Information Technology Overview

Academic Year
2006-2007

Partnering with faculty, students, and staff in the quest for knowledge, applying the power of technology to unite people and content anyplace, anytime.

A GUIDE TO IT DEPARTMENTAL SERVICES
Office of Information Technology
Academic Technology Center
George C. Gordon Library
Computing & Communications Center
Vision—where are we going?
The Information Technology Division’s (IT) vision for our future state is to fuel the success of WPI by understanding the community so well that solutions are sought, trusted, and in place as needs arise. We strive to position WPI, not on the bleeding edge of technology use, but out in front as an aggressive leader in its strategic application to higher education. IT staff and infrastructure provide WPI with competitive advantages that facilitate our research initiatives and unique undergraduate educational approach—the WPI plan.

Mission—why are we here?
The division’s mission is to partner with faculty, students, and staff in the quest for knowledge, applying the power of technology to unite people and content anytime, anyplace. This broad statement of purpose guides us in supporting a large breadth and depth of teaching, project, research, and administrative initiatives. We are a major service provider to all stakeholders within the university community and support most mission-critical processes and services, many 24x7. IT also provides a visionary and leadership role relating to e-content, infrastructure, services, and policy and often acts as a change agent.

Staffing and Budget
The Office for Information Technology (OIT) oversees three departments: the Academic Technology Center (ATC), Computing and Communications Center (CCC), and the George C. Gordon Library (GL). We have 76 staff and employ about 128 students each year. Our FY07 divisional expense budget is $9.8M, $6.1M of which are salaries and benefits. We administer between $2-3M/year in institutional IT capital projects for networking, computing, e-classrooms, e-resources, e-learning, video, multimedia, and advanced technology projects. We maintain a 5 year planning horizon with 3-5 year replacement cycle for core computing, storage, and networking infrastructure.

Strategic Planning
The alignment of IT initiatives with our strategic plan and research thrust areas is excellent. Our new IT strategic plan uses the Balanced Scorecard methodology. We created performance metrics, with target values, to track progress on key initiatives from four perspectives—stakeholder, internal processes, employee learning and growth, and resources. All employees within the IT division have participated in the development and execution of our strategic story, and we have also enjoyed contributions from stakeholders from many other areas of the university community. We are using our plan to guide decision making to translate our strategy into action and to deliver exceptional customer service experiences. A five-point communication plan was implemented to significantly improve our ability to collaborate within the division and across the university.

Key Initiatives
IT continues to plan and implement hardware/software resources that will provide redundant off-site systems. A warm backup for mission-critical services includes the myWPI learning and information portal, Banner/Oracle enterprise resource system, UNIX academic/administrative file storage, and the WPI website. Other initiatives include institutional data access and architecture, data warehousing, data protection and system recovery plans, network, data security and email plans and policy development, university-wide compliance audits of federal and state IT security acts, and work with our external consultants and auditors.
Community Outreach
WPI owns the Goddard GigaPoP, a regional aggregation point connected to Internet2’s (I2) Abilene network at the Northern Crossroads GigaPop (NoX) in Boston. I2 connects 300+ education and research institutions, is much faster than the commodity Internet, and offers the opportunity to experiment with capabilities not yet available on the commodity Internet. WPI led the formation of the Goddard Collaborative—a non-profit organization of over 20 educational institutions, museums, and a regional network. WPI sponsored WGBH as an I2 Sponsored Participant. WPI and UMASS jointly sponsor a statewide I2 K-20 educational network (Sponsored Educational Group Participant (SEGP)) that includes MECNet, UMASS/MITI, and the Goddard Collaborative. WPI also formed the Gateway Medical Network which provides access to the Boston and I2 medical communities as well as WPI’s Bioengineering Institute, the UMASS Medical Center, and Fallon medical facilities.

IT Department Liaisons
In the summer of 2006, the Library and ATC staff joined forces to create the IT Department Liaison Program, which is intended to facilitate relationships between IT and WPI faculty and administrative staff. At least one Library and one ATC staff member are assigned to each academic and administrative department. The liaison teams work together to gain a better understanding of departmental needs and ensure that the appropriate IT services are provided to the departments. Activities of the liaisons include informing department heads and faculty of new library products and instructional technologies, consulting on teaching and learning with technology, and introducing faculty to library services.

