Office of Information Technology

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Chief Enterprise IT Architect
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Stewardship through Creativity & Discovery
Executive Summary

The Office of Information Technology (OIT) continued its pursuit of operational excellence this year and achieved a number of significant milestones despite new economic challenges. With the addition of key executive staff over the past few years and the completion of many foundation initiatives, OIT is now better equipped to fulfill its mission to create and sustain a seamless, agile, innovative, and efficient information technology environment that advances the educational, clinical, and research activities and aspirations of Emory University and the Woodruff Health Sciences Center.

The Enterprise IT Architecture team, one of the newest functions in OIT, made substantial progress in building out the infrastructure for data integration and application development. Led by Steve Wheat, the team put into place a software version control system, collaboration tools, and an enterprise service bus that allows data integrations to be done with a contemporary, standards-based approach. This infrastructure proved essential for supporting two high priority projects – Project Compass and Electronic Conflict of Interest.

Driving security standards throughout two distinct business environments represents another set of challenges for IT leadership. Emory’s IT security team, led by Brad Sanford, strengthened and enhanced the security landscape by methodically assessing, recommending, and implementing various safeguards which improved the protection of some of Emory’s most sensitive information systems, such as those hosting student, financial, and patient data. For example, more than 30 security policies were created or updated to establish appropriate expectations for the protection of patient and financial data. System administrators and those with privileged access to information systems must now present stronger credentials when managing servers or applications within Emory’s trusted networks. Due to the extreme risk of data exposure should a highly mobile device be lost or stolen, Brad and his team evaluated, selected, and are currently deploying safeguards to encrypt the hard drives of laptops used to store or process sensitive information. Detailed threat assessments resulted in significant improvements to Emory’s annual HIPAA risk assessment process and Emory’s enterprise wide vulnerability scanning and reporting process. The assessments have also highlighted the need for compliance with the Payment Card Industry (PCI) Data Security Standard and have resulted in several approved recommendations for reconfiguring network firewalls and intrusion prevention systems to enhance Emory’s network security.

Despite the economic downturn, opportunities for extramural grant funding were at an all-time high and the Division of Research & Health Sciences IT (R&HS) used the opportunity to its advantage. Through extensive collaboration with the research community, R&HS, led by Marc Overcash, established new platforms and services to support investigators in the design and conduct of research. A new virtual biorepository platform was selected and will be deployed to University research laboratories and their partners within a year. The new technology will assist researchers electronically capture and manage their data, collaborate with other research teams within and beyond Emory, and discover resources that will assist in their research. These initiatives are being established in conjunction with the Atlanta Clinical and Translational Institute, an NIH/NCRR funded partnership of the top Atlanta research
institutions. In response to the University’s high urgency and priority regarding issues of conflict of interest, the R&HS distributed an electronic conflict of interest (eCOI) application. The application manages both conflicts of interests and conflicts of commitments while integrating multiple forms and questions across the University. RH&S continues to work with investigators on the creation of research-specific IT solutions to help in discovery, analysis, and conduct of research.

During the past three years, the number of centrally managed servers at Emory has grown by 40%. As the need for data center space increases, so does the concern for costs. University Technology Services (UTS) took steps to forestall the enormous capital costs associated with additional data center space, power, and cooling by making existing servers and storage more efficient. Through an approach called “virtualization,” which divides a single physical server into multiple “virtual” computers running on the same machine, UTS was able to absorb the hyperinflationary increase in servers. Virtualization is a sustainable solution that decreases the need for additional physical machines, thereby decreasing the necessity to power and cool the machines. Currently, UTS has virtualized more than 25% of its servers, saving over 1.1 million kilowatt hours of power each year. The UTS solution is now available to smaller departments, helping to further save energy while delivering the redundancy and reliability of enterprise class servers at prices less than or equal to their typical equipment purchases.

