A Message to the ECU Community

Information and Technology Services (ITCS) provides the majority of the university’s technology-based infrastructure and services needed by all areas within the university. We provide the campus community with an annual report describing the high-impact projects in process and how each relates to the strategic goals of the university and the productive impact upon constituents. These projects require assistance and guidance from other units across the university to make each project a success. Ultimately, our collective efforts improve the ECU experience for everyone.

This past year, ITCS partnered with Health Sciences in merging the Multimedia Technology Services (MTS) unit into ITCS. This will enable greater efficiencies by avoiding duplication of existing services, providing a very high level of backup support to the Division of Health Sciences, thereby creating even stronger IT services to that division.

This past fiscal year, our Information Security Officer and our Director of Infrastructure Services retired. This gives us the opportunity to restructure and realign our existing senior-level staff to provide greater dedicated support and service to our ECU customers as well as within ITCS itself. This was accomplished without adding additional staff.

This edition of “The Year in Review” was produced with the intent to share what is happening within ITCS affecting the campus community in an easily-understood manner. It is intended to not only provide you additional insight as to what is happening within ITCS but also to provide you an informative document explaining the technologies ITCS offers. We would appreciate your feedback so that we can continually fine-tune these annual reviews to ensure that they meet their intended goals.

Don Sweet • Chief Information Officer
East Carolina University

About Us

ITCS exists to develop and deploy a stellar information technology environment at East Carolina University. Individual members work together to care for the university’s technology systems and services, and ensure quality support is communicated through their area’s work. Who are we?

Sue Stox 
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Wendy Creasey, EdD.
Director, Academic Technologies

Ray Drake
Director, Systems and Applications Support

Martin Jackson
Director, Network Services

Skip Kirby
Director, Strategic Information Services

Zach Loch
Director, Enterprise Information Systems

Jack McCoy, EdD.
Chief Information Security Officer

Hector M. Molina
Director, Central Project Office

Wanda Sandeford
Business Officer, Finance and Personnel Administration
ITCS Vision
We aspire to build an organization with committed and skilled people accountable to and serving faculty, staff, and students; simple processes making it easy to work with us, do our jobs, and deliver results; and innovative technology that is the right technology for the right reasons.

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The Information Resources Coordinating Council (IRCC) is the campus-wide group that advises the Chief Information Officer on information technology matters. The IRCC has representatives from every division and college across campus and provides input on information technology policy, projects, roadmaps, tool adoption, and IT changes. A few highlights this year from the committee include:

- reviewing the major projects, approving changes to the classroom standards, and approving the rooms selected for technology refreshes;
- reviewing the technology fee rate and discussing the allocation of the fee;
- supporting a recommendation to conclude the Blackboard Collaborate pilot since many of the features are available within the existing tool;
- reviewing and recommending the new proposed Web regulation that requires Web pages to be ADA compliant;
- supporting the acquisition of a Data Loss Prevention (DLP) tool that will automatically encrypt certain types of sensitive data within e-mails leaving campus;
- approving the change in PirateID construction, which will make all ID’s unique and never recycled from user to user;
- reviewing the spring 2013 technology survey results and proposing action where there were patterns seen within the data;
- providing guidance on issues, such as the Blackboard hardware upgrade, the end of life of Moodle, and the changing of persona; and
- supporting a recommendation to move forward with the adoption of lynda.com (a training tool for students) and the adoption of Blackboard Portfolio and Outcomes.

This year, a survey was administered to all Saba Meeting faculty, staff, and student users to determine the aspects of the program users struggle with the most. The results of the survey indicated that a user’s difficulty with audio, difficulty logging in, and generally how to use the program impacted the satisfaction of the user with the tool. Based on these survey results, an action plan was proposed to focus efforts where they are needed the most. User education on how to manage these items and troubleshoot audio and program issues will be implemented this year.

Based on feedback from several users of “clickers” used in instruction, a survey was also administered to faculty using clickers to determine whether the current clickers recommendation is meeting their needs. The results of the survey were presented to the IRCC and a recommendation was made to continue supporting Turning Technologies as our campus clickers solution.

Last year, the Web Oversight Committee (a sub-committee of the IRCC) worked on several initiatives. The Web Policy was updated to require that all Web sites used for the purpose of conducting university business, including academic work, must meet ADA requirements. Approval of this policy is pending. The ecu.edu homepage was refreshed with a new look and layout to allow visitors easier access to the most searched-for information. New templates for the university-wide content
management system were developed to meet ADA requirements and to implement a responsive framework that will allow a single Web site to work on all devices from desktop to mobile. Resources have been provided to help departments redesign their Web sites and to move their Web site content into the new templates. In addition, with the growth of available public Web sites, the decision was made to eliminate offering a service for individuals to host personal Web sites. This will allow more resources to be made available to host individual Web sites for academic work.

The annual technology surveys focus on (1) satisfaction with ITCS services, systems, and applications; (2) use of technology tools and systems; and (3) technology and training needs. We incorporate this feedback into future planning and implementation of technologies to support academic, research, and business needs. See Table 1 below for selected satisfaction rates on core technologies.