External Recognition
WPI is ranked 64th out of 248 national, doctoral universities by U.S. News &World Report in the category of Best National Universities. WPI has been named one of the Top 25 “Most Connected Campuses,” by Princeton Review as reported by Forbes Magazine. In a related poll by the Princeton Review, WPI students noted, “WPI’s greatest strength is its ability to stay ahead of the curve with respect to technology.” We continue to receive strong, positive, national recognition which validates our work and infrastructure.

The IT Division also procured over $875k of corporate gifts for hardware, software, fiber/wire, and installation services and $32k of grants to the Gordon Library’s archives collection. WPI is the premier beta tester of Nortel Network equipment in the eastern USA.

Summary
The Information Technology Division is aligned with WPI strategic and academic plans, honors revenue and expense budget commitments, is focused on improving services and creating new capabilities, exploits synergies across the division and university, hears critical feedback, and enjoys a culture of dedicated staff who strive to deliver “continuous customer delight!”

MISSIONS

OIT
The Office for Information Technology provides technology leadership, vision, and operational management in support of WPI’s academic and administrative operations, missions, and strategic plan.

ATC
The Academic Technology Center serves as a focal point for promoting and developing the use of information technology in teaching, learning, and scholarship.

Library
The George C. Gordon Library designs, produces, acquires, preserves, and provides access to resources and innovative services to meet the collaborative learning, information, teaching, and research needs of the university.

CCC
The Computing and Communications Center provides the infrastructure of communication, computing, storage, software utilities and applications to support academics, research and administration of the university.
About the ATC
The staff of the Academic Technology Center (ATC) is divided into four major service groups:

- **The Technology for Teaching and Learning Group** works with faculty, staff, and students on the application of technology to teaching, learning, and supporting activities.

- **Campus Media Services** is responsible for the A/V management and support required by campus event planners as well as the day-to-day support of electronic classrooms, conference rooms and the ATC's comprehensive inventory of loan out equipment.

- **Video Production Services** provides support for studio productions and studio facility utilization, remote productions, special event tapings, off-air recordings (i.e., satellite, cable TV) and video editing, duplication and format conversion.

- **Audio/Visual Systems Engineering** is responsible for the design, installation and maintenance of the ATC's operational infrastructure as well as a host of other campus-wide resources.

Together, these service groups work with other departments in the IT Division to deliver a comprehensive suite of information technology services to the entire WPI community.

Academic Technology Infrastructure

The Academic Technology Center (ATC) is responsible for the design, installation, maintenance and day-to-day support of the multimedia technology found in the numerous electronic classrooms and conference rooms located on the main campus and at the Mass Academy on Prescott Street. It also supports WPI's Advanced Distance Learning Network. In addition, the ATC also manages a number of special teaching, communication and media development facilities; myWPI; the university's cable TV network and video bulletin board system; streaming media technology; video and web conferencing; and the infrastructure required to make these resources easily available to the WPI community. The ATC also maintains a large inventory of equipment available for loan to members of the WPI community to meet their academic and presentation needs.

Teaching with Technology Collaboratory

The ATC maintains and updates the Teaching with Technology Collaboratory, an online resource for faculty who are interested in using technology in their teaching. The Collaboratory website, located at [http://www.wpi.edu/+Collaboratory](http://www.wpi.edu/+Collaboratory), features:

- Ideas on how faculty can use technology to address teaching challenges.
- How-to topics on the use of specific technologies.
- Information on how to effectively teach distance learning courses.
- Technology news items and tips for using technology in teaching.
- Best practices, highlighting WPI faculty who have successfully used technology in their teaching.

A monthly e-newsletter sent to faculty complements the Collaboratory content. In addition to the self-serve resources, the ATC provides one-on-one or group consultations with faculty on an as-needed basis.
**myWPI**

WPI's online learning and information portal, *myWPI*, provides a customized portal interface to course content, projects, campus organizations, and WPI's website. Since its implementation in September of 1999, *myWPI*’s use has grown each year. This past year 848 course/project sites, 235 faculty, and 249 organizations took advantage of *myWPI*’s powerful online communication and collaboration capabilities.

The *myWPI* web site is located at my.wpi.edu and is powered by the Blackboard Learning System with Community Portal, version 6.3. The ATC will soon be implementing blog and wiki tools that integrate with *myWPI*.

**Web Conferencing**

WPI’s web conferencing software, Interwise iMeeting, was launched in January 2006. Interwise allows remote participants to collaborate and communicate via voice over IP, shared files and applications, a shared whiteboard, videoconferencing, polling, and text messaging. Interwise is gaining popularity among students and faculty who are using it for project group collaboration, distance learning, collaboration on research projects, guest speakers, academic advising, and other collaborative events.

