

IT PROJECT STATUS REPORT

October 2003

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INTRODUCTION

This document is a compilation of major projects and significant initiatives undertaken and completed over the past year by the staff of the Information Division. There is a staggeringly large number of activities that range from strategic to tactical that have been completed, often under severe time pressure, by our highly dedicated and talented staff. Here, key these activities are highlighted to give you a broad sense of what has been accomplished.

DIVISION-WIDE PROJECTS

Important division-wide projects critical to our success include IT Strategic Planning, Data Protection and System Recovery (Disaster Recovery), Network and Data Security, and a Program for Compliance with Information Technology Security Acts.

1. IT STRATEGIC PLANNING PROJECT

Picking up from the prior year's project to select a strategic planning process for the division and learn the selected methodologies, we began this academic year with Morissey's approach to writing a values statement and then we cut-over to the Balanced Scorecard process. This effort is led by the Core Team, which consists of the Vice President for Information Technology and the IT Managers, and involves all members of the IT Division. After the Values Statement was approved, the IT Division members were surveyed asking for their perspective of how the IT Division meets those values. Most scores indicated that the IT does well. The area most noted for improvement communication and at the November 2003 IT Division meeting, breakout groups will develop suggestions for it. While those efforts progress, the Core Team will draft an IT Mission statement and then move on to work on the IT Vision statement. The IT Strategic Planning Project Initiation document provides more detail on the project objectives, approach, and deliverables.

2. DATA PROTECTION & SYSTEM RECOVERY PROJECTS

Accomplishments were made on two Data Protection & System Recovery Projects: 1) kick off and Phase One of the project focusing on non-IT supported academic and research areas and 2) updates and additions to the plan for IT-Supported Systems.

- Data Protection and System Recovery for non-IT Supported Academic and Research Areas

The long-term goal and objective of the Data Protection and System Recovery Project for non-IT Supported Academic and Research Areas is to minimizing systems downtime and data loss by documenting existing backup and recovery procedures. The procedures answer the question, "How would we operate if we had a short, medium, or long term outage?"

This is a major process in the protection of intellectual assets, data integrity, and security of academic and research data. Each department identifies the Recovery Time Objectives (RTO) and Recovery Point Objectives (RPO) for each vital machine, and then analyses anticipated recovery to these objectives.

The Recovery Time Objective (RTO) is the period of time within which systems, applications, or functions must be recovered after an outage (e.g., one business day). RTO's are often used as the basis for the development of recovery strategies, and as a determinant as to whether or not to implement the recovery strategies during a disaster situation.

The Recovery Point Objective (RPO) is the point in time to which systems and data must be recovered after an outage. (e.g., end of the previous day's processing). RPO's are often used as the basis for the development of backup strategies, and as a determinant of the amount of data that may need to be recreated after the systems or functions have been recovered.

In 2003, Phase I was nearly completed. Phase One covers system-administrator managed machines in five academic areas: Computer Science (CS), Continuing Education, Electrical and Computer Engineering (ECE), Mathematical Sciences, and Mechanical Engineering (ME). During the process of documenting backup and recovery procedures, the team made many improvements to prevent problems and enable faster recovery, and made recommendations for further improvement. The team identified “Lessons Learned” to minimize campus-wide risk and to assist work in future phases. A document of backup and recovery procedures was published in September 2003. Recommendations and Lessons Learned sections are being written and will be added to that document.

- Data Protection and System Recovery for IT-Supported Systems

In October 2002, we published the Data Protection and System Recovery Plan for IT-Supported Systems. Since then, recommendation and guidelines for other departments were drafted and several other sections were updated. As resources become available to complete the additional work scoped and started, a version 2 will be published.

3. NETWORK & DATA SECURITY PROJECT

The long-term objective of the Network and Data Security Project is to bring levels of data and network security on both the administrative and academic sides of WPI into a single cohesive strategy for dealing with all known threats while putting WPI on a good foundation for dealing with new threats. This entails continuous improvement/reevaluation to accommodate changes in technology, security risks, preventative and recovery options, and personnel. The project has two phases: 1) predominately network security and 2) predominately data security. Phase one is underway with the development of a written network security policy and phase two will start as resources become available. The Project Initiation document further describes the project objectives, approach, and deliverables.

4. PROGRAM FOR COMPLIANCE ON INFORMATION TECHNOLOGY SECURITY ACTS

IT staff members are addressing due diligence with regard to FERPA, ECPA, CFAA, USA Patriot's Act, TEACH Act, and the Gramm-Leach-Bliley Act. The *IT Security for Higher Education, A Legal Perspective* (<http://www.educause.edu/ir/library/pdf/CSD2746.pdf>) published by EDUCAUSE briefly describes the university issues relating to these seven acts, as outlined below.

1. Family Education Rights and Privacy Act (FERPA)

FERPA: “An institution may be particularly vulnerable to a FERPA violation if it can be shown that it was negligent in instituting procedures to protect against disclosure of electronic records... there is no consensus as to when it is necessary to protect data or the methods that should be employed.”¹

2. Health Insurance Portability and Accountability Act of 1996 (HIPAA)

“...Colleges and universities that are affiliated with health care providers are considered covered entities and by April 14, 2003, those institutions must provide written notice of their affiliated health care provider’s electronic information practices...”

¹ *IT Security for Higher Education, A Legal Perspective* (<http://www.educause.edu/ir/library/pdf/CSD2746.pdf>)

HIPAA generally requires covered entities to (i) adopt written privacy procedures that describe, among other things, who has access to protected information, how such information will be used, and when the information may be disclosed; (ii) require their business associates to protect the privacy of health information; (iii) train their employees in their privacy policies and procedures; (iv) take steps to protect against unauthorized disclosure of personal health records; and (v) designate an individual to be responsible for ensuring the procedures are followed. Educational institutions may be obligated to comply with HIPAA in connection with a broad range of activities. ...”²

Three subprojects:

- a) Employee plans
- b) Student plans
- c) Health Services (including ERP data control)

3. *Electronic Communications Privacy Act (ECPA)*

“...ECPA broadly prohibits the unauthorized use or interception by any person of the contents of any wire, oral or electronic communication. Protection of the ‘contents’ of such communications, however, extends only to information concerning the ‘substance, purport, or meaning’ of the communications....”³

4. *Computer Fraud and Abuse Act (CFAA)*

“...The CFAA criminalizes unauthorized access to a “protected computer” with the intent to obtain information, defraud, obtain anything of value or cause damage to the computer. A “protected computer” is defined as a computer that is used in interstate or foreign commerce or communication or by or for a financial institution or the government of the United States....”⁴

5. *USA PATRIOT Act*

“...The USA PATRIOT Act, passed six weeks after September 11, 2001, grants law enforcement increased access to electronic communications and, among other things, amends FERPA, ECPA and the Foreign Intelligence Surveillance Act of 1978 (FISA), in each case making it easier for law enforcement personnel to gain access to otherwise confidential information. Perhaps most significant in the context of higher education is an amendment that potentially prohibits institutions from revealing the very existence of law enforcement investigations....”⁵

6. *TEACH Act [along with Copyright and Fair Use]*

“...The TEACH Act, passed by Congress on October 3, 2002 and signed into law by the president on November 2, 2002, relaxes certain copyright restrictions to make it easier for accredited nonprofit colleges and universities to use materials in technology-mediated educational settings.....”⁶

² Ibid.

³ Ibid.

⁴ Ibid.

⁵ Ibid.

⁶ Ibid.

7. *Gramm – Leach – Bliley Act (GLBA)*

“The GLBA, enacted in 1999, is applicable to financial institutions, including colleges and universities, and creates obligations to protect customer financial information. The GLBA includes requirements to take steps to ensure the security of personally identifying information of financial institution customers, such as names, addresses, account and credit information, and Social Security numbers. The GLBA also sets forth extensive privacy rules which, among other things, require covered financial institutions to provide customers with privacy statements describing their information privacy practices. However, the Federal Trade Commission’s (FTC’s) regulations implementing the GLBA specifically provide that colleges and universities will be deemed to be in compliance with the privacy provisions of the GLBA if they are in compliance with FERPA. Nevertheless, educational institutions likely remain subject to the security provisions under the GLBA and the FTC’s implementing rules. The GLBA customer financial information security rules, with which institutions must come into compliance by May 23, 2003, will require colleges and universities to develop comprehensive security programs, assess the need for employee training, and include obligations in their agreements with third parties that have access to financial records covered by the rules.”⁷

⁷ Ibid., p.12.

