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# 2015

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WILLIAM & MARY

INFORMATION TECHNOLOGY

## MESSAGE FROM THE CIO

Dear Colleagues,

Without a doubt, 2015 has been a transformational year for William & Mary Information Technology. We re-imagined the boundaries that once framed technology at W&M, and used this new perspective as a compass while redesigning our organizational structure and technology services.

The changes we underwent in 2015 were extensive, reaching well beyond the walls of Jones Hall. We consolidated the disparate IT shops at W&M, bringing them into our central W&M IT unit. We've reorganized our management team and streamlined our decision-making processes with a fresh governance structure. We've bolstered our service offerings by leveraging cloud-based systems. We began instituting a cradle-to-grave Salesforce CRM platform, becoming the first institution of higher education in Virginia to do so. When finished, it will allow for a 360-degree view of our constituents across the enterprise.

There have been growing pains during the process, but there are also many benefits. We are becoming more responsive, more adaptable, and more prepared to take-on an ever-changing technology environment - and doing so faster than I've ever imagined.



**Courtney Carpenter**  
W&M IT Chief Information Officer

### IT Management Team

**Courtney Carpenter**  
Chief Information Officer

**Bernadette Kenney**  
Deputy Chief Information Officer

**Peter Kellogg**  
Director of Information Security and  
Project Management

**Michael Murphy** (Started October 2015)  
Director of Academic & Technology  
Support Services

**Rachel Pace**  
Director of Data Management

**Corinne Picataggi**  
Director of Software Systems

**Robert (Chris) Ward** (Retired July 2015)  
Director of Systems and Support

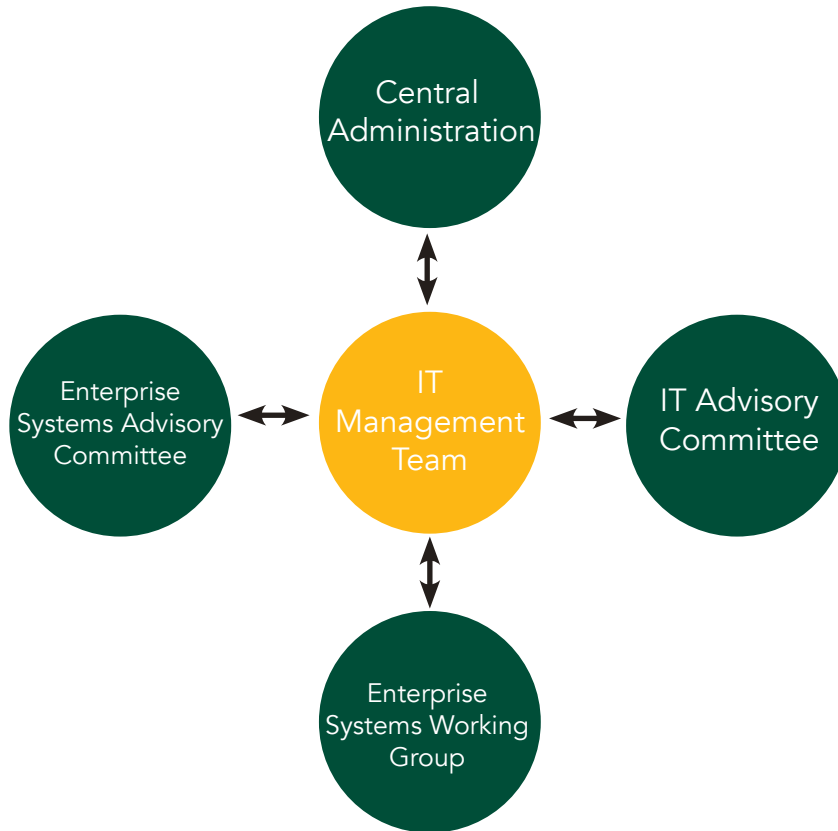
In this report, you will see the many advances we made in 2015. You will read about our latest organizational structure, governance model, and our other strategic initiatives. You will discover how W&M IT supports learning and research ventures, and academic pursuits of all kinds. You will learn about new developments in IT software systems and infrastructure that were made all while steadfastly maintaining the high level of service and security we strive for every day. You will also get a glimpse of our initiatives for 2016 and the future of technology at William & Mary.

There is no aspect of the university in which W&M IT is not involved. Whether it is education, student life, research, or business operations, our department remains an integral contributor in all corners of the William & Mary campus. We are energized and enticed by the possibilities that new technologies can bring to William & Mary. The changes made in 2015 have readied W&M IT to pursue opportunities for the benefit of the institution as a whole.

Sincerely,  
Courtney Carpenter

# NEW W&M IT GOVERNANCE STRUCTURE

As of November 2015



## RESPONSIBILITIES

### Central Administration

- Identify strategic priorities
- Provide project priority approvals
- Authorize exceptions
- Make university level decisions

### Enterprise Systems Advisory Committee

- Receive IT updates
- Provide priority preferences
- Provide process, system, data updates
- Advise or make decisions based on recommendations from Working Groups/ Project Teams

### IT Management Team

- Evaluate project requests
- Rank projects
- Assess feasibility and scope studies
- Facilitate university and cross-functional decisions

### IT Advisory Committee

- Receive IT updates
- Advise on IT policy
- Advise on project decisions

### Enterprise Systems Working Group

- Cross-functional impact discussions
- Address OWG/PT or dept. concerns
- Consider systems, data, process
- Make decisions at cross-functional level

## Operational Working Groups/Project Teams (OWG/PT)

OWG/PT have singular function discussions (Finance, HR, Student, etc). The groups/teams consider systems, data, and processes. They may move through various points of the governance structure for decisions.

## IT Advisory Committee (ITAC)

Formerly known as the IT Steering Committee, the Information Technology Advisory Committee (ITAC) membership reflects the diverse academic and administrative interests of the William & Mary community.

The fundamental aim of ITAC is to further institutional goals through the effective use of information technologies. Committee members contribute input and feedback on IT policies and make recommendations about how and when priority projects should be implemented. The committee also plays an advisory role on procedural, organizational, and support issues as they relate to academic services and business practices affected by technology use.