**Video and Multimedia Services**

The ATC provides video and multimedia services to the WPI community. These services include video production, multimedia design, interactive CD-ROM development, DVD production and duplication, a four camera TV studio, editing facilities, large-format printing, and media conversion services. The media production group makes the dynamic world of multimedia available in support of course curricula, research, special projects and distance learning.

**Course Redesign Grants**

In 2007, the ATC is replacing its Teaching Technology Fellowship program with Course Redesign Grants in order to better meet current faculty development needs related to technology. These grants will assist faculty with redesigning their instructional approaches using technology to achieve enhanced learning, taking advantage of efficiencies that can be realized through the use of technology, and evaluating the impact of new instructional approaches.
About the Library
The library pursues five primary areas of activity:

- **Access Services** manages the print inventory of library materials, ensuring maintenance of the stacks, circulation of materials, and course reserves in support of teaching on campus. It also ensures access to non-WPI materials through Interlibrary Loan and through consortial borrowing within Worcester.

- **Archives and Special Collections** acquires and preserves documents, photographs, publications, and artifacts telling the history of WPI, as well as other documents of historical interest in other areas. The Special Collections contains many old and rare editions such as the Fellman Dickens Collections.

- **Library Systems** develops the online research environment through licensing and evaluation of electronic resources, and through maintenance of the integrated library system which provides inventory management of collections.

- **Reference and Instruction Services** work to enable the WPI community to leverage library collections and services to their fullest potential, and to create information literate students who are ready for the workplace, future scholarly pursuits, and lifelong learning. Librarians provide research support and instruction through various in-person and virtual modes.

- **Collection Management Services** is responsible for identifying, acquiring, cataloging, and organizing works in print, electronic, audiovisual and other formats, according to nationally recognized standards. This area is also responsible for a preservation program that maintains the print collections in excellent order.

Library as Place
Facilities available within the library building include 16 group study rooms; seven group spaces enabled with high-end collaborative technology, or “Tech Suites;” two instruction labs equipped with PCs for hands-on learning; an open PC room offering 24 seats; a high-end multimedia lab; quiet and noisy study zones; and wireless network access throughout. Study furniture and comfortable seating in the building provide inviting, reflective places to work and are heavily used. Exhibitions and special events are held in the building and attended both by WPI people and the Worcester community at large.

A vision for library renovation has been underway for several years, as the current facility has reached both its collection limits and infrastructure lifespan. Beginning in 2006, furnishings and offices on the Main Floor were reconfigured to create diverse learning environments for library users, foster greater visibility, and highlight popular service points. Interior enhancements will continue in heavily utilized study areas throughout 2007.

Although many improvements have been made, the vision is for a state-of-the-art facility that will continue to meet research needs and strengthen the collaborative nature of the WPI educational experience.
Library Collections

The library’s electronic collection grows in richness as full-text collections and interlinking among resources make search, discovery, and use of scholarly materials available anytime, anyplace. Print collections encompass book holdings, runs of numerous scholarly journals, conference proceedings, technical reports, multimedia resources, rare books, special collections, and offer strengths in support of curriculum, research, and project needs.

Special Projects and Initiatives

A sampling of activities underway toward advancing the partnering role of the library in support of teaching and learning at WPI:

- **Assessment**: design surveys and form focus groups to improve the library web presence, explore the possibility of extended hours, and enhance electronic collections, as a result of the feedback collected from the LibQual+™ assessment tool.

- **System Enhancements**: implement a federated search interface that will allow multiple online databases to be searched simultaneously; maximize LinkSource® capabilities for cross database navigation.

- **myWPI Integration**: offer assistance to faculty integrating readings and library instruction into their course sites; expand access to librarians via web conferencing and other virtual modes.

- **Remote Help**: utilize web conferencing software to experiment with library instruction and reference assistance to remote groups.

- **Information Literacy**: promote an information literacy program that provides workplace skills and prepares students for graduate study, beginning with first year experiences, through project research, and into discipline-specific expertise.

- **Project Team Support**: expand project integration with additional librarians to on-campus and project-center groups.

- **IQP/MQP Reports**: create catalog records in online catalog for MQP and IQP reports, including print reports back to 1999 and ongoing print and electronic submissions.

- **Service Point Space Planning**: leverage the newly created single point of service information desk to improve interactions with library users.

- **Podcasting/RSS**: expand the amount of information delivered via librarian created podcasting and RSS feeds.