Table 1. Overall percentage of satisfaction with selected core services

<table>
<thead>
<tr>
<th>Service</th>
<th>Faculty / Staff</th>
<th>Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall satisfaction with IT services and resources</td>
<td>89%</td>
<td>88%</td>
</tr>
<tr>
<td>Respondents who think ECU's technology services and resources are important</td>
<td>97%</td>
<td>92%</td>
</tr>
<tr>
<td>Respondents who think technology used in courses is effective</td>
<td>92%</td>
<td>92%</td>
</tr>
<tr>
<td>Satisfied with e-mail</td>
<td>93%</td>
<td>82%</td>
</tr>
<tr>
<td>Satisfied with Piratedrive</td>
<td>84%</td>
<td>78%</td>
</tr>
<tr>
<td>Satisfied with computer labs</td>
<td>78%</td>
<td>85%</td>
</tr>
<tr>
<td>Satisfied with wireless networking*</td>
<td>74%</td>
<td>60%</td>
</tr>
<tr>
<td>Satisfied with IT Help Desk support</td>
<td>83%</td>
<td>80%</td>
</tr>
<tr>
<td>Satisfied with desktop technologies support</td>
<td>84%</td>
<td></td>
</tr>
</tbody>
</table>

* We will continue to invest in the wireless technology in academic areas to support student devices. We did not see a significant difference in student wireless satisfaction in 2014 (60%) compared to 2013 (69%); however, problems with the new wireless network security service and new wireless access points being installed at the end of the year may indicate there has not been enough time for students to see a positive difference prior to the survey. We will continue to evaluate satisfaction with the wireless networking in 2014-2015.
In the Global Classroom, 557 presentations were recorded and 46 partner universities in 28 countries were connected via video conferencing.

Our multimedia and technology services team managed more than 500 video teleconferencing events.

Over 1,100 posters were printed in the Laupus Library Computer Lab; 936 posters were printed in the Walk-in Help Desk in Austin Building.

The MTS video services team captured and edited video from more than 75 university events.

We updated more than 1,000 Web pages for departments in Health Sciences.

More than 24,000 OpScan sheets were scanned on the Health Sciences campus; 7279 sheet packets were scanned on Main Campus.

The Software Download Center processed approximately 7,227 software downloads. In addition, Microsoft downloads totaled 13,922.

Last year, 681 faculty and staff and 607 student users created 3,840 Qualtrics surveys with 243,443 responses.

ITCS supports WordPress blog servers with 5,179 sites and 7,055 users.

ECU staff and faculty have created nearly 40,000 CommonSpot Web pages, and uploaded over 50,000 documents and 85,000 images in over 800 department Web sites.

1,621 students and 1,297 faculty and staff have MyWeb space.

14,965 instructional video presentations were recorded using lecture capture technologies. These presentations were viewed 254,113 times by students, faculty, and staff in multiple colleges across campus.

Using seven Pirate Print kiosks, students printed approximately 11,902 files and 51,655 pages.
Since its inception in 2004, the ACE Student Computing Support Center has received nearly 56,000 requests for service or support for student computers. In 2013-2014, ACE resolved 7,348 service requests from students.

We refreshed over 1,100 computers in campus computer labs.

The Virtual Computing Lab (VCL) served over 5,400 reservations and over 83,600 hours.

Online service requests increased 25% from 12,746 to 15,883.

As part of the technology training sessions for freshman orientation, 4,314 incoming freshman were educated on the use of OneStop, Banner registration, Blackboard, security, and the e-mail system. 1,032 parents were informed of the technology needs for their students and advised on making decisions related to purchasing computers.

In 2002, there were 6 servers to a rack. Today there are 42 servers to a rack. We also now have a Blade Chassis, which has 56 Blade servers.

ECU has 13,227 desktop computers supported by ITCS.

The campus has 110 student computer labs with 2,930 computers.

ITCS’s Business Intelligence/analytics environment, ecuBIC, now hosts over 8,000 reports and supports well over 5,000 users. Attendance at ecuBIC training courses was just under 800 last year.

There are 1,800 wireless access points throughout the Main and Health Sciences Campus, including residence halls, classrooms, and offices, which can accommodate 15,000 wireless users concurrently.

ITCS continues to install data ports in multiple locations, bringing ECU’s total data ports to 55,000.

Last year, more than 400 faculty and staff attended ITCS-led training sessions on Tegrity, Blackboard, Saba Meeting (formerly Centra), WordPress, and other classroom technologies.
Behind the Scenes

Our data centers have 700 servers that store 1,709 terabytes of data. That’s almost 752 BILLION sheets of paper!
Upgrades to the University Infrastructure

Applications like Banner, Blackboard, the ECU Web site, and OneStop are the lifeblood of the university. To ensure continued secure, rapid, and reliable delivery of all ECU critical applications, several projects this past year focused on strengthening our network infrastructure, including:

- Upgrading network load-balancing hardware to provide greater versatility for disaster recovery and application testing. The upgrade provides a more secure front-end and firewall functionality for various Web applications.
- Implementing a firewall management platform that enables our network team to ensure continuous compliance across the network, thus increasing network security and performance.
- Implementing the university’s new network security system to protect ECU applications from unauthorized access and to ensure computers connecting to the university networks – both wired and wireless – meet minimum security standards. We will continue to implement additional features of this network security system.
- Purchasing, installing, and configuring the university’s next generation network core. The new core has been built in parallel to the current network and is being prepared for integration and migration in the near future. The new network core will provide greater flexibility, performance, and security compared to the current network design.

