



Division of  
Information Technology



# THE SHAPE OF **IT**

Division of Information Technology | 2017 Annual Report

## FROM THE CIO

Technology plays a key role in eliminating traditional classroom boundaries, enhancing transformational education and empowering the world-changing research of Texas A&M University. 2017 was a big year for the Division of Information Technology as we continued to strategically and proactively support the mission of Texas A&M.

In 2017, we united campus stakeholders to design and implement a university-wide framework for [IT Governance](#). Six committees, comprised of 88 campus community representatives, are helping define the role IT will play in the mission of the university.

To prepare for the future and the growing need for resources, we opened the new [West Campus Data Center](#). This highly scalable facility can grow with technological demands in ways that are both efficient and sustainable. It also houses a secure enclave and ensures the protection of our data and network resources. By providing room for growth ahead of demand and protecting sensitive research data, we can increase the research competitiveness of the university.

As we support the campus community, we must also position ourselves for the demands of the future. We took a big step toward this goal with the opening of the newly renovated Help Desk Central and Incident & Operations Center in August 2017.

The importance of technology resources was also apparent when Hurricane Harvey hit the Texas coast. While we were spared the brunt of the storm, Texas A&M and the Division of IT [were able to assist](#) in efforts that truly made a difference.

As this report shows, the past year has been a defining one for the Division of IT. I look forward to the many opportunities 2018 will present and hope you will help us make technology a centerpiece of Texas A&M University.

### **M. Dee Childs**

Vice President for Information Technology  
and Chief Information Officer,  
Texas A&M University

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*As we support the campus community, we must also position ourselves for the demands of the future.”*



# INFORMATION TECHNOLOGY BY THE NUMBERS

The Division of Information Technology provides IT services and resources that support the academic and research pursuits of Texas A&M University.



We secure over  
**4 MILLION**  
WI-FI SESSIONS  
each day

**What's a Petabyte?**  
One petabyte of mp3 music would play continuously for over 2,000 years.



**WE BLOCK  
7.4 MILLION  
CONNECTIONS  
TO MALICIOUS SITES**  
with the campus firewall

**1 PETABYTE  
OF DATA**  
inspected every day



**5.8 MILLION EMAILS  
INSPECTED DAILY**  
for spam, phishing  
& viruses

**OVER  
50TB OF DATA**  
are transferred  
**OVER THE NETWORK**  
each day during a semester

**THE DIVISION OF IT  
PROTECTS**

 <b>212,000</b> Accounts	 <b>140,000</b> Mailboxes	 <b>100,000</b> Devices
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*in an average moment in time*

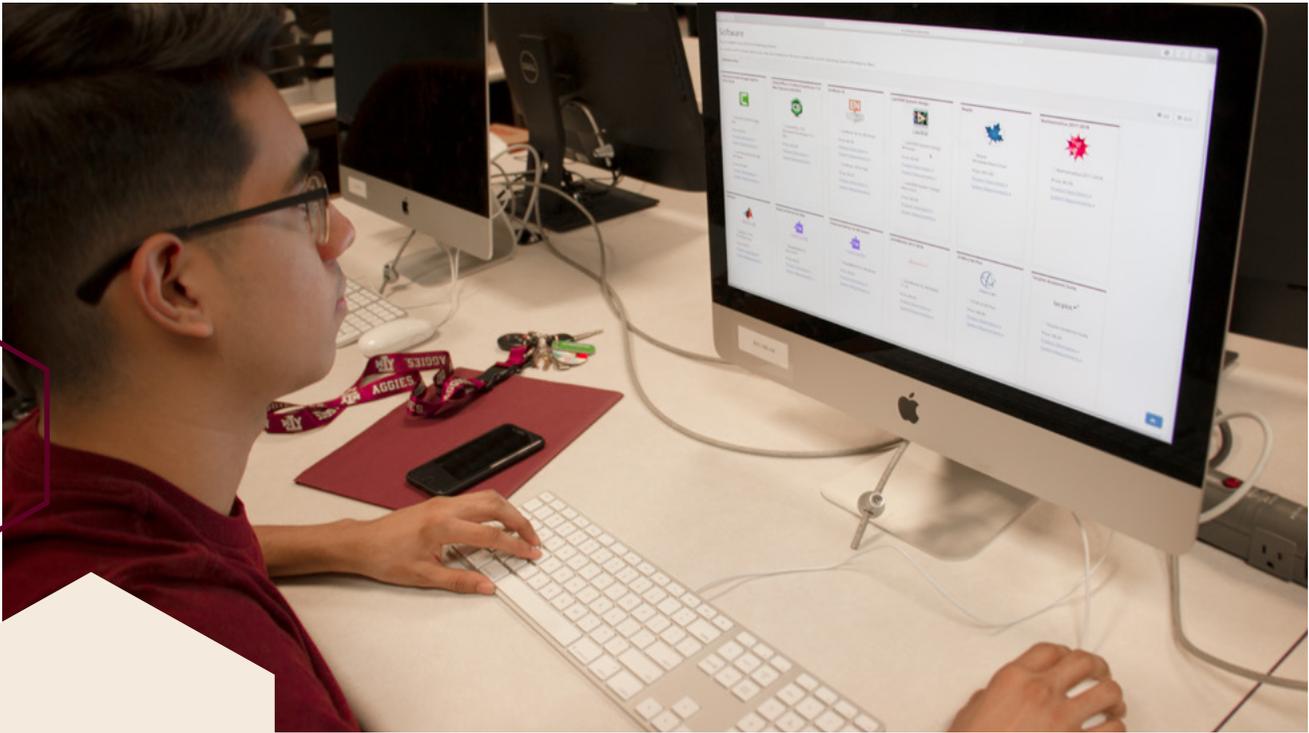
**6,800+**  
**WIRELESS  
ACCESS POINTS**  
located across campus