- **Institutional Repository**: initiate a digital repository to capture and preserve the intellectual output at WPI.

- **E-Submission**: operationalize e-submission of project reports, based on 2005 pilot, to create a cohesive, online repository of student work, as was accomplished for theses and dissertations.

- **Digitization**: digitize selected special collections to increase accessibility and preserve the integrity of primary source objects.

- **WPI Planning**: participate in WPI presidential commissions on first-year experience, and Research and Graduate education.

- **Archives and Special Collections Grants**: from NEH for the Fellman-Dickens Collection and Massachusetts Historical Records Advisory Board to document Worcester’s printing industry.
About CCC
The Computing Services staff is divided into four major service groups.

Support Services
The Helpdesk maximizes user productivity by enabling and supporting WPI faculty, staff, and students to make the most efficient use of the technology tools and services provided to them through significant investment by WPI. They provide quick answers, coordinate trouble-ticket processing, offer individualized desk-side support for office productivity challenges, and deliver technology orientation programs for new faculty, staff, and students. The Information Desk provides operation support, printing, and inventory services and local support for primary CCC computer labs. The trained staff triage incoming Helpdesk e-mail and web-based requests, and provide backup support for Helpdesk phone inquiries. The Computer Shop deploys new or rebuilt systems. They also configure, troubleshoot, and repair WPI-owned computers and printers while offering network connectivity, spyware, and virus protection services for personally-owned student systems. Computer instruction is offered to all members of the WPI Community. Short instructor-led classes are held throughout the year for the MS-Office productivity suite and for campus administrative information systems. Online access to documentation and technical training for over 400 software applications is available through ElementK, an e-learning tool providing interactive, self-paced online courses.

Banner, WPI’s Enterprise Resource Planning (ERP) Platform
SCT Banner is a fully integrated, Oracle-based, Internet-native technology package solution for the higher education community. Banner is the market-leading suite of software applications for student information, admissions, human resources, financial aid, faculty and advisors, alumni information, finance, and more. Banner Self Service, a web-based technology allowing self-maintenance of personal information, provides active and prospective students, employees, and faculty the ability to maintain and view their own registration, application, payroll, and financial data. In addition to the transaction-focused ERP the Banner group supports an Operational Data Store (ODS) for daily reporting and data mining needs, and an Enterprise Data Warehouse (EDW) which provides long term data for trend analysis. The Banner team provides support for maintenance and upgrades of the application software, and implements and maintains enhancements and extensions of the baseline software. The team also provides business critical reports and maintains a library of reporting views that are available to the user community for their use in developing ad-hoc reports.

Windows Services
The Windows team manages all Microsoft Windows-based services utilized by the WPI community. Recipients of these services include faculty, staff, students, and laboratory and classroom PCs. The team distributes over 100 software applications to users and manages respective licenses appropriately. The Windows group ensures that virus protection is available for all domain e-mail, desktops and servers, and provides incident response services when necessary. The team is constantly monitoring the health, security and performance metrics of systems and services within the enterprise. The Windows group also manages other community administrative systems and applications, including centralized file and print services, electronic locks, WPI ID’s, and other interfaces with the Banner group. The team also provides a robust messaging environment for all members of the WPI community with Microsoft Exchange Server 2003.

Operations
The Operations group directs CCC policy and general operation. They manage the CCC budget, contract and software licensing agreements. CCC operations manages the IT capital inventory and supports a multiple-year projected funding requirements model. Operations assists the campus community with computer technology hardware and software purchases. In conjunction with academic departments, operations manages the public lab/PC classroom facilities in each of the academic buildings across the campus.
About CCC

Internetworking and Telecommunications staff is divided into three service groups: Telecommunications, UNIX, and Network Operations and Security.

Telecommunications

Telecommunications is responsible for campus telephone services, including the voice mail and voice directory systems. The Telecommunications Manager is responsible for WPI’s phone switch, including its repair, its local and long distance access, usage reporting, phone instrument repair, and day-to-day moves, adds, and changes.

UNIX

The UNIX team manages computer systems for interactive and computational use. They support over 5900 login IDs, including not only individual student, staff, and faculty accounts, but also group accounts for clubs, faculty committees, student project groups, fraternities, and others. The login ID also defines that individual's or group's email address at WPI.