Because we are a growing university community and equipment becomes outdated over shorter timeframes, our data network technology is upgraded to ensure it remains top-of-the-line. This past year, the network services team installed and upgraded equipment – i.e., network switches and copper and fiber optic cabling – in more than 20 locations across campus. These upgrades will provide expanded network capacity for faculty, staff, and students; monitoring of HVAC (heating, ventilation, and air conditioning) and electrical systems; and new technology-enhanced classrooms, IP cameras, network access points, fire alarms, and burglar alarms. Additionally, several rooms containing equipment that delivers connectivity to localized areas of campus buildings were completely overhauled.

On the Health Sciences Campus, Voice-over-Internet Protocol (VoIP) phone lines increased by more than 780. VoIP lets users make phone calls over the Internet by converting analog audio signals into digital data. By converting the Brody School of Medicine’s legacy phone system to VoIP, the university will benefit from significant reduction in costs for voice services.

This past year, we improved the university’s data storage environment by:

- Installing new computer network technology in both the primary and secondary data center that enables traffic to be consolidated using a single network, thus reducing cabling, power, and cooling costs;
- Implementing management software for monitoring, configuring, and troubleshooting devices connected to the data storage environment – this software speeds the configuration of devices by at least 20%;
- Applying a new configuration that enables higher availability (uptime) of the data storage environment;
- Expanding capacity of the data storage environment to allow for growth over the upcoming year; and
- Offering faculty and staff an additional hosted data storage and backup option, CrashPlan. Licensed by ECU, this application is available to ECU departments through an annual license fee of $83 per user. Users can install CrashPlan on up to four ECU-owned computers.

We have an ongoing project to provide thin clients (computers that depend on some other computer to fulfill computational processing) to users in administrative and clinical areas with an emphasis at the Brody School of Medicine. To provide full disaster recovery capabilities between our primary and secondary data centers, we have upgraded the thin client
environment. To manage the increase in usage, we have doubled our licenses to 500 concurrent users for this environment. We purchased over 350 new thin-client technology systems for use in clinical and administrative areas on both the Main and Health Sciences Campuses. This new disaster recovery environment and the increase in thin client systems will enable ECU to avoid purchasing higher-priced workstations and to increase the length of usage for these devices compared to a traditional desktop system.

Virtualized application delivery decreases the downtime for users experiencing individual workstation issues since these system are centrally managed. Systems are more securely managed so that configuration changes are minimized thus giving us an added layer of security protection.

Physical space continues to be a priority at the Cotanche data center location. To meet the continued rack and floor space requirements we are working toward the redesign of the Enterprise Server Room. The new design will mirror other redesigned spaces and help achieve maximum space efficiency. We have completed the initial floor design and have begun moving equipment in anticipation of receiving funding for this project.

An important component to managing enterprise systems is the monitoring capability. This year, we upgraded to new and improved versions of Argent and vSphere. These software packages help us monitor the size of users’ disk, and input and output, CPU, and memory performance. New features of Argent include the ability to monitor whether Web page content is available, as well as file security.

This year, many teams across ITCS have been working on improving the firewalls to ECU servers. Firewalls are equipment that reside on the network and manage the flow of traffic to our servers. Work this year has focused on improving the security of our firewalls. This process includes the evaluation of existing firewall rules, and the identification of who or what needs access and why.

Tripwire software is enterprise level file integrity monitoring software that provides strict file change monitoring. It provides a high level of security monitoring and file change notification and tracking. This past fiscal year, our Systems unit deployed this software to 35 of our most critical servers. In part, this expansion of the broader monitoring environment is driven by changes to Payment Card Industry (PCI) requirements which have expanded the reach of what is “in PCI scope.”

Windows 2003 Server is approaching the end of software support in July 2015. In preparation for this, ITCS has been working to systematically migrate systems to more recent versions of Windows Server. Considering the broad implications of migrating 40+ systems, this is a huge endeavor that requires a lot of planning and accurate execution to limit negative impact to the customer. We have made significant progress this year and will continue the work in this area.

For long term provisioning efficiencies and to meet other automation needs, ITCS is building an environment for testing, script development, and server provisioning. This new automation environment will allow ITCS to automate repetitive tasks, quickly deploy critical applications, and proactively manage infrastructure systems and services. The new environment will play a pivotal role in provisioning and maintaining the new Blackboard application Infrastructure.

ECU’s voice environment runs on a Cisco hardware system. New features were tested this past year and implemented across campus in November 2013.

Oracle continues to be an extremely important component of our database platforms and an area where we enhanced our ability to support our databases using Oracle’s advanced database monitoring and system patching software. We are adding their database appliances as a standard choice for housing ECU data.
Operations staff monitor critical applications and systems to ensure the delivery of services. Additionally, they monitor the building perimeter to ensure employee safety.
Efficiencies
Efficiency and Effectiveness in Development

Earlier this year, ITCS completed the first in a series of planned projects involving the migration of patient information to the Medical Data Warehouse (MDW), which provides a HIPAA-compliant repository for secure storage and retrieval of electronic health records (EHR) and associated documentation that result from the decommissioning of legacy medical record systems. By law, this information must be maintained in an accessible environment for a period of time that may extend beyond two decades. These efforts included the development of an ecuBIC lookup/retrieval and reporting solution, resulting in the successful retirement of the Centricity medical record system at an estimated cost savings of over $500,000.

