laptop," said University of Tennessee professor Jack Dongarra, who helps compile the "Top500 Supercomputer Sites" list of the world's fastest supercomputers. "There's a lot of turnover."

Princeton's system will be called the Orangena, to incorporate one of the school's colors, according to a university statement.

"This supercomputer should enable research that will help Princeton build its reputation as a computational research center," Maria Klawe, dean of the university's engineering school, said in a statement.

Bill Tang, director of the Princeton Plasma Physics Laboratory, said the Orangena will help model the movement of charged particles, which will lead to a better understanding of how gases move in a nuclear fusion process.

Building a supercomputer that can handle complex formulas, like creating models of gases or the universe, usually involves linking dozens of individual computers together.

The Orangena is one rack of 2,048 processors. At the Lawrence Livermore National Laboratory in California, 84 racks put their Blue Gene/L machine at the head of last year's "Top500," Dongarra said. He said he wouldn't deny that Princeton's Orangena could be one of the 100 fastest machines on the 2005 list, to be released next week.

But the extra speed does not mean more durability, said Herb Schultz, marketing manager for the Blue Gene at IBM.

"If there's a fire or the sprinkler system goes off, it's like any other electronic device," Schultz said.

To protect the machine from hackers, any user needs to have a special user name and password. There are also extra fans, a backup power supply and a "service node," or a computer that handles security - so that the Orangena can be used solely for its jobs, Schultz said.

The supercomputer should get its first assignment next week, according to spokeswoman Cass Clawitt.

"We already have a fairly large user base waiting to get onto (Orangena)," said Curt Hillegas, who heads the group that will manage the system through the university's Office of Information Technology. About six people have user names already, he said.

Buying powerful machines may make the university an appealing donor target, Hillegas said, because "part of the analysis for deciding who gets funding is the capability of that university to handle technology."

Princeton has other supercomputers that made past "Top500" lists, but they have all since been outpaced, Hillegas said.

There are around 25 Blue Gene systems in the world, located in the United States, the Netherlands, Japan, France, England and Switzerland, Schultz said.

To upgrade the Orangena, Princeton could buy more racks of processors, he said, but added, "No matter how powerful the processor is, there's always another set of problems" to tackle. He mentioned mapping the world's streams or tracking global warming.

As for whether today's Blue Gene will be tomorrow's laptop, Schultz said, "That's not out of the question."
University installs one of world's 500 fastest computers

RESEARCH
Continued from page 1

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OIT to add IP privacy measures

Student computers' IP addresses will no longer be tied to NetIDs

By Folasade John
Princetonian Staff Writer

Students surfing the Internet on the University's Dormnet system will no longer be associated with their NetIDs, following a change in OIT policy announced this week.

This move, expected to take effect by fall, will increase privacy by preventing outsiders from tracking host names back to students' NetIDs. Such tracking allows website operators to gather personal information, including telephone numbers and dorm addresses.

IP addresses, which were previously traceable to NetIDs, will now be associated only with randomly generated pseudonyms, OIT Associate Chief Information Officer Steven Sather said.

The current system has been used for "over 10 years, before the web was invented," Sather said in an e-mail. "OIT believes this is the right time to make this change."

Though OIT has been looking for a solution to the issue for some time — it was raised at a CPUC meeting in April — graduate students Alex Halderman '03, Jeff Dwoskin and Harlan Yu created additional pressure with a petition that had collected 261 signatures as of Thursday evening.

Sather heard of the petition through a Dec. 13 Daily Princetonian article and quickly arranged a meeting with the three graduate students earlier this week. OIT was occupied with other issues over the summer, such as installing the wireless network in dorms, he said.

Halderman said the timing was fortunate, because OIT "had already come up with a plan to fix the problem, which coincided with what we thought."

Yu agreed that the solution seemed reasonable and was "greatly pleased" that OIT responded to the petition so quickly.

"The gears were in motion internally to change the host names," he said, but a little "pressure from students" helped speed up the process. He added that it was important for OIT to know that students are aware their privacy is being violated.

Until the change is implemented, OIT has pledged to educate the student body on ways to protect itself. The graduate students have also provided a number of suggestions on their website, princetonprivacy.org, on how to maintain anonymity online.

Tips on the website recommend accessing the Internet through the campus wireless network, which is safer than Dormnet, and connecting to the Princeton Virtual Private Network, which OIT's website describes as "a secure network connection layered on top of a public network, such as the Internet."

Though the new policy will make the network more private, OIT and others on campus will still be able to trace a host name back to a student's identity, and as the students' website notes, "the University may be forced to provide this information to outside parties when required by a court-issued subpoena."

After the change, students who want a simpler pseudonym will also be able to add another nickname if desired.


CAMPUS LIFE

"Can you hear me now?"
Verizon to add new tower

By Mike Shapiro
PRINCETONIAN STAFF WRITER

The days of leaning out windows and freezing in winter weather in search of better cell phone reception on campus might be numbered, at least for Verizon Wireless customers.

The company plans to install a system of antennae, known as a base station, on top of the New South building near the Dinky station to improve cellular phone reception throughout campus and surrounding community. Verizon is planning to begin installation after the holidays and finish by the end of January, said David Morrale, senior manager of Desktop Support and Support Services for OIT.

OIT, which has been working on the project for two years, “hopes that Verizon coverage will improve significantly on campus and in the surrounding community after the equipment is installed on New South,” said Steven Sather, T-Mobile base station manager for OIT.

Verizon has conducted a study to determine how the new system will improve coverage, Sather said. OIT is also designing a pilot to investigate other technologies to increase cell phone signal strength in buildings.

Prospects for improved service are favorable, given the success of a similar T-Mobile base station that was installed on the Old Graduate College.

Verizon Wireless will put a new tower on the roof of New South next month, giving Verizon customers better reception on campus.