COMPUTING & COMMUNICATIONS CENTER (CCC)

1. BANNER

Assisted and facilitated end-user offices in Business process design and re-engineering efforts for the following processes:

General:

- Provide support for all Banner modules/users.
- Assist in process definition and implementation.

Health Services – Immunization forms:

- Developed new forms in Banner for collection of immunization information.
- Created views for information reporting.

Housing:

- Revised dorm damage process to work with new baseline process including new data entry form and A/R upload.
- Early access to DISCOVERER queries – pilot program.

Registrar's Office:

- Augmented BannerWEB class list to include pictures.
- Assisted in analysis and implementation of new processes to track SIM and Corporate Education students.

Accounting:

- Implemented Accounts Payable direct deposit ability.

Graduate Admissions:

- Assisted in separate implementation for Graduate Management BannerWEB applications.
- Modifications to existing “Printed E-application” report for Graduate Admissions and Graduate Management Admissions.
- New process design project (in-progress) for monitoring TA/RA awards and assignments from the departmental offices through registration and job creation.

Provost Office:

- Re-wrote and improved WPI Cost Share reports.
- Created Oracle report and temp tables for reporting.
- New view for data analysis.

Alumni Office:

- Heavy support for Alumni Donor report process.
- Support for collection of activities data for alumni from the last 5 years.
- Reviewed, re-taught and revamped Reunion processing forms in MS Access.

- In progress – converted several ARD (Alumni Reporting Database) reports to Oracle reports.

Budget Office:

- Web Budget request process support during spring cycle.
- Some form changes to support new year budget processing.
- Summit 2003 Presentation in New Orleans, LA (J. Scamacca, pmd).
- Assisted with Budget Roll process for new fiscal year.
- Creation of on-line form for Operation Budget Summary Detail, control form, and several Oracle reports.

Student Accounts:

- Overload Billing – Re-engineered to use baseline fee assessment.
- Graduate billing – revamped process for earlier and regular billing cycles.
- Implemented aging in graduate and undergraduate billing.
- T-1098 (student tax notifications) process redesigned. New “view” created for Finance office.

Academic Advising:

- Developed BannerWEB page for list of Advisees with pictures.
- Early access to DISCOVERER queries – pilot program.

Banner Group:

- Toolbox (development assistance tool).
- Parameter form for INB Oracle reports to allow easy parameter entry for users.
- Established weekly meetings for sharing technical ideas/issues within group.
- Managed regular meetings and communications with BUGs group.

Technical Upgrades:

- Oracle Database upgrade from 8i to 9iR2.
- Application server upgrade from OAS to iAS (current technology).
- Implemented web-based Banner (replacement for Banner client aka INB).
- Applied 10 major Banner upgrades, and numerous Banner patches.

Long Term Projects:

- **Information Access Project**
 - Launched Oracle’s DISCOVERER as an end-user reporting tool to the development group (alpha).
 - Created, tested, re-wrote, re-designed, and re-launched several Business Area views in support of project.
 - Created, testing, implementing first data mart object (SWBNAST) for student area.
 - Selected and supported group for alpha testing data access via DISCOVERER.
 - Prepared initial training class for pilot group for reporting via DISCOVERER.
 - Held first training class for pilot group.
- **SEVIS – Student and Exchange Visitor Information System: (J. Scamacca)**
 - Large implementation project in support of International Student Office.

- Analysis and procedure development for new process.
- Creation of view and several Oracle reports for end-user operations.
- Download of information from SEVIS website and upload data to Banner.
- **Web for Prospects**
 - Implementation of BannerWEB for Prospects for both Graduate and Undergraduate Admissions.
 - Assisted in design of office procedures to support processing of e-recruiting.
 - Problem solved all loading and technical issues.
 - Added attribute and contract code functionality.
- **Web Salary Requests – Phase II (J. Scamacca)**
 - Process opened up for review and salary request by all supervisors. Changed underlying hierarchy design to accommodate.
 - Numerous edits to improve form functionality.
 - Access to faculty and/or staff records.
 - Supervisory Hierarchy Report.
 - Summit 2003 Presentation on New Orleans, LA (J. Scamacca, pmd).
- **CAPP – Banner’s Degree Audit program**
 - Support and implementation assistance for new Degree Audit process in Banner.
 - Graduating seniors – initial pilot group.
 - BannerWEB CAPP audits available for graduating seniors and their advisors.
- **Course Evaluations**
 - Developed new process and web forms for Continuing Education evaluation process.
 - Developed companion process and Banner form for data entry of undergraduate and graduate evaluations.
- **Locks Interface – CBORD**
 - Developed interface for pilot program for card access to dormitories. January pilot.

2. OPERATIONS

General Operations:

- Restructured the Administrative and Academic systems administration groups to a single group for supporting Windows. Included in this restructure was the addition of a backup for the Manager of Computing Services with a new position Senior Windows System Administrator.
- Initiated the construction of a test environment for essential production systems/services. The “test” machine room is being built in Fuller Labs Level B. The room will include copies of essential production systems on a private network. This enables the testing of recovery processes as well as an environment to test complex upgrades (for example Exchange 2003 or Oracle secure networking upgrades both of which make changes in the Windows active directory as part of the upgrade).
- Continued restructuring of Operator and Information Desk Services in order to make best use of available resources in support of the user community. The 3rd shift operator position has been converted into a 1st shift Help Desk Analyst, backfilling the 3rd shift position with an entry level Information Desk Clerk. This resulted in better use of the prior 3rd shift Information Desk Clerks talents and assisted in addressing the workload seen by the helpdesk.

- Distributed printing (supporting about 250 printers in departments) moved off of VMS/Pathworks to a Windows platform. Additionally implementing charged printing ability for general community print facilities to charge printing costs against campus ID cards.
- Added a backup Data Base Administrator position to the ERP/Banner support group. This had been an area of high risk as identified by both the annual business audit and a separate IT audit due to the high level of dependence on the ERP for daily operations and a limited backup DBA availability. This additional resource has also allowed us to move forward on testing and implementation of projects like off-site backup, hot backups and single sign on for our Oracle production environment.
- In the process of updating the physical security systems for the CCC facility, in particular the machine room. A new alarm system that is integrated with the electronic locks is being installed in CCC. The new system will replace the stand alone card locks for the machine room with WPI ID card accessed locks, the brass access (for emergency access) will be limited to the directors and a couple of key systems administrators.
- Replaced the in-house developed image storage system for security cameras with Axis ACR1 software package. The change provides better ability to “play” through a set of images for a selected camera and also improves our ability to expand to new locations as needed.

Public Computer Labs

- Upgraded 3 public access labs including:
 - 31 PCs in ADP Lab in FLB16.
 - 12 PCs in BioMed Lab in SL412.
 - 12 PCs in ChemEng Lab in GH012.

Department Specific Computer Labs:

- Funded upgrades to computer labs managed by academic departments:
 - Biomedical Engineering:
 - 6 PCs in Bioinstrumentation Lab in SL311.
 - 2 PCs in MQP Lab in SL415.
 - Electrical and Computer Engineering:
 - 20 PCs in General Purpose Lab in AK317.
 - Management:
 - 10 PCs for Telecommunications Course Lab in WB228.
 - 2 notebooks for Telecommunications Course lab in WB228.
 - Mechanical Engineering:
 - 4 PCs for Engineering Experimentation Lab.
 - 6 Workstations for Design Studio.

Other:

- Over 285 individual desktop installations
- Over 60 redeployments of used PCs
- Funded 20 networked printers to replace aging hardware

3. DESKTOP SUPPORT SERVICES

- **Microsoft Campus License Agreement (MS CLA) media orders:**
- From 9/1/2002 – 9/1/2003 the Information Desk deployed 1807 copies of Microsoft software products to members of the WPI community.