Enterprise Data Management (EDM; formerly Knowledge Management) is a comprehensive program designed to engage the campus community in the formal administration of the university’s information assets. This initiative was born out of the recognition that data plays an increasingly-important role in the university’s decision-making processes. Through EDM, the university will leverage investments in human and information resources to enhance the quality, accuracy, and value of data, and to increase the efficiency and effectiveness of information flow processes. An initial, primary goal of EDM is to establish a governance structure and set of standard operating practices that will enable the identification, definition, and cataloging of Institutional Data. This will also involve the development of a set of university-wide standards that provide for consistency in both the handling of Institutional Data, and the interpretation of policies, regulations, rules, and procedures governing the practice of data management at East Carolina University.

We implemented a system to track students’ physical entry and exit from various locations - Pirate Tutoring Center (tracks the amount of time students are tutored), an athletics location, and Austin Math Lab - using their 1 Card. Veterans services will be completed later this year. This system serves as a quick, easy way to run customized time-tracking reports for departments.

The Honors College needed a seamless application process that was user-friendly, integrated with existing technologies, and would help streamline the Honors admissions process. The Honors Application is housed in Pirate Port and gives incoming students an honors admissions process that is integrated in real time with Banner.

ECU embarked on an exciting new project this year - Pirate Introduction to ECU Registration (PIER). PIER introduces newly-admitted Pirates to the academic steps needed to begin their journey at ECU. The program facilitates student transition from high school to college by offering information about ECU, its programs, and available student resources. Students review the information on the PIER Web site, register for summer orientation, test their knowledge about the information on the site, and register for fall courses. ITCS developed the PIER Web site (www.ecu.edu/cs-acad/PIER) and quiz that was added to Pirate Port.

‘Recruiter’ is ECU’s new recruiting and admissions solution for campus admissions departments. The system is a robust portal for prospective students that allows students to track their admissions checklist and be aware of important information related to their admission to the university. Admissions departments can take advantage of the Recruiter Console, which allows admissions personnel to track prospective students as they work through the admissions process. Recruiter is fully integrated with Banner. Last year, Phase I was successfully completed. It was comprised of implementing the prospective student portal, communication campaign management by the undergraduate admissions staff, undergraduate event management for tours and open house, and integration with Banner. Phase II this year will include ECU’s own admissions application and deeper integration with Banner.

Thanks so much to you and your team for your exceptional work in making the Honors College online application a reality. We are all very impressed ...

— E-mail received from Honors College
Efficiency and Effectiveness in Operational Delivery of Services

As we make progress toward a mobile-friendly environment for our faculty, staff, and students, we must adapt our security practices, support strategies, and technology infrastructure. This past year, several projects focused on meeting these challenges:

- The ECU homepage received a refresh that included a new layout design and site infrastructure, as well as a new backend framework that offers a responsive design so Web pages will automatically rearrange content based on the visitor’s screen size. This past year, we received funding for student support to assist departments redesigning their Web sites. Over 60 sites are either in process or have been completed. Both RAVE, ECU’s alert system, and the university’s calendaring system, Localist, were integrated into the new ECU homepage.

- We now require faculty and staff to use a passcode on all mobile devices that access ECU e-mail. Implementing a passcode is extremely critical to protect sensitive university information, as well as protect users’ personal information.

- Our upgrade to Lync 2013 includes a Mobile Lync app for Windows, Android, and iOS users to stay connected on the go. Lync integrates seamlessly with e-mail, the calendar and the ECU address book to allow instant text messages, video conferences, online presentations, and even group conferencing.

- In partnership with ECU Campus Living, we invested over $350,000 to install wireless networking in Aycock, Scott, and Tyler residence halls. With this installation, all of ECU’s existing residence halls are now wireless. We annually invest $150,000 to upgrade wireless in academic areas to provide for growth, greater speeds, and redundancy. Our network services staff continually monitor traffic to identify peak areas, then add, move or adjust the range of access points to ensure appropriate coverage.

We implemented an Enterprise Video Conference Management system that provides an address book for campus video conference units and enables private addressing for those units. Users can initiate a video conference without having to know a specific number, while private addressing protects users from external access.

This year, we deployed four additional Pirate Print kiosks, bringing our total to seven kiosks across ECU. These units enable students to upload documents from any location and then access the documents to print from the seven kiosks. Additional kiosks will be added in the upcoming year.

We replaced over 1,100 lab computers with new and updated technology. Many of these replacements are “thin clients”. Thin clients are less expensive, have a lower energy emission, and enable improved centralized software management.

We have implemented full virtual desktops for students to access software for class assignments. This new method will replace the Virtual Computing Lab. This new technology implementation provides a consistent interface to students and increases access to resources by all students.

Distance education students and faculty, or those who frequently travel and are not tied to campus, need to have access to Piratedrive online file storage through a Web-based interface. The Piratedrive application, now in Pirate Port, has quickly become the most used application in Pirate Port and gives university employees and students quick access to their documents in a safe, secure, and convenient way.

The Orientation Registration system received a major upgrade this year and was converted to Pirate Port. The Orientation Registration system is frequently the first system an admitted student will use at ECU. The system is responsible for registering thousands of incoming students so reliability is important. In addition to a major facelift, several new features were added to allow First Year Center staff to configure the system from year to year with little ITCS involvement. This year, over 4,000 newly-admitted students registered using the Orientation Registration System.
My compliments to all on the Web site changes! I think the appearance has improved and is very user friendly.