The issue of data storage also loomed over the Emory community, with a rate of demand increasing twice as fast as that of servers. At any given time, UTS manages the storage of one million gigabytes of email, health records, and other data. After spending two years engaging business users and analyzing performance needs, the UTS storage team re-designed new classes of storage within existing equipment. This innovative tiered approach has helped OIT better control the cost of storage, despite explosive growth in its demand. Reusing existing storage more efficiently has saved Emory $500,000 by avoiding the need to purchase new equipment. At the same time OIT increased its total storage capacity, it reduced the storage costs for customers by up to 75%, decreased backup costs by 87% (worth $93k to customers), introduced a new method for helping researchers backup their data in multiple locations, and still reduced power and cooling demands 44%.

In addition to the above cost savings consolidation initiatives, UTS underwent its Next Wave reorganization, a refined restructuring guided by Brett Coryell and informed by key stakeholders across the University and Emory Healthcare. The reorganization has brought a more unified and cost-effective approach to providing IT services throughout the Emory community while positioning the organization to better address key improvement areas outlined by the stakeholders and working group: Operational Excellence, Service Delivery, Customer Service, Innovation, Customer Relations, Culture, and Employee Development. The new organizational structure enhances engagements with customers, eliminates silos within the organization, and reduces annual operating costs by $1.5 million dollars.

In summary, during the past fiscal year OIT delivered a wide range of infrastructure and service improvements. The coming year will likely present even greater fiscal challenges and we hope to use those challenges as leverage and inspiration for even more creative solutions that enhance the essential services we provide for the Emory community.
Issues and Risks

As an institution, one of the most proximate risks was the go-live of Project Compass in September 2009. The Project Compass governance committee reviews risks and remediation strategies on an ongoing basis, but as with any effort of this size, OIT resources mobilize to address issues as they arise. Longer term, the lack of designated funding for a business intelligence and data warehousing solution is our most worrisome post-launch risk.

On a broader scale, ongoing security and compliance risks are present in multiple forms, ranging from PCI compliance to the latitude allowed in current network and desktop configurations. These and other security risks will likely be with us for a number of years and will be addressed as rapidly as funding allows.
Introduction

Fiscal Year 2009 was a period of significant change and growth for the Office of Information Technology. The Research & Health Sciences division established itself as a strategic partner for our extensive bioinformatics needs and the two newest areas got off the ground with substantial contributions to improve our architecture and security standards. The University Technology Services division transformed itself into a converged organization, changing the reporting structure for over 100 staff members. This annual report includes the benefits gained by our customers with the UTS reorganization and highlights major initiatives across the strategic themes of OIT:

• Digital Scholarship
• Online Community
• IT-Enabled Research
• Knowledge Management
• Integrated Administrative Systems
• Technology Foundation Initiatives

Digital Scholarship

Emory's iTunes U: The public site of Emory’s iTunes U experienced explosive growth with more than 1.5 million downloads haven been made before its one-year anniversary of October 2009. The news grabbed the attention of the press, whose coverage garnered additional traffic to Emory’s iTunes U site and exponentially more downloads of Emory podcasts.

The iTunes U initiative was a true collaboration among many groups across the University. Emory houses 1,700 audio and video podcasts of lectures and interviews of Emory faculty, researchers, and speakers on Apple’s iTunes online store. A great part of the success is due to the wealth of language materials posted on iTunes U by the Emory College Language Center, which boasts around 80% of these download numbers. Eight languages are currently available in the collection, with more to come.