CELL

Continued from page 1

done by Bruce Eisenstein, a telecommunications expert working for Princeton Township, found “a gap in coverage that will be significantly improved by the new site,” according to a letter on file at the Princeton Township Regional Planning Board Office.

According to the study, the planned base station will improve service for both the University and the community at large and “give Verizon coverage in the southwest part of the borough and township.”

Verizon is not the only cellular service looking to increase its coverage at the University. T-Mobile, Sprint and Cingular wireless are all planning to work with OIT to install equipment on top of Pine tower to augment their service on campus, said David Wirth, manager of Technical Operations at OIT.

According to documents on file at the Planning Board Office, the base station will be housed in a five-foot-tall fiberglass addition to the top of the New South building — a “stealth antenna” — that will not significantly alter the appearance of the building.

The University will not have to pay for hosting the base station, Wirth said.
dinner bell would ring and we'd run home to eat. Most families ate early so we often went back outside to play after dinner, during the months when it was light.

"My first 11 years were spent growing up on a farm in Clarksburg, Monmouth County, which was very rural back then — then we moved to Roosevelt," says Helen Steinberg of Plainsboro, who was born in December 1946 at Princeton Hospital. "During my first four years of school, the school house still had a cord to ring the bell to change classes and go to lunch.

"You learned how to amuse yourself, especially growing up on a farm," she continues. "And in Roosevelt, you went anywhere and your parents didn't worry. But in today's world, you have to know where your kids are — it isn't as safe."

The switch from radio to television was a powerful memory for many of the folks we spoke to.

Today's youth, raised in an era of humongous plasma screens, high-definition television, satellite and cable TV, might scoff at the days of three channels, rabbit ears and no remote control, but our boomers said it was a thrill to watch a fuzzy signal in black and white.

"My father was a gadget junkie and we were the first in our apartment building in Queens to have an RCA black-and-white, 13-inch console TV," says Cindy Feeley, an East Windsor resident who will turn 60 in October.

"Roy Rogers and Dale Evans were one of my favorites," says Plainsboro's Meryl Miller, who will turn 60 Jan. 30. "I would dress up as a cowgirl with my guns and holsters — I didn't become a violent person. I also loved Milton Berle, Lucy, Ed Sullivan and Playhouse 90."

"I liked Flash Gordon but my parents stopped me from watching because I was having nightmares," Ms. Steinberg says. "It was so bland compared to what kids watch today."

Other great improvements included comforts like air conditioning in cars ("My father was the first in the family to have air conditioning," recalls Susan Ring of Monroe) and more significant discoveries such as the polio vaccine.

"I remember standing in line in my junior high school nervously awaiting a sip of that magic liquid that Jonas Salk discovered," Ms. Feeley says.

Baby boomers at the leading edge of this generation are credited with pioneering the protest movement. They were starting to come of age when John F. Kennedy was President and became disillusioned after he was assassinated. At the same time, human rights issues came to the forefront and the Vietnam War escalated, a perfect storm for potential dissent.

However, the "radical stage" came later in life for the folks we spoke to — if at all.

Ms. Steinberg says she was raised to have ideas of her own, as long as they didn't differ too much from her parents' way of thinking.

"They taught me to have a mind of my own," she says. "They just thought I would think along the same lines. What they would call rebellion wasn't really rebellion."

"My rebellion during college (at Bucknell University) was mostly doing what I liked, instead of what I was supposed to do," Ms. Leydon says. "I grew my hair long, and wore a blue work shirt and dungarees most of the time."

Tucked away in Lewishurg, Pa., Bucknell wasn't a school known for protests, although Ms. Leydon says they certainly worried about the Vietnam War and the draft. Hanging out with anti-war protestors and hippies would come later.

After graduation in 1967, she found a crew of artists, musicians and other counter-culture types at loft parties in Greenwich Village — a bohemian respite from her job in Manhattan with IBM as a systems engineer.

"I was once at a loft party with Janis Joplin!" Ms. Leydon says.

Then, deciding she didn't want to be a part of corporate America, she moved to France, taking a job as an English teacher.

"I had long hair, wore bell-bottoms and spent a lot of time playing Celtic music on the violin with other musicians," Ms. Leydon says. "My parents wondered when I was going to grow up and come home."

Ms. Miller also waited until adulthood to rebel, marching for peace and women's rights in the late '60s and early '70s.

"(Earlier, my main focus was on boys, school and career," she says, adding that when the women's rights movement started to take hold, she was enthusiastically involved. In fact, she was a member of the nascent National Organization for Women. Perhaps early job interviews where she was asked about her family plans sparked her interest.

One noteworthy tale of rebellion comes from Michael Aucott, who works as a government scientist for the New Jersey Department of Environmental Protection in Trenton. He, his wife and three children went back to the land in 1978, "an outgrowth of a lot of ideas from the 60s," he says.

"Much of the euphoria of previous years had morphed into angst about the future," says Mr. Aucott, a Pennington resident. "It was starting to become clear that there were major environmental and social problems that weren't being solved."

Their hope was to make a statement about suburbia and capitalism by "getting back to the garden," as Joni Mitchell, another boomer, sang.

So Mr. Aucott and family moved to a small parcel of land in north-central Pennsylvania, where they developed a pick-your-own strawberries and cauliflower farm and heated the house with hand-cut wood.

He says life on the land was wonderful in some ways and very trying in others. For one thing, the family was quite a distance from the nearest road. He also discovered that upstate Pennsylvania winter storms could be stern and unforgiving.

Another lesson learned was that "farming isn't gardening," Mr. Aucott says. "Timing, machinery and marketing are critical. You don't get second chances."
One of the most powerful lessons was that being self-sufficient is unrealistic in this day and age, that we're all interdependent and sometimes survival depends on other people.