<i>Microsoft Software Product</i>	<i>Number of deployed copies</i>
Microsoft Front Page	92
Microsoft Office XP	765
Microsoft Office X (Mac)	54
Microsoft Windows XP	896
Total	1807

Call Volume:

- Helpdesk tracked about 14,400 requests for assistance Academic Year '03
- The average monthly ticket volume was about 1200.
- Increases in call volumes were seen in almost every month.
- Average monthly increase in call volume was about 11% over last academic year.
- Major events that impacted Helpdesk call volume:
 - Mail server upgrade – October 2002 – recorded 33% call volume increase over same month previous year.
 - Increase in Internet Spam – Spring 2003 – 17% call volume increases over previous year.
 - Hacking Attempt Prevention/Security issues – April 2003 – 15% call volume increase over same month previous year.
 - Microsoft vulnerability issues – 6% call volume increase over same month previous year.
- Upgrades/Improvements:
 - In the process of upgrading the Helpdesk call tracking system to Remedy Helpdesk 5.x. Currently 70 % complete with call tracking system upgrade project. The new system will have a web interface for use by end users and support personnel alike. The new system will also have improved e-mail integration.
 - The Helpdesk website was renovated during the summer 2003. Major improvements include:
 - Dynamic Menu navigation
 - Constituent-based content delivery
 - Integration with IT News database
 - Updated content
 - Visit: <http://www.wpi.edu/+Helpdesk> to see the final results

New and Rebuilt Personal Computer Deployment:

- The CCC repair shop prepared over 285 new personal computers (PCs) for deployment to WPI faculty and staff.
- Coordinated the deployment and delivery of these PCs.

- Replaced 20 aging departmental printers with new printers.
- Were able to rebuild 60 computers from parts and re-deploy them as needed.

Progress with Regard to Process Improvements:

- The computer shop worked diligently to define WPI CCC Desktop Support Service policies. We hope to have these available to the public via the web later this fall. This is the first step to developing Statements of Service to better align user expectations with reasonable deliverables.
- The office operations support workgroup worked closely with the training group to improve the New Faculty Orientation process. This group also worked to improve password policies, procedures and related documentation. They are currently working on an IT Employee Separation checklist to facilitate personnel changes as they relate to the use of IT resources.

Training:

- Changes/Improvements for CCC training are as follows:
 - The CCC training staff combined efforts with ATC and Library instructors to form an "instruction coalition/alliance" to leverage learning opportunities for our campus. The group meets on regular basis to discuss, market and distribute information about training offerings to the campus throughout the year.
 - Coordinated the development of an IT-wide training brochure. All trainers within the IT Division worked together to coordinate schedules and resources, as well as print a 16 page catalog of workshops to be offered in Fall 2003, articles on technology, and information about other resources.
 - Combined efforts with other IT departments to offer "A la Carte" and department-based training.
 - Co-taught training sessions with ATC staff on using WPI's course management software "myWPI" (aka Blackboard).
 - Co-taught sessions for MS PowerPoint software which included presentation and design tips with the ATC's graphic's coordinator.
 - Co-presented at various out-of-town and local conferences.
 - Co-taught MS Word software training documentation/thesis submittal workshops.
 - Offered training sessions to the Colleges of the Worcester Consortium (COWC).
 - Co-taught with the Accounting Office to offer Finance (Banner) training to financial managers.
 - Co-taught pilot sessions on using Oracle Discoverer to generate reports from WPI's information system.
- New equipment/software in training lab:
 - Webcams and headsets were installed to facilitate training for web seminars and as well as online instruction and instant messaging training sessions which included audio and video.
 - SynchronEyes was installed to aid in answering an attendee's question(s) during a training session; the software displays a student's desktop on the instructor screen
 - We re-designed the training lab in order to offer transition training sessions to new or upgraded software (i.e. half of the lab PCs have Windows 2000 while the other half has Windows XP, also all the machines have both Office 2000 and Office XP

again to help transition our campus during periods of upgrading computers to newer versions of software.

- Our online training vendor licenses with Element K were renewed and continue to be utilized to maximize learning of software applications for those campus members who cannot attend instructor-led sessions.
- Oracle Discoverer was installed to enable staff to design reports from WPI's information system (Banner).
- New student and employee orientation:
 - The Helpdesk, Training, Human Resources and Provost Office staff collaborated to offer new student and new employee orientation sessions to better equip new user's to WPI's computing accounts and facilities.
 - Helpdesk and Training staff worked with the Insight Program coordinators to train student leaders and faculty advisors to better improve the first year computing experience of WPI's incoming undergraduate class
- Future endeavors include:
 - Coordinating and presenting at a Technology Conference to be offered through COWC in June 2004.
 - The use of CPS (Classroom Performance System) and web conferencing technologies in training sessions.
 - Collaboration with other departments to offer SME (subject matter expert) co-taught training sessions (similar to Accounting Office).
 - More training will be available on using Banner and generating reports using Oracle Discoverer.

4. WINDOWS SYSTEMS

Organization:

- Previously separated into two distinct entities for Administrative and Academic computing, the Windows group has added a new Systems Administrator and unified to provide ubiquitous and focused support for Windows desktop and server applications for the WPI community.

Server Upgrades:

- BANNER (ERP) and in-house administrative applications support
 - Jan 2003 – EXECWEB implementation in progress for SCT Banner Web for Executives.
 - Jan 2003 – STANDBY implementation in progress will function as an offsite backup server for the production Oracle database.
 - May 2003 – PINZON runs the Banner Web component for online registration, employee self-service and Admissions applications.
 - June 2003 – COLUMBUS houses the Internet Native Banner product for running a clientless Banner session via the web.
 - Sep 2003 – IPAYMENY implementation in progress to convert from the “skip jack” credit card processing and authorization system we have been using to the Oracle I-Payment server. The IPAYMENT server will provide an ability to extend secure on-line credit card services beyond the functions contained in the Banner information system.

- Sep 2003 – CLM houses the SCT Campus Loan Manager product which will be used in conjunction with Banner by the Financial Aid Office to manage student loans.
- Upgrades to other Administrative LAN
 - Jan 2003 – OPS runs the Microsoft Operations Manager (MOM) software for monitoring Microsoft servers and consolidating performance and logging information.
 - July 2003 – HVAC works in conjunction with a client PC in Plant Services to manage new heating and air conditioner controls across campus.
 - Aug 2003 – GATEKEEPER server installed to support the “BEST” card lock system, currently being implemented for floor access in the residence centers and projected to extend to academic buildings on campus.
 - Aug 2003 – EQUINOX monitoring server for all Administrative, Academic and some UNIX systems. Monitoring software determines when hosts are offline and notifies the appropriate system managers about the outage so repairs can begin immediately.
 - Aug 2003 – ILL run a new version of the Library’s inter-library loan software.
 - Aug 2003 – TIVO captures and manages video feedback from numerous network-enabled security cameras installed in various academic buildings.
 - Aug 2003 – SAMARITAN runs the back end of the Helpdesk’s Remedy call tracking support software.
 - Sep 2003 – PASTEUR runs the front end (web server) of the Helpdesk’s Remedy call tracking support software.
- Upgrades to the Academic LAN
 - June 2003 – VACCINE runs the McAfee e-Policy Orchistrator (ePO) software for managing all client and server installations of McAfee VirusScan software across campus.
 - July 2003 – RIVET implementation in progress will run the new version of Microsoft’s System Management Server for distribution of campus software applications and license management.
- Desktop
 - Creation of image for and management of the 8 Email Kiosk stations in the Campus Center.
 - Converting Library PAC terminals to Windows 2000.
 - Mass Academy classroom and public library systems are now fully managed by the CCC.
 - Begun testing on Windows XP systems for deployment in all labs next summer.
 - Added one WPI lab and one Waltham lab to the list of managed labs.

5. UNIX SYSTEMS

Installations:

- Installed a group of Linux servers to be development platforms for courses and research.
- Installed a group of Linux servers as a compute cluster for researchers.
- Installed a Linux server as the mail receiver for the campus. The handling of mail arriving at the campus is:
 - Internet -> edge mail server -> McAfee virus Scanner -> mail hub.

- The edge mail server and mail hub are new Linux servers.
- The McAfee virus scanner is a turnkey box.
- Installed a spam-marking package on the edge mail server. The mail is marked with a spam “probability” so that it can be processed by individuals based on their tolerance for spam. No mail is blocked; it is only marked for optional personal handling.