## MEMBERS

**Courtney Carpenter**  
CIO and ITAC Chair  
**Michael Halleran**  
Provost and ITAC Co-Chair

**Ginger Ambler**  
Vice President for Student Affairs  
**Henry Broaddus**  
Vice President for Strategic Initiatives  
**Carrie Cooper**  
Dean of University Libraries

**Terry Driscoll**  
Director of Athletics  
**John Griffin (until Sep. 2015)**  
Dean of Undergraduate Studies  
**Keith Griffioen**  
Professor of Physics

**Laura Heymann**  
Vice Dean & Class of 2014 Professor of Law

**Mark Hofer**  
Associate Dean and Spears Term Distinguished Associate Professor, School of Education

**Michele Jackson**  
Associate Provost for University eLearning Initiatives

**Sam Jones**  
Senior Vice President for Finance & Administration

**Matthew Lambert**  
Vice President for University Advancement

**Dennis Manos**  
Vice Provost for Research & Graduate Professional Studies

**Anna Martin (until May 2015)**  
Vice President for Administration

**Salvatore Saporito**  
Associate Professor of Sociology

**Till Schreiber**  
Senior Lecturer for Economics

**Tom Ward**  
Professor, School of Education

**John Wells**  
Dean and Director of VIMS

### Ex Officio Members:

**Kent Erdahl**  
Director of Internal Audit

**W&M IT Management Team**

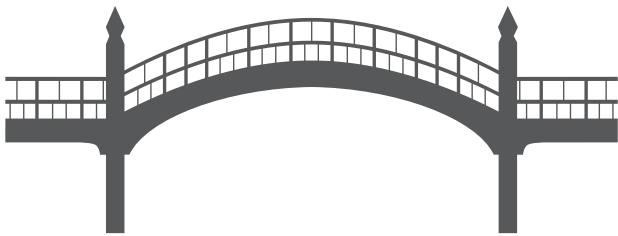
## CONSTITUENT RELATIONSHIP MANAGEMENT (CRM)

The Building Bridges initiative is a William & Mary strategy-driven effort that focuses on helping our constituents (students, faculty, staff, alumni, parents, corporate partners, volunteers, and friends) engage effectively with the university.

The effort highlights the overall Tribe experience while strengthening our institution's commitment to be a leading public university, globally engaged, and connected to graduates for a lifetime. It bridges the processes of university departments across one platform, equipping the faculty and staff to make informed decisions and provide personalized services for our common constituents.



### BUILDING BRIDGES



SPANNING THE WILLIAM & MARY  
EXPERIENCE

Through the adoption of a campus-wide Constituent Relationship Management (CRM) solution, the Building Bridges initiative brings together the processes related to recruitment, student success, and advancement into one platform.

Strategic advantages of an enterprise CRM solution:

- Boost recruitment and retention of talented students across the university
- Better the university's engagement with all our constituents
- Build a welcoming community and lifelong alumni loyalty
- Bolster decision making by providing enhanced reporting & data analytics

Tactical advantages are numerous but the most significant include:

- Centralizing and sharing information
- Coordinating communication
- Streamlining processes

In September 2015, contracts were awarded to three vendors to implement and build the CRM environment. Salesforce Foundation, TargetX, and ACF Solutions will provide the infrastructure, software, and services to bring the university to a unified platform.

"When I was the dean of admission, TargetX's CRM made the difference between being able to send a generic message about William & Mary's academic excellence to all prospective students and being able to send targeted messages to particular prospects based on the academic interests they had shared with us," said Henry Broadus, the vice president for strategic initiatives and public affairs. "I know from that experience how important a CRM is to facilitating the kind of timely and relevant communication that stands out from the clutter of one's inbox."

The implementation effort is under the direction of a W&M cross-functional project team consisting of stakeholders and advisors from various departments across campus including: academic advising, arts & sciences, career center, information technology, law school, president and provost offices, business school, school of education, marine science, student affairs, university advancement, undergraduate admission and the university registrar. The team will help to coordinate university data across departments in a manner consistent with the goals of the Business Innovation initiative to improve efficiency and effectiveness.

"Although IT will play a central role in implementing our CRM, this is not so much an IT project as it is a university-wide undertaking" said Provost Michael R. Halleran. "This endeavor will enable W&M to explain and promote W&M through a more effective communications structure and strategy, which is one of the primary goals articulated in the university's strategic plan."

**Want updates on the Building Bridges project?**

Visit our [What's Happening Now with CRM](#) website

## MIGRATING TO THE CLOUD

Moving traditionally local technology services to cloud-hosted environments has been a standard course of action in W&M IT for several years now. In late 2014, the Censeo Consulting Group reinforced this movement by recommending a migration of IT services to the cloud as part of a strategic initiative for the university.

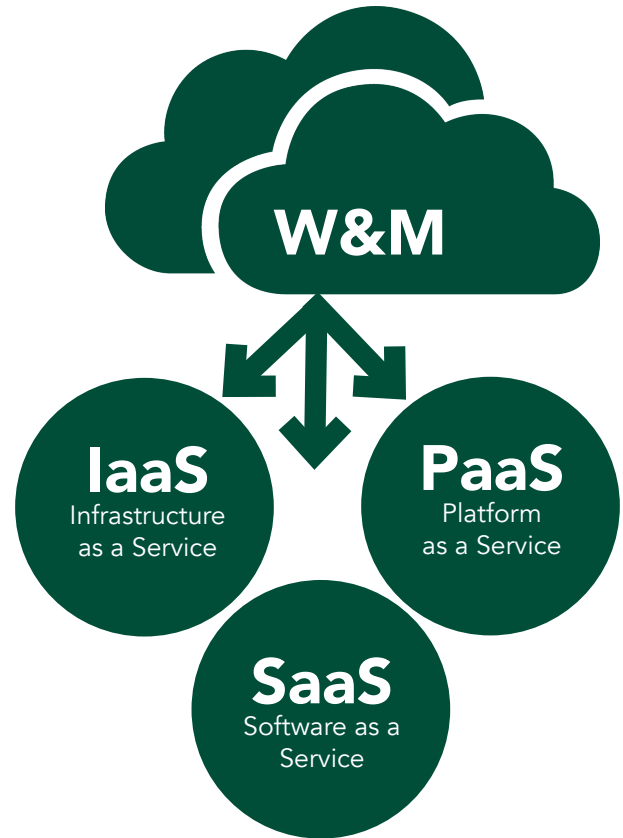
There are predominantly three different types of cloud-based services: Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS). W&M is currently utilizing all three of these.