"We also realized that we could make a bigger contribution building our educations instead of trying to be homesteaders," he says. "We decided to leave the farm and go back and do the kinds of things we were trained in and were good at. I went back to school and got a master's, then a Ph.D in environmental science, and my wife studied midwifery."

Ms. Feeney was not able to take part in the social revolution of the '60s, instead following a fate many women of her generation would endure — falling into an unhappy marriage, too young.

"Most women married right out of high school, some following college graduation," she says. If they did pursue a career, many of Ms. Feeney's female peers got little respect.

"Almost every job I held in New York City in the '60s required a master's in making coffee and cheerfully serving it to your employer," she says. "When I remarried in 1981 and later gave birth to my son, I entered a new generation of the working mother, aided by the helpful husband."

"Shared chores and child care became the norm," Ms. Feeney continues. "Gloria Steinem had paved the way for a more enriched life, I felt as if I had broken free of the generation I had been born into."

The TIMESOF interviewees all seem to be scratching their heads, wondering where the years went and asking, "Just who is that person in the mirror getting senior citizen discounts?"

"People tell me I look like I'm in my 40s," Ms. Feeney says, adding that she's always been attentive to her health and skin. "This is a personal benefit, but a real deterrent when trying to get into the movies at a senior citizen's rate."

"I am very young looking and I actually feel great," Ms. Ring says. "I belong to a gym and do aerobics, hiking, Pilates, weights, walk the treadmill, just about anything. I've been doing a 50-mile bike ride for multiple sclerosis for the past 12 years. I tried the 170 but could only do 110. I was a passive child but sure made up for it as I got older."

"I'm aging as gracefully and sagely as possible," says Ms. Miller, a certified massage therapist. "My body won't do what it used to, but I'm happy to be as flexible as I am and am still committed to my well-being via physical activity, good nutrition and a healthy lifestyle."

"I do give myself a break, though," she continues. "I don't have to be the way I expect myself to be. I am more lenient and accepting of who I am."
March 1, 2006, The Daily Princetonian

E-mail puts profs @ students' fingertips

By A.J. McAlpin
PRINCETONIAN STAFF WRITER

I just found out my best friend’s dad is going to be in Princeton for an hour this afternoon,” Sarah Peteraf ’09 recently wrote in an e-mail to her Spanish lecturer, Holly Brown. “I know this isn’t really a legitimate excuse for missing class, but I thought I should let you know why I won’t be there.”

A decade ago, a message of this type would probably not have reached a professor. Either the student would have skipped the class without notifying the professor or would have felt compelled to attend class anyway.

As e-mail use has risen, though, the social barrier between students and professors has disappeared. Under the veil of e-mail, students are less shy about approaching their professors or telling them personal details about their lives.

Though this informal communication can be a nuisance for professors, it also has its advantages. At a university that prides itself on its low student-to-faculty ratio, e-mail makes it easier for students to contact professors.

“E-mails, a great way to break that initial ice,” Maryam Khan ’08 said. “Once you start interacting with [professors], you think there’s always potential for a great relationship on an intellectual and personal level.”

Alec Dun, a history lecturer, said he is in favor of e-mails because they enhance his relationships with students. He cautions students, though, to read over e-mails before sending them.

“Firing off an e-mail is a dangerous move for anybody,” Dun said.

Alissa Dubnicki ’09 said she has a tendency to approach e-mail casually.

“I proofread once, but I don’t spend that much time on them,” she said. “I’m not really intimidated by my professors, but I guess if I were more so, I would spend more time on it.”

Conventions surrounding e-mail are more casual than other forms of communication. English professor John Fleming GS ’87 noted, leading students to make typographical and grammatical errors.

“Now and again you get a really annoying e-mail that is the product of thoughtlessness and discourtesy, but the same sort of thing happens in ordinary speech,” Fleming said.

One of professors’ pet peeves is receiving an e-mail asking for lecture notes when the student did not attend class.

“From the student’s point of view, what the student is doing is legal. I’m showing you that I didn’t come to class. I’m sorry. I’m showing you that I’m interested,” Fleming said.

“He or she is not thinking, ‘Oh wait a minute, what I’m ask-

Technology makes professors seem accessible 24 hours a day

ing this person to do is give another lecture’,” he said.

At Princeton, though, informality does not appear to be a big problem. Students interviewed said that they try to be respectful of their professors and e-mail mainly academic or administrative questions.

They also treat e-mailing a professor of a big lecture differently than e-mailing a preceptor or a professor of a small seminar-style class. Peteraf, who skipped class to meet her frier’s dad, said this factor influenced her decision to e-mail her Spanish professor.

“It was for a language class, which is smaller and more intimate,” she said. “We call our professor by her first name so things are less formal. I think it’s more responsible to explain the reason I was skipping class than to just not show up.”

Several professors encourage their students to e-mail them and try to be as available as possible. Khan said that several of her professors have even given her their home phone numbers.

English professor Jeff Nunokawa said he is a huge advocate of e-mail. “Short of taking an advertisement out in the ‘Prince,’ I have done everything in my powers to encourage such communication,” he said.

Professors now appear to be available 24 hours a day, seven days a week through cyber space. E-mail has created a sense of immediacy and students sometimes complain if their professors do not get back to them right away.

“I decided a catastrophe had taken place when a professor I correspond with very frequently took more than 24 hours to write back,” Khan said. “And even that was long. I was more used to two or three hours at most.”

Just because professors can be contacted does not mean they feel the need to respond right away.

“I answer it if I want to answer it or if I think it needs answering,” Fleming said.

Nunokawa said that the around-the-clock nature of e-mail opens up new possibilities for intellectual debate.

“I look at the times that I receive e-mails, and I think, wow, this is really great,” Nunokawa said. “We have a medium now that allows for people to send out their thoughts when they are ready to send them out, which may or may not be during the period of the precept or office hours, but rather at 3 a.m. on Wednesday, or 11 p.m. on Saturday.”
OTT looks to add Internet television

By Kate Carroll
PRINCETONIAN STAFF WRITER

Students may soon be able to watch real time episodes of their favorite television shows for free on the University network without even leaving their computers.