— ECU end user on the redesigned university homepage

Several new recurring original programs were developed for ECU-TV, including Rebuilding Together, Health Discoveries, and a Nutrition Services program.

ITCS provided various hardware and software upgrades and installations across campus this past year:

• We replaced aging systems with new workstations and thin clients (approximately 648 replacements in Academic Affairs, Administration and Finance, and the Brody School of Medicine); replaced 76 ITCS systems with higher-end computers to better fit the enhanced technology required by IT staff; and migrated 445 computer and associated network printer endpoints located on the Vidant Medical Center (VMC) network to the ECU network.

• We worked closely with the Department of Chemistry and multiple hardware vendors to propose appropriate hardware replacement options for the High Performance Cluster (HPC), which is at the end of its life. The original cluster was funded by a $400,000+ National Science Foundation grant. The new environment will include approximately 40% more computational cores. The projected replacement will be completed in fall 2014.

• In May, ITCS began working closely with Joyner Library IT staff to replace the hardware that runs the library’s card catalogue servers for the ECU campus and Elizabeth City State University.

• We retired the Centricity Electronic Health Record (EHR) system and implemented a new ECU Physicians EHR system in five remaining clinics.

• We upgraded Symantec Endpoint anti-malware software on faculty and staff computers; transitioned users from Windows XP to Windows 7, which included migrating over 1,100 clinical systems in the Brody School of Medicine (an additional 1,170 systems will be migrated by the end of summer); and deployed Alertus software, an integral part of the ECU RAVE Alert system, which sends ECU Alert notifications to university-owned computers and displays them on screen.

Several changes were instituted for PirateIDs this past year:

• The structure of faculty and staff PirateIDs now model student PirateIDs, thus eliminating the possibility of a faculty or staff PirateID ever being assigned to someone else.

• In collaboration with Human Resources, the time in which a faculty or staff PirateID is deactivated was shortened from 120 days to 5 days after termination date. This change decreases the amount of time that former employees can still access university computing resources based on PirateID authentication, better protecting ECU resources. In a similar effort, we devised a method that allows new university retirees to keep their ECU e-mail address while eliminating potential access to ECU resources.

We implemented a new system that requires ECU Alumni to register in ECU’s password reset system after activating their ECU Alumni e-mail account. This allows our alumni to easily reset a forgotten password, and has dramatically reduced password reset calls to our IT Help Desk.
Efficiency and Effectiveness in the Delivery of Learning Technologies

We upgraded various learning technologies, including Saba Meeting, the primary method for Web conferencing in distance learning instruction. Blackboard was also upgraded. Feature enhancements include inline grading, a group management tool, test exceptions, global navigation, and a new calendar. An addition to Blackboard included installing the Mediasite Building Block, which allows any Mediasite-recorded lecture or presentation to be published as learning content in Blackboard.

In addition, we consolidated Mediasite content to one site; now ECU colleges and departments are managed by directory structure and permissions, which provides for easier content sharing and quicker addition of new colleges and departments as adoption increases.

We piloted and implemented the new Mediasite Desktop Recorder that enables faculty, trainers, staff, and students to use a laptop or computer camera and microphone to easily record high-quality video and rich media.

The 9th annual Think-In was a great success! This year, in addition to posters, we offered two excellent panel discussions. One of these panels was also presented at the UNC General Administration sponsored webinars during North Carolina Distance Learning Week.

As part of the College STAR (Supporting Transition, Access, and Retention) project: A UNC System Project Supporting Students with Learning Differences, we collaborated with ECU CREWS (Collaborating for Retention and Engagement With ongoing Support) on research involving lecture capture in instruction using Tegrity. We also collaborated on the development of training modules that students who are less adept at technology can use to better prepare for how to effectively participate in an online class. The Tegrity Lecture Capture Faculty Learning Community will present at the 3rd annual College STAR Shared Learning Conference, a nationwide conference designed to provide an opportunity for members of different educational communities to come together to share ideas, resources, and learning about the school environments we create for our students.

ITCS partnered with Human Resources to consolidate professional development delivery and training registration systems and implement a single-source system, Cornerstone. Using Captivate and Articulate software, we built and packaged twenty-one online courses for use within Cornerstone. This consolidation will give the university a standardized platform for years to come.

Read&Write Gold was upgraded. Read&Write Gold is assistive technology software that reads electronic text from e-books, Web sites, and documents created in word-processing programs. This software also helps writers with predictive spelling, word choice, dictionary, and thesaurus features.

Throughout the year, we completed many technology-enhanced space refreshes, which involves audio and video installations and upgrades across campus (including 34 classrooms on the Health Sciences Campus) for the Brody School of Medicine, College of Fine Arts, College of Arts and Sciences, College of Technology and Computer Sciences, Dowdy-Ficklen Stadium, Joyner Library, and the East Carolina Heart Institute, among others. This work included:

- design, consulting, and project management services for audio/video installations and upgrades, which provided significant cost savings to the university since these services would normally be contracted out;
- reconfiguring spaces to accommodate growth; and
- installing equipment such as projectors, flat-screen monitors, video conferencing units, Mediasite recorders, and phone-charging stations.