Training Program for Faculty Development Excellence: Emory's Center for Interactive Teaching (ECIT) successfully completed the first session of a multi-year initiative in partnership with the Graduate School of Arts and Sciences entitled "Technology, Pedagogy, and Curriculum" (TPC). The initiative is designed to teach Emory's graduate students how to effectively use technologies such as wikis, blogs, digital audio and video, and iTunes U in their instruction. Feedback was positive with 100% attendees stating the program was extremely valuable to their teaching and would be valuable to their overall graduate experience at Emory. In February, the ECIT staff began teaching the second session in the TPC series to an interdisciplinary group of graduate students.
The Learning Commons: The Woodruff Library and Emory University Technology Services designed the Learning Commons, bringing together computing tools, print materials, and electronic resources with the expertise of the Library staff and the Academic community at large. The Learning Commons currently provides its services in the Woodruff, Math and Science, and Chemistry libraries. It furnishes over 180 PC and over 60 Mac workstations as well as printers and business hubs. In the Woodruff library, the Learning Commons, in addition to the general use workstations, has two special use areas located on Level 2: the Desktop Publishing and Digital Media zone and the Data Visualization and Statistics zone. The Learning Commons also offers several group study rooms, equipped computer workstations, SMART Boards, and large flat-panel plasma TV screens. Users can bring their personal laptops or benefit from the Learning Commons Laptop Loan program conducted in collaboration with the Circulation department.

ECIT, Emory College Language Center, Online Resources: UTS saw a marked increase in faculty and student use of production and classroom facilities during the Fall 2008 semester, compared to previous years. Workshops, one-on-one training sessions, and customized classes were in high demand, largely focused on the adoption of blogs, wikis, and podcasts into teaching and learning.

Online resource usage also dramatically increased, as evidenced by a two-fold jump in access to online language content compared to Fall 2007. Improvements to digital offerings, better utilization of resources by faculty, and a student body increasingly comfortable with online language materials means the resources are more than just available to students; they are actually being used.

Statistically, there is a decline in kiosk use across the campus. While 128,000 kiosk logins fall semester is in no way inconsequential, it does confirm the rising trend towards more wireless laptop use and an increase in ownership of portable devices, such as Blackberries and iPhones by students. UTS is evaluating services such as kiosks to determine the future applicability of the service to now current industry trends and Emory’s needs.

Student Desktop Support: In parallel with the UTS Next Wave Organization’s focus on providing better customer service, Emory’s Student Desktop Support, or Clean Room, moved from its North Decatur Building to the 2nd Floor of the Student Computing Center, Cox Hall with great success. This physical move to a central campus location made it easier for Emory students to access technical support for their personal computer issues, install virus protection and anti-spyware solutions, setup EmoryUnplugged wireless network access, and uninstall programs that pose security risks. Since the move, the Clean Room has experienced an almost 22% increase in student traffic and has been able to provide more customized support to the Emory student body.

Student Computing Center: The Computing Center at Cox Hall saw another year of record-breaking student use, with over 172,000 entrances fall and spring semester, an increase of over 18% from the previous year. Close to 1,200 classes, tutorial sessions, study groups, and student organizations utilized the Computing Center's classrooms and collaborative spaces during fall and spring semester, up 23% from 2008.
Integrated Administration Systems

PeopleSoft Financials (Project Compass): The magnitude of Project Compass was felt across all OIT divisions and Emory enterprise business units. A dedicated project team consisting of business representatives, consultants, and information technology resources worked collaboratively over the past eighteen months to ensure a successful cutover on September 1, 2009. This was an expansive initiative due to the degree of affected customers and the technical complexities involved with any effort of this scale.

Project Compass included a significant build out of a new hardware environment as well as project management and programmer work. UTS teams performed integration testing to verify the various modules would allow information to flow through the system properly. The detailed testing also verified the validity of the cutover strategy and the amount of time each task would take during implementation. The Project Compass team spent two months performing stress testing on the production environment, contracting with a stress testing company who provided software and consultants. The collaboration helped simulate 1000 users on the system to ensure that the environment will perform properly under a load. User Acceptance Testing was performed as well. Individuals in UTS collaborated with the Project Compass team as well as many end-users across the enterprise and our consulting partners. This thorough testing and validation approach contributed to the success of the launch.

Part of the financials work consisted of converting chart of accounts and department ids stored in many systems. The PeopleSoft team worked with the Controller’s Office to convert data to new department structures. This represented a significant effort for the Controller and the business officers in the various schools and departments across the campus. Conversions were important because Enterprise Applications merged the accounting structures of two legacy general ledger systems into one. A new module (Commitment Accounting) was implemented in PeopleSoft HR as a result of the financials project, bringing the number of HR modules to eight, double what it was in 2003.