Other:

- Several identical dual CPU Dell servers were acquired last year and they have been set up to run Linux.
- We moved the WPI web server to Linux server.
- We moved the classroom Oracle server to Linux server.
- We moved the mail hub to Linux server. The mail server software is also different and is more PC friendly (faster IMAP and POP service).
- We restricted mail transmission so that mail from WPI must pass through the mail hub. This blocks an infected PC from spraying mail to the Internet. Many recent viruses have had this characteristic. Some years ago, the campus mail receipt had already been restricted. The configuration is:
 - Outbound access is only out the mail hub.
 - Inbound access is only at the edge server.
- We restricted access to CCC systems to secure mechanisms. Unencrypted access has been shut down.
- The modem bank has been shut down. It did not offer secure access. We are suggesting that people use ISPs for remote access and the campus VPN for security.
- We implemented numerous web functions.
 - A page to control mail delivery based on spam marking.
 - A page to securely drop files into the web so that URLs can be emailed rather than large files.
 - A page to enable a group moderation of messages to mailing lists. Its first application was to control email to undergraduates, allowing a sharing of responsibility in the process of choosing what messages need to be seen by all undergraduates, insuring important messages go through, but traffic remains low. The page is generalized so that it could be applied to other lists, helping with the technically challenging moderation function and offering a sharing of the responsibility of moderation.
- We implemented a secure web authentication method called “pubcookie”. This method was primarily developed at the University of Washington. It authenticates a browser so that the person using the browser can access web functions which require authentication. Formerly, each service had to ask for ID and password. The advantages are:
 - There is one authentication page so there is no confusion that the user might be giving their password when they shouldn’t. It always has the same look and feel.
 - There is an authentication period so that the person does not have to issue the id/password again until the period expires.
- Several pages have been converted to use this method:
 - Resident network signup (for in-residence network).
 - Managing mail delivery within residential net.
 - Internet address request (for academic campus & wireless).
 - Mail forwarding.

- Vacation message.
- Spam marking control.
- Login group (e.g. club, fraternity) management.
- Email list management.
- Emergency email broadcast (restricted to administration).
- Database creation and management.
- Personal login management.
- Privacy management (controlling display in on-line directory).
- Searching course evaluations.
- Interlibrary loans.
- Ordering books for library (restricted to faculty).
- Secure file drop.
- Various administrative pages.
- There has been some progress on disaster recovery:
- A recent failure of the mail server proved the efficacy of using multiple identical systems for services.
 - When the server failed, another box was put in its place and the disks were moved to the new box.
 - The campus was adjusted to use this box, rather than the old one.
 - After the disks were repaired, things were back to normal.
 - The recovery process took 12 hours of intense work. This is much longer than we would hope. The systems are robust, having:
- Dual power supplies.
- Dual CPUs.
- Pluggable disks.
- This system was more robust than most having a RAID controller so that any disk failure would not lose data. Other systems do not store data locally but use the file server for all data; they do not need RAID.
 - The reason for the difficult recovery of this system was that the RAID controller failed. The controller would handle a disk failure, which is its benefit, but it failed in such a way that it corrupted all the disks. Rather than saving us from a bad disk, it caused us trouble on all the disks. The other systems, using the file server, not local storage, would be recovered within minutes of the failure, rather than this lengthy recovery.
 - A backup file server for the UNIX file server has been acquired. We will begin installing at the remote, power protected, site it soon.

6. NETWORK OPERATIONS

- The campus buildings have been finally all converted to new network infrastructure, ending a 4 year multi-million dollar project.
- Network operations moved to a new location forming a campus NOC (Network Operations Center) for the first time. The equipment in the NOC was acquired with the support of grants from vendors.
- Network Operations installed the Access Grid, neighboring their new offices. The Access Grid is an attractive evidence of the availability of Internet2 on the WPI campus. It already is

heavily booked for videoconferencing throughout the Internet2 community. It also gives WPI a visibility.

- The five-year-old Greek network infrastructure has been replaced.
- The fraternities and sororities are connected by wireless links at 20 megabits/second, up from the former 8 megabits/second.
- The buildings have 10/100 switches, rather than the old 10 megabit hubs.
- The houses have signed agreements to pay per-house, rather than the old method of per-student. This way, we assure repayment of the WPI investment in this new architecture.
- Participated in the formation of the Goddard Collaborative.
 - This is an organization of area universities, networks, and K12 systems.
 - Assumption College, a collaborative member, has been connected to Internet2 via WPI's Goddard GigaPoP.
- Participated in discussions about the formation of the New England Research and Education Network (NEREN). WPI is a potential stop on the high speed optical network ring around New England.

Internet2 and Goddard Internet2 GigaPoP

- WPI recently completed the purchase of the remaining 50% interest in the gigaPoP from NEESCom, our partner since inception. This required extensive negotiations.
- We received a gift of a Juniper router from Integration Partners. This will allow us to upgrade our capabilities and use the multicast protocol necessary for the Access Grid Node.
- Our purchase of the gigaPoP has afforded us the opportunity to use this location (474 Main St., Worcester) as a backup and recovery site. We have sufficient space, environmental controls, and resources to place backup computers and disk storage arrays at this location to be used as a "hotsite" in the future. The gigaPoP is well connected to campus via dual Gigabit/sec links which take different routes for redundancy.
- We instituted a competitive Internet2 faculty grant program. We had two winners: John Delorey and Kaveh Pahlavan. After extensive investigation, John's project was too complex and the hardware to support it was not available thru a grant we had pursued. Kaveh's project is titled "Performance Analysis of a Distance Learning Experiment over Internet2."
- The Access Grid Node is the first visible instance of an I2 application on campus. It will be used for a variety of activities ranging from international research collaboration to the building of geographically dispersed communities that are racially diverse.
- WPI has been pursuing collaborators for the gigaPoP. We invited most of the local colleges, universities, and museums to meet with us to discuss the concept of a Worcester-area regional computer network with I2 connectivity. This work has blossomed into a monthly meeting with over 25 organizations being represented including UMASS, Olin College, Wellesley, Babson, Bentley, ...

7. ACADEMIC, RESEARCH, AND HIGH PERFORMANCE COMPUTING

Access Grid:

- In February of 2003, WPI hosted its first Access Grid event, bringing together researchers from WPI and Dartmouth College. This was followed by a discussion of the AG's capabilities between visitors at WPI, a faculty member at the University of Montana and employees of inSORS, an AG reseller and makers of the inSORS Grid (IG). Since that time, the WPI AG has been utilized to enable WPI Faculty and Staff to attend workshops offered by the National Center for Supercomputing Applications (NCSA) and the Ohio Supercomputing Center (OSC), seminars and meetings with colleagues throughout the world, and the 3rd Virtual Genomics and Bioinformatics Conference presented by North Dakota State University, and attended by researchers from 25 sites around the world.
- Currently, Dr. Julia Mullen, Frank Sweetser and Joe Krzeszewski (both of Network Operations), have been actively involved in preparing many of the Satellite Sites for the upcoming SCGlobal '03 program. SCGlobal '03 is a portion of the technical program for IEEE and ACM's premier conference on Super Computing, SC2003. As part of the SCGlobal organizing committee Dr. Mullen has been involved from the beginning, while Frank and Joe have recently become part of the testing team, and will act as node operators during the actual three-day event. This will be the first time that WPI's AG node will be seen at a significant international conference.
- The AG team at WPI continues to host demonstrations of the technology to further the understanding and use of the tool. The AG node was active for the entirety of the October Open House, and numerous demonstrations were held for the advisory board members who visited the campus on October 17th.

Display Wall:

- The WPU 'Pixel Factory' is closing in on an opening date. At present all of the hardware has been setup and the software is being installed. The Display Wall is a research project, and thus the software is not production ready and requires a good deal of tuning.
- As part of the SC2003, WPI researchers will have their visualization projects displayed on the stereo display wall in the Boston University Booth. Dr. Mullen is working on the software issues required to bring the work to Professor Gretar Trygvasson and Professor John Sullivan to the wall.

LINUX Cluster:

- The Linux cluster (11 nodes, each node 2x2.4 GHz Zeon Intel Processor, 2GB RAM, 36 GB HDD) has been operational for about a year now. It has been a great success with faculty and students from ME, CE, ECE, CS, MA and CM constantly using it. The cluster is operating at 90% plus capacity most of the time.
- The 10, dual CPU, Linux cluster node at WPI is currently in use. Though many groups use it as many single node machines, there are groups who are utilizing the distributed computing resources that it offers. Dr. Mullen is currently working on a User Guide for the Linux Cluster, along with tutorials for using it as a parallel computing source.

Card Access:

- Academic Computing was part of the team that helped design and implement the total conversion of the external doors to all WPI dormitories and some academic buildings to the hardwired Card Access system by Best. We helped to coordinate the IT portion of this massive, quite extensive project which involved establishing connection and coordination between different databases, network connections to all panels and readers, managing the entire software installation, troubleshooting and system administration.