SaaS applications are typically purchased from and fully managed by a software vendor. SaaS solutions make it easier for people to work while on-the-go or from remote locations as services can be accessed from anywhere with an Internet connection. W&M currently utilizes many SaaS solutions, such as Box for file sharing, and Panopto for recording lectures in the classroom. The adoption of SaaS continues to grow - and will probably do so as long as these services fulfill the needs of our community.

PaaS services, comprised of a combination of software and hardware hosted in the cloud, provide tools needed for application development. The Salesforce CRM is our first foray into PaaS applications. As a platform it will host various SaaS applications such as the Sales & Marketing Clouds and TargetX. We will also have the ability to develop our own tools and configurations to fit these applications into our unique W&M environment.

We use IaaS to run servers in the cloud that would traditionally be run on-premise. The immediate benefit to using IaaS is we only pay for what we use and we can quickly and automatically add or lower capacity based on demand. We can also test new ideas cheaper, faster, and with less risk than with traditional infrastructure, encouraging continuous improvements. Most of advancement's new/revised websites (forthebold.wm.edu, wmalumni.com, and giving.wm.edu) are running in Amazon Web Services (arguably the largest IaaS provider in the US). In the coming years we will continue testing IaaS systems and expanding the applications for the services that have already been adopted at W&M.

The migration to the cloud has many benefits. It quickens development, testing, and deployment of services. But even with the ability to move more rapidly, we want to proceed with care and intentionality while transitioning to cloud services. We are being mindful about re-architecting our systems to follow current best practices and to take full advantage of what the cloud has to offer. Furthermore, utilizing cloud offerings has also allowed us to avoid building a costly data center that was scheduled in the capital plan. These resources can be rerouted to better align with the current business initiatives of the university, namely expanding our portfolio of cloud services.

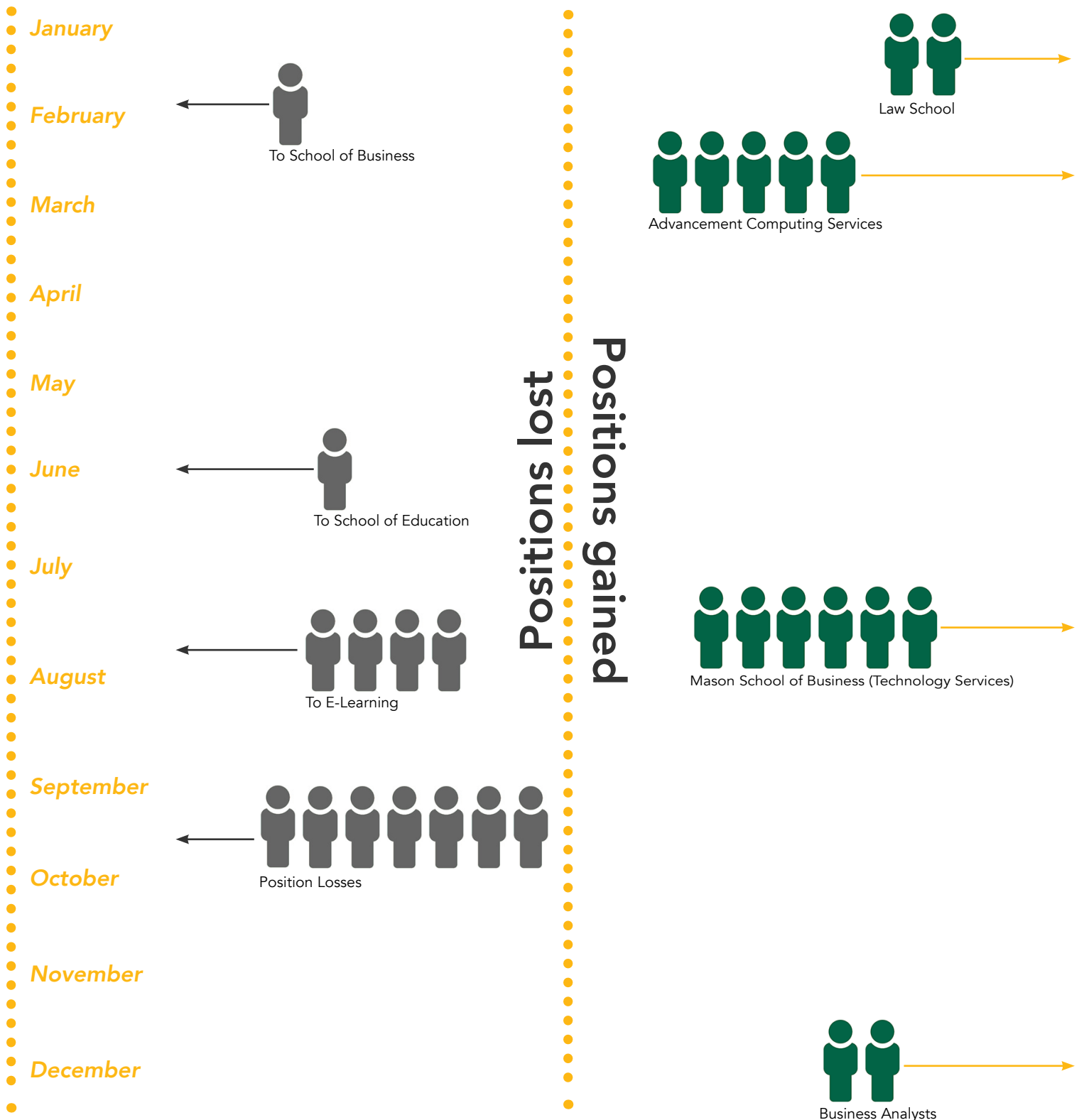


### CLOUD APPLICATIONS AT W&M

- Adobe Analytics
- Adobe Connect
- Adobe Experience Manager
- Amazon Web Services
- ARMS (Athletics)
- Box (File sharing)
- Clarizen (Project Management)
- Everspring (Online MBA)
- GradesFirst
- LSAC Processing
- NeuLion (Web Services)
- Panopto (Lecture Capture)
- PeopleAdmin (Human Resources)
- Revenue Visions
- Salesforce
- Sales & Marketing Clouds
- SIDEARM (Athletics)
- Symlicity
- Studio Abroad (Study Abroad)
- T2 (Parking)
- TargetX (Admissions)
- TouchNet (Payment System)
- WMApps (Google)
- WMwikis (Wikispaces)
- Workplace Answers