**How  
much is 50TB?**  
With this much storage,  
you could take one  
average-sized photo per  
day on your phone for  
almost 68,500  
years!

**LESS THAN 30 MINUTES**  
Average response time for  
identifying and shutting down  
a compromised email account



# EXPANDING HORIZONS



**\$5.5 MILLION**  
**IN SAVINGS**  
off retail pricing  
*on Microsoft Office alone*

## **Making Tools Accessible**

Graduates with specialized software experience have a competitive advantage in the job market, but this software can be very expensive.

To help students get the experience they need, the Texas A&M Software Center works with software companies to provide software such as MATLAB, Circuit Design Suite Power Pro, ChemOffice and Mathematica at no cost. Last year, over \$200 thousand worth of Mathematica was distributed.

Additional software is available at highly reduced rates. Campus members saved over \$5.5 million on Microsoft products alone in 2017, with over 10,750 copies of Office 2016 Professional for Windows sold and over 6,000 copies of Office 2016 for Macs.

To improve delivery and service, the Software Center also launched a redesigned version of its website at [software.tamu.edu](http://software.tamu.edu).



### Collaborative Project Analyzes “Aggie Spirit”

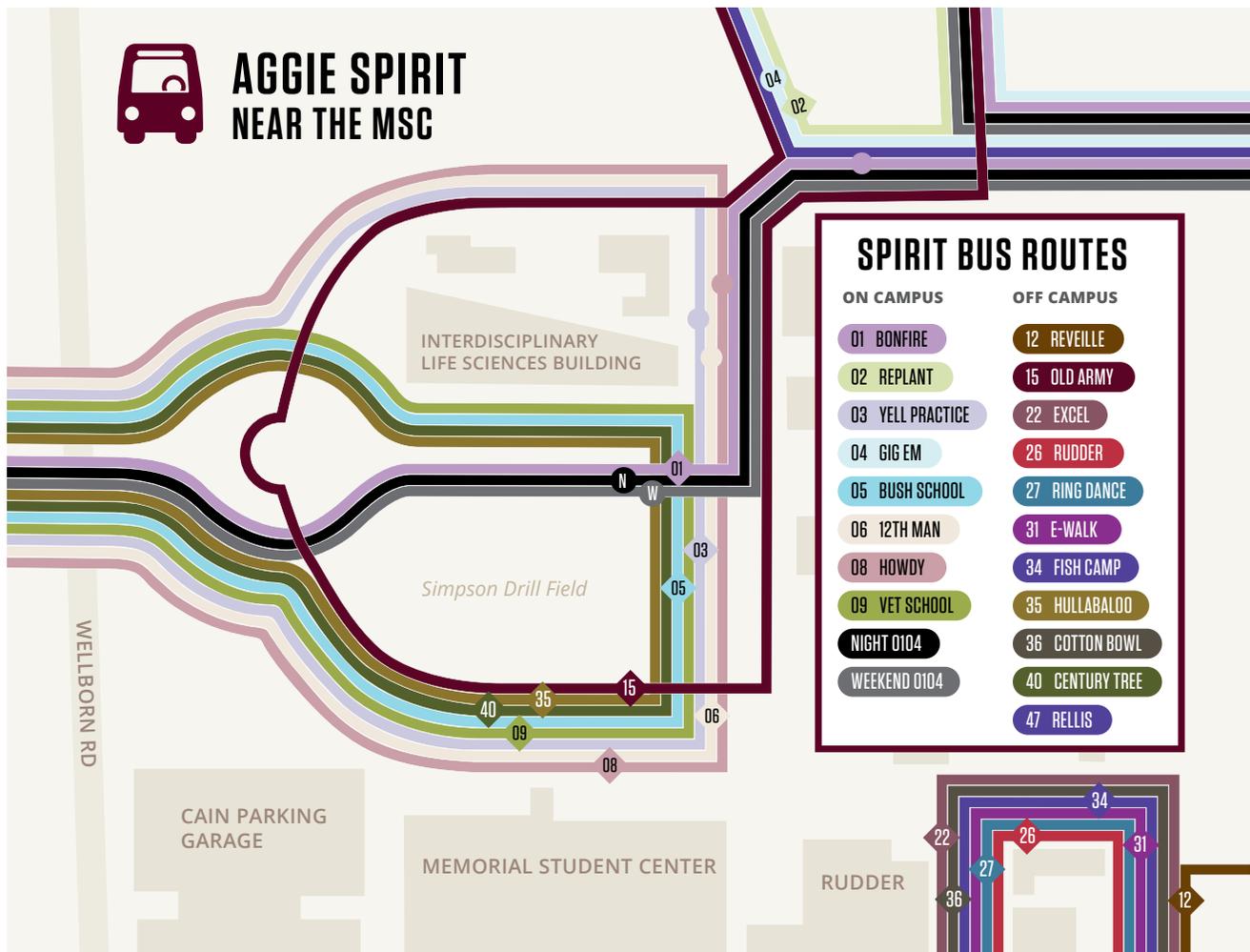
Over 145,000 members of the campus community depend on “Aggie Spirit” buses each week as they travel to, from and across Texas A&M. With 80 buses serving 18 routes on and off campus, bus stop locations need to be strategically placed to maximize traffic flow and optimize bus ridership.

The Division of Information Technology collaborated with the [Texas A&M Transportation Institute \(TTI\)](#), [Transportation Services](#) and Hewlett Packard Enterprise’s [Aruba](#) for a footfall pilot study to track and monitor traffic flow at the Memorial Student Center (MSC) bus stop. The pilot project was part of the Campus Transportation Technology Initiative (CTTI), which aims to improve mobility and safety by utilizing private sector transportation innovation. Wi-Fi signals from cell phones and Internet of Things (IoT) devices were used to collect

