

OIT Annual Report 2006-07

EXECUTIVE SUMMARY



The Office of Information Technology (OIT) continued to build on the partnership of Academic and Administrative Information Technology (AAIT), Network Communications (NetCom), and Healthcare Information Services (EHcIS) to successfully meet objectives for seven high priority themes: standardization; communications; infrastructure; administrative initiatives; academic initiatives; research and health sciences; and issues and risks.

In its second year, the IT Governance process brought consistent,

In collaboration with senior leadership and the Information Technology Steering (ITSC) and subcommittees, goals and priorities were set and resources allocated. Efforts were guided by a commitment to operational excellence, so that customers could be assured that resources were efficiently applied.

transparent decision-making standards for IT management across the institution. Synergies were found where the bar could be raised by functionally aligning people, projects, and resources with the University's business needs and strategic mission.

Seven governance subcommittees met

monthly, gathered proposals, evaluated them, and submitted recommendations to the IT Steering Committee (ITSC) for approval and funding, to be allocated in 2008. An eighth subcommittee, Research Administration, was appointed in the summer of 2007.

Projects recognized as exceptions to a once-a-year review process were those that supported University strategic initiatives to be implemented in 2007, projects that had contracts or other University obligations associated, or projects that carried a University liability if not approved in the interim.

Instructional and Research subcommittees, whose members are University faculty, developed a proposal submission process. The Instructional subcommittee considered proposals based on the value of

the technology to teaching and learning in the classroom, while Research focused on the scientific and clinical research benefits of proposals to predictive health, computational and life sciences, neuroscience, human nature and society, and global health. Both Instructional and Research calls for proposals encouraged cross-unit collaboration to confirm initial and ongoing needs.

Organizational and senior-level personnel changes presented new opportunities to strengthen and support key strategic initiatives. An IT Security Organization and Policy Review recommended the creation of a chief information security officer (CISO) position. National searches were conducted for the CISO, as well as for a deputy CIO for IT.

On August 1, 2007, Brett Coryell was appointed to the deputy CIO position. Coryell leads a new division, University Technology Services (UTS), that merges Academic and Administrative Information Technology (AAIT) and Network Communications (NetCom). Several key functions of UTS, such as network and communications technologies,

OIT Annual Report 2006-07

EXECUTIVE SUMMARY



data center operations, financial systems, and the PeopleSoft Human Resources application, serve both Emory University and Emory Healthcare (EHC).

Coryell's appointment and the consolidation of the two major University enterprise IT organizations represents a significant advance in streamlining and optimizing IT at Emory.

The creation of a new Research and the Health Sciences IT (RHSIT) division promises to advance the University's strategic mission by facilitating cross-institutional and collaborative research efforts. Marc Overcash was appointed as the deputy CIO on April 1, 2007.

Planned services include opportunities for broader access to computational resources; availability of dedicated resources for using and extending EHC's clinical data warehouse for research purposes; development of a research portal that will organize and present services and data tailored to the Emory researcher;

common software to facilitate secure, seamless collaboration across and beyond Emory; and dedicated resources to quickly provision new research-oriented services, such as HIPAA-compliant file shares and data collection mechanisms.

The introduction of a new, cross-departmental IT Finance and Administration (IFA) division consolidated staffing and resources for the administration of financial, human resources, contracts, licensing, facilities, and administrative operations of OIT, UTS, RHSIT, and the CISO. John Connerat was appointed executive director of IFA on August 1, 2007.

Dr. Richard Mendola
Vice President for Information Technology & Chief Information Officer

E-mail and Calendaring

A major standardization effort commenced to upgrade and unify enterprise e-mail and calendaring services. All units in the Emory Finance & Administration Division were asked to standardize e-mail and calendaring on the Microsoft Exchange platform as part of a multi-phased initiative, the Emory Exchange Project, which is set to migrate computing, desktop, and mobile environments to the Exchange platform for e-mail, voice, calendaring, and document sharing.