## W&M IT REORGANIZATION

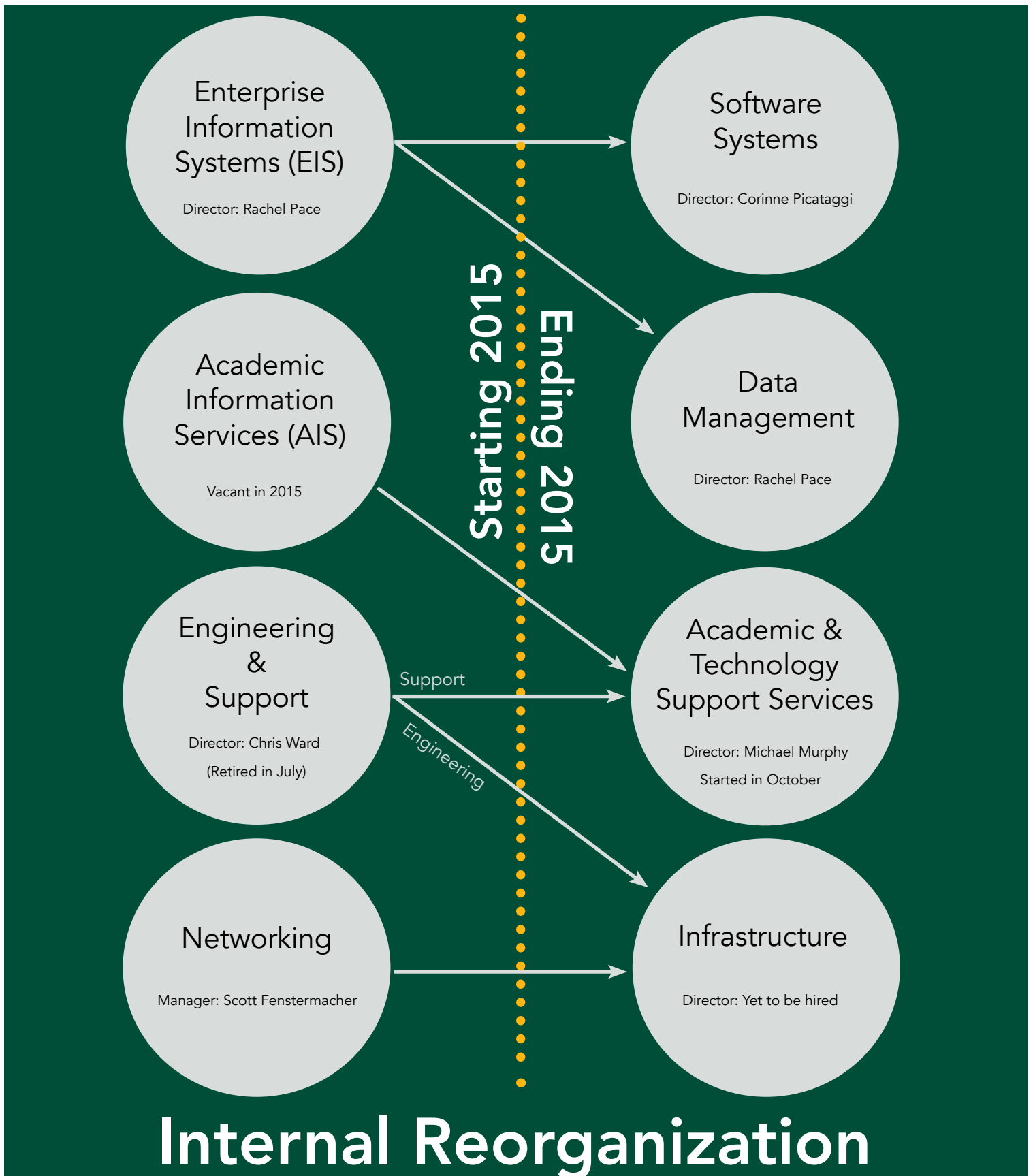
In 2015, IT departments across the W&M campus were consolidated under the central IT organization (W&M IT). These changes were largely based on the recommendations of the Censeo Consulting Group and supported the university's Business Innovation Initiative. In the process of change, some positions were lost or reassigned to other departments.



# External Reorganization

## W&M IT REORGANIZATION (CONTINUED)

Significant changes were also made to the internal organization of W&M IT. These changes were based on the recommendations of the Censeo Consulting Group, current industry standards, and the retirement/hiring of leadership positions within the department.



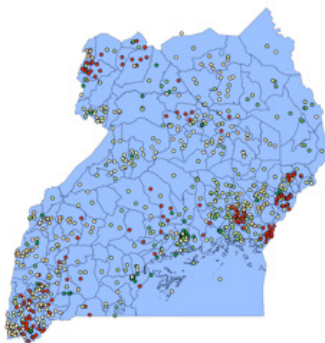


# RESEARCH COMPUTING

W&M IT includes among its ranks a team dedicated to providing computing power, technical skill, and a high level of intellectual acumen to support the array of computing projects conducted by researchers within the campus community. The High Performance Computing (HPC) team maintains a combination of computers with much more processing power than the typical personal computer. These computers are used by members of the W&M academic community to run robust research computing projects.

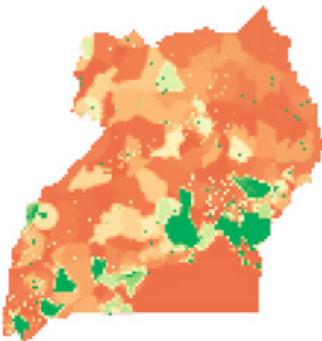
"The HPC facilities at W&M provide a healthy middle ground for calculations that are too demanding for a single desktop machine but are not so overwhelming that a large supercomputing facility is needed," explained Eric Walter, the HPC manager, also a senior research scientist in the physics department.

## IMPROVING DATA VISUALIZATION



Above is an example of what a traditional method of working with aid data looks like (red to green points represent amount of aid).

Below is an example of a raster generated using HPC and is a more accurate representation of aid data (red to green pixels represent amount of aid).



Submitted by Daniel Runfola and Seth Goodman from AidData

HPC systems includes three main clusters of computers, named SciClone, Storm, and Chesapeake, providing over 2600 computing cores. The SciClone cluster has been the main staple of HPC computing on campus. It provides about 1,200 computing cores and over 120 TB of storage. Storm and Chesapeake are recent additions to the fleet (2014). Their inclusion paved the way for an exponential increase in HPC utilization hours. For example, over 1,200,000 hours were used in May 2015, opposed to 28,000 hours used in May 2014, just a year before.