anonymous data. An Aruba partner, SkyFii, used the data to provide visualization of rider behavior.

The project also provided transformational learning opportunities for students, as the data was analyzed by a student team in the [Capstone senior design course](#) in the Department of Industrial and Systems Engineering. The data detailed such information as the direction riders took after exiting the bus, the percentage of visitors who traveled to certain campus locations, and the busiest transit days and hours.

Expansion of the pilot project could help create pedestrian flow diagrams across the university and establish a dedicated, campus-wide pedestrian and bicycle pathway. It could also be used at Kyle Field on game days to ensure efficient entry and exit.



# BUILDING POSSIBILITIES



## Opening New Doors to Discovery

Research and technology are key to future success, and both require vast amounts of computing resources and digital storage. With the opening of the 50,000 square-foot West Campus Data Center, Texas A&M University is poised for the world-changing discoveries and innovations of tomorrow.

The future also requires IT to transform. This was done figuratively and literally as the former Fred W. Dollar Commissary was transformed to the new data center. Even though the building was originally constructed in 1983, the Division of IT ensured the redesigned facility would be environmentally friendly by adhering to the [Leadership in Energy and Environmental Design \(LEED\)](#) standards

for silver certification, the most widely used green building rating system in the world. By repurposing the building, the Division of IT conserved land and other resources while giving new life to a facility that was largely unused.