All email entering or leaving the WPI campus or moving between WPI mail servers passes through the campus mail hub, which is also maintained by the UNIX group. WPI email users may read their mail using a POP or IMAP mail client or may, if they prefer, use a web-based email system. From here, mail may also be forwarded to private mail servers for academic departments or clubs, to the Exchange server operated by the Windows team, or to off-campus mail servers such as Google's Gmail service, other web mail services, or corporate mail systems.

Every message that passes through the campus email hub is scanned for malicious content, including viruses and email worms. There are also several systems in place that check the likelihood that any given email message is spam and we offer tools to delete the most likely candidates.

Other services provided by the UNIX team include the main campus web server at www.wpi.edu, and various other web servers. The UNIX team also installs and maintains a number of Linux systems. These systems provide login access for educational and research use and include access to Oracle and MySQL databases, Maple, Matlab, and other major research and academic software packages. A number of UNIX-based research systems are also supported by the UNIX team. These include the SGI supercomputer purchased through a grant by the Math Department and Linux-based compute clusters. The library systems that provide the Encompass and Voyager services also fall within the UNIX domain.
About CCC, Network Operations

The Network Operations and Security team is responsible for the engineering, installation, maintenance and security of the WPI network as well as the Goddard GigaPoP. They also manage the WPI presence at 1 Summer Street, Boston, and the connection to the NoX. The Network Operations Center (NOC) monitors all aspects of campus data networking, including bandwidth consumption, equipment status, and security incidents.

The Network Operations and Security staff is also responsible for network and security policy development, identifying breaches of the WPI Network Security Policy (NSP) and the WPI Acceptable Use Policy (AUP) by WPI faculty, staff, and students as well as identifying external intrusions by outside entities. They use an array of intrusion detection sensors and flow monitoring sensors to identify suspicious behavior of equipment and to track hackers and viruses. Network Operations and Security is responsible for handing these incidents from detection to resolution and liaising with law enforcement when necessary.

Network Summary

A redundant 30 Gigabit Ethernet backbone is at the network core. The network connects 35 academic buildings, 34 dorms and fraternities. Network Operations manages networking for approximately 17,000 devices. They maintain approximately 2.75 million feet of copper cable and 700,000 feet of fiber. Network Operations also maintains the campus-wide 802.11a/b/g wireless network.

Goddard GigaPoP

At the GigaPoP, WPI connects to the Internet via a 1 Gbps fiber Ethernet connection over which WPI can vary service speed upon request, without the expense or delay of ordering telephone-style circuits. WPI typically uses about 50 Mbps during the academic session.

Besides connecting WPI to the commodity Internet, the Goddard GigaPoP has an OC3 (155 Mbps) connection to Internet2 via the NoX. The GigaPoP also serves as a regional aggregation point to Internet2. WPI is also tracking development of a New England region research network to determine how best to participate.
CCC, About Research and High Performance Computing and Scientific Application Support

The team provides a variety of services, tools, and scientific and technical expertise to assist the research and academic efforts of the students and faculty. The team is also involved in strategic IT planning for all academic departments, as well as coordinating the efforts of academic department local IT personnel with each other and the central IT services staff. WPI’s state-of-the-art HPC tools include the Access Grid, 2 Linux Clusters, SGI Altix 350 and a AMD Opteron based SMP system.

Access Grid

The Access Grid (AG) supports large-scale distributed meetings, collaborative work sessions, seminars, lectures, tutorials, and training. The Access Grid design point is group-to-group communication. The AG consists of multimedia display, presentation, and interactive environments, interfaces to grid middleware and interfaces to visualization environments. WPI’s AG node has been used for coursework, workshops, seminars, research, and is increasingly being tested for project work.

Scientific/Engineering Application Support

The program supports the core academic undergraduate, graduate curriculum, and research activity, by providing training sessions to the community, relieving faculty from having to teach software during a short 7 week term and providing direct help and support for project groups. The program started in March 2006, and as this graph states has conducted more than 100 sessions attended by over 500 students and faculty, covering applications such as Matlab, Fluent, Ansys, MathCad, Abaqus and others.