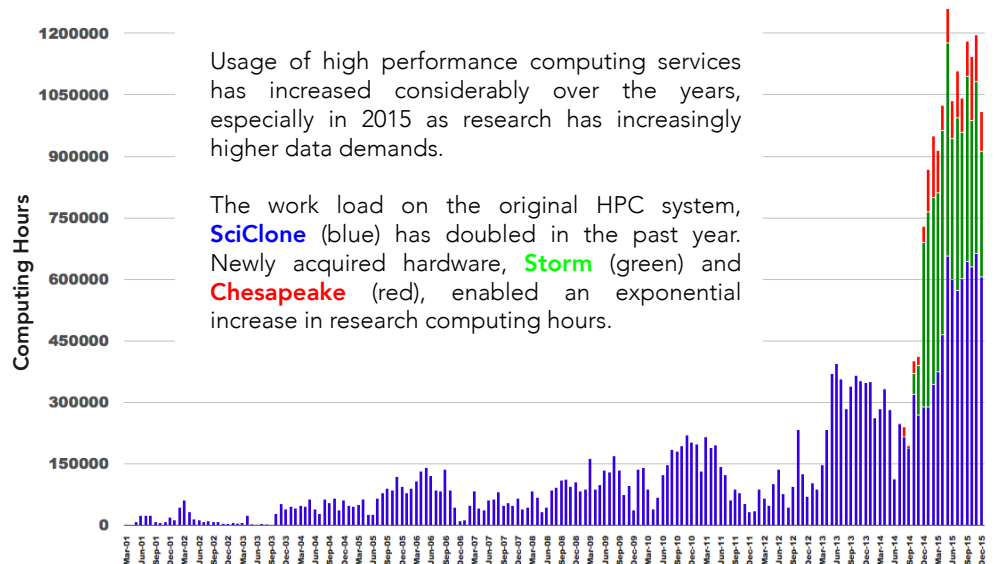
HPC serves a wide variety of researchers around the W&M community. Research computing is especially important to science departments such as physics, applied science, and physical sciences at VIMS. However, HPC equipment and services are also employed by researchers from various academic disciplines, including economics and international relations.

"I want to go on record to say that [the HPC team] has been extremely important to the success of my research program and the breadth and strength of mathematical/computational science at W&M," noted Gregory Smith, an associate professor of applied science.

Smith's work in the applied sciences exposes him to appreciable collaboration with the HPC team and their facilities. He also noted his excitement over the university's dedication to his field, adding, "I am highly appreciative of the administration's continued support of centralized high performance computing at the College."

Dennis Manos, the vice provost for research & graduate professional studies, expressed a similar sentiment. "It is good to know that computational science continues to be of great importance to the university," Manos said.

"It is our intention to keep a robust resident-modeling simulation and high-cycle computational capability alive for the foreseeable future" Manos continued. "There is no question that our need for computational capability will not go away."



Want to see more examples of HPC research? Check-out our [Research Computing](#) news story.



# TECHNOLOGY-ENHANCED LEARNING

## College Curriculum

The dawning of the new undergraduate College Curriculum evoked sweeping changes across campus in 2015. W&M IT supported the university through the transition, in both administrative and academic roles.

Many administrative processes had to be redesigned and revamped to support the changes. Working extensively with the university registrar, our Software Systems team built the necessary changes in Banner and translated them into Curriculog (a work flow tool for curriculum changes).

On the academic side of things, W&M IT's academic technology specialists helped faculty navigate available technology resources to prepare for the curriculum shift. In particular, the COLL 100 courses, with the goal of preparing students to articulate themselves through non-traditional, non-written forms, often required the assistance of the technologists for their expertise in digital media.

## Online MBA

W&M IT supported the Raymond A. Mason School of Business as it implemented its new Online MBA program. We worked with our online program partner, Everspring, and various campus offices including financial aid, bursar, university registrar, etc., and the business school to determine the best approach to implement the Online MBA program using our current administrative structure and system. The program welcomed its first class in August 2015 and second class in January 2016. Five classes were offered in the Fall and Spring semesters.

## LiveText

Integrating with Banner and Blackboard, LiveText is a planning and assessment tool that leverages data and analytics to help evaluate and strengthen institutional goals. At the School of Education, LiveText is being used to plan goals, assess progress, and evaluate the quality of programs.

## Blackboard Upgrade

After much anticipation, Blackboard, the university's learning management system (LMS), was upgraded in August 2015. The upgrade provides additional features that allow for greater flexibility and enhanced functionality within Blackboard.

The upgrade adds additional components called **Content** and **Community**. Content allows for file sharing and storage within Blackboard. Community provides enhanced collaboration features and space for non-course organizational groups. These new components were rolled-out during the fall 2015 semester.

There are also additional features that are a part of the upgrade, including the Blackboard mobile app and portfolios.

## Panopto - Lecture Capture Tool

Panopto is an easy-to-use tool for recording multiple events including in-class lectures, events, presentations, and tutorials that can be easily distributed to students through Blackboard. Panopto provides video storage and indexing of videos, making them searchable. Students can also utilize the tool to make video recordings for assignments. Panopto has been tested successfully in the School of Education in 2015 and will be available to the entire campus in 2016.

## Online Summer Courses

Online summer courses were first made available in 2014 with two courses offered. The program expanded in 2015, bringing scheduling flexibility to students and considerable financial gains to the College.

Starting in the fall of 2015, the online course development program shifted to the Office of Associate Provost for University eLearning Initiatives (APeL) where the program will continue to grow.

6

Undergraduate Arts & Sciences Courses Offered Online Summer 2015

109

Enrolled Students

67%

Of students enrolled because they desired flexibility

\$130,000+

Net revenue

## SUPPORTING THE ACADEMIC MISSION

### Building Technology

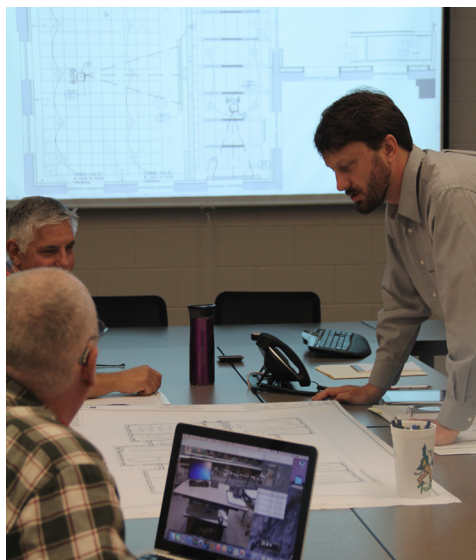
Prior to 2015, the technology design in new/remodeled buildings had always been contracted-out, but now that has changed. W&M IT took on the challenge of incorporating a first-rate technology infrastructure and classroom audio visual systems into the newly constructed Integrated Science Center 3 (ISC3) and renovation of Tyler Hall. We believe doing the design in-house will allow us to directly address the technology needs of the W&M faculty that will be occupying the new space.