A *focus on standardization led to greater yields through economies of scale, strengthened community, and increased opportunities for meaningful academic interactions.*

Over the course of the year, 5,000 users accounts in Human Resources, NetCom, and AAIT were migrated from Eagle e-mail and Meeting Maker calendaring software to Exchange. An evaluation for the migration of an additional 10,000 users was completed.

Concurrently, **Phase 1, the Healthcare Exchange Project**, was kicked off on January 23, 2007, with EHC leadership approval for the migration of all their e-mail and calendaring accounts (approximately 13,000) from the Groupwise platform to Exchange. A consulting team, Enabling/Project Leadership Associates, was contracted to assist with project management, design, and migration efforts.

Over the spring and summer, progress was made in planning the migration. Design issues were encountered that pushed the full implementation date forward to a tentative completion date of fall of 2007.

After the migration of EHC accounts, **Phase 2, the University Exchange Project**, will prioritize and migrate the remaining e-mail and calendaring accounts for faculty and staff in University departments, divisions, and schools, from Eagle E-mail to Exchange over the course of 2008.

LearnLink will continue to serve as the primary e-mail platform for students with some exceptions. **Phase 3** is slated to integrate enterprise voice mail with e-mail.

Antivirus-Spam Filtering Service Implemented

A new, enterprise-wide e-mail filtering service, Postini, improved services on campus by reducing the volume of unwanted e-mail (spam) and helping to block virus-infected mail before it could be delivered to University e-mail accounts. The service was activated on October 23, 2006, for Emory University faculty, staff, and student e-mail accounts with some exceptions. Additional features were added to the antivirus-spam Filtering service in January 2007.

As part of the GroupWise to Exchange migration, EHC gained the added security benefits of the Postini service beginning in April 2007. All EHC e-mail from outside Emory now flows through Postini's filters.

Change Management Methodology

A cross-functional team led a review of the IT Change Management (CM) process. Based on the review and recognizing IT Infrastructure Library (ITIL) best practices, a Change Review Board was created, processes were outlined for each of five risk levels, and

administrative functions were identified to schedule, document, approve, and communicate change requests. Funding was requested for a Remedy (Manage IT) software module to automate the CM process.

Evaluation of Microsoft Sharepoint

Following the interest in SharePoint on campus, AAIT worked with Emory Libraries on a joint evaluation of the product. SharePoint offers a wide variety of tools that could address outstanding Web application needs: file sharing, team collaboration, portals, blogs, wikis, business process management, Web content management, etc. Goizueta Business School (GBS) uses it extensively, and units in the School of Medicine (SOM), as well as a number of administrative units, expressed interest in the collaborative capabilities the product provides.

Help Desk and Network Operation Center Services

Remedy Help Desk software was implemented across IT HelpDesk and Network Operation Center Services for EHC, AAIT, and NetCom, providing a common software solution to track,

manage, and resolve internal and external help desk and customer support incidents.

Assessments were made to appropriately reconfigure work-flows and seating to enhance services rendered by help desk and network operation centers.

Network Core Architecture

This year, NetCom's advancements in virtualizing network routing technology enabled cost and labor efficiencies in the extension of network cores to new locations. Each virtual core is built atop hardware that is already deployed.

Extending the academic network to Emory Crawford Long Hospital (ECLH) for the new Predictive Health strategic initiative became a matter of configuring the software – no additional hardware was necessary. Designing the network core with the flexibility to extend and move networks to new buildings prepared Emory for future Campus Master Plan initiatives like those that call for the expansion of ECLH into the midtown campus.

In addition to providing 10 Gbps connectivity between the switch rooms, the new core provided 10 Gbps connectivity to research buildings and high traffic local area networks (LANs). The new School of Medicine (SOM) building was the first research building connected to the core at 10 Gbps, followed by Whitehead Biomedical Research Center, Wayne Rollins Research Building, Grace Crum Rollins School of Public Health, Atwood Chemistry Center, and the Robert W. Woodruff Library.

Edge switches connect over 35,000 computers to Emory's backbone networks. Emory is in the process of upgrading these edge switches to provide gigabit connectivity to each computer, which will provide the bandwidth needed for new applications including video.