The Office of Information Technology (OTT), in collaboration with Video Furnace, is working to complement the University's current analog television system with Internet TV.

If the system receives support and financial backing, students would have access to certain movies and a subset of live TV channels selected by the USG.

The Undergraduate Life Committee (ULC), members of the USG and David Hopkins, managing director of the New Media Centre at OTT, will meet today to discuss the possible implementation of the system.

"The project is being run by the Undergraduate Life Committee," Rob Biederman '08, vice president of the USG, said. "We are having a big test at 4:30 today to see what the members of the Undergraduate Life Committee think of the service and see if we move forward with it from a technical standpoint.

After the presentation to members of the USG, ULC and interested students, the ULC will make a recommendation to Vice President for Campus Life Janet Dickerson "about whether they think it should be adopted," Undergraduate Life Chair Caroline Chopko '07 said.

OTT selected a small sample of students three months ago to test the product, and activated the sample system in select dorms for a limited period of time.

The University decided to examine new media possibilities because of students' increased use of computers and the technological developments of companies like Video Furnace.

"Everyone is doing a lot of stuff with video over the Internet so with that happening, we are just seeing what are the next steps and possibilities," Hopkins said. "This is just looking to the future to see what other products can do."

Art Flamholz '87, member of the Computer Science Undergraduate Council, tested out the pilot application.

"It's real time video. The quality is decent ... and it was nice to have it on your computer," he said.

Flamhozlz said that he wondered whether the benefits would justify the costs, though, assuming that the system will require substantial funding.

"I don't know if it's monetarily worth it for the University, but it is definitely monetarily worth it for students," Flamholz said.

One of the advantages of the system, he said, is that it could decrease the need for illegal file-sharing.

"It will probably make file-sharing less likely because people don't need to download TV shows," Flamholz said. "If I could watch 'Family Guy' on Sunday nights instead of downloading it on Monday mornings, I would do it."

USG considers Internet HDTV

VIDEO
Continued from page 1

...
ACADEMICS

Librarians answer questions online

IM service allows students to get help from dorms

By Caroline Brody
PRINCETONIAN CONTRIBUTOR

The library reference desk may now be going the way of the card catalogue, as University librarians are increasingly taking their expertise online.

The University recently announced a service that allows students, faculty and staff to chat with a reference librarian from the comfort of their rooms. Any member of the University community who has AOL Instant Messenger, Yahoo Messenger, MSN Messenger or ICQ can chat live with a librarian under the screenname "libchatpal."

One online reference librarian said that few people have used the service, but that it can be a valuable resource for students who need help with assignments.

"They can ask about citing sources, for help finding books and journals and even help getting started on a research paper," libchatpal said in an instant message. "Helping with research can get a bit complicated and then we might arrange an appointment when we could meet with the student."

Initially, there were some concerns about whether students would take the service seriously. The librarian said, however, that there haven't been any pranks.

"When someone first contacts us, we usually ask for their name and Princeton ID, so we can at least know we are dealing with a Princeton student," libchatpal said.

The service also allows librarians to answer questions even when they are away from the reference desk. Librarian Susan White said she often answers reference questions from home.

"I was monitoring the electronic reference service over Christmas and New Year's, and people still ask questions," White said.

Should the service experience heavy use, with multiple people asking a question... See LIBRARY page 3

IM service available during spring break

LIBRARY
Continued from page 1

at a time, a "first-come-first-served" policy will be in place. Students are also encouraged to e-mail, phone or visit the reference desk in person.

Audrey Wright, a reference librarian, said the library is keeping logs of all its online conversations.

"The logs are for internal library use only, and if we excerpt parts of a transaction for training purposes, we do not include any identifying information about the patron," Wright said in an e-mail.

"We plan to keep them only for a short time, again, just for analysis/improvement of the service, and then delete them permanently."

The service is available from 3 p.m. to 11 p.m. Monday through Wednesday, 3 p.m. to 7 p.m. on Thursdays and 7 p.m. to 11 p.m. on Sundays.
Name: Curtis Hillegas.

Position: Manager of computational science and engineering support in the academic services department of the Office of Information Technology. Supervising two staff members who assist faculty members, students and research staff in using computational resources for their research. Managing the supercomputers in the machine room at 87 Prospect St. and high-performance computers owned by faculty members.

Quote: “Having been a graduate student in the chemistry department at Princeton, I saw the need for support for computational work in the sciences and engineering. I like being able to provide computer support to faculty members, students and staff so they can focus on science and engineering.”

Other interests: Singing in the Princeton United Methodist Church choir. Rock climbing. Skiing, swimming and playing tennis with his wife, Hope, and their kids, 8-year-old Fritz and 6-year-old Logan.
ACADEMICS

U. opts not to 'Turnitin'

By Julia Ostellone
PRINCETONIAN STAFF WRITER

As jobs and graduate school admission become increasingly competitive prospects, campuses nationwide are confronting a rising tide of cheating among undergraduates.

A study released last year by Duke University's Center for Academic Integrity revealed that 70 percent of college students admit to some form of cheating, while a widely-cited survey by Who's Who Among American High School Students determined that 80 percent of college-bound students cheat.

To tackle this issue, universities have turned to anti-plagiarism software. More than 5,000 institutions in 50 countries, for example, use software provided by the online business Turnitin.com.

"Plagiarism is the capital crime in academics," Turnitin founder John Barrie said. "There's no reason to believe that Princeton is a bastion of ethics."

But Princeton, along with Harvard, Yale and Stanford, declines to use the product.