The new data center more than doubles the

previous data center space on campus and allows many individually managed servers to be consolidated to a single location. If all campus servers were moved to the facility, Texas A&M could see an estimated savings of up to 10 percent of current power and cooling costs.

The West Campus Data Center's need for power and cooling redundancy was also fulfilled with sustainability and savings in mind. Two diesel-powered generator housings provide five megawatts of backup power and can supply the university power grid at peak times, saving additional money and resources. Texas A&M is only the second facility in the country with this generator configuration. In addition, the state-of-the-art heating, ventilation and air conditioning (HVAC) system can operate in "free cooling mode" when outside temperatures are low enough. In 2016, there were over 150 days the university could have benefited from this efficiency.

The West Campus Data Center's security and flexibility open doors to new research possibilities. The facility includes build-to-suit co-location spaces specifically designed for High Performance Computing Systems. Users will soon have access to the self-serve Aggie Cloud, which will allow virtual server creation and help reduce the number of physical servers required across campus.

# 10%

*Consolidation of servers to a single location could save up to 10% of current power and cooling costs.*



PROTECTION OF  
**CONTROLLED UNCLASSIFIED  
INFORMATION (pCUI)**



**Governance**



**Technology**



**Policy & Guidance**



**Training**



**Accountability**

**Securing the Future of Research**

Grant funding is crucial to research. To keep receiving Department of Defense grants, all entities that process, store or transmit information with federal or state agencies were required to create policies and procedures for the protection of Controlled Unclassified Information (CUI) by the end of 2017.

To ensure compliance, the Division of IT established a protection of Controlled Unclassified Information (pCUI) Task Force. The task force, which will continue work through 2018, consists of 16 representatives from campus entities, including the Division of IT, the Vice President of Research, The Texas A&M University System, AgriLife, the Texas A&M Engineering Experiment Station, the Division of Research, Texas A&M Galveston and university libraries. The team is engaging researchers who may be affected by changes.

The task force is also working on policies for the West Campus Data Center and its secure enclave. The enclave is isolated from other servers and data in the facility, ensuring the entire university meets the new security standards.

# WEST CAMPUS DATA CENTER



# 24/7

SECURITY & CONTROLLED ENTRY

**400 tons  
of cooling**  
*provided by*



COMPUTER ROOM AIR CONDITIONERS

# 10,000 sq. ft.

OF COMPUTE SPACE NOW OPEN.