Linux Clusters, SGI Altix, SMP systems

As part of the global shift toward cluster computing, WPI’s HPC group provides a distributed computing platform consisting of two clusters available to the whole community for large scale computing. This platform provides supercomputing capability at a fraction of the traditional cost. The SGI Altix is a powerful shared memory architecture supercomputer consisting of 16 Itanium 2 processors. The AMD Opteron system is the fastest system consisting of 16 AMD Opteron 2.4 GHZ, dual core CPUs.
**IT Divisional Statistics**

**ATC**

*myWPI Usage*
- FY02: 417 courses, 191 faculty, 72 orgs.
- FY03: 466 courses, 210 faculty, 97 orgs.
- FY04: 516 courses/projects, 220 faculty, 120 organizations
- FY05: 681 courses/projects, 264 faculty, 156 organizations
- FY06: 809 courses/projects, 299 faculty, 186 organizations

**Media Support for Events**
- 300 in FY02; 365 in FY03; 450 in FY04; 360 in FY05; 366 in FY06
- Annual major campus events include Admission Open Houses, Trustee meetings, Homecoming, Parents Weekend, Reunion Weekend, and Commencement.

**Electronic Meeting Spaces**
- Classrooms: 25 in Worcester; 1 in Mass Academy
- Electronic Labs: 16
- Conference Rooms: 14
- 7 Library Collaboration Rooms
- Design and build out of AV system supporting NOC and Access Grid
- Admissions Interactive Plasma Display
- Campus Center Info Desk Display

**TV Studio/Production Facility**
- 50 seats with 30x20 stage area, professional lighting grid
- 3 Sony DXC-D35WS triax camera packages with Telemetric robotics
- 1 Panasonic 3CCD document camera
- 24 Sony XGA flat panel displays
- 96x96 analog video routing switcher
- Mass duplication facilities: 41 VHS duplication decks; 4 SVHS production decks; 6 DVCAM decks; Betacam SP
- Digital, non-linear editing suites
- Ku and C-band satellite downlink (analog/digital)
- Tandberg IP/ISDN videoconferencing
- Anycast portable production switcher

**Systems Support**
- Carillon System (Campus Bells)
- Anycast portable production switcher (analog/digital)
- Ku and C
- 96x96 analog video routing switcher
- 1 Panasonic 3CCD document camera
- 3 Sony DXC-D35WS triax camera packages with Telemetric robotics
- 24 Sony XGA flat panel displays
- 96x96 analog video routing switcher
- Mass duplication facilities: 41 VHS duplication decks; 4 SVHS production decks; 6 DVCAM decks; Betacam SP
- Digital, non-linear editing suites
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- Tandberg IP/ISDN videoconferencing
- Anycast portable production switcher

**CATV Network**
- Two parallel systems: a 550 MHz high-split, bi-directional network and a 550 MHz broadcast network
- 800° CATV nodes to classrooms, dorms, common spaces

**Faculty Support Services**
- Teaching Technology Fellowship Program – 8 faculty in FY02; 5 in FY03; 7 in FY04; 10 in FY05; 3 in FY06
- One-on-one faculty support for 39 ADLN courses in FY03; 52 in FY04; 45 in FY05; and 49 in FY06

**Equipment Inventory**
- Laptops (105)
- Digital Audio Recorders (17)
- Data/Video Projectors (13)
- Digital cameras (15)
- Digital/VHS/SVHS Camcorders (11)
- Portable IP/ISDN videoconferencing unit (1-Tandberg)
- Student Response Systems, VCRs, TVs, DVD players, cables, etc.

**Mobile Computing Programs**
- Library Laptops (25)
- Campus Center Laptops (10)

**Multimedia Resource Facilities**
- Full Nonlinear Edit Suite
- 3 2400 dpi scanners, 3 PDF scanners, a 35mm slide scanner, an automated CD-duplicator & printer (600 disc capacity), HP 42" 2400 dpi plotter & 42" scanner

**Gordon Library**
- 9 public access catalog stations
- 4 copiers
- 2500 volumes, 100 artifacts—Fellman Dickens Collection
- 140° years of WPI historical records
- 2000° linear feet of WPI archives
- 8000° archival photographs
- 1500° rare books in Special Collections
- 500 volumes of WPI newspapers, journals, yearbooks
- 8 art exhibitions
- 2 art galleries

**Systems Administration**
- Voyager integrated library management system on SunFire 280R Server
- ENCompass for managing digital collections on SunFire 280R Server
- Public access networked printing & copying integrated w/ cashless payment

**CCC**

**HelpDesk**
- PC and software support for ~5000 clients; Ratio = 5000/4.25 staff = 1177:1
- National Average = 150:1
- Remedy call tracking system
- 800-2200 incidents per month
- Support 100° academic software apps
- Web support for accounts, passwords, registration of devices, email support, ordering of software and tech support