"We are actively discussing ways of assisting faculty in detecting plagiarism, and want to do so in a way that is consistent with the University's philosophy and process regarding academic integrity," Associate Dean of Undergraduate Students Hilary Herbold, a member of the Committee on Discipline, said in an e-mail.

But Turnitin, which requires every paper to be added to a database, is not a "practice ... with which the University would be comfortable," Herbold said.

With the University's vaunted Honor Code in place, many professors and students contend that cheating is not widespread. "My overall impression is that plagiarism, and cheating more generally, is much less prevalent here than at other schools," Robert Vanderbei, chair of the Department of Operations Research and Financial Engineering, said, "The Honor Code seems to be taken quite seriously."

An informal survey of department chairs revealed that there is not a large presence of anti-plagiarism software on campus. Some have not even heard of Turnitin and claim that the original research and problem-solving involved in their assignments presents an obstacle to a students' copying work verbatim.

At least one case, however,

(continued on next page)
Profs opt not to use anti-cheating software

CHEATING

Continued from page 1

is using software to ensure that students' work is their own.

In an e-mail sent to students in MOL 300 on March 26, professor Allison Gammie reminded students about the importance of upholding the Honor Code and submitting an original lab report. Students must submit electronic versions of their reports so that they can be checked against others' in the class.

The policy would serve to "encourage everyone that their hard work is not being borrowed by another person," Gammie said in the e-mail.

This is her first time using the software program, Gammie said in an interview, and she does not know how successful it will be.

'Honor' not enough?

Barrie argued that without using anti-cheating software, Princeton risks producing students who don't know right from wrong.

"The disturbing thing," Barrie said, "is that Princeton is producing our society's future leaders and the last thing anyone wants is a society full of Enron executives who can't think critically and produce scandals in our society."

By itself, Barrie said, honor systems are not reliable ways to avert plagiarism. In the Duke study, campuses with honor systems had slightly fewer cases of plagiarism, but the numbers remained high.

"It's a shame that schools like Princeton aren't taking the lead because they're too concerned about what they are going to find," Barrie said. "They are the top schools that would need to use it because as the prestige of the institution increases so does the amount of cheating."

Turnitin, created in 1996, allows instructors to submit papers to be scanned against other students' papers, Internet websites and academic journals. Phrases with more than eight words copied would be highlighted in red.

A question of trust

Some argue that programs like Turnitin place undue distrust on students.

Mount Saint Vincent University in Nova Scotia recently cancelled its Turnitin accounts after students protested against this very issue.

Chris Lloyd '96, chairman of the Honor Committee, said the implementation of anti-plagiarizing software at Princeton would not violate students' rights.

"We don't have an Honor Code in which professors trust students blindly," Lloyd said. "Professors trust students to proctor each other. If professors don't have oversight over what a student is doing in their room, it seems a reasonable means to see if work is a student's own."  

USG president Alex Lenahan '07 agreed, saying the only problem with Turnitin is that students might not want their papers available on a computer database. Otherwise, "I don't think there's any problem with teachers checking the papers against other papers on the system," he said.

In the end, it is up to the students to be honest about their work.

"I personally wouldn't mind [anti-cheating software] because plagiarizing is illegal, and none of us should do it," Blake Martin '07 said in an e-mail. "We shouldn't have anything to hide."
Staff retirements

Effective Jan. 1: in information technology, storeroom attendant Salvatore Amico, after 20 years; in computer science, office support staff member Sandra Barbu, after 20 years; in the plasma physics lab, electrical technician Lawrence Corl, after 44 years; in population research, office support staff member Carol Dyer, after 13 years; in information technology, programmer Barbara Eisenhut, after 27 years; in the plasma physics lab, technical assistant Otto Griesbach, after 35 years; in dining services, cook Minnie Hicks, after 45 years; in information technology, executive assistant Frances Johnson, after 37 years; in the dean of the college office, administrative assistant Lee Nolan, after 40 years; in the plasma physics lab, principal research physicist Wnochull Park, after 27 years; in information technology, office support staff member Ruth Prigge, after 31 years; in information technology, information technology architecture director Lee Varian, after 42 years; in information technology, lead Unix systems administrator Melinda Varian, after 35 years; in African-American studies, program manager Jean Washington, after 11 years.

Effective Feb. 1: in the plasma physics lab, head of travel and relocation services Sallie Meade, after 30 years; in information technology, senior programmer Thomas Rothenbach, after 18 years.

Effective March 1: in loans and receivables, manager of parent loans Robert Bonser, after 31 years; in health services, nurse practitioner Carolyn Torre, after 10 years; in physics, senior technical support staff member Laszlo Varga, after 37 years.
Betty Leydon, Princeton’s vice president for information technology and chief information officer, and Susan Taylor, director of the University Art Museum, were among 16 women from local businesses, organizations and educational institutions honored at the annual YWCA Princeton’s Tribute to Women awards dinner March 8.

The program was established by the YWCA to honor women who have made significant contributions to their professions and community in executive, entrepreneurial, professional, educational and elected roles. The honorees were judged on criteria that took into account academic achievement, professional responsibility, community service, demonstrated leadership and mentoring of others.

Leydon was cited for leading the development of a set of core values to foster greater professionalism, integrity and respect for diversity in the Office of Information Technology as well as in the local and national organizations with which she volunteers.

Taylor was recognized for initiatives she has launched to elevate the level of student, faculty and public involvement in the museum, including increased opportunities for interdisciplinary interactions among faculty and students and multicultural activities that have strengthened ties to the community.
tribute to women 2006

An Outstanding Celebration!

Held during National Women’s History Month, the presentation highlighted achievements of the following honorees, who were nominated by managers, colleagues, and peers in the workplace and the community:

Chris Andrilis
Robert Wood Johnson
University Hospital Hamilton

Cathy Frank-White
Hopewell Valley
Community Bank

Pamela Garbini
Bovis Lend Lease

Michele Kennedy
Covance Inc.