*Expandable up to 30,000 sq. ft.*

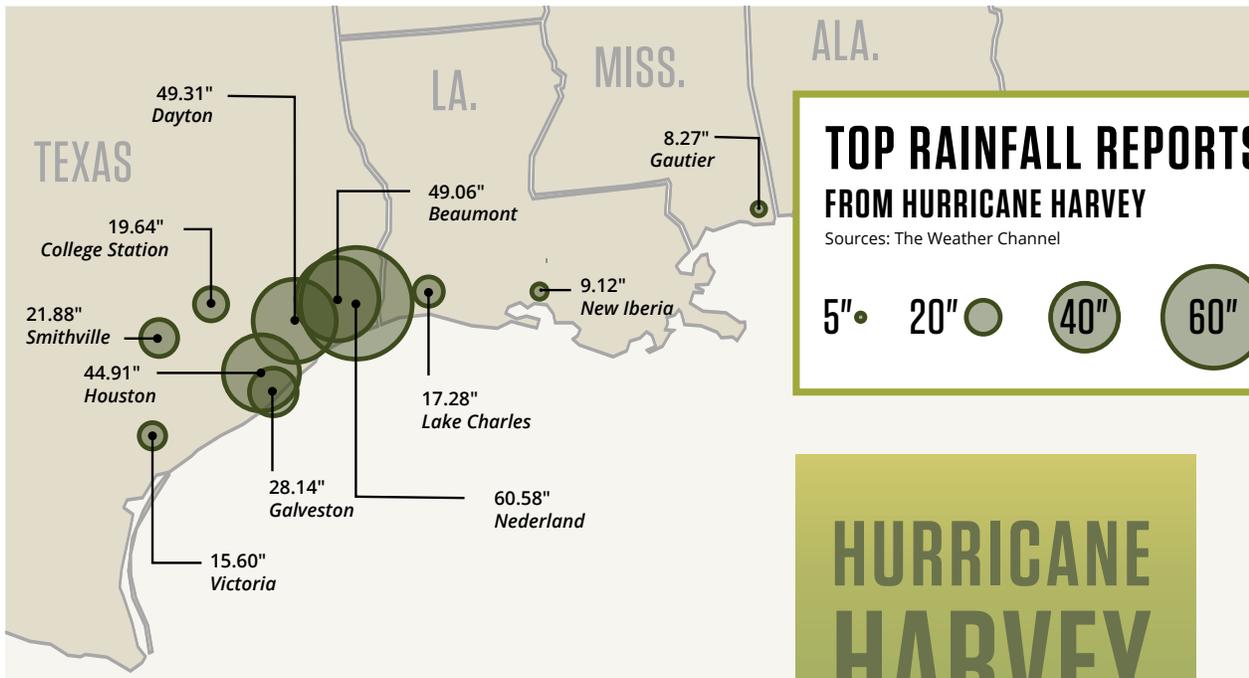


# 48 HOURS OF FUEL

*held by backup generators*



# AGGIES AND IT MAKE AN IMPACT



## TOP RAINFALL REPORTS FROM HURRICANE HARVEY

Sources: The Weather Channel

5" ● 20" ○ 40" ○ 60" ○

# HURRICANE HARVEY

6 DAYS. 5 STATES.  
**1 STORM.**

Over 27 trillion GALLONS OF  
**RAIN** 

  
**13 MILLION PEOPLE AFFECTED**





*After Hurricane Harvey slammed into the Texas coast, Aggies made an impact in relief efforts, helping with rescues, donating great deals of time and money and offering specialized support. The Division of IT was able to assist in a number of ways.*

### Networking Recovery Efforts

The Division of IT set up a temporary network and 175 guest accounts for Texas Task Force 1 headquarters in South College Station. Federal and state teams used the connection to communicate with commanders and other bases of operation to coordinate rescue and relief efforts. Texas Task Force 1 and 2 conducted rescues or evacuations of over 50,000 Texans.

When the Federal Emergency Management Agency (FEMA) chose Texas A&M's RELLIS Campus as a staging center for relief supplies and operations, they also required a temporary network. Fortunately, the network used by the former Riverside Campus was still functional, so FEMA was up-and-running within 30 minutes.

### HDC Answers the Call

The storm forced Texas A&M University to close the first two days of the fall semester. Since students were urged not to travel, Help Desk Central student technicians were not available. HDC never closes, so six full-time staff members answered more than 1,200 phone calls, emails and chats over the two-day period, fielding questions on campus closures, travel conditions and area damage.

### Extending the Branch

Almost two feet of rain covered Galveston, prompting Texas A&M University at Galveston (TAMUG) to postpone classes. Since the campus targeted a September 4 start date, TAMUG officials operated from the Jack K. Williams Building in College Station, with the Division of IT providing phones and ensuring network access for everyone.

### Presidential Support

To raise money for hurricane relief efforts, all five living former presidents united for the "[Deep From the Heart: The One America Appeal](#)" concert at Reed Arena in October. Although tickets for the event sold out in less than 24 hours, the concert was [streamed live on YouTube](#). To ensure everything went smoothly, the Division of IT tested all connections and was on standby to provide support during the event.



*Photos courtesy of Texas Task Force 1 and Cassie Stricker/Battalion.*



# LEADING THE WAY



*The spacious new Help Desk Central and Incident & Operations Center opened in summer 2017.*

## The Ideal Solution

When Aggies have technical questions, they turn to [Help Desk Central \(HDC\)](#) for answers. In 2017, technicians resolved over 139,000 help requests.

Due to the growing need for assistance, the newly renovated [Help Desk Central and Incident & Operations Center](#) opened in the Computing Services Center in August. Thanks to HDC's higher visibility, with an entrance facing the Central Parking Garage, over 900 students and employees walked in for assistance during the first week of the

fall semester. The new facility features a spacious service area with automated check-in, a software sales counter and digital signage displaying wait times. Self-service lockers allow users to pick up repaired equipment at their convenience.

While HDC solves problems, the Incident & Operations Center prevents them. The secure area allows around-the-clock monitoring of all network traffic to help prevent cybersecurity attacks and provides an overview of network health.