Other:

- Helped to establish a connection for WPI labs placed in the CMMIC (Central Mass Magnetic Imaging Center) building at UMass Medical in Worcester. Previously the faculty and student were transferring large file sets over modem lines since they were not allowed on either hospital or the school networks. After the connection they will have access to Internet2.
- Purchased an EMC CX400 unit with 1 TB of extremely secure storage to provide redundant backup for the valuable data of EPI researchers and departmental servers.
- Led the effort for the IT Disaster Planning and Recovery Project for four of the academic departments and Continuing Education. This effort led to the identification and cataloging of all critical systems. Documented detailed plans were created on how to prevent or reduce the risks and how to recover from disasters.

Gordon Library and Web Development Office

1. COLLECTIONS AND RESOURCES:

- ENCompass, is software that enables users to reach a wide range of local and remote library resources in a single search, was made public during the summer of 2003.
 - Two local digital collections were created by library staff.
 - Over a thousand items in the Woodbury letterhead collection were scanned, creating digital objects for each one. Metadata was entered to identify each object. The Web Development Office began work on the design of a web portal for this collection.
 - WPI electronic theses and dissertations (ETDs) are being entered into ENCompass as a separate collection. To date 35 have been processed with approximately 180 current ETDs to be added. Each year more ETDs will be added to the digital collection.
 - Remote resources such as licensed databases and full text electronic journal collections were incorporated into ENCompass.
 - A product called Link Finder Plus, an open URL-based link resolver that allows users to step easily from citations and abstracts to full text articles without having to leave their initial search session, is in the final stages of testing.
- A new Collaboration Room was created. The room consists of two identical areas separated by movable screens. Each area contains a plasma screen, dedicated PC, drops for two laptops, DVD and CD players. The spaces are intended for groups to work together using this high end equipment. A system was developed whereby students and faculty can reserve the areas themselves. We anticipate these spaces will become very popular and well used.
- Purchases of new web based electronic books, journals, and databases expanded the online collections to 7,913 e-books, 10,938 e-journals, and 160 e-databases.
- Interlibrary loan requests for WPI materials from other libraries almost doubled in this period resulting in 7014 requests for journal articles. Electronic transmission of journal articles more than doubled during the period.
- Several important gifts received by the Archivist for the Special Collections included:
 - Harold Black papers – lecture & research notes, articles, miscellaneous publications of Harold S. Black, Class of 1921, inventor of the negative feedback theory.
 - Woodbury & Co. Collection (1884-2001) – Printing samples, woodblock, photogravure engraving proofs, sky camera photos; Company records, newsletters, memorabilia; Set of large hand drawn renderings of factories and commercial buildings. Gift of Kim Woodbury, Class of 1944.
 - Bell Collection – 60,000+ technical drawings relating to fire alarm design donated by Robert W. Bell, former CEO of Faraday Corporation. The collection is Mr. Bell's personal collection and dates from the early 20th century to the 1980's.

2. NEW SERVICES:

- The UnipriNT-CBORD pay for printing system was implemented in the library. This system allows users to use their WPI ID to pay for printing from all public PCs in the library as well as pay for copies on the library copier machines.
- Laptop loans more than doubled in this period. Laptops were loaned a total of 3,493 times compared to 1,437 for the previous twelve months.
- Gordon Library enabled a 24/7 virtual reference service called MassAnswers in June 2003. This service enables people with questions to contact a nation wide reference service, staffed by librarians from all over the United States.
- Virtual services for users were expanded
 - A pilot program to test the value of AOL's Instant Messenger service as a means of assisting users outside the library was established in November, 2002.
 - Electronic Interlibrary Loan requests were made available to students. Prior to this period, electronic ILL requests were only available to faculty and staff.
 - Electronic requests for materials in Founders were developed.
- Two hundred and nineteen instruction sessions were offered to 2725 attendees, an increase of 14 sessions and 304 attendees over the previous 12 month period. Course related instruction accounted for 62% of the total sessions offered.
- A new feature in the Voyager online catalog called Bookbag was activated. This feature permits users to create personalized collections of library records.

3. LIBRARY BUILDING:

- Compact shelving was installed on the ground floor during the summer of 2003.
- Thousands of journal volumes from three floors were consolidated into the regular and compact shelving on the ground floor. An outside contractor was hired to move all the volumes based on advance calculations from librarians.
- All book volumes in classification areas P through Z were moved from the third floor to the first floor shelving previously occupied by journals.
- Shelving on the third floor that formerly held the books that were moved to the third floor were removed as well as shelving in the reference area on the first floor. This opened up attractive seating areas for students on both floors that have been needed for a long time.
- New lounge furniture, tables, and chairs were added on the first, second, and third floors in response to student needs. New carrels were purchased.
- Web-based security cameras were installed on all floors of the library in place of cameras which recorded to videotape. The images are digital and can be observed on selected PCs. Older footage is archived on the web.

4. WEB DEVELOPMENT OFFICE:

- Staff continued redesign of the WPI Web site, working both with Marketing and with individual academic and administrative departments. Major projects completed include:
 - Undergraduate Admissions (www.admissions.wpi.edu)
 - Advanced Distance Learning Network (www.wpi.edu/+ADLN)
 - Corporate Education (www.wpi.edu/+corped) - new site
 - Continuing and Professional Education (www.ce.wpi.edu)
 - Chemistry & Biochemistry (www.wpi.edu/+Chemistry)
 - IT Division (www.wpi.edu/+IT) - new site
 - Academic Technology Center (www.wpi.edu/+ATC)
 - CCC (www.wpi.edu/+CCC)
 - Library (www.wpi.edu/+library)
 - Management (www.mgt.wpi.edu)
- The Cabinet approved the new web policies, which are now in effect campus-wide.
- Created and filled a new full-time Web Developer position. The WDO staff currently numbers four full-time staff – a director, designer, developer, and applications developer.
- Designed a kiosk for the Admissions Office, featuring an interactive campus map, directory of key offices for visitors, and an events calendar. Future plans include working with Marketing on a second phase and implementing an interactive directory of student tour guides (in progress).
- In conjunction with CCC's Banner Group, developed an online evaluation system for continuing education certificate program students.

5. OTHER INITIATIVES:

- The Library Director, Collection Management Librarian, Archivist, and Systems Librarian once again worked with Professor John Woycheese and the Director of the Academic Technology Center to submit an NSF grant application. The proposal involves building a collection of digital objects used in the teaching of fire protection engineering. The National Science, Math, and Engineering Digital Library (NSDL) program had 194 proposals submitted and we were one of the 30 grants awarded out of this total. This enables WPI to have a node in the National Digital Library effort.
- The Archivist continued his IQP collaboration with faculty in the Humanities & Arts Department. This involved students expanding the Worcester Author website to include Worcester poets with links to libraries and repositories that held collections relating to the Worcester poets.
- The Archivist and Collection Management Librarian applied to the Massachusetts Board of Library Commissioners for a grant to fund a preservation survey of the archives special collections. The grant was awarded to Gordon Library and a professional conservator will be hired to survey the collections and provide recommendations on ways to preserve and/or conserve the holdings.
- Barcoding was concluded for over 8,000 older journals scheduled to be stored in the New England Regional Depository. The barcodes and other information were entered into the library online catalog in order to link with the Depository's inventory for retrieval purposes.

- Gordon Library held a Vendor Fair in October. A total of eleven outside vendors of library resources attended. Tables were set up in the main floor of the library for vendors to display promotional materials and talk about their products. Several chose to give presentations in the Instruction Labs and the Movie Lab. Around 216 people attended and their feedback as well as vendor feedback was overwhelmingly positive.
- A pilot program to determine the value of PDAs for searching library collections was developed in conjunction with the Academic Technology Center who loaned 5 wireless Compaq iPACs to librarians. The pilot showed that these devices were useful because of their mobility and therefore usable in many different locations. However, the small screens required a great deal of scrolling and some web pages needed to be rewritten to accommodate ease of use on the PDAs.
- Brown bag lunches targeted at faculty and staff began in A term. These sessions called 'Lunchtime in the Library' have been well attended. So far they have included a session choosing the best college or university that included using library resources to help make the choice, and a session on copyright for faculty.