Underestimating the user impact in a project of this size would be a huge mistake. Fortunately, the project team understood the need to provide multiple training opportunities for all the functional users consisting of a variety of delivery modes including online documentation, multiple email communications, simulated demonstrations, and interactive demonstrations. Additionally a dedicated support team and process was created to answer customer questions providing quick subject matter expertise and rapid escalation as needed.

Document Imaging: UTS is working with Enrollment Services to modernize their business practices through the use of an enterprise document imaging solution. The continuing rise in volume of admission applications combined with the effort to meet Emory’s sustainability pledge has prompted Admissions to seek an alternative, more efficient business process. In conjunction with Purchasing and UTS, Admissions has researched imaging solutions to automate their business processes and provide relief from the burden of traditional paper intensive processes. With this initiative, paperwork will be
electronically and/or digitally submitted and then shared. It will increase efficiency and productivity, improve data accuracy, reduce Emory’s liability by minimizing document loss, and simplify disaster recovery planning by reducing the need for shadow systems. Moreover, it is scalable to meet the needs of both large and small offices.

Currently in the Proof of Concept phase, Admissions plans on going live in Spring 2010 with Document Imaging, using a pilot population of incoming transfer students. Later phases of the project will include a campus-wide enterprise solution, capable of integrating with University PeopleSoft. Implementations to include, but not be limited to, Financial Aid, Oxford College, Human Resources, Development and University Relations (DUR), Emory Alumni Association (EAA), and Finance & Administration. An integrated document management, imaging, and workflow solution will help Emory University conserve and reduce the University’s impact on the local environment.

**Administration Data Warehouse:** The UTS Data Warehouse team researched ways to enhance their customer service - specifically on ways to improve the information gathering and reporting process of the PeopleSoft Financials system. Intent on finding a solution to remedy inconsistencies in PeopleSoft reporting, the Data Warehouse team discovered the success of Oracle’s business intelligence products used by other institutions that experienced similar issues with PeopleSoft. Oracle collaborated with the Data Warehouse team, coming onsite to perform a Proof of Concept and installed their product using actual Emory information. Pending funding approval, the Oracle solution will significantly improve access to PeopleSoft data.

**Tightened Security Policies for Protecting Data:** A new IT security policy was created and implemented to enhance the security controls required for all critical financial reporting systems. Additionally, a new disk encryption policy was established to ensure that mobile and desktop computing devices utilize whole disk encryption technology to protect sensitive information stored on the devices, when appropriate. New technical procedures were also implemented that require system administrators to utilize two-factor authentication to remotely manage servers hosted in trusted Emory network zones. An initial draft of a security addendum that may be included in contracts with third party vendors or external hosting providers has been developed in conjunction with Emory’s office of general counsel. This addendum is designed to ensure that vendors entrusted with sensitive Emory data are contractually required to implement reasonable and prudent security safeguards to protect the data. Enhancements to Emory’s enterprise wide password policies are also currently under development.

**Software Configuration Management and Source Code Version Control:** Emory IT units use Subversion for software configuration management, deployment processes, and source code version control. OIT Architecture designed and implemented Subversion which allows configuration changes to be monitored, tracked, and logged. It also supports efficient back-out procedures for reversing configuration changes and more comprehensive deployment changes and upgrades when necessary. One of the most compelling advantages of this practice is that it stages and replicates all configurations and deployments to backup, standby, and off-site infrastructure to support Emory’s business continuance practices. The central deployment of Subversion is used for all design, modeling, source code, build, and application development documentation. All development efforts for IT units will be
stored in a single repository whenever possible to allow storage, growth, backup, failover, and disaster recovery to be planned and administered in a single, centralized manner. Security Administration grants access to users as job function requires, adding another layer of protection. Other repositories can be created for other units. OIT continues to develop software configuration management practices and publish guidelines for the use, administration, and migration to this new deployment of Subversion.