**PC Shop**
- Maintain 2000° desktop computers
- Dell certified technicians

**High Performance Computing**
- EMC Clarion CX400, NX350, AX100 7 TB storage arrays
- Additional 3 TB storage array
- Dell Linux Clusters, each with 11, 14 nodes, 22 and 28 processors (2.4 GHz XEON), 2 GB RAM
- SGI Altix 350, 16 Itanium 1 processors and 40 GB of RAM
- AMD Opteron system with 16 dual core CPUs, 2.4 GHZ
- Access Grid group-to-group videoconferencing facility
CCC

Goddard GigaPoP
- Is located off campus at 474 Main St., in a robust generator-protected telecommunications-carrier facility
- Also hosts some disaster-recovery equipment in this remote location
- Has redundant Gigabit Ethernet fiber connection to the WPI campus network
- Is a hub offering high-speed local connection to the Goddard Collaborative members, such as Clark University, UMass Medical School, Assumption College, the College of the Holy Cross, Worcester Academy, Memorial Hospital, and the Merrimack Education Center, making those institutions virtually local to our campus
- Peers with Charter Communications so that home cable Internet users in the area have direct connection to WPI as well as the above Goddard Collaborative partners
- Connects to Internet2 via WPI router in the NoX in Boston

Windows
- 100+ Windows servers
- 340 public lab PCs, 1200 WPI desktops
- 2500 Campus Residence & Fraternity PCs
- 1500+ Wireless devices
- 700+ “visiting” (non-WPI owned, non-residence) systems
- myWPI (Blackboard)
- Streaming Media Server
- Equipment/Inventory Mgmt. System
- Web Conferencing System (Interwise)
- Microsoft Exchange

Unix
Server & client support; software support and distribution:
- Servers: 40 Linux, 5 Sun
- 100 UNIX workstations
- 2 Network Appliance File Servers; offsite Disaster Recovery

Interface Applications
- Banner-Blackboard (e-learning)
- Banner-CBORD ID transaction sys
- Banner-BestLock e-ID cardlock
- Banner-Remedy (helpdesk call tracking)
- CBORD-BestLock (ID card sequence number synchronization)
- Banner-directories (white pages, web, exchange, telephone)
- Unix-Banner (synchronize e-mail/username)

Recognition
- U.S. News & World Report listed the MBA and Engineering ADLN programs as “among the best online graduate degree programs,” 2002
- LERN International Award for Excellence in Marketing, Nov 2001

Demographics
- Geographic: East-69%; South-6%; Central-7%; West 8%; Int’l 10%
- Student Age: 20-29, 26%; 30-39, 50%; 40 plus, 24%
- Gender: female 25%, male 75%
- Student Status: 98% part-time

NetOps
- Nortel Networks equipment
- Academic network: 36 buildings, Residential network: 34 buildings
- 802.11 a/b/g wireless network: over 200 access points in 18 academic buildings and 23 dorms.
- Greek wireless network: 15 houses
- Remote networks: Mass Academy, Gateway Park
- Backbone: Redundant 30 Gigabit Ethernet fiber paths
- Primary servers each on gigabit link
- 10/100 Mbps to the desktop
- Commodity Internet 100 Mbps
- 16,200 campus network ports with 10,320 active, more than 40 servers for network monitoring and management

Telecommunications
- 2300 line Nortel Digital PBX
- Voice mail and voice directory

Database Services
- ERP – Banner/Oracle
- Special applications (WorkOrders, Helpdesk, Blackberry, Electronic locks and ID cards)
- MySQL databases
  - Web Development Office
  - IT Operations
  - Public student accessible
- Operations (LDAP, TimeServer, DHCP, Wins, Radius, IMAP, POP, SMTP…)

Recent Gifts to IT Division

EDS
- Unigraphics—500 licenses
- Ideas—100 licenses
- SolidEdge—Site license

PTC
- Full Product line —500 licenses

Solidworks
- Solidworks—150 license
- Cosmos—150 licenses

Integration Partners
- APC 80 KVA Unit
- APC Server Room Racks
- Cyclades Terminal Servers
- $40k toward Gateway Park

Nortel Networks
- Nortel Call Pilot System
- Nortel Wireless (HW/SW)
- Netops Closet Build out
- Nortel VPN and Licenses
- Nortel 48 port 10/100/1000 Switches (Server Room)

Grants
This year, the IT Division has been awarded roughly $40K in total funding:
- Including, federal grants for preserving and digitizing library materials.