# MAKING IT SHINE

*The Division of IT was honored over the past year as we supported the campus community in research, innovation and discovery.*

### InCommon Steering Committee Position (two-year term)

M. Dee Childs, CIO | InCommon

*Operated by Internet2, InCommon exists to create and support a common trust framework for U.S. education and research.*

### 2018 Ones to Watch Award

Judith Lewis, Ph.D. | CIO.com

*CIO.com is a premier content and community resource for IT executives and leaders.*

### HDI's Team Certified Pinnacle of Excellence Award

Help Desk Central | HDI

*HDI recognizes organizations with exceptional customer service as the premier professional association for the technical support industry.*

### Best of Category Awards

Division of IT | ACM SIGUCCS

*The Special Interest Group on University and College Computing Services honored Texas A&M in four communication categories. All entries can be seen at [u.tamu.edu/SIGUCCS](http://u.tamu.edu/SIGUCCS).*

- **Best Short Video**  
"Aggies Map 100 Miles of Campus Fiber"
- **Best General Service Promotion**  
"State of Security Report 2016"
- **Best Student Created Material**  
"Computer Lab Poster Campaign"
- **Best Printed How-To Guide**  
"Welcome Home Brochure"

## Laying a Solid Foundation

Decision-making activities for information technology, such as prioritization and funding, will be better aligned with Texas A&M's strategic priorities through the newly launched IT Governance initiative.

Using input collected from the university community in the first half of 2017, a framework was created to foster transparency, accountability, stewardship, collaboration and agility in IT strategy.

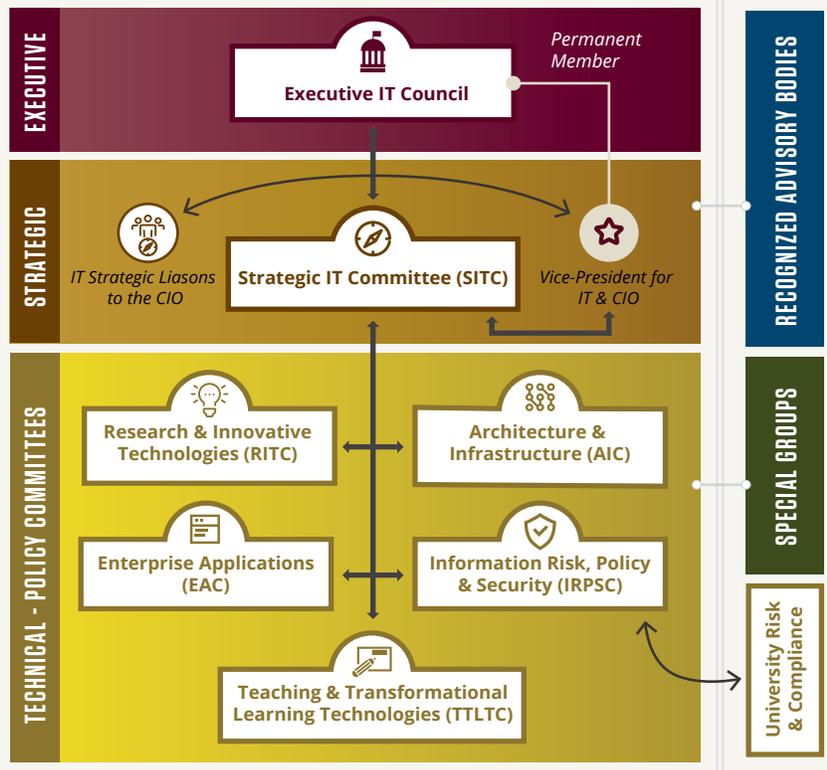
Over the summer, 88 diverse appointees representing students, researchers, administrators, faculty and staff were appointed to the following committees: Strategic IT; Teaching & Transformational Learning Technologies; Enterprise Applications; Research & Innovative Technologies; Architecture

& Infrastructure; and Information Risk, Policy & Security.

During November and early December of 2017, each committee conducted their initial meetings, selected leaders, and worked to identify priorities for their first year of service. A technology needs assessment will be distributed to the university community in 2018 with the intent of guiding the prioritization process among the committees.