**IT-Enabled Research**

In its third year, the Division of Research and Health Sciences IT (RH&S) continues to support and expand IT Infrastructure to support the research environment. RH&S partners with investigators from across the University, including Public Health, Surgery, Transplant, Biochemistry, Genetics, Radiology, Medicine, Yerkes, and many others. Over 200 studies utilize RH&S-managed infrastructure. In addition, the Division continually works with investigators to evaluate and deploy a specific series of key Infrastructure that will support and advance their research.

**Finding the Right Research Resources:** With the breadth and depth of research at Emory and its partners, finding the right research resource can be difficult, especially with a deadline approaching. The Division, working with the Atlanta Clinical Translational Science Institute (ACTSI), designed and completed a prototype called eBIRT, the electronic Biomedical Interactive Resource Tool that allows researchers to browse and search for laboratory, technology, and core resources. These resources have detailed information on the services provided, costs, and contact information, and additional information such as funding opportunities and potential collaborators will be added.

**Automating and Managing Research Laboratories with Technology:** Over a 9 month period involving over 45 people, the Division led an evaluation of Laboratory Information Management Systems. With the assistance of funding from the ACTSI, Thermo Scientific Fisher’s Nautilus product was selected. This new research-focused infrastructure will help laboratories track and manage specimens through their lifecycle, automate the laboratory workflow, and manage results and quality control data. In FY10, the Division will be deploying the software across multiple research laboratories. Use of this centralized system is expected to generate $250,000 in one-time savings over the next three years and $50,000 in recurring software license savings.

**Analyzing Data through the High Performance Compute Cluster:** Ellipse, Emory’s central high performance computing cluster, continues to grow and expand. Since its inception two years ago, Ellipse has over 65 of users running over 4.6M CPU hours of simulation, modeling, and computational analysis. To meet the growing needs of the community, the Division expanded the available storage from 7.8 TB to 21 TB.

**Supporting Investigators, Centers, and Programs:** The Division continues to work closely with individuals and units within the University. The Predictive Health Initiative’s Center for Health Discovery and Well Being continues to add capabilities and reporting developed by the Division. The Departments of Surgery, Biochemistry, and Urology utilize the Division to advance their research and program objectives. Finally, the Atlanta Clinical and Translational Science Institute, a significant partner in
advancing key research infrastructure at the University and its research partners, works with the Division to create new strategic uses of information technology.

**Regulatory Compliance:** Multiple activities were undertaken to improve compliance with various State and Federal regulations. Over 30 HIPAA Security policies were reviewed and updated resulting in a single consolidated set of HIPAA policies appropriate for both Emory University and Emory Healthcare. The annual HIPAA risk assessment process was also significantly modified to ensure that compliance concerns identified in the assessment are appropriately documented and remediated over time. An assessment of Emory’s Trusted Zone has been completed and multiple remediation initiatives are underway to address the issues identified in the assessment.

Several additional activities focused on gaining an initial assessment of Emory’s compliance with the Payment Card Industry’s Data Security Standard. Peer institution research was conducted, Emory merchant accounts were reviewed, and a project business case has been submitted to governance to engage the assistance of a PCI Qualified Security Assessor to assess Emory merchants for compliance with the PCI Data Security Standard and develop remediation plans to address compliance concerns as needed.

**Electronic Capture and Management of Research Data:** Many investigators utilize electronic forms to capture data as a source for their research. With the help of 18 researchers, the Division has recommended two form-based tools that will facilitate the creation of form-based data capture instruments. These forms can be configured to help improve the integrity of the data, such as the use of data validation controls, and assist in the usability of the forms, such as skip patterns. In addition, these form-based platforms are designed for use within research so they have support for longitudinal studies, multi-center research, and HIPAA security controls.

**Managing and Tracking Conflicts of Interests – eCOI:** To assist the University in tracking and managing information required by its conflict of interest policies, the Division rapidly developed the Electronic Conflict of Interest application, partnering with the Office of Research Administration (ORA). The application seeks to streamline the conflict of interest and annual reporting processes while facilitating the compliance requirements of Federal and Emory conflict of interest policies and procedures.