"In the past, the architect would hire an AV designer and integrator," said John Drummond, academic technology engineering manager and project team member. "But this time around they are doing things a little differently. We now contract these people. This gives IT more leverage and a prominent role in coordinating the infrastructure with the classroom technology that will occupy it."

The IT team works closely with faculty in an effort to understand their various instruction goals, and attempts to accommodate those goals with the best available technology.

"This is an IT-essential building," said Eric Bradley, professor and chair of the biology department, about the ISC3 building. "A large amount of instruction in lecture halls, classrooms, PAC labs, teaching laboratories and research labs is centered here, and it all depends on IT systems and support."

For faculty members like Bradley, being able to interface with IT and other building contractors is a crucial aspect of the process. Typically, professors could only hope to have the necessary technology in their classrooms. Now they are able to conduct an open dialogue with W&M IT and take an active role in the construction of their teaching spaces.



Pictured, the W&M IT project team consults with faculty from the government and economics departments and the public policy program on the location of projectors in the newly designed classrooms in Tyler Hall.

### Technology on Display

W&M IT hosted two events in 2015 that showcased technology in the classroom, the Teaching & Technology Expo (aka the Expo) and T3: Tech Tips & Talk. Both events were spearheaded by Karen Conner, the interim team lead for W&M IT's Technology Services and associate director of eLearning at the Raymond A. Mason School of Business. Conner oversees much of the overlap between technology and academics at the business school. "We are helping to provide technology solutions that will benefit faculty in their work and in their research," she explained.

The Expo, in its third rendition, included new topics such as: Sphere 360, Box, Screen Sharing, Design Thinking, COLL 100, Lynda.com, and STEM Education, along with various others from previous years.

"This year's Expo is much more hands-on," lauded Bob Polley, a representative from the Virginia Institute of Marine Science (VIMS). "The Expo has always had a personal experience to it. This year, it is more so." Polley along with Donglai Gong from VIMS were showcasing a yellow underwater glider used in oceanography research.

In a similar manner, the T3: Tech Tips & Talk, a 3-day event held in late September, gave faculty and staff from the business school an opportunity to learn how the Technology Services team's skills and services can help them in their teaching, work, and research. It featured fourteen different tech topics ranging from the use of well-known systems, such as Blackboard and Qualtrics, to newly introduced solutions, including Box and Poll Everywhere.

"Each team member was available to informally answer questions and chat one-on-one about technology and how we can help support them in their work," said Conner. Arguably more important than the initial conversations that occurred during the event is the resulting relationship between the faculty, staff, and their technology support team.



Interactive demonstrations of technology filled the room at the Teaching & Technology Expo. In this picture, a participant is guiding a bomb disposal robot to place the "bomb" (yarn) in the "safe zone" (purple container). The robot, once used in the military but now retired, is used to teach robotics in the K-12 school systems.

See more pictures from these events in our Flickr albums:  
[Teaching & Technology Expo](#)  
[T3: Tech Tips & Talk](#)

## SECURITY

### Data Breach Incident Response Exercises

Technology is becoming increasingly complex. Although technology advances can drastically expand William & Mary's capabilities as an institution, they also stir concerns for the security of the university's information systems. Measures and safeguards are in place at W&M to prevent security incidents. However, there is always the possibility that something could happen.

To address these concerns, W&M IT partnered with the Emergency Management Team to facilitate two data breach recovery exercises. These exercises were designed to review and assess the current incident response procedures.

The first exercise, a tabletop simulation, was conducted on October 30. It served as an initial run-through of the existing procedures regarding data breaches. The objective was to review documented communication protocols for responding to a data breach and to further develop interdepartmental response practices. Additional goals of this exercise included familiarizing participating parties with the language and timing of data breach protocols and clarifying the decision-making process.

A month later, on November 30, a follow-up exercise took place. Different from the tabletop exercise, this was a realistic simulation. This was a day-long event in which IT was alerted to an issue. IT security then investigated the issue, the CIO opened lines of communication with other university administrators, and events unfolded much like they would have in a real-life scenario. The intent of this exercise was to minimize the impact of a breach by having a ready response framework in place to assign responsibilities, define trigger events, identify available resources, and guide university actions.

"Certainly the majority of interest would be on the prevention side, but I think folks would take some comfort in knowing we have a risk strategy and recovery plan," said Kenton Towner, the emergency management coordinator. He was pleased with the incident response exercises, noting, "The exercises let us test the plan with a realistic scenario so we could see if all of the pieces fit together, and also identify what may be missing that would further improve our plan."



### Phishing and Ransomware

Phishing, an attempt to steal account credentials by pretending to be a trusted entity, continues to be the biggest challenge in email security. In 2015 we had nearly 100 compromised accounts due to phishing. We are experiencing and detecting more targeted attacks that are attempting to compromise more valuable targets (for financial or intellectual gain).

Ransomware is also on the rise. Ransomware, a malicious virus often transmitted through email attachments, takes over a computer and holds the data "hostage" by encrypting the data in an unusable format.

Although there are blocks and filters in place to remove many of the threats from the W&M email system, the bad guys are always trying to stay one step ahead of security measures. As a result, preventive measures such as training and awareness continue to be of utmost importance in protecting College data.



### Cyber Security Awareness

National Cyber Security Awareness Month (NCSAM), organized by EDUCAUSE, is a collaborative effort among educational institutions, government, and businesses across the nation to promote Internet safety and data security throughout the month of October.

At W&M we spotlighted two of the most common cyber security issues we encounter, phishing and password security. We leveraged our social media sites, Facebook and Twitter, to raise awareness of these important (and persistent) cyber security issues and cyber security in general.

W&M's Director of Information Security Pete Kellogg answered cyber security questions via Twitter throughout NCSAM. Using the hashtag #wmitsecurity, our constituents could "Tweet with Pete."