The goal of the IT Governance Program is to provide a collective voice to the university that will bring everyone together in reimagining the role of IT across Texas A&M University. More information can be found at the IT Governance website at: <https://u.tamu.edu/governance>

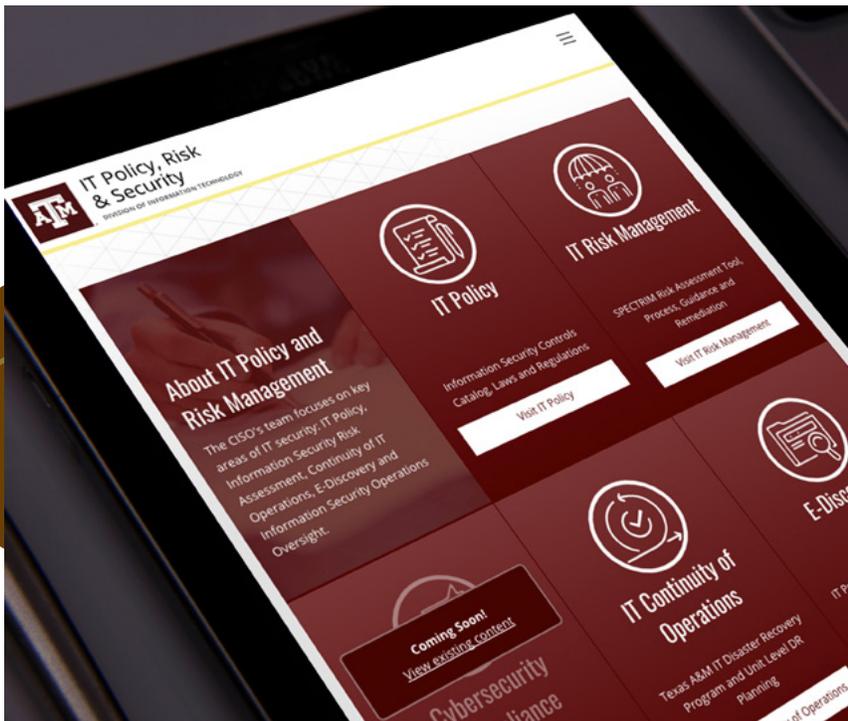
## UNIVERSITY-WIDE IT GOVERNANCE FRAMEWORK



# SUPPORTING THE TEXAS A&M MISSION

## Focusing on IT Accessibility Services

- Hosted the first campus-wide Accessibility Sprint as a collaborative endeavor of the Division of Information Technology and the GoWeb Team.
- Evaluated the accessibility of key university websites and applications including [www.tamu.edu](http://www.tamu.edu), [Code Maroon](#) and the [Howdy](#) student information portal; more than 20 website and project accessibility compliance evaluations were completed.
- Expanded content on the IT Accessibility website to include not only web accessibility, but also document creation, captioning resources and procurement best practices.
- Incorporated accessibility into business processes to optimize impact across campus; approximately 25 Electronic and Information Resource (EIR) contracts were evaluated for various departments in working with TAMU Contract Administration.
- Created web accessibility testing protocol, documentation and templates.



## Improving IT Policy and Risk Management

- Launched new IT Policy and Risk Management content on [CIO.tamu.edu](http://CIO.tamu.edu). With a full-featured [IT Security Control Catalog](#) and an expanded risk assessment checklist, the site provides IT professionals with easier access to important policy and risk management information.

### Increasing IT Security

- Enhanced security of the Central Authentication Service (CAS) by placing NetID and password entries on separate pages. This move allows implementation of additional authentication options in the future.
- Began notifying users when additional analytics discover an email threat got through the initial scanning process. Users are asked to immediately delete the email or contact Help Desk Central if the message was opened.
- Launched the Tenable Security Center vulnerability assessment platform to provide passive scanning data and true continuous monitoring. The tool is available to all Infoblox users at [securitycenter.itsec.tamu.edu](http://securitycenter.itsec.tamu.edu).
- Made Texas A&M one of the first universities in the country to deploy border security services capable of 100 gigabits per second of firewall and intrusion prevention services (IPS).

## NEW TEXAS A&M NETID (CAS) LOGIN STEPS

### STEP 1:

Current Users

NetID or Email Address

Next

### STEP 2:

Enter your password.