In addition to providing more bandwidth, these switches integrate with the core and firewall architecture to extend each of Emory's different networks to end computers. These switches also offer advanced quality of service and power over Ethernet capabilities.

Information Security Conference, Cyber World Threats: Don't Be A Target

Protecting information confidentiality and preventing identity theft are top challenges to computing security in today's cyber world. Emory's fourth annual Information Security Awareness Mini-Conference on March 28, 2007, offered Emory faculty, staff and students the opportunity to learn ways to secure their digital information, protect their computing privacy, keep confidential information secure, and avoid becoming victims of identity theft when using networked resources. Over 200 people attended the one-day conference.

Policies on the Web

The Office of General Counsel (OGC) attempted to print out all policies published on the Emory University Web site and found that they were in dozens of different locations and the page count exceeded 1,500. With no cohesive organization, employees found it difficult to locate policies of interest to them.

AAIT, HR, and the OGC jointly developed a searchable Web site that functions as a central repository for all University-wide

policies that was implemented in spring 2007.

Web Initiatives and Portal Assessment

To keep pace with technology advancements at top tier institutions, critical service needs for Web infrastructure were addressed to support new paradigms for communication and collaboration, such as blogs, wikis, podcasts, portals, and enterprise-wide content management systems.

A new, highly-available architecture for Web development and production services that adheres to recently defined IT server standards (HP BladeSystem) was architected for University Web hosting. The first phase of implementing the new environment went live on May 21, 2007, with the successful migration of existing protected Web content to a new secure access Web service that hosts 40 sites with over 100 protected directories.

Three Web service offerings, "standard, advanced, enterprise" moved to the last phase of pre-beta testing in fall 2007. Migration from the current to the new Web Hosting environment is projected for November 2007.

Single Voice Platform

Progress was made in consolidating the two voice systems at Emory into one VOIP-based platform, including common voicemail. Unified Messaging will bring e-mail, calendaring, voicemail, inbound faxes, and

***B**ehind the scenes, the division's IT infrastructure ensured reliable, secure, and cost-effective services for Emory. Threats and opportunities for the academic and medical community were identified and managed. At the "command central" location, the heart of Emory's IT infrastructure beat 24 hours a day, 7 days a week – assuring continuous coverage for vital systems and services.*

instant messaging into one common e-mail inbox or phone interface.

NetCom developed a business case, sought funding, and began conversion of legacy voice systems to the Avaya single voice platform in preparation for the Clifton Road re-development (CRRP) initiative.

Consolidation of The Emory Clinic (TEC) and ECLH to Avaya switches was completed.

Work commenced with student community and housing to finalize a student residence hall voice platform strategy. Landline phones were scheduled for removal from freshman residence halls in fall 2007 and other residence halls by August 2008.

Identity Management (IDM)

Security in a digital world includes not only data that describes a person, but also data that describes the systems that are accessed. Rights and privileges are currently managed at Emory by a homegrown application that functions as a rights manager for applications and the Shared Data repository. Challenges for secure and efficient management of credentials and identities for the University and EHC include ensuring compliance with HIPAA, FERPA, and other federal information privacy mandates, as well as the ongoing work of keeping information current.

A design and analysis review was contracted to assess IDM architecture. An IDM team met with campus stakeholders to assess needs, review, and

evaluate IT product solutions. Sun's Identity Management Suite was selected. The review generated documents on requirements, the architecture for implementation, and a high-level project plan for a phased rollout.

Implementation of the re-architected IDM system, in addition to improving service, will expand access to EHC affiliates, alumni, and parents of students, improve provisioning processes, implement automation where possible, and establish an IDM infrastructure that allows for a more seamless customer experience.

Business Continuity and Disaster Recovery Plan

Business continuity and disaster recovery plans were needed for all central IT units. Phase I included commencement of work with schools on a common plan; creation of partnerships with functional units to understand and prioritize business recovery processes; and negotiations to secure a secondary, geographically remote data center that will serve as a disaster recovery site.