Betty Leydon
Princeton University

Anna Lustenberg
Verizon

Amy Mansue
Children’s Specialized Hospital

Vicki Meisel
University Medical Center at Princeton

Carol Norris
Princeton HealthCare System

Bonnie Parker
HiTOPS, Inc.

Lori Rabon
Nassau Inn

Sandra Persichetti Rothe
Princeton Community Housing

Rev. Dr. Katharine Doob Sakenfeld
Princeton Theological Seminary

Susan Taylor
Princeton University Art Museum

Stephanie Wolcott
Tyco International (US) Inc.

Jeri Bogan Ziellinski
Educational Testing Service

Chair of the event was Doreen T. Miri, principal of Jaguar Group, LLC, in Princeton.

Corporate Sponsors for the Evening:

$10,000 Leaders
Children’s Specialized Hospital
Educational Testing Service
Merrill Lynch

$5,000 Benefactors
Bristol-Myers Squibb Company
Covance, Inc.
Princeton HealthCare System
Tyco International
Verizon

$3,000 Associates
Bovis Lend Lease, Inc.
Bracco Diagnostics Inc.
NRG Energy, Inc.
Palmer Square Management LLC
PSE&G

$2,000 Patrons
Commerce Bank
Wachovia
Wired for Scholarship

Learning and discovery are ancient pursuits, assisted over the centuries by innovations ranging from the sextant to moveable type. Today, information technology has become indispensable to scholarship, whether the endeavor involves mastering a foreign language or understanding the cosmos. At Princeton, students and faculty conduct their work using tech-tools at the cutting edge of computing capabilities. They are only supported by Princeton’s Office of Information Technology, through its Academic Services group and other units, and technology experts at the Princeton libraries. On this page: a sampling of the technological wizardry at work on Princeton’s wired campus.

RESEARCH COMPUTING

The “Orangenena” computer—built by IBM and about 1,000 times faster than a typical desktop computer—arrived in October, giving Princeton one of the world’s 100 fastest supercomputers. (Its name is the Tiger adaptation of IBM’s Blue Gene computer—“blue” for the company’s “Big Blue” nickname; "gene" for the genetics research for which it was originally constructed.) Composed of 2,684 processors, it is preparing to help chemists researchers analyze complex chemical reactions and is already in use by astronomers trying to understand the evolution of stars. Earlier this year, Orangenena got some supercomputer company, with the arrival of Della, named for its creator, Dell Inc.

GIS MAPPING

"Geographic Information System" technology, better known as GIS, aids in the examination of everything from archaeological dig sites to the movements of baboon populations. One project enabled a postdoctoral student in the Office of Population Research to factor soils into her analysis of malaria exposure in Brazil. A historian turned to GIS technology to help him chart land use changes in Namibia and Angola. And a digital movie illustrating flooding in New Orleans from Hurricane Katrina has been used by students and researchers in geosciences, architecture, and environmental engineering.

MULTIMEDIA

With the help of specialists, faculty members can set up Web sites and other instructional tools. One describes an archaeological site at Bida in Sierra, where Professor of Art and Archaeology Thomas E. Leisten leads an ongoing excavation. Learning tools may also be built into presentations. Art history students, for example, may test their memories with a “quiz” feature that works like an electronic flash card: students view the image of a piece of artwork without identifying information, then click on a “show label” to see if they’ve correctly remembered the artist, name of the work, and other essentials.

LIBRARY TOOLS

Princeton’s libraries offer such resources as electronic reserves, wireless connectivity, and online journals and databases that number in the tens of thousands. (The Peter B. Lewis Library, now under construction, will be one of the world’s most technologically advanced libraries for researchers across scientific disciplines.) Librarians have digitized an assortment of images and texts, including photographs of...
THE TECHNOCRAT

I'm a computer scientist, not your tech support

By Avi Flamholz
Princetonian Columnist

You know those really awkward introductions you sometimes have on campus? The ones where you meet someone new, a friend of a friend maybe, and you need to make conversation without any common ground?

You don’t know the person at all (let’s call her Georgina), don’t know what her interests are and you have no idea what she does with her time. Maybe I’m more socially awkward than the rest of you (OK, I definitely am), but for me, these introductions usually go like this:

Georgina: Hi, I’m Georgina!

Me: Hello, I’m Avi. Nice to meet you.

I might, if I’m feeling particularly social, shake Georgina’s hand. I don’t usually feel that way, so it probably won’t happen. After the introduction, we might exchange unpleasantries about classes and how much work we have. I might even make a sarcastic comment or caustic joke. Regardless of the conversation, however, the following question inevitably pops up.

Georgina: So what’s your major?

Me: I’m a computer science major. What’s yours?

Georgina: Oh my God! You can fix my email!

It’s usually email. Sometimes it’s Microsoft Office. Once in a while it’s something more random like people having spilled rum all over their keyboards. No matter what Georgina or anyone else wants me to fix, my feelings are the same. No! I don’t want to fix your computer. I probably don’t even know how. My computer is broken now too. I sent the thing to Apple.

The Office of Information Technology (OIT) pays some moderately knowledgeable students to sit in a room all day — 24 hours a day, most days a week, in fact — and answer your computer questions. That’s their job.

If your email doesn’t work, call the help desk (8-HELP). If you can’t figure out how to write Greek, Russian, Hebrew or Slovenian in Microsoft Word, call the help desk. If your USB drive won’t load, then (sing it with me!), call the help desk.

If you’re just too lazy to pick up the phone, you can also try emailing your Residential Computing Consultant. The RCCs are paid to fix your email, help you print things and get rid of those thousands of viruses and spyware programs you accidentally downloaded.
There are a couple of RCCs in each residential college and a few more for the upperclassmen. There are even three RCCs for graduate students. You can find out who they are and where they live at www.princeton.edu/rcc. You might be surprised to find that I am not on that list. That's not a mistake — I'm not your RCC.