Password

Next

## TEXAS A&M'S IT NETWORK

 **6,831**

**WIRELESS NETWORK  
ACCESS POINTS**

 **120,000**

*devices on the network daily*

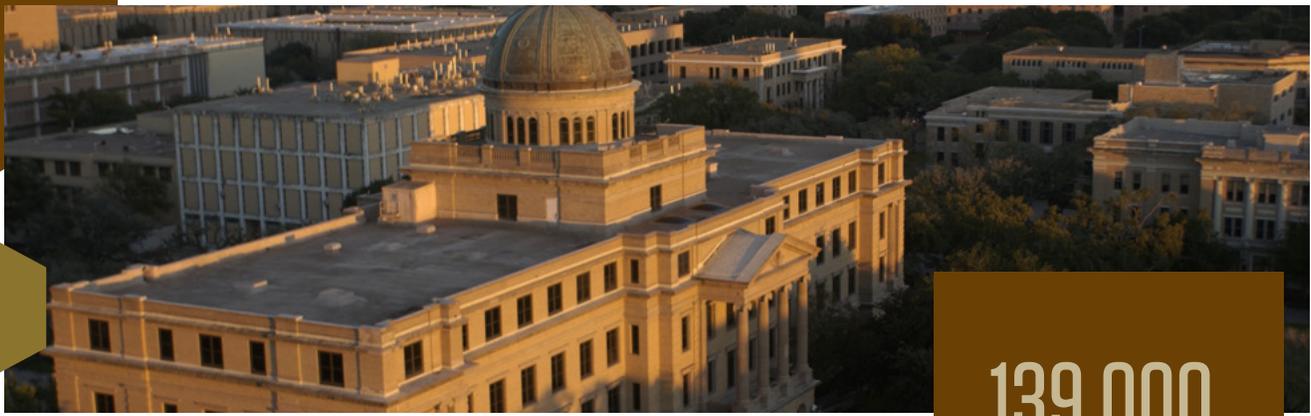
**4,578 HOURS**

**OF TELECONFERENCES  
& VIDEO STREAMS**  
*scheduled through TTVN*

### Expanding Campus Network and IT Infrastructure

- Replaced older wireless access points with faster AC Wave 2 hardware. A total of 69 locations across main and west campus received the upgrade.
- Expanded TAMU Visitor self-registration Wi-Fi access to 10 new locations across campus.
- Added over 600 wireless network access points (APs) in 2017, bringing the total to 6,831 APs.
- Saw an average of 120,000 devices on the network each day, with a daily transfer of 50Tb of data.
- Retired Motorola Trunked Radio System and replaced it with a Motorola MotoTRBO Radio System that serves ~1,400 radios.
- Converted Office of State Relations in Austin from Nortel Phone System to a Cisco VoIP system hosted in College Station.
- Upgraded Costa Rica Soltis Center with new network, Wi-Fi, and Cisco VoIP Phone System.
- Upgraded TEEX State Headquarters from legacy Nortel Phone System to Cisco VoIP.
- Added over 400 new Voice-over-IP customers. 9,471 VoIP systems are now installed on campus.
- 1,622 TTVN teleconferences were scheduled in 2017 for a total of 2,833 hours. Over 1,000 video streams were scheduled for a total of 1,745 hours of video communication and collaboration.





139,000

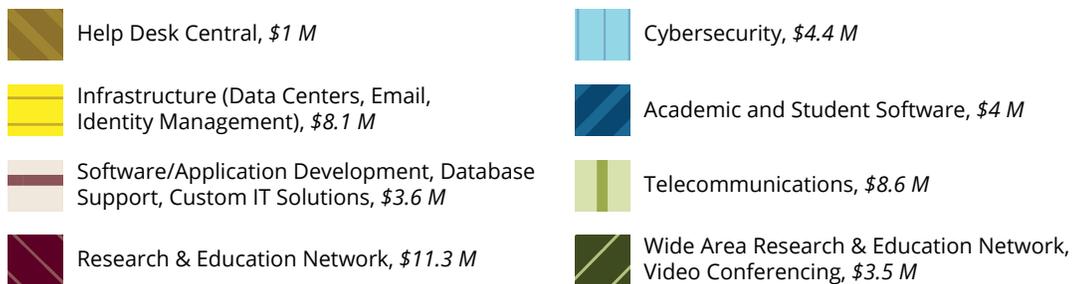