We redesigned several instructional spaces to enable more interactive learning, flexible seating, bring your own device collaboration stations, and the ability to share imaging at multiple stations. Rooms were added in the College of Business, the Writing Program, Joyner Library, and Biology.
The higher education sector has reached a critical point where it must address the innovations that have changed the way its learners, and the rest of society, seek and engage with knowledge.


**Efficiency and Effectiveness in Compliance**

East Carolina University is dedicated to providing technology access for students, faculty, and staff with disabilities. This year, ITCS partnered with the Office for Disability Support Services (DSS) to promote and integrate IT accessibility in the development and delivery of campus resources. A few of the highlights of this work include:

- Web sites supporting the business of the university – including department, faculty, and staff Web sites – are required to be ADA compliant. Accessible CommonSpot templates are now available for departmental use. Developer Guidelines and ADA in Web Development training courses are offered.

- The new Accessibility Gateway site provided by DSS is now available to assist students, faculty, staff, patients, and visitors. Several tutorials and resources are available to assist faculty and staff to create various types of accessible media.

- An Accessible Content module is now included in the 2014-2015 Distance Education Faculty Modules (completed by all faculty teaching DE) and is also available as a separate module within Cornerstone. Module content includes accessible learning platforms, best practices for developing accessible content, and a reference checklist.

- The Online Tools Guide is another resource for faculty that advises them of accessibility requirements when choosing non-ECU hosted tools to include in their course work.

- Purchasing language is integrated into bid requirements. Vendors must assure all features, components, and sub-
systems of enterprise-level instructional software fully comply with Section 508 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794d), (www.section508.gov). Vendors must detail why any feature, component, or sub-system contained in an RFQ (Request For Quote) does not fully comply with Section 508, and the way in which the proposed product is out of compliance. Products are subject to an accessibility evaluation by the university. Exceptions will require approval.

IT Security completed the annual IT Risk Assessment for reporting to university’s leadership. An IT Risk Assessment identifies IT threats that can prevent the university from accomplishing its strategic goals, as well as opportunities to enable the university to achieve operational efficiencies and compliance benefits from new information technologies and information management practices. The results of the Risk Assessment are provided for use in strategic IT and information security management decisions that impact teaching, research, and patient treatment.

IT Security is developing a multi-tiered approach to awareness and education as part of the Security Management Program project, which will span several years. This past year, this effort included:

- Deployed the annual HIPAA Security Training Course in Cornerstone for all identified HIPAA Security Administrators. Three hundred forty-eight employees completed the training.

- Purchasing and collaborating on the content of the HIPAA Research Training Course for those participating in human research studies involving protected health information (PHI). The Research and Graduate Division offers this “required” training through Cornerstone.

- Developing a HIPAA Systems Database to document the university’s HIPAA systems (over 120) as a federal HIPAA compliance requirement. Previously, the inventory and administrative and departmental information were maintained manually across several spreadsheets and files, negatively impacting the ability to monitor, track, update, and report HIPAA inventory. The database is being updated with the HIPAA inventory and approximately one-third of the inventory has been placed into the database.

- Developing a comprehensive promotional campaign to enhance campus awareness of information security requirements and best practices. This campaign will take advantage of many existing communication channels and a few new channels that are emerging to provide more effective security awareness and education.

- Providing targeted Security Awareness Training Presentations to a) New Faculty Orientation, b) HIPAA Researchers, and c) Financial Services Workshop.

- Integrating SANS Secure the Human (STH) integrated into Cornerstone and making it available to campus. IT Security is working on the core training components of STH that will become the basic security awareness training for the campus.

We are documenting over 120 HIPAA systems to ensure ECU meets federal HIPAA compliance requirements.
Everyone has undoubtedly heard about “the cloud.” Just what is “the cloud?” Well, think of it as a data center located somewhere else that provides its customers, via an Internet connection, the capability to store data or to use services (applications) from their servers as if they were sitting in the university's central data center in the Cotanche Building.

There are several different types of cloud computing:

- **Infrastructure-as-a-service (IaaS):** Instead of purchasing hardware and software for a data center, the vendor provides these services and invoices the customer based upon the amount of resources used.

- **Platform-as-a-service (PaaS):** The vendor provides the networks, servers, storage, and other services that are required to host the customer's application (such as Banner, Blackboard, etc.). The customer remotely controls and maintains the application(s).

- **Software-as-a-service (SaaS):** The vendor provides/purchases the license, and maintains and manages the software applications (such as Banner) including the implementation of new releases.

Some positives using “the cloud” include:

- Reduces need to purchase servers or applications and maintain them in-house, thereby reducing the physical footprint needed for an on-site data center

- **Scalability:** grow and expand storage and services (hopefully) on demand

- Data backup and disaster recovery services

- Reduced on-site support staff vis-à-vis shifting same to cloud vendor(s)

Some negatives using “the cloud” include:

- Ensuring data security and privacy (especially related to FERPA, HIPPA, and other sensitive data)

- Dependency upon a third-party vendor

- Although reduced costs are the initial selling point, many adopters are finding the actual costs are higher using the cloud. Cost reduction should not be cited as the main goal to use cloud computing.

- Being tied to the financial health of another company providing cloud services

ECU and ITCS currently use public cloud computing platforms including: TouchNet for e-commerce activities; PORT (SciQuest) for e-procurement; PeopleAdmin for personnel-related functions; Starfish for our early alert student retention tool; Student e-mail with Microsoft; and the Electronic Patient Medical Record System (formerly known as HealthSpan) hosted by Vidant Medical Group.