Phase II will include the creation of a business continuance infrastructure. After the business continuance infrastructure is in

place, Phase III will address the need for modifying applications to utilize primary and secondary data centers. An operational review was completed that increased the understanding of enterprise service interdependencies and documented the enterprise application environment. Key to business continuity, the review documented the current production-ready applications, and paved the way for a consistent process for adding and documenting new services.

Server Consolidation and Virtualization

Demand for enterprise data storage for the University and EHC are high and growing. Available data storage space in AAIT's Data Center currently approximates 300 terabytes, housed in a complex physical infrastructure of hardware, software, and firmware. In the worlds of research and academia, centralized digital storage promises cost-effective and convenient solutions for short and long-term data access. The infrastructure needed to support present and future data banks must be reliable, secure, accessible, and responsive to input/output demands.

Current infrastructure is supported by a tape backup/recovery system and scalable tape libraries that provide network-attached campus storage delivery; Data Center-based backup and recovery; and enterprise storage and storage services delivery.

Planned efficiencies will be achieved through a new server architecture that will optimize physical server capabilities by allowing more applications to reside on the same number of servers, in an IT architectural scheme called virtualization.

Since all data is not alike, and data custodians often have varying needs, a multitier storage model is being designed to accommodate stratified levels of input/output performance, redundancy (for reliability), and storage delivery needs with a baseline of 24/7 availability.

This year, multiple tiers of service for campus customers were defined with associated pricing models. Service level agreements for new service offerings will be introduced in late 2007.

Firewall Migration

AAIT and Netcom began in late January 2007 to migrate Checkpoint firewalls to Netscreen

as part of an overall revitalized network core project.

Co-location Space Expanded

As part of an ongoing commitment to the University's vision for research, as well as plans to consolidate University server resources when yields and increased efficiencies are achievable, construction commenced in September 2006 to nearly double the footprint of the co-location area of the Data Center. The space is dedicated for research, departmental, and unit servers that require the security and high-reliability environment of the Data Center. The reconfiguration of the space also paved the way for the addition of the new high performance computing cluster (HPC).

Additional infrastructure for the Data Center included a Liebert unit to provide for the needs for expanded cooling capacity.

Representatives from the schools and research areas collaborated to formulate a service level agreement for housing computing systems in the co-location area. Processes were devised by NetCom and the Data Center to enable a responsive and streamlined co-location service for the Emory community.

OIT Annual Report 2006-07

ADMINISTRATIVE INITIATIVES



EMORY

PeopleSoft HR, Kenexa/BrassRing Applicant Tracking and Kronos Upgrades

Successful HR infrastructure initiatives included upgrades to the PeopleSoft HR module to improve security, functionality, and data

Systems required for business and administrative processes were streamlined and improved.

Keeping the development of business and administrative systems in pace with the university's growing technological needs meant responding to new and changing business requirements, meeting federal requirements, and accommodating to organizational changes. Effective support was a balancing act of managing constant change while providing stable production environments.

integrity; adding functionality to Kenexa/BrassRing Applicant Tracking that gave hiring managers and recruiters an easier to use, more streamlined applicant-tracking process; and upgrading to the Kronos Time and Attendance software to resolve performance issues. The Kronos system was also implemented in

TEC and ECLH, completing the implementation for all of EHC.

In PeopleSoft Student Administration, online enhancements added functionality, including an OPUS feature, Guest Access, which provides student-authorized parents and guardians access to view designated student information such as bills, financial aid, etc. An assessment was completed to upgrade PeopleSoft Student to 9.0.

PeopleSoft Financials

An assessment was completed to initiate replacing the University's legacy Financial System (FAS), that included project planning for PeopleSoft Financials.

To standardize development and provide tighter integration of applications, the Finance Division's Web application development, maintenance, and support were restructured and moved to AAIT.

Continuing work from the previous year, when a consultant was hired to assess the state of the Finance Web, applications were inventoried and recommendations for improvement were developed. Another goal of the project is to create reusable programming components to enhance current and future finance applications.