**Knowledge Management**

**Disk Encryption Solution:** Emory completed a project to evaluate and select an enterprise disk encryption solution to help protect sensitive information stored on portable and desktop computing devices in the event the devices are lost or stolen. PGP Whole Disk Encryption was selected and the implementation of this solution is underway and nearing completion. The central infrastructure components have been implemented and initial pilot testing is currently underway. Pilot production availability of the solution is expected in October and full production availability is expected by calendar year end.
Insight Application Server Migration: UTS migrated Insight, Emory’s image database system, to a virtual server, thereby restoring stability to the application. The existing Insight infrastructure had been purchased in 2003 and required enhancement to ensure its reliability. Insight now hosts over 100,000 digital images, and is available to the entire Emory community for teaching and research.

Online Community

Service Catalog: UTS provides over seventy services to the Emory community. Historically, identifying services in business terms is challenging for an IT organization staffed with technical engineers. The best practices framework adopted by UTS identifies a standard to transform IT professionals from a technology view to a business and services view. The Service Catalog is at the core of the ITIL framework, acting as the focal point for interaction between IT and customers, providing the foundation for defining services. The catalog provides a general description for each service along with other helpful information such as eligibility, availability, cost, features, and support.

The Service Catalog uses the new enterprise content management system, Cascade, and the standard web design template created by the Emory Creative Group. Building the Service Catalog in customer understandable language comprised multiple stages: beginning with a list of services; engaging customers to help define and document services in customer-friendly business terms using card sorting exercises; creating and documenting consistent information for each service; and ultimately publishing the catalog on the web.

Migration of Users from Meeting Maker to Exchange: To minimize duplicative services and unify email and calendaring services, Emory consolidated multiple calendaring services into one calendar service using the Microsoft Exchange platform. The multiphase initiative to migrate computing, desktop, and mobile environments to the Exchange platform for e-mail, voice, calendaring required the retirement of the Meeting Maker system, Emory’s first collaborative calendaring and email system. This year UTS moved all Meeting Maker accounts to Microsoft Exchange, which is not only a robust collaborative calendaring and email system, but the only system compatible with the new Emory Single Voice Platform, Modular Messaging. Emory’s 3,460 Meeting Maker users were migrated successfully; by December 2008, all users had been disabled. The success of the uneventful changeover was to due to the standards and documentation provided by the Project Management Office and the thoroughness of the UTS teams who worked on the project.

Collaboration Tools (Confluence Wiki): The Confluence project resulted in a Wikipedia-type environment, facilitating editing, documentation, and collaboration among OIT staff. OIT deployed to production the latest version of Confluence, which included migration of existing documents in other systems. The simple, powerful wiki allows creation and sharing of pages and documents; it acts as a single, searchable, organized repository in which knowledge is accumulated and shared.
Technology Foundation Initiatives

**Server Virtualization:** The demand for IT services at Emory has grown phenomenally within the last three years. The number of new servers has increased by 40%, with storage expanding more than twice that rate. To address the demand, OIT implemented a multi-phased migration to virtualized servers, an initiative that has not only improved performance, but reduced expenses.

Server Virtualization maximizes the cost effectiveness of two basic information technology building blocks — servers and storage. Server virtualization safely divides a single physical computer into multiple virtual computers. Consolidating multiple virtual servers in a single physical machine allows for much higher utilization and economy of scale. OIT has indirectly added new data center space by making better use of servers and storage. Because data centers are among the most expensive spaces on campus, averaging $2,000 per square foot, Server Virtualization has a real economic impact.

From a sustainability standpoint, fewer physical machines reduce the power, space, and cooling needs in the data center. To date, these power-efficient solutions are saving more than 1.1 million kilowatt-hours of power each year. OIT has virtualized more than 25% of its servers and is now offering the service to campus IT departments. In addition to cost savings, the scalability of a large central offering has provided a level of redundancy and reliability that hasn’t been affordable for smaller departments.