**So, what’s our future in the use of (public) cloud computing?** ITCS will evaluate cloud computing on a case-by-case basis, which means we will assess the security of the data with each vendor. We will examine the security of the data, data backup methods for each vendor, the integration with ECU's existing infrastructure and application, ensure the vendor is financially sound, and put in place customer-centric service level agreements and contracts. As we move forward and seek funding to replace end-of-life servers and storage mediums for our Banner and associated systems, we will perform a cost and benefit analysis on purchasing and installing new hardware in-house versus using a platform-as-a-service model offered by Ellucian, the Banner vendor.

According to Gartner, private cloud computing is a major IT trend. A private cloud offers the same features and benefits of a public cloud system, but leaves control over the data and data security in our hands. This provides ECU with the inner security of knowing that our data is residing safely within our firewall, in our data center, and controlled by our staff. Previously, Blackboard was hosted by Blackboard, Inc. and we found this arrangement did not meet the needs of ECU. As a result, ECU brought Blackboard in-house where it is managed by ITCS in the ECU data center. This was a highly successful change.
Community Outreach: Engaging Generation Z

Middle School Innovators Academy (MSIA)
ITCS participated in the Middle School Innovators Academy (MSIA), an after-school/summer program that engages Generation Z tech-savvy students immersed in social media and the Internet, for whom traditional learning environments are unchallenging. New technology uses can enable rural Generation Z students to collaborate and realize educational growth in art and design through informal educational channels based on the Academy’s deep-dive style process. The academy is a national winner of the University Economic Developer Association award for Talent Development in 2011. The 2013 program was an exciting collaboration between East Carolina University, Pitt County Schools, and DSM Dyneema.

Bring Your Child to Work Day
The ITCS Staff Council coordinated our first Bring Your Child to Work Day on August 1, 2014. This event presented an opportunity for ITCS staff to introduce their children to the exciting things that go on here at ITCS and at other areas of technology. Attendees participated in hands-on activities and toured the operations area to see servers and the ways ITCS staff monitor the network and primary data center. In all, we hosted approximately 35 guests ranging in ages from 4 to 18 years old. Hopefully, these children will attend ECU and, perhaps, one day be employed by ITCS.

The inagural ITCS Bring Your Child to Work Day was a success.
ITCS: The Year Ahead
Fiscal Year 2015

Current Major Projects Underway
We have many major high-impact projects underway from a total of nearly 200 projects that are in our queue. Highlights from the major projects are listed below.

Information Security Framework (ISO 27002)
ITCS is collaborating with academic and administrative representatives throughout campus to develop a policy suite for Information Security Management, Data Governance, and Acceptable Use. These policies will establish frameworks and define responsibilities for managing university information and IT systems in an effective and secure manner.

In support of the policy framework, ITCS is leading the development of IT Security Standards for ECU. These Standards are based on an international code of practice (ISO 27002), tailored to the higher education environment. To ensure the Standards adapt to frequent changes in today’s digital environment, ITCS embraced a continuous improvement approach. This approach facilitates active dialogue and collaboration with representatives throughout the university and the UNC System. Such collaboration yields many improvements to the Standards, ensuring their long term viability and a high level of assurance that university information will be managed securely in the future.

To assist with the rollout of the new ECU Standards, ITCS is developing Best Practices for Information Security. The purpose of the Best Practices Guide is to provide practical guidance to the university community for implementing the Standards campus wide.

Managing Mobile Devices
With the proliferation of mobile devices, the need to manage those devices is critical, especially those that seek to access sensitive data. AirWatch software allows for the management of mobile devices, including smartphones and tablet devices. AirWatch also will allow the compartmentalization of personal and university data on a mobile device, allowing for greater protection of important and critical information.

Automatic E-mail Encryption
Currently, we have no way to prevent inadvertent or willful sending of unencrypted sensitive data through e-mail. Education is one of the primary means to raise awareness but until now we have not had the ability to implement a technical solution for this problem. Once implemented, the Data Loss Prevention (DLP) tool will automatically encrypt an e-mail containing sensitive data, thus providing a safe transport of sensitive data to the recipient. It will also alert the sender that sensitive data was detected in order to raise the awareness of the need to send such information securely.

Blackboard Hardware Replacement
Several teams within ITCS are engaged in a major initiative to replace aging Blackboard hardware with a newly-designed system that will meet the growing needs for our Distant Education delivery for the next 5 years. The new innovative design provides ECU its own Internal Private Cloud for Blackboard Services. The infrastructure comprises Oracle’s Real Application Clustering on highly-tuned Oracle Database Appliances for the Database Tier, while the Application Tier is built on large memory servers that takes advantage of both virtualization and automation technologies. This initiative will save energy and create operational efficiencies. The primary goals are to provide a robust, highly available, highly scalable, and very flexible application environment in a cost-conscious manner. The new design allows for quick provisioning of application servers to accommodate usage spikes and it significantly simplifies future application upgrades as well as improves our disaster recovery capabilities. The project is comprised of two distinct phases.
The replacement of the Application Tier was phase 1 and went live in May 2014. The second phase targets the replacement of the Database Tier and will be completed in late fall 2014.

**Cisco Identity Services Engine (ISE)**
Implementing the university’s new network security system, ISE, to protect ECU applications from unauthorized access and ensure computers connecting to the university networks – both wired and wireless – meet the minimum security standards. We will continue to implement additional features of this network security system.