Research Administration/eIRB Upgrade

An upgrade was completed in August 2007 to components of the Electronic Research Administration system (eIRB), with plans for the implementation of additional modules, as time and effort permit.

Destination Emory

A new Web site, Destination Emory, provided an interactive map that displays Emory's commute options to facilitate carpool matching.

SciQuest Project

For over 10 years, the University used the purchasing system, eProcurement. The vendor was sold multiple times since the product's installation. In a collaborative effort between AAIT and Purchasing & Accounts

OIT Annual Report 2006-07

ADMINISTRATIVE INITIATIVES



Payable, on February 5, 2007, a new vendor-hosted procurement application, SciQuest, went live in a phased implementation for campus units and departments, replacing eProcurement.

A third-party middleware product, WebMethods, was implemented to interface between SciQuest and Emory's legacy systems: FAS, A/P, ePlus.

A Web application was designed to handle vendor-create and maintenance issues. SciQuest was designed to interface to a modern enterprise resource planning (ERP) application and problems and challenges to interface it to Emory's mainframe legacy FAS system were considerable.

BlackBoard Online Course Management System

This year, more than ever, online resources moved into the mainstream for teaching and learning. Use of BlackBoard, Emory's course management system, surged from roughly 100,000 hits a day to nearly 30,000 hits per hour at peak usage.

Services were upgraded to satisfy additional demand and improve capabilities. Emory's Blackboard course management system underwent a

Supporting the educational needs of Emory faculty and students remained a priority. The division worked to enable faster access to information, improve methods of academic communication, assist with problem-solving efforts, expand learning resources, and evaluate the effectiveness of IT solutions. In collaboration with other Emory departments and divisions, technological advances were incorporated into the university's learning resource operations.

significant upgrade that went live on May 20, 2007. Retaining the look and feel of the previous version, Blackboard 7.1 offers new features, bug fixes, and support for collaboration tools such as wikis, a website where multiple individuals can share authorship of the same web page, and blogs, short for weblog, which are public, web-based journals in which frequent updates can be made. In addition to

upgrading the application, the application's infrastructure was upgraded to accommodate growth in the use of Blackboard on campus.

EduCAUSE Learning Initiative (ELI) International Assembly

On January 22, 2007, AAIT hosted an international gathering of academic computing professionals, CIOs, and Provosts, at the annual EduCAUSE Learning Initiative (ELI) conference in Atlanta.

The assembled visitors arrived on Emory's campus early in the morning to tour IT facilities and talk with colleagues about designing formal and informal learning spaces for the twenty-first century campus. Tours of the

Computing Center at Cox Hall, the Graduate Lab in Callaway, production classrooms in Candler Hall, the Emory College Language Center and the Emory Center for Interactive Teaching were prominent features of the site overview. Emory facilitated a participant discussion that looked at the challenges of creating and assessing innovative learning spaces. With visiting teams from Stanford, MIT, Williams, and Yale, Emory received outstanding evaluations on the day's events, a review that closely parallels the leading reputation Emory has in the field of learning space design.

Managing Student Elections

In the late 1990s, Emory students were still using paper ballots for their student government elections. That spring, after two contentious, nullified elections and heated articles in the Wheel, AAIT stepped in to offer a homegrown student elections' program. A new version, written in ColdFusion this year, has the capacity to handle the full load of 12,000 students authenticating via Network ID and voting within a twelve-hour period. This spring's election was successfully held using the new version.

International Outreach: Collaboration with Ethiopia

Rich Mendola and Mike Mandl traveled to Addis Ababa University (AAU) in Ethiopia in 2005 to consult with IT staff on strategic planning. That visit was reciprocated this year with the arrival of Bahrnegash Bellete and Sulieman Ali from AAU. For five days, beginning on March 19, Barnegash and Sulieman met with AAIT and Emory Libraries staff to discuss strategic planning issues, academic technologies and facilities, administrative computing and infrastructure, and IT policies and standards. Also discussed was an exciting opportunity for AAIT to partner with Emory Libraries on the creation and hosting of an interactive online site for AAU manuscripts, some dating from 2,000 years ago and inscribed on animal skins.