OIT has nearly 1 million gigabytes of e-mail, health records, and other data under management at any given time. A tiered approach that matches requirements to the appropriate class of storage has helped control cost in the face of explosive growth. By engaging business users and analyzing performance needs during the past two years, the Storage Team has been able to re-architect new classes of storage using existing equipment, thereby avoiding more than $500,000 in new purchases.

Over the past year, these changes have resulted in an 87% reduction in the cost of backup storage and a 44% reduction in power and cooling demands associated with our storage environment. Emory’s strategy to enhance its technology capabilities comes with the ever-present need for new and updated IT applications and services. Server virtualization and storage optimization are intelligent solutions to that demand.

**Network Security Improvements:** Numerous network security improvements and enhancements were implemented throughout the year, significantly improving the overall security posture of the institution. The most notable improvements include:

- Expanded coverage of Emory’s intrusion prevention system to protect against attacks originating from Internet2 locations.
- Increased the effectiveness of Emory’s intrusion prevention system by quarantining systems involved in brute force attacks against Emory’s IT resources. These improvements are expected to block over 100 million brute force login attempts over the next 12 months.
• Limited peer-to-peer file sharing to users who express a need for the protocols in advance.

• Received governance approval to implement a more restrictive firewall policy for the academic network. Default Deny firewall policies have already been deployed to several early adopters with little or no negative impact.

• Dramatically improved enterprise wide vulnerability scanning processes. Real-time results are automatically consolidated into a web based security portal used by OIT Information Security. Detailed plans for allowing distributed access to the portal by local IT departments have been documented and a formal project request has been submitted to governance.

**Avaya Modular Messaging:** Faced with aging phone equipment, technical support with an expiration date of 2011, and the conundrum of purchasing outdated equipment for new offices, Emory surveyed the industry trends and noticed rapid conversion from switched technology to Voice over Internet Protocol (VoIP), a system that uses standards-based internet protocols to transmit voice.

UTS led the initiative to retire Emory’s legacy voice offerings and migrate to a new enterprise system from Avaya. During the course of the multi-phased process, three outdated phone switches were consolidated into one, approximately 26,000 work orders were written, and substantial coordination efforts were made for technicians to decommission old phones and switch to VoIP without disrupting service. By project completion in January 2009, more than 6000 University phones had been migrated.

The initiative satisfies Emory Healthcare’s need for a single, redundant phone system and provides a uniform user experience across Emory University and Emory Healthcare. This VoIP service allows messages to be retrieved via telephone, computer, or PDA. These improvements encourage an agile, cost-effective support for a more mobile workforce.

**Postini Provisioning:** Emory’s enterprise email protection service, which filters and quarantines spam and viruses, went through a restructuring process. The Postini Project consolidated the University and Healthcare Postini configuration from three to two organizations. This streamlined administration overhead and saved over $9,000 annually. All Postini users can now login using their network ID and password and set personal white/black lists. This project retired old, fragmented, ad-hoc provisioning and replaced it with improved consolidated provisioning using the Identity Management system. Old hardware was retired and a new robust, fault-tolerant infrastructure for the Postini system was implemented.

**WebMail High Availability Upgrade:** The Webmail High Availability Upgrade project was initiated to refresh the software and hardware on the Webmail system. The existing hardware was old and the maintenance contracts were expired. The old hardware was replaced with Virtual machine servers (VM). The software was out-of-date and needed an upgrade to cover security holes and bugs. The project was a success, and the new webmail infrastructure is now very robust and responsive.

**Email Names:** In October 2008, the Identity Management and Data Management teams of Emory IT Integration, in collaboration with other groups, successfully implemented enterprise management of
email names. This initiative, the EMNA project, addressed and resolved several chronic issues, such as collisions between University and Healthcare email names and problems involving LISTSERVs. Benefits of the EMNA project included: prevention of future email name collisions between University and Healthcare; reduction in confusion by showing the same email address in the GAL and on-line directory for people with exchange mailboxes; management of email names and addresses in the enterprise active directory for the life of the account; and a way for university users to self-select non-standard as well as standard email names for themselves.