Now if you have a real problem with your computer, OIT pays some really knowledgeable people (not students) to sit in a room all day and help you. The OIT Solutions Center is on the 100-level of Frist Campus Center. Contrary to popular opinion, the Solutions Center is not a dungeon in which scary nerd demons live. Actually, it's a place where nice computer technicians work to help you get your computer working again. And, no, I don't work there either.

Sometimes, if I am feeling particularly prone to flights of fancy, I imagine what might happen if Georgina cared enough to keep up the conversation. Maybe she'd ask what kind of computer science major doesn't know how to fix her computer. After all, isn't that what computer science is all about?

Well, I just spent a week scraping the course catalog for interesting classes to take next semester. While I still have no idea what I'm going to take, I did learn something from all my effort. There is actually no COS class called "Fixing Microsoft Windows and Related Problems." There's not even a class called "Fixing People's Email." Shocking, I know.

Why doesn't the computer science department offer classes like those I just mentioned? Because products and tools like Microsoft Windows, email and web browsers are results of computer science research, not central issues in the field. So what is computer science? It's not the easiest thing to pin down, but I'll take a shot. Computer science is the discipline of figuring out what we can make a computer do for us and how we can make a computer do it fast.

So who cares if computers can do new tricks? Don't they already do plenty of stuff plenty fast? They really don't. Every year our computers get faster and our hard drives get larger. Along with that expansion, people want to solve bigger scientific problems, take bigger pictures, store music and video at higher quality, and play more awesome video games. Every one of those advances takes serious computer science research.

There was a time when math was considered the lingua franca of the sciences. To quote computer science professor Bernard Chazelle, "science now has two Esperantos, math and computer science." Computer science is a major enabler of the most exciting science research going on today. Computers allow biologists, physicists and chemists to collect more data than they might ever analyze on their own. Computer science gives them the tools they need to let the computer help in the analysis.

Computer science is about fixing your computer, but only peripherally. Asking a computer science major to fix your computer is like asking a premed to prescribe you medicine or asking a history major what he did last night. They might know the answer, but it might also be a pretty bad idea. So if you ever meet me on campus please, please, keep that in mind. And take a computer science class. They're damn good.
What Went Wrong with AllLearn?

Three elite universities have quietly folded their joint online venture.

*By Lisa Jokivirta*

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Oxford, Yale and Stanford closed their joint not-for-profit online venture, AllLearn (Alliance for Lifelong Learning) citing insufficient enrollments and funding as the primary reasons. AllLearn was established in 2001 at the peak of the dot-com boom to offer online non-credit courses in general interest subject areas. The initial audience was the alumni of the three institutions, but as of the autumn semester 2002, provision was opened to the general public. After almost five years in operation, the three universities have released a joint statement concluding that "the cost of offering top-quality enrichment courses at affordable prices was not sustainable over time." Following a series of collapsed e-university ventures from U.S. universities (e.g. NYU Online, Fathorn, Virtual Temple, and University of Maryland University College Online), AllLearn is another major product of the dot-com boom to fold.

AllLearn, an enterprise based in New York state, released a press statement in March 2006 claiming that "the cost of offering top-quality enrichment courses at affordable prices was not sustainable over time." AllLearn was launched to offer non-credit courses in general interest subject areas. The online venture was initially established as the Alliance for Lifelong Learning with alumni as the target audience, but in the autumn of 2002, the online venture adopted its current name in an effort to improve brand visibility and opened its provision to the general public. Provision focused on general interest courses rather than conventional higher education qualifications, primarily in humanities and social sciences. The venture's website claimed to offer the full range of academic subjects from "archaeology to zoology," with sample courses including "The History of Spies," "Understanding Beethoven" and "Poets of the First World War." Course content was developed by faculty members of the three universities, and free public access was made available to a unique online library of some 12,000 academic websites. According to the press release, the three universities will continue to independently offer online continuing learning courses, with "[lessons from the AllLearn experience] now integrated into the universities' teachings, where they will continue to benefit students and faculty for years to come."

A Promising Start

Starting small and focusing on a more receptive alumni market, AllLearn exhibited several important characteristics as a potentially successful online venture. Over the past five years, AllLearn offered 110 online courses to more than 10,000 students from 70 countries. The median age of learners was around 47. The business model was based on a flexible approach to delivery and technology. AllLearn offered shorter duration courses lasting from five to 10 weeks. In order to ensure access to students with a slow internet connection, AllLearn provided the option of substituting high-bandwidth features such as rich media.

A range of delivery modes (e.g. CD-ROM) were made available, although the internet was the central medium of instruction. The AllLearn brand was backed by its association with three elite universities and gained visibility through extensive marketing initiatives such as advertising in specialized and general interest magazines, pre-established links with university networks, etc. According to former Director of Marketing Nancy D. Kelly, what set AllLearn apart from other online ventures was also the direct involvement and support of the partner universities. Top-level professors and subject-area experts from all three institutions were active in course content creation. AllLearn courses were also more cost-effective than the online continuous study program offered independently by the three universities, although there was a rise in costs over the five-year period.

From the outset, there were signs that AllLearn's enrollment targets were not being met. Princeton (N.J.) had initially been an institutional partner in the venture, but backed down on plans within a few months following an initial intake of 600 students. According to Betty B. Leydon, Princeton's vice president for Information Technology, "[AllLearn was launched] at a time when there was a belief that online education was going to be a very important vehicle for distributing learning. Because of the economic situation today, that hasn't turned out to be the case—at least not yet." Some argue that AllLearn's decision to expand provision to the general public was testament to a lack of interest among the alumni market, although the company insists that public access had always formed part of the business plan. News coverage suggests that AllLearn continuously stepped up marketing initiatives to reach out to a wider audience, including advertising to alumni from other universities, targeting business and government employees, and affiliating with high-profile companies.
In March 2005, AllLearn announced plans to expand its global pool of potential learners by offering courses to high school students. The pre-university component of the program was launched in Summer 2005 with a course entitled "Mastering the Essay," although no details on initial intake are forthcoming. AllLearn ceased its operations in December 2005, and is in the process of making its dissolution official.