Instruction Sessions Open to WPI Community

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<th>Library</th>
<th>ATC</th>
<th>CCC</th>
<th>Total</th>
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<tr>
<td>Sessions</td>
<td>252</td>
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<td>271</td>
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<tr>
<td>Topics</td>
<td>77</td>
<td>18</td>
<td>49</td>
</tr>
<tr>
<td>Attendees</td>
<td>3075</td>
<td>188</td>
<td>927</td>
</tr>
</tbody>
</table>

Excludes faculty development & 1-to-1 support
Institutional IT Capital Budget

IT administers between $2M to $3M/year in institutional IT capital projects for networking, desktop computers, servers, high-performance workstations, printers, e-classrooms, academic computing labs, e-learning, video production, web-streaming, web-conferencing, software, telecommunications, and advanced technology projects (see figure below). Funding allocations are sometimes insufficient to meet the list of #1 priorities, but significant progress has been made without accumulating crisis-level backlogs to date. Funding prior to FY00 was in the $250K to $350K/year range which was inadequate. IT now maintains a 5-year planning horizon and uses a projected 3-5 year replacement cycle for mission-critical servers, storage, and networking infrastructure. 41 out of 54 classrooms and computer labs used for instruction (76%) and 14 conference rooms have multimedia capability. The e-classroom AV equipment replacement cycle is currently 4-5 years. An upgraded e-learning infrastructure supports a wide variety of technology-mediated communication tools such as student response systems, streaming audio/video, web conferencing, and IP-based videoconferencing. A total of 7 technology-enabled meeting spaces (Tech Suites) have been built in Gordon Library.

The network capital budget covers the upgrading of our campus network/security hardware and infrastructure which includes all academic, administrative and residential buildings as well as the Greek Wireless Network (projected for an upgrade next FY) and satellite locations. A 10 year planning horizon is maintained for network projects. The Network Wiring Project budget funds major upgrades of the campus network such as the wiring infrastructure in the academic buildings and residence halls. In addition to the capital money that is allocated to fund these network projects, generous gifts from companies such as Nortel Networks and Integration Partners have contributed to our success in maintaining a robust and highly stable network.

The IT capital review process involves extensive data gathering, inventorying, and prioritizing of user requests. Once per year we request IT capital needs from all academic and administrative departments. The academic requests are reviewed and prioritized by the Provost with recommendations from IT. Administrative requests are reviewed by divisional Vice Presidents and IT. Summarized, merged, and prioritized lists are then submitted to the CFO and Capital Budget Committee for review, reprioritization, item elimination, and sent with recommendations to the President for final approval within the context of the constraints upon the overall budget (via funding mechanisms through gifts, debt, reserves, and depreciation). Core server replacement, backup capability, disaster recovery, and academic computing and labs are top priorities.
Operating Budget

Our FY07 divisional expense budget is $9.8M, of which $6.1M (62%) are salaries and benefits (see Staffing below) and $3.7M are non-salary expenses. The allocation of total expense across operating units within IT is shown in the figure below.

Much of the IT operating budget supports/funds resources that are not consumed by IT, but are required for IT services provided to benefit the entire campus. Two major institutional expenses are:

- Software and hardware maintenance contracts ~$1.2M/year.
- Library holdings—expense base of $1.5M/year requires budget increases of $100K+ year to continue at current holding levels to offset ~8% yearly increases in costs.

Staffing

IT currently employs 76 staff and 128 students. The distribution of staff and students across the CCC/OIT, Gordon Library, and ATC is indicated in the chart below. WPI benefits from an expert and extremely dedicated staff, many of which have been at the university for 20-30+ years.

A growing number of IT services are now viewed as mission-critical. They are expected to be available 24x7 with little, if any, tolerance of downtime (e.g., email, networking, myWPI, library on-line access, etc.). Staff presence within our facilities is not yet at the 24x7 level but is approaching it due to the demand for extended hours of operation in certain computer labs, the library, the technology HelpDesk, special events support, and support needs of the global projects program. Many technical staff are on call with an automatic paging system.

IT Capital Statistics

Top 5 categories in FY07 IT Capital budget:
1. Servers and Storage — 22%
2. Employee PCs — 20%
3. Computer Labs and Shared Laptops — 18%
4. Electronic Classrooms — 14%
5. Network Infrastructure — 13%

Revenue Statistics

GreekNet network services are billed annually to the participating houses at a price to recover the installation and operating costs in four years.

$10,000 from sponsored Internet2 participants connected to WPI’s Goddard GigaPoP.

Local dormitory phone and 10 Mbps networking services are now bundled into room fees.