Academic Technology Center (ATC)

1. OPERATIONS

- Secured hardware for a PDA pilot (46 units at no charge) in Oct, 2003. During FY03, the ATC conducted some PDA pilots with the Teaching Technology Fellows and select members of the IT Division (Library and NetOps) to work through support and connectivity issues. A pilot with Professor Jim Hanlon, one of the Teaching Technology Fellows, is scheduled for C-term, 2004.
- As part of WPI's ongoing mobile computing efforts, the ATC deployed new hardware and training support for the Campus Center's laptop program (10) and continues to support the Library's laptop program (10).
- Expanded webcasting services (live and archived); primary beneficiaries are ADLN and campus event planners (e.g. 2002 and 2003 Commencements were simulcast online as well as other high profile events such as the Gubernatorial Debate).
- Evaluating the implementation of a campus-wide web conferencing product. Committee was formed in June, developed evaluation criteria and is currently reviewing product. On-campus demonstrations of the committee's top four products are scheduled for late September/early October.
- Mobile equipment inventory significantly upgraded to provide high quality image and audio capturing devices required for courses and projects. Students, faculty and staff now have access to fully digital video cameras, 3.1 and 5 mega-pixel digital still cameras, and audio recording kits for use on academic applications/projects.
- Modified the WPI CATV head end to provide an additional channel of programming to WPI Campus Television lineup (i.e., TechTV) at the request of students.
- Purchased a site license for Camtasia screen capturing software (instructions and deployment procedures are currently being piloted) to assist faculty and IT instructors with the development of media-based training materials.
- Equipment Reservations: FY03 Actual – 3782, FY04 projection – 4100
- Media Support for Events:
 - FY03 Actual – 421 plus 7 Satellite Downlinks and 22 Video/web teleconferences; FY04 projection – 463 (summer of 2003 was slower than in years past).
 - Some of the major events included: six Undergraduate Admissions Open Houses; NIE Conference in Boston (John Orr – several day event); Joint Advisory Board Meetings; Accreditation Board Meetings and AV/computing support at their hotel (AACSB, NEASC, ABET); NCSSSMST Student Conference; Gubernatorial Debate; Trustees Meetings; Commencement Weekend (Baccalaureate, ROTC Commissioning, Graduation); Graduate Admissions Orientations and Trainings; Monthly Venture Forums; BEI Grand Opening; Science Education for the New Millenium (three offsite meetings); Memorials (9/11, Denise Nicoletti, Carmen Brown, Herbert Beall); Faculty Convocation (including a videoconference with Australia w/award recipient J. Barnett); Alumni Weekend; Homecoming Weekend; RoboNautica (weekend Robotics competition); Battle Cry (Weekend Robotics competition); five MPI Meetings/Symposia; NSO (five days of events), NFO, Faculty and Departmental Retreats; Founders Dinner in Alden; Monthly Faculty Meetings; Technology Humanists Awards Dinner; Athletics Awards Dinner; bi-weekly CEDTA events; Summer Camps

(Strive, Gems, Frontiers, Camp Reach, Strive Jrs, Gems Jrs); CDC Career Fairs and job recruiter sessions; and IGSD Global Fairs.

- Video Production and Editing Projects
 - Editing and shooting of PS Competition, multi-day and multi-camera event- Judy Miller.
 - “Life safety” video editing - D. Lucht.
 - Re-edit of “Careers in FPE”- D. Lucht.
 - Edit of Twin Towers collapse- J. Barnett.
 - Many edits and re-compilations of WPI video and audio commercials- Flett.
 - Shooting and editing of Chinese language video for IGSD CD- S. Weininger.
 - Re-edit of Plant tissue series- P. Weathers.
 - SFPE tape series: Required many hours of shooting and editing, final tape series is 9 hours long.-D. Lucht/P. Shelley.
 - CDC promo video: Shot all original footage over a 5 month span; 5-plus days of editing - A. Riordan.
 - “Venice under Siege”, some re-editing- Fabio Carrera.
 - CCC Informational Video, both shoot and edit- Deb Dexter.
 - Edit video and create MPEG for presentation- Chrys Demetry.
 - Edit several videos and create MPEGs for NSO presentation- Jack Carney.
 - Edit and MPEG creation of graduate research work on a weekly basis - S. Shivkumar.
 - Video tape analysis for the Worcester Police and State Police. Assisted police with at least 10 cases, including a hit-and-run accident.
 - Production Only events – End-of-year graduation dinner and awards; Faculty Convocation; 2 visiting lecturers for Management; BEI Grand opening; Borkey Dedication.

2. INFRASTRUCTURE PROJECTS:

- New e-classroom installations: Salisbury Labs 123, Higgins Labs 154, Higgins Labs 230. Install includes dedicated projectors, PCs, VCRs, and DVD players as well as support for a laptop and external video source.
- New e-conference room installation: Fuller Labs 246 (Beckett Conference Room). Install includes dedicated projector, PC, VCR, and DVD player as well as support for a laptop and external video source.
- Upgraded existing e-classrooms - the electronics and projectors in FLAUD, and KH116.
- Upgraded existing e-conference rooms - the electronics and projectors in the Hagglund and Mid-Century rooms of the Campus Center.
- Replaced 12 PCs in existing e-classrooms (50%) – two-year replacement cycle maintained for PCs in classrooms.
- Completed the AV design and installation for the Access Grid Room to include: triple, rear projection; four remotely controlled cameras; and a 42” plasma that serves as a reference monitor for the presenter. Via the campus CATV network, the Access Grid room can also access other WPI resources such as the existing H.320 and H.323 videoconferencing hardware located in the TV Studio or the satellite dish located on the roof of Goddard Hall.
- Completed the AV design and installation for the NOC to include: routing of multiple display sources to twelve unique destinations; a Crestron control system tied to existing KVM

switching to provide an easy-to-use interface for the end user; four plasmas displays and eight local displays.

- Completed the design and installation of two collaborative learning areas in the former Web Development Office space located in the Gordon Library. Each area accommodates up to six users and has a dedicated 50” plasma centrally located so all users can view it. Each area also has a dedicated PC, VCR, and DVD player as well as simultaneous support for up to three laptops. The collaboration areas, formally named as the “IT Lab” by the Gordon Library staff, can be reserved through the circulation desk of the library.
- Upgraded the Movie Lab in Gordon Library with input from the entire WPI Community. All hardware was replaced and software was updated. The lab is currently running HP XW4100 workstations with 3GHz hyper-threaded processors. All the monitors were replaced with 18” LCD displays that have the ability to rotate from landscape to portrait orientation. All machines also support user accessible firewire and USB 2.0 ports. Updated resources allow faculty, staff, and students to create 3D and 2D animations, graphics, audio clips, multimedia presentations, and short edited video segments.
- Added a telestrater to the PC in the TV Studio. This tablet-like device allows any presenter in the TV Studio to draw, with multiple colors, on the image of the PC; thereby allowing for on-the-fly interaction with his/her electronic content. There has been an overwhelming amount of positive feedback from faculty on the introduction of this new technology.
- Upgraded aging ATC support servers (i.e., departmental file share, equipment reservation, ATC anti-virus) this summer. The load of a couple servers was distributed over additional servers providing better performance for the user, and a higher level of reliability.
- The ATC made large strides in providing streamed content to our end-users this summer. Hardware was added to support two simultaneous streams coming from the Master Control Room (MCR) at one given time. The media server was also upgraded and storage added to house the large amounts of video being generated.
- Norton AntiVirus was upgraded this summer providing a comprehensive protection package to all ATC supported machines (classroom PCs, laptops and desktops). Central notification and central quarantine are a couple of the unique features in the upgrade.
- In support of a NSF grant received by Rajib Mallick, the ATC designed a system to assist Prof. Mallick with the teaching objectives outlined in his grant submission. The facility is located in the Civil Engineering conference room and includes a dedicated 50” plasma, PC, VCR, and DVD player as well as support for a laptop and external video source.
- Upgraded the VHS-based, automated video playback system used to support the university’s premium movie service to an automated DVD playback system.
- Installed a dedicated power conditioning unit and UPS in front of all the equipment in the TV Studio. This will provide staff with the needed time to properly shut down all equipment as well as protect the equipment from brown outs and spikes.
- The ATC and Web Development Office launched a new, interactive plasma display for visitors to the Admissions office. Using a simple touch screen interface, users can view an interactive campus map where they can select departments or buildings and gain more information about them. Users can also view daily campus events.