In addition to the relationship with Addis Ababa University, the division continued to work with the Meru and Kagaa schools in Meru, Kenya. In spring 2007, staff traveled to the schools to discuss technology projects, continue training and education of their IT staff, and look for additional ways that Emory can partner with

these institutions. One partnership on behalf of the University is to establish a memorial to Dr. George Brumley, former head of pediatrics, who perished with twelve members of his family four years ago on the flanks of Mt Kenya.

John Wahome was a visiting guest of the Academic Technologies Services (ATS) group beginning on September 3, 2007. John hailed from Meru, Kenya a partner with ATS in bringing computers, shoes, books, and scientific equipment to Kenya over the past three years.

LearnIT!, an Educational Conference on Academic Technology at Emory (EduCATE 2006)

Faculty, administrators, library staff and technology specialists had the opportunity to learn about innovative practices and new technologies that are advancing teaching and research at Emory at AAIT's annual *EduCATE* conference on October 25, 2006. This year's conference featured a full day of sessions in a setting that encouraged networking and information sharing.

An interdisciplinary roster of Emory faculty and AAIT/NetCom technical professionals led concurrent sessions on innovative teaching with instructional technology. Featured technology in the sessions included: iPod and pod casting, personal response systems (clickers), geographical information systems (GIS), Emory's High Performance Computing (HPC), the latest BlackBoard features and functionality, Google Scholar, and social software (blogs and wikis).

OIT Annual Report 2006-07

RESEARCH & HEALTH SCIENCES



New Computing Cluster Available for University Research Beginning September 3, 2007

The Emory Life Physical Sciences cluster, “ ELLIPSE,” a 256 node, 1024 CPU, high-performance Sun computing cluster is the latest arrival in the Emory High Performance Compute Cluster (EHPCC), a subscription-based, shared resource for the University community that is managed by the High Performance Computing (HPC) Group.

The new division for Research & the Health Sciences IT (RHSIT) was positioned to offer dedicated IT support for research across the University and the academic units of Woodruff Health Sciences.

The addition of ELLIPSE to existing campus computational resources, such as those at the Biomolecular Computing Resource (BIMCORE) and Cherry Emerson Center for Scientific Computation, moves the University into

the top tier of institutions for conducting computational investigations in neural simulation, genomic comparison, biological sequence analysis, statistical research, algorithm research and development, and numerical analysis.

Computing clusters provide a reasonably inexpensive method to aggregate computational power and dramatically cut the time needed to find answers in research that requires analysis of vast amounts of data. Eight and one-half hours of ELLIPSE operation is equivalent to an entire year of 24-hour days on a fast desktop, and four to five days is equivalent to two months on its 128 CPU predecessor, which is still in service.

OIT Annual Report 2006-07

ISSUES & RISKS



Insufficient power for the Data Center in the North Decatur Building

New initiatives for the Data Center, such as PeopleSoft Financials, BlackBoard, and the High Performance Compute cluster, and new storage added by both EHC and the University, placed additional demands on the NDB's power supply.

The current uninterrupted power supply (UPS) is running at around 88% with no failover path until the new redundant 750kVA UPS is installed in November 2007. Even with the 750kVA UPS in place, the power consumption is estimated to approach an 80% threshold within nine months.

Insufficient Funds For Hardware Refresh

While there is some consolidation with refreshing the servers (approximately six per year), many services remain on older hardware which puts them at risk for failure: servers are 44% more likely to fail at 4 years, 50% by 5 years and 100% by the end of 6 years. Older hardware consumes more overall power than the new blade technology and maintaining service contracts is comparatively more costly. Lacking budget lines for new funding, some services, like Insight, Webfocus, WebTrends, and Siteminder will have to be moved to hardware that was targeted to be decommissioned, rather than the more efficient and, in the long run, more cost-effective blade environment.