## ENTERPRISE SYSTEMS

# MABUG

## Stats

**306**

Participants

**38**

Colleges/Universities attended

**8**

Tracks of content

**80**

Presentations +  
One full day of Code Camp

**26**

Sponsors

**38**

W&M Volunteers



Vendors and attendees shared ideas and new technologies at the Mid-Atlantic Banner Users Group (MABUG) conference hosted by W&M in November.

### Argos (Data Visualization)

Argos is a web-based reporting and data visualization tool offering many advantages over our current reporting solution (Oracle Discoverer). Argos includes dashboards, highly customizable report layouts, and scheduled distribution of reports. In 2015, a plan to implement Argos as a long-term reporting solution was outlined, including the standardization of requests, security, templates, report development, report storage, and report distribution.

Numerous Argos reports and dashboards have been developed and are currently in production use. Additional reports and visualizations are being designed and developed to meet reporting needs across campus. We anticipate using Argos to provide much of the campus reporting by the end of 2017. In addition, IT is exploring other data visualization tools to continue to enhance the end-user reporting and data visualization offerings.

### MABUG

The Mid-Atlantic Banner Users Group (MABUG) is an annual conference for Banner colleges and universities to meet, share ideas, and collaborate. In 2015, MABUG was hosted by William & Mary. The conference took place November 8-10 at the Double Tree by Hilton with W&M IT's Maria Elena (Mane) Pada serving as the conference chair.

### Cardinal

The new Cardinal financial management system replaced the outdated CARS System in the Commonwealth of Virginia. Cardinal provides an ERP (enterprise resource planning) system based on industry best practices that conforms to regulatory, financial, technical, and governmental standards. W&M IT created several interfaces between Cardinal and Banner that transmit and receive payroll and financial data.

### Vendor Standardization

To comply with federal and state regulations related to vendor W9 verification, W&M IT worked with Financial Operations to update vendor records. Part of this process included a clean-up to remove vendors that had not been used in two years. This data integrity and standardization effort was a prerequisite for the Cardinal project, as the W&M vendor database and state vendor database were integrated.

### T2 Parking System

The T2 parking management system is a cloud-based platform that replaces the previously used outdated system. System development for T2 took place throughout 2015. The first W&M patron information feed was sent to T2 in December, enabling the use of the new system on campus.

### DegreeWorks TESS

For students thinking about transferring to William & Mary, or current students looking to study away, understanding how course credits will transfer from one institution to another is of utmost importance. DegreeWorks, our newly implemented degree audit system, offers a transfer equivalency self-service system called **TESS**. This public-facing website was implemented by W&M IT in 2015 so that any person can now calculate how their previous/prospective courses would possibly transfer to William & Mary.



## ENTERPRISE SYSTEMS

### Athletic Ticketing

In 2014, W&M IT implemented a ticketing management system that improved accessibility and brought new capabilities, such as the ability to purchase or renew season tickets online and update will-call tickets in real-time. In 2015, W&M IT enhanced the capabilities of this system by integrating the athletic ticketing system with W&M's advancement system, allowing for better participation tracking.

### Parent Proxy for Banner

W&M IT created a way for students to grant permission to their parents or guardians to view certain pages of information available in their Banner student account. The student manages the creation of a proxy and the pages that the parent can view, and parents use their own login credentials to access it. The service went live in November 2015.

### Billing for IT Services

The interdepartmental billing process for IT goods and services previously required an extensive, manual, paper based process to manage transactions. Beginning in January 2015, W&M IT automated the process by integrating data from our service request system (Cherwell) to our billing system (MySoft) and then relaying that data to Banner. For departments that previously had to process these transactions, a task that used to require hours of work now requires just minutes, saving the College hundreds of hours in staff time.

### Workplace Answers (WPA)

In February 2015, all College employees were required to take online Title IX training and training verification courses. Workplace Answers was the tool that facilitated this training. W&M IT created a file that automatically loaded to the WPA servers containing a list of all active non-student employees, and categorized them by faculty or staff and supervisor or non-supervisor. This provided employees with personally-tailored training materials and allowed the tracking of participants to ensure a 100% completion rate.

### Managed Printing

W&M IT took over the management of printing on campus in September 2015. The move consolidated the management of printers with that of copiers, brought them under one contract, and shifted the responsibilities of managing the new program to IT.

The contract was awarded to ESI (Electronic Systems Inc.), a subsidiary of Xerox. They are responsible for replacing aging equipment and servicing machines. They also monitor toner and ink levels in the machines and send replacements automatically. A new pricing structure, billing policy, leasing program, and support system was implemented by W&M IT to meet the terms of the new contract and service agreements.

While overall costs are similar to the previous contract, the pricing structure will produce significant savings to departments for printing via copiers. As more copiers are aged-out and replaced under the new contract, cost-per-click prices will go down, resulting in significant savings to the departments which can be reinvested in other ways.

## Departmental Copier Savings

The pricing structure under the new managed printing contract will produce significant savings to departments for copier printing.

Combined departmental savings:

Year 1 - **\$25,000**

Year 2 - **\$35,200**

Year 3 - **\$51,700**

Year 4 - **\$64,400**

Estimates are based on current copier usage (about 7,000,000 pages per year) and factor-in the cost of new equipment.

After the fourth year, the cost-per-click prices will have reached the lowest point, so no additional departmental savings are expected after that.

Total departmental savings under the 5-year contract:

**\$176,300**

## TECHNICALLY SPEAKING

### Campaign Support

With Advancement Computing Services joining W&M IT in 2015, technical support for campaign fundraising efforts has become a priority for the department. Particularly noteworthy are the following projects:

**forthebold.wm.edu**  
**wmalumni.com**  
**giving.wm.edu**

These websites were built by W&M IT in the Amazon Web Services cloud for the campaign.

### Campaign Launch Invitations

W&M IT helped launch the For the Bold campaign by constructing 3,152 lines of code used to generate targeted event invitations sent to 72,734 people.

### Wireless Network Upgrade

W&M IT is in the midst of a campus-wide wireless network upgrade. Testing of new equipment and configurations took place throughout 2015.

The most notable change is taking place in residence halls, where wireless access points are moving from the hallway into individual residences. This better supports the latest wireless standards, resulting in faster and more stable connections.

Initial upgrades have been completed in four residence halls. The remainder of the residence halls will be upgraded over the summer of 2016. Work in the academic and administrative areas will commence in the fall of 2016.