3. TEACHING AND LEARNING:

- Teaching Technology Fellowship Program (IT/AA funded – 6 faculty “graduated” from the class of 2003 Fellows, 6 faculty continuing in the class of 2004, 7 new faculty selected for class of 2005); Fellowship video produced and distributed as part of “Graduation” ceremony
- Laptop Pilot Program institutionalized and renamed to “Mobile Classroom Program” - PLC (Davis Tutorial- A and B terms) and 3 courses - Olinger (ME – C term), Tyler (BB – C term), Mallick (CE – D term) are currently scheduled.
- myWPI – increased number of users and uses
 - FY00 – 160 courses
 - FY01 – 343 courses, 170 faculty; piloted the use of myWPI to support organizations
 - FY02 – 417 courses, 191 faculty; 72 organizations
 - FY03 – 466 courses, ~210 faculty; 97 organizations, plus the Insight program which includes all incoming freshman)
 - FY04 – 500 courses projected (i.e., 2/3 of all WPI courses use myWPI – less PE courses)
- Increased training offerings to administration, faculty, staff, and students.
 - “A la Carte” and department-based training for faculty: training model developed, list of offerings determined, lesson plans written, and program piloted. Offered to several departments in 2002 – 2003 (FY04 program offerings available upon request)
 - Multimedia Workshops offered covering topics such as scanning and image acquisition, digital cameras, design tips for presentation graphics, and photographic composition. Each session attended by 5-10 participants, mostly staff.
 - Co-taught sessions in Photoshop with Gordon Library’s Reference/Instruction Librarian. Sessions typically attended by 12-15 participants, mostly administration and staff
 - Combined PowerPoint software training presentation/design workshop offered with the CCC’s Computer Trainer – with future combinations and collaborations planned. Attended by 5-15 participants with a mix of administration, faculty, staff, and students. Also co-taught sessions on Electronic Thesis and Dissertation submission, attended by 24 graduate students.
 - Piloted additional myWPI training offerings in collaboration with the CCC’s Computer Trainer. As usage of myWPI increases, there seems to be a higher need for training. New sessions were added targeting staff and students on the basics of navigating myWPI, and using myWPI for organizations. Extensive training is also being developed to coincide with the launch of Bb6.
 - Added formal CPS training sessions to training calendar to meet increased demand.
- Coordinated the development of an IT-wide training brochure. All trainers within the IT Division worked together to coordinate schedules and resources, as well as print a 16 page catalog of workshops to be offered in Fall 2003, articles on technology, and information about other resources.
- Surveyed ADLN faculty on professional development needs. In response to the survey results, coordinated professional development offerings with CEDTA and then implemented an ADLN Luncheon series for faculty teaching distance-based courses.

- Deployed ADLN faculty assessment surveys to assess satisfaction levels. On a likert scale of 1-5 with 1= Strongly Disagree and 5= Strongly Agree, the ATC received an average score of 4.68. Actual survey questions and results for the Spring 03 semester are available upon request.

4. AWARDS AND PR:

- ATC Director, Conference Committee Member and co-chair of Instructional Support track, NERCOMP 2004 Annual Conference - "IT Matters! Supporting the Educational Enterprise in Challenging Times," Worcester, MA, March 2004.
- ATC Director and Gordon Library Director, co-PIs (along with a FPE faculty member who served as PI) on a NSF Digital Library grant, "Fire Science Multimedia Library," for \$149,960, effective January 2004.
- ATC Director, Conference Committee Member, American Association of Colleges and Universities (AAC&U), Technology, Learning, and Intellectual Development, Network for Academic Renewal Conference, Cambridge, MA, November 2003.
- ATC Manager of Educational Technology Services, ATC Online Delivery Coordinator and CCC Computer Trainer, Presenters, AAC&U Technology, Learning, and Intellectual Development, Network for Academic Renewal Conference, Cambridge, MA, November 2003.
- ATC Manager of Educational Technology Services and CCC Computer Trainer, Presenters, EDUCAUSE Annual Conference, Anaheim, CA, November 2003.
- ATC Director, co-producer of NERCOMP SIG – Blackboard User Services Workshop, Worcester, MA, October 2003.
- ATC Online Delivery Coordinator and CCC Computer Trainer, Presenters, NERCOMP SIG-Blackboard User Services Workshop, Worcester, MA, October 2003.
- ATC Sr. Systems Administrator and CCC Manager of Academic Computing, Sia Najafi, interviewed for article on audio/visual design of the Access Grid Room; ProAV Magazine, August 2003.
- ATC Manager of Campus Media, WPI Leadership Award (given in recognition of leadership and A/V assistance throughout the Summer Outreach Programs), August 2003.
- ATC Manager of Educational Technology Services, Invited Article Writer, New England Faculty Development Consortium Exchange, Spring 2003.
- ATC Online Delivery Coordinator, Presenter; AACE ED-MEDIA World Conference on Educational Multimedia, Hypermedia & Telecommunications, Honolulu, HI, June 2003.
- ATC Manager of Educational Technology Services, Invited Reviewer, Journal of Computing in Higher Education, 2003.
- ATC Graphics Coordinator, Invited Presenter; Digital Design Workshops. Borough of Manhattan Community College. Invited to give a series of workshops to general faculty and staff as well as Title III Cohorts. Manhattan, NY, December 2002.
- ATC Manager of Educational Technology Services and CCC Computer Trainer, Presenters, Sloan Annual Conference on Asynchronous Learning, Orlando, FL, November 2002.
- ATC Graphics Coordinator. Empowering Faculty: Development of a Campus-Wide Academic Technology Certification and Mentorship Program. Association of Educational Communications and Technology (AECT) International Conference, Dallas, TX, November 2002.

5. SPACE:

- The final phase of the ATC office renovation was completed. This phase reworked existing, poorly designed and underused space into a functional work area for many end-user support activities of the department. The reception area and new entrance provide for higher visibility to the community as we are now visible from the main stairway in Fuller Labs. The renovation also relocated the ATC shop to a less usable public space under the stairwell where ATC storage once was. The renovation has provided increased security and a better service space for ATC customers as well as a more suitable working space for the staff.
- Renovation to the Prep Room of Perreault Lecture Hall is beginning (FLB14). This will provide one office space for a senior CCC staff person and the construction of a multi-purpose facility that will house video editing, photo copy standing, and virtual reality creation equipment. When not being used as a work space, the facility will double as much needed private meeting space for the Educational Technology Services group of the ATC. The space will also provide off-hours access to certain ATC resources. A small amount of storage will be maintained in this area for larger, less used pieces of the ATC's equipment inventory.
- Existing hallway/storage space was converted to a PC workshop where machines can be repaired in a clean, static-free environment and new hardware can be configured for deployment.

6. PLANNED FOR FY04:

- Complete renovations of FLB30, FLB14, and WB228.
- Complete electronic classroom inventory and create instructional materials and signage for using classroom equipment both in the e-classrooms and on the ATC website.
- This December, the ATC will perform major upgrades to myWPI. The software that supports myWPI (Blackboard's Enterprise Learning Management Platform and Community Portal) will be upgraded to the latest release of Bb6. In parallel with the Bb6 upgrade, the ATC is planning for the implementation of hot, off-site backup of the myWPI system (current plans call for co-locating a fully redundant system with the Goddard GigaPoP). Once the Bb6 upgrade is complete, plans to tie myWPI into an authentication system with the goal of implementing single login, the integration web-based e-mail into myWPI and the use of myWPI as a portal for alumni will be addressed.
- The campus televisions will be upgraded, and new locations will be added. These new locations included 2 new TVs in the fitness center, one in the bowling alley, and one in the new FL 2nd floor lounge. The upgrades and new TV's will be managed from a central location providing us the ability to control all the functions of the TV from a dedicated PC in the ATC MCR. The new locations will also provide increased exposure of the campus bulletin board.
- Currently evaluating hardware/software to upgrade the aesthetic nature, news worthiness and usefulness of the university's video bulletin board system (the system is currently driven by a PC loaded with PowerPoint).
- The ATC is in the middle of an ongoing project to connect all installed campus projectors to the data network. This will allow for proactive maintenance as well as additional security.
- Install and configure a campus-wide, web conferencing service.

- Reevaluate the current international cell phone service provided to project teams traveling abroad, and replace all existing cell phone hardware. Currently the ATC supports 175 global cell phones and 40 pre-pay phones.
- Assist the CEE department with the development and implementation of a technology solution that will help them to virtually connect lab space with classroom space.
- Evaluate the need for and possibly deploy a new production switcher in the PCR or at another appropriate location on campus.
- Evaluate the need for and possibly deploy DVD duplication services.
- Install updated alarm system; tie into existing card access project in Fuller Labs.
- Offer new faculty development programs, including an IT Lecture Series and IT New Faculty Orientation Information Luncheons. Continue development and deployment of A La Carte.