What Went Wrong?

Unlike many other international online learning providers (e.g. Universitas 21 Global and Global University Alliance), AllLearn was an explicitly not-for-profit venture with no significant commercial partners or private investment. Very few financial details have been disclosed, but AllLearn is reported to have been backed by $12 million U.S. dollars for start-up funding and “operated on a budget that is much smaller than many other online education ventures.” Tuition fees were initially set at a standard rate of $195 for alumni and $250 for the general public, plus variable “material fees” ranging from $11.95 to $49.95.

Courses are reported to have cost between $10,000-$150,000 to produce—which based on tuition income alone would have required between 40 and 600 enrollments per course to break even. By 2004-05, tuition costs had risen significantly and varied by course, but examples include $975 plus $83 in materials’ fees for an eight-week “Travel and Adventure Writing” course or $995 (up from $249 in 2002-03) for a 10-week course on “Encountering Homer’s Odyssey.” By June 2005, AllLearn had incurred a deficit of $783,410, with a revenue of $2.5 million and expenses totaling $3.28 million. The project’s founders appear to have underestimated the costs of designing online courses and overestimated the number of students willing to pay tuition costs. Lack of interest, rather than lack of status or brand visibility, has been cited as the primary reason behind AllLearn’s failure to meet enrollment targets.

Some argue that AllLearn’s demise can be in large part attributed to its non-credit course offerings. Many who enroll in online courses are vying for jobs in a competitive market. They are seeking university qualifications, particularly from “elite universities,” such as those involved in the venture. AllLearn was backed by the prestige of its partner institutions, but the company might have been hard-pressed to “sell” the value of the non-credit courses rather than a degree with the “elite university” seal. The Global Education Network, a U.S.-based for-profit online provider, has seen some success in offering non-credit courses partly developed by college professors, but a significant part of its clientele is comprised of high school students. Established and wholly-owned by Cornell University (N.Y.), the for-profit eCornell operates a wide range of non-credit, professionally focused courses offered by “any top-20 university in the United States,” and has relied on close links with high-profile corporations to attract enrollments.

AllLearn attempted to tap into both the pre-university and business markets, but with limited success. As "edutainment," online learning still finds it difficult to compete with television for consistency and familiarity. Evidence suggests that those enrolled in continuing learning programs want to watch television-quality broadcasts online, and might find the more cost-efficient audio-taped lectures generally used by online providers less exciting and engaging. Institutions offering non-credit courses must generally charge lower tuition fees than providers operating credit courses leading up to a qualification, and the shorter duration of courses compared to degree program suggests less tuition revenue. AllLearn’s closing suggests that the "general interest"market for online provision remains unproven, although this may change over time as the educational value of broadband is further explored.

Not-for-profit Versus Commercial

As the latest in a series of failed online learning university ventures, AllLearn’s demise raises interesting questions over the viability of online learning in general, and not-for-profit versus for-profit status in particular. A large proportion of the collapsed online ventures initiated in the dot-com era have had explicitly for-profit motives. Columbia’s Fathom (N.Y.) was perhaps the most high-profile e-learning venture by an American university and closed in 2003 despite attracting 65,000 students to over 2,000 online courses and $25 million in investment funds. New York University invested $25 million to establish the for-profit distance learning company NYU Online, but this collapsed in 2001 due to its alleged inability to break from its academic roots and operate as a business. The University of Maryland University College closed its for-profit arm, UMUConline, in October 2001 after attracting more than 63,000 enrollments, and Virtual Temple, the for-profit company of Temple University (Pa.), folded in July of the same year.
In 2006, the for-profit university-related online ventures that remain include e-Cornell, UnNext/Cardean University, Global Education Network (with a loose affiliation to Williams College (Mass.), and the National University of California's Spectrum Pacific Learning Company, although the current profitability and long-term viability of these initiatives remains unclear. For-profit status might be aimed at enhancing the financial competitiveness of the parent institution, but there might be certain risks attached to creating a spin-off for-profit online venture separate from the university. These could include tension with the parent institution over straying away from traditional values and institutional identity, lack of faculty involvement, and concerns over assuring the quality of provision.

The few apparently more successful university online ventures are either non-profit (e.g. UMass Online, Penn State World Campus) or are backed by a private company to run the business (e.g. Black Education and University Alliance). By avoiding for-profit status, maintaining close links with core faculty and component campuses, and brokering mutually acceptable intellectual property/compensation agreements, online ventures such as UMass Online and World Campus seem to have avoided many of the pitfalls that plagued for-profit online counterparts such as NYU Online and Columbia's Fathom.

AllLearn's failure to move beyond the "edutainment" market appears to have been the main reason behind its demise. Until now, Oxford, Yale, and Stanford have kept quiet about the collapse of their joint e-learning venture, with next to no news coverage on AllLearn's demise. This is most likely based on concerns over the potential impact on institutional reputations, particularly on public perceptions of the partner universities’ online learning capabilities. However, AllLearn's closure could offer an unprecedented opportunity to step back and discuss the strengths and weaknesses of the business model, along the lines of the publicly released UKeU documents, aimed at distilling lessons learned from the venture to take e-learning forward in the United Kingdom. Oxford, Yale, and Stanford might wish to consider being as open as possible about AllLearn's progress to date and the decision to close, and put forth observations and recommendations on how a more sustainable and informed approach to the e-learning market might have been achieved. Further research into the series of collapsed online ventures may shed some light on what makes a successful distance education program, and enable some of the surviving online providers to redefine their business models and marketing strategies accordingly.

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