**Email LDAP Infrastructure - High Availability:** Over the last several months, UTS configured and deployed Sun Java System Directory Server Enterprise Edition to replace the current LDAP infrastructure. This was done as part of a normal upgrade process as well as to address intermittent service failures due to misbehaving clients and improve overall availability and reliability. The architecture was reviewed by several OIT groups and was designed to institute failover in all parts if the LDAP architecture. Performance metrics were favorable when UTS moved to the Sun Java System Directory Proxy Server in March 2009. In addition, the new environment has mitigated the issues with clients that caused the service to fail.

**Enterprise Service Bus:** OIT made a leap from its traditional point-to-point, batch file-based integration, to a messaging, enterprise application integration (EAI). Emory University OIT adopted OpenEAI and other open integration services to implement its Enterprise Service Bus (ESB), and is using these frameworks to implement connectors for applications. An ESB provides faster and cheaper accommodation of existing systems. It increases flexibility, making it easier to change as requirements change. Emory University also benefits from the standards-based, predefined ready-for-use service types.

**UTS Next Wave Reorganization**

In pursuit of the mission of Emory University and the Office of Information Technology and in recognition of the converging nature of IT disciplines, UTS realigned into eight newly formed departments, each with a defined purpose directly addressing improvement areas requested by our stakeholders and customers. This restructuring eliminated artificial divisions and distinctions between Academic and Administrative Information Technology (AAIT) and Network Communications Division (NetCom).

Movement toward a thorough organizational review began in 2007 with the appointment of Deputy CIO Brett Coryell. With ongoing feedback solicited and received from Emory faculty, staff, students and internal UTS staff, a formal reorganization process began in September 2008. Under Brett's leadership, a cross-functional working group focused on UTS offerings, service delivery, capacity, competencies, and productivity. Working in conjunction with outside consultants, the group also met with a cross section of key customers including the Emory Libraries, Emory Healthcare, Emory College of Arts and Sciences, the School of Public Health, the Provost's Office, and Human Resources.
To catalyze organizational change using a standardized process-model based method, UTS adopted a set of IT best practices for managing projects and services. UTS removed one-third of its management layer redeployed resources to expand services. The new structure and approach delivered measurable productivity gains for PeopleSoft developers, Project Managers, system administrators, and other technical staff, while simultaneously expanding service and adding important new capabilities in Business Continuity and Applications Integration.

Summary and Highlights

In only ten short months since the realignment, impressive improvements have already been recognized by our customers:

- **Customer Relationship Management**: The time to move a new project request from submission through the IT Governance structure was reduced by 47%.
- **Innovation**: A study and proof of concept to improve the wireless experience for students at Emory was initiated. Results so far show the promise of greater speed and reliability with lower costs.
- **Customer Service**: The Service Desk expanded its hours and set a customer response goal to answer 72% of calls within 45 seconds. The desktop consolidation for Finance & Administration units was completed with Service Level Agreements in place for all supported units.
- **Operational Excellence**: Operational improvements resulted in a phone rate reduction of 10%, or $650,000 of savings passed on directly to customers. Increased productivity was realized in multiple areas including PeopleSoft development (10%), phone coordinators (9%), and system administrators (50% over past two years). Two business continuity improvements were implemented on the phone system with no downtime.
- **Service Delivery**: Project capacity was increased by 29% while simultaneously improving on the ability to deliver projects on time. Late delivery was virtually eliminated. Numerous hardware and software upgrades were completed, including a significant storage refresh.
- **Employee Development**: Enormous training efforts in the core competency areas of Project Management, Management, and IT Service Management with over 42% of UTS staff trained and certified in ITIL.
- **Culture**: A new Job Family System approach was designed and piloted with a large department within UTS. This provides clearly identified roles, responsibilities, and career paths for staff.