Advanced Distance Learning Network (ADLN)

1. REVENUE/EXPENSES:

- Closed FY03 at 97% of revenue and 94% of budgeted expenses thus contributing 95% more net than budgeted (see below).

ADLN Budgeted		ADLN Actual	
Revenue	\$1,227,556		\$1,189,092
Expenses	\$1,175,586		\$1,087,800
Net\$	51,970	\$	101,292

- For FY04, currently at 53% of projection.

ADLN Budgeted	
Revenue	\$1,233,488
Expenses	\$1,176,234
Net\$	57,254

- Ongoing relationship with Seoul National University in Korea to deliver Fire Protection Engineering program.
- Working on a relationship with the College of Fire Technology in India where their students would complete a M.S. in Fire Protection Engineering Department via ADLN.

2. INFRASTRUCTURE/OPERATIONS:

- All ADLN courses are now offered completely online due to the implementation of streaming media (i.e., video-based content is directly accessed by the distance students through an archived video stream in their myWPI course site). This new service eliminates the multi-day delay and expense of shipping videotapes and other media. A fee-based media service has been instituted to service students who do not have access to a high speed internet connection.
- Working with School of Industrial Management (SIM) and Corporate Education to deliver customized graduate certificate programs to corporate clients through “blend learning” approach; currently assisting with the delivery of a 6-course graduate certificate program via videoconferencing to students located in Worcester, MA and Syracuse, New York.
- Working with CCC to track ADLN courses and students taking these courses through Banner.

3. AWARDS AND PR:

- ADLN Asst. Director, Panelist, New England E-Learning Association, Measuring the Delta in Higher Education, Boston, MA, April, 2003.
- ADLN Asst. Director, Guest Editorial, Mass High Tech, “High Tech MBAs Make a Difference from a Distance”, December, 2002

4. OTHER INITIATIVES:

- Investigating the use of DVD as an information and content distribution media for high-bandwidth applications in ADLN (primarily); DVD mastering equipment was purchased in FY03 and there are plans for the purchase of DVD duplicating equipment in FY04.
- Relationship of SIM/Corporate Education to ADLN and how revenue and expenses are to be booked has not been determined. This is an outstanding issue that still needs to be addressed. Projected SIM/Corporate Education activity that is distance based is unclear (and therefore unbudgeted).
- Working on some e-learning consulting projects with potential revenue stream. This is a new activity for ADLN so unsure what the impact will be.

Office for Information Technology (OIT)

1. BUDGET AND PLANNING

- The IT Division's operating and capital budget performance for the past fiscal year both came in substantially under budget, thus returning funds to the University for use elsewhere. For FY03, the Advanced Distance Learning Network (ADLN) contributed 95% more net than budgeted. Our scalable business model has served us well during the downturn in the economy.
- We executed extensive, important and aggressive capital budget projects over the summer. These projects are documented elsewhere in this document.
- The IT Division participated extensively in Crisis Planning activities and implemented two crisis centers, and a web-based email emergency broadcast system.

2. OUTREACH

• IT Advisory Committee (ITAC)

The ITAC, a group of 24 individuals from all aspects of campus (students, faculty, administrators), is co-chaired by Provost John Carney and VP for Information Technology Tom Lynch.

- The IT Advisory Committee conducted a study and held a forum to obtain faculty and student input regarding a potential laptop requirement at WPI. "The committee determined that there is strong sentiment in the community to not require students to own laptop computers. Of primary concern is the fact that the requirements vary substantially across the community so that standardization on one model or one operating system would not be appropriate. Additional concerns included expense, effective utilization, and distraction in classes. Most significantly, however, was the philosophical argument that such a requirement would be at odds with the WPI PLAN. 'Turning away from this sort of diversity does a disservice to the learning environment WPI claims to foster.' WPI requires its students to take responsibility for their own educational programs. In an analogous sense, WPI students are expected to take responsibility for determining the tools they need to succeed in their own program of study."⁸
 - The ITAC sponsored instruction for faculty and staff on the administrative system (Banner). Business staff and IT staff joined to develop and deliver short instruction sessions for targeted audiences, such as reviewing research budgets.
- ### • Goddard Collaborative
- WPI led area universities, museums, and K-12 schools in the formation of the Goddard Collaborative, a nonprofit group which is interested in leveraging technology to improve collaboration. From the group, WPI, as a regular Internet2 member, sponsored Assumption College and the College of the Holy Cross for their connection to Internet2. We also sponsored the Worcester Antiquarian Society, the Higgins Armory, and the Merrimac Education Center (a network of 300 K-12 schools throughout Massachusetts),

⁸ <http://www.wpi.edu/Admin/IT/Advisory/laptopreport.html>

for their forthcoming connection to Internet2. WPI offered consultant support for institutions exploring connection to the Goddard GigaPoP.

- We developed the website, <http://www.goddardcollaborative.org/>, and posted a wealth of other grant and committee information on BlackBoard.
- Our sponsorship of the Merrimack Educational Center (MEC) for Internet2 participation has been approved. MEC is working with Charter Communications to get connected to our gigaPoP at 474 Main St. This has already paid dividends; our successful grant from the Massachusetts Department of Education included a number of MEC school districts across the state and we will be serving them over the ADLN/MEC network. What is MEC? Merrimack Education Center grew out of a need on the part of school superintendents and the Department of Education to examine the models of regional collaboration to provide cost effective services to schools based upon local issues and concerns. MEC currently serves over 100,000 pupils in the region and acts as an educational broker linking the school districts with local, state and national resources.
- The Goddard Collaborative meetings resulted in several other grant proposals and the following two grant awards:
 - Holy Cross and Assumption awarded \$172,000 National Science Foundation Grant for network infrastructure.
 - The American Antiquarian Society (AAS) and Higgins Armory received a private grant valued at \$25,000 to provide microwave links to WPI to connect to the Goddard Collaborative and Internet2. Our sponsorship of AAS has already been approved; Higgins is in the final draft process. Both organizations have plans to distribute K12 educational content using the ADLN and MEC.

- **Internet2 Sponsored Educational Group Participant (SEGP)**

While our plans were to establish a State-wide SEGP, policy changes at Internet2 would have created a competitive situation pitting WPI against the University of Massachusetts. Accordingly, we began a relationship with the Merrimack Education Center (MEC) and have successfully sponsored them for Internet2 participation. MEC is currently providing network services and internet connections to 350 Massachusetts K12 schools, 70% of the K12 student population. Their network is being connected to WPI and they will share our Internet2 connection. There are significant opportunities to provide math and science educational content over WPI's Advanced Distance Learning Network once MEC is connected.

- **Worcester InfoTech Corporation**

Tom Lynch has participated as a board member of the Worcester InfoTech Corporation. This group, founded by Trustee John Nelson, is attempting to bring economic development to the region in the form of Information Technology related businesses.

- **Ecotarium**

Tom Lynch is a trustee at the EcoTarium, a local museum that is dedicated to providing the public with knowledge of the New England environment; their goal is to generate awareness of issues and to foster a sense of stewardship. Tom serves as head of the Trustee Program Committee and the Information Technology Committee. One faculty member in the Computer Science Department at WPI has recently agreed to sponsor an IQP project with the EcoTarium. This collaboration will benefit WPI, our students, and particularly help the EcoTarium during a

difficult financial time. Our work with the Goddard Collaborative has helped the EcoTarium to substantially reduce its internet connection charges and has provided them with an opportunity to become an Internet2 sponsored participant. This will pave the way for future joint collaborative opportunities.

- **Presentations**

Tom Lynch, VP of IT gave the following presentations:

- *Internet2 Implications for Libraries* , New England Library Association Annual Conference, Worcester Centrum Center, October 26, 2003, <http://www.wpi.edu/Admin/IT/Projects/publications.html>
- *Internet2 and the Goddard GigaPoP*, The Worcester City Council, Worcester, MA
- *Internet2 and advanced networking*, The Worcester Chamber of Commerce, Framingham, MA
- *Internet2 and advanced networking*, Worcester Academy Parents Council, Worcester, MA

3. ACADEMIC VISION

We continued to work with the Provost, Academic Department Heads, and others to define an academic vision for WPI.