### Exchange Email Server Upgrade

Exchange email servers were updated in late 2015, going from Exchange 2010 to 2013. When W&M originally moved to Exchange in 2008 we had less than 4,000 mailboxes and 1 TB of data. With this recent move, we transferred 6,300 mailboxes and 7.5 TB of data.

The new architecture of the servers mirrors current best practices with multiple copies of the databases kept in various locations for redundancy and disaster recovery. The local mailbox servers are accessed by redundant servers, which are behind a load balancer and other network devices that monitor the systems and keep data protected from direct Internet access.

### Shaping Internet Traffic

The new traffic shaping appliance on the college network enables engineers to make smarter use of limited resources. For example, traffic shaping intelligently manages queues of network connections when Internet services are under increased demand, keeping greedy bandwidth intensive file transfer applications from crushing less intensive, latency-sensitive applications, such as remote logins.

Traffic shaping also allows for better security monitoring of misbehaving network applications, and provides some protection against distributed denial of service attacks. These measures are designed to improve the quality of service users experience when trying to access various Internet resources.

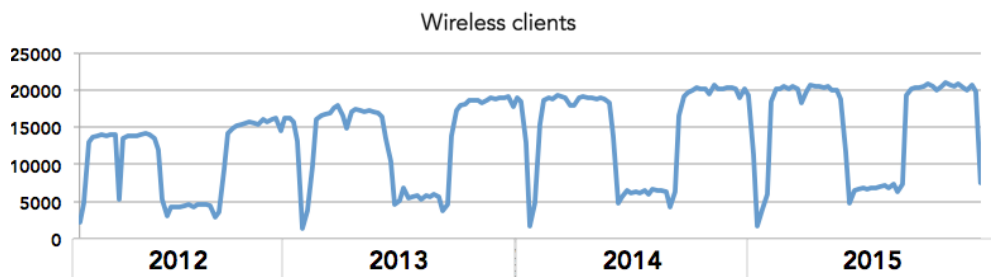
### Network Upgrades in Satellite Offices/Campuses

To support expanded services in offices and campuses located outside the main Williamsburg campus, the following networking upgrades and improvements were made in 2015:

At the **Peninsula Center**, the network was consolidated to one point-to-point circuit (MetroE from Cox) and upgraded to 200 mb/sec.

At the **Washington Center**, bandwidth was upgraded from 10 to 100 mb/sec using Level 3 (an Internet provider) connecting directly to the Internet.

**VIMS** now has a fully redundant network with 2 circuits on direct 10 gig fiber. They also now have a point-to-point circuit (MetroE from Cox) as a back-up. W&M IT now acts as the Internet Service Provider (ISP) for VIMS.



This chart shows a steady increase in the amount of devices using the wireless network at W&M.

# WHAT'S NEXT IN 2016

## Data-Informed Decision Making

William & Mary has a wealth of data that is currently used for ongoing operations but not being explored effectively to make strategic decisions for the future. Many of our peer institutions are using data-informed decision making to improve student retention, predict success of applicants, determine optimum tuition rates, predict adoption of academic programs, and many other key areas of interest. W&M IT is moving forward in a multi-year process of identifying appropriate tools and data platforms, gathering data from disparate sources, cleansing data to mitigate inaccuracies, and establishing data governance procedures to facilitate the use of College data for strategic decision making.

## Campaign Support

W&M IT will work closely with Advancement to support the goals of The Campaign for William & Mary. On the docket for 2016 is the development of a fundraising portal with our partner, Give Campus. The portal will allow Class Ambassadors to self-select eligible classmates and guide them through solicitations. We will also continue to assist the complex invitation sorting process for large campaign-related events and multi-tiered campaign solicitations, and support ongoing campaign reporting - all while providing our top-notch technical support to Advancement staff.

## Director of Infrastructure

A Director of Infrastructure will be hired in 2016, refilling the vacant seat left by Chris Ward, who retired in July of 2015. Filling the position will complete the W&M IT leadership team and bookend the reorganization efforts that took place in 2015.

## ePayments

Currently in the works for a 2016 launch, the ePayments project will allow the College to pay vendors electronically through a commercial bank. This will reduce the cost of cutting and sending checks as well as enable vendors to get paid faster.

## Windows 10

Moving towards the installation of the Windows 10 operating system on our Public Access Computer Lab and classroom podium computers (anticipated for 2017), image development will take place throughout 2016. First we will identify applications that are compatible with Windows 10 and remove any that aren't. Then a standard image will be created and tested extensively in-house. Towards the latter part of the year, there will be a limited deployment to test things like printing and working in a heavily loaded environment (like Swem), prior to an official move.

## HPC move to ISC3

High Performance Computing (HPC) is moving to the new Integrated Science Center 3 (ISC 3) in 2016, starting in May. The move will bring together the SciClone cluster (currently in Jones Hall) and Storm cluster (currently in the ARC at the Jefferson Lab) into one integrated unit. Equipment such as switches, nodes, file servers, and front-ends will have to be un-cabled and un-racked, transported to the new building, and then re-cabled and re-racked in a different layout, and with a different network configuration. Because this is such a large undertaking, there will be some downtime for each of the systems, with the majority of systems back online in mid-June.

## Banner XE

The latest iteration of Banner, the **Extensible Ecosystem** (aka XE), promises to be a more adaptable and user-friendly system. It will be evaluated and tested by W&M IT in 2016 to gauge the scope, timeline, and resources needed for an implementation project at W&M.

## CRM (Building Bridges)

2016 promises to be a big year for the Building Bridges project. Phase 1 will run through July/August 2016 and focus in two areas: **student** and **advancement**. The student area will focus on implementing the online application and recruitment modules for TargetX for three of our graduate schools. The advancement area will center around event and marketing management and building an online alumni community.

Phase 2 will run throughout the remainder of 2016. The student area will focus on delivering TargetX functionality to the remaining graduate school as well as functionality for student success. The advancement area will focus on the implementation of Advancement Connect.

During these phases multiple systems will be integrated with the Salesforce platform and several departments across campus will go live.



## GOING TO THE CLOUD IN 2016

- Blackboard
- FAMIS (Facilities Management)
- Studio Abroad (Study Abroad)
- Symlicity Accomodate (Accessibility Services)

## UNDER CONSIDERATION

- Email (Google, Microsoft 365)
- Employee Training & Development
- Performance Management
- Travel Management





# WILLIAM & MARY

INFORMATION TECHNOLOGY