**Enterprise Data Management**
Continuing to fine-tune Enterprise Data Management (EDM; formerly Knowledge Management) - a comprehensive program designed to engage the campus community in the formal administration of the university’s information assets. This initiative was born out of the recognition that data continues to play an increasingly important role in the university’s decision-making processes. Through EDM, the university will leverage investments in human and information resources to enhance the quality, accuracy and value of data, and increase the efficiency and effectiveness of information flow processes. To this end, an initial, primary goal of EDM is to establish a governance structure and set of standard operating practices that will enable the identification, definition, and cataloging of Institutional Data. This will also involve the development of a set of university-wide standards that provide for consistency in both the handling of Institutional Data, and the interpretation of policies, regulations, rules, and procedures governing the practice of data management at East Carolina University.

**Network Refresh**
Purchasing, installing, and configuring the university’s next generation network core. The new core has been built in parallel to the current network and is being prepared for integration and migration to the new network core in the near future. The new network core will provide greater flexibility, performance, and security compared to the current network design. Planned completion is late 2015.

**DAS (Distributed Antenna System) Cell Coverage Increase**
ECU is working with a vendor to bring DAS to campus to maximize cell phone signal strength. Currently, the project is starting at Dowdy-Ficklen Stadium with Verizon. AT&T will follow in the next year along with T-Mobile and Sprint. The vendor will continue to deploy the antenna system throughout campus in a long-term contract with ECU to give ECU faculty, staff, and students the best possible cell phone coverage throughout campus and in all buildings.

**Classroom Technology Refresh**
We will continue to upgrade classrooms and refresh technology-enhanced spaces with equipment such as projectors, document cameras, touch-screen control panels, flat-screen monitors, video conferencing units, annotation devices for writing on presentation material, and Mediasite recorders.

**Information Security & Education Awareness Program**
IT Security is developing a multi-tiered approach to information security awareness and education as part of the Security Management Program project, which will span several years.

**Kronos**
With an increase in state and federal legislation and compliance demands related to wage and hour rules, the university will standardize and automate time- and leave-keeping functions. To assist in this standardization and automation, ECU has purchased Workforce Timekeeper from Kronos, Incorporated. This software package has been adopted by the university as the time, attendance and leave keeping system of record for employees who track time, as well as employees who are granted or earn leave.

**Oracle IDM**
Oracle Identity Management is a complete and integrated next-generation identity management platform that provides scalability, enables organizations to achieve rapid compliance with regulatory mandates, secures sensitive applications and data regardless of whether they are hosted on-premises or in a cloud, reduces operational costs, and simplifies end-user account administration. Phase 1 of the implementation of IDM will encompass: system design; building interfaces to our current systems, and provisioning rules to create and remove accounts as well as an account request and approval system.
Service Learning Centers for School of Dental Medicine

We will continue to work with contractors to identify the needed technology - high-speed network connections, circuits, and outside phone lines - for ECU’s dental community service learning centers. We provide and configure the networking and telephony equipment for the buildings and establish connectivity back to the Cotanche building. We contract with CenturyLink to install the equipment and provide maintenance on the equipment if we are unable to do it remotely.

Current Overall State of ITCS

The reliance on infrastructure and services from ITCS by virtually every unit throughout the campus to perform their functions is at an all-time high…and growing. We are proud to share that ITCS provides an extremely high level of customer service for our constituents; this is demonstrated by the positive results of the feedback we receive from our campus community.

Our largest project presently is the replacement of our end-of-life network infrastructure with a completely new and modern hardware and software platform. This is a multi-million dollar investment, projected to be completed by the end of 2015, which will position ECU well into the next decade. This network refresh will provide ten times the current speed to the desktop.

We are constantly evaluating the methods we use to deliver services. For example, we performed an assessment of providing faculty and staff e-mail (Outlook) support in-house by ITCS versus outsourcing it to "the cloud." The recommendation at that time was to maintain faculty and staff e-mail in-house until costs and other variables (privacy and legal issues) are more mature. After that recommendation, we decided to initiate another full assessment in early 2015. Student e-mail has been outsourced to Microsoft for several years now with significant monetary savings.

We will continue to create efficiencies in these challenging budgetary times. In addition, we are responding to the recommendation from the May 2014 University Committee on Fiscal Sustainability Report which stated: "Review the appropriate levels of central and distributed IT positions and workload with goals of staffing at levels appropriate to fulfilling university priorities and maintaining service levels.” ITCS will provide the leadership this fiscal year to assess this recommendation and we will work very closely with affected parties in the development of a model to reduce duplication of services, enforce standards and best practices, and generate improved efficiencies. Our primary goal will be “to create strong partnerships, align existing and emerging technologies, increase knowledge and aware of IT security issues, and reduce duplication of services to create efficiencies.”

With 225 central IT (ITCS) staff and approximately 150 decentralized IT staff at varying levels and units across campus, it would be advantageous to develop a model whereby the collective brain trust can be utilized more comprehensively to meet the ever growing needs and demands placed upon the use of technology.

In conclusion, we are very proud to be a part of ITCS and to work with the people that make IT work seamlessly for this institution. I trust that this year’s publication has provided you with an in-depth look at the major projects underway within ITCS as well as some of the existing initiatives scheduled for the upcoming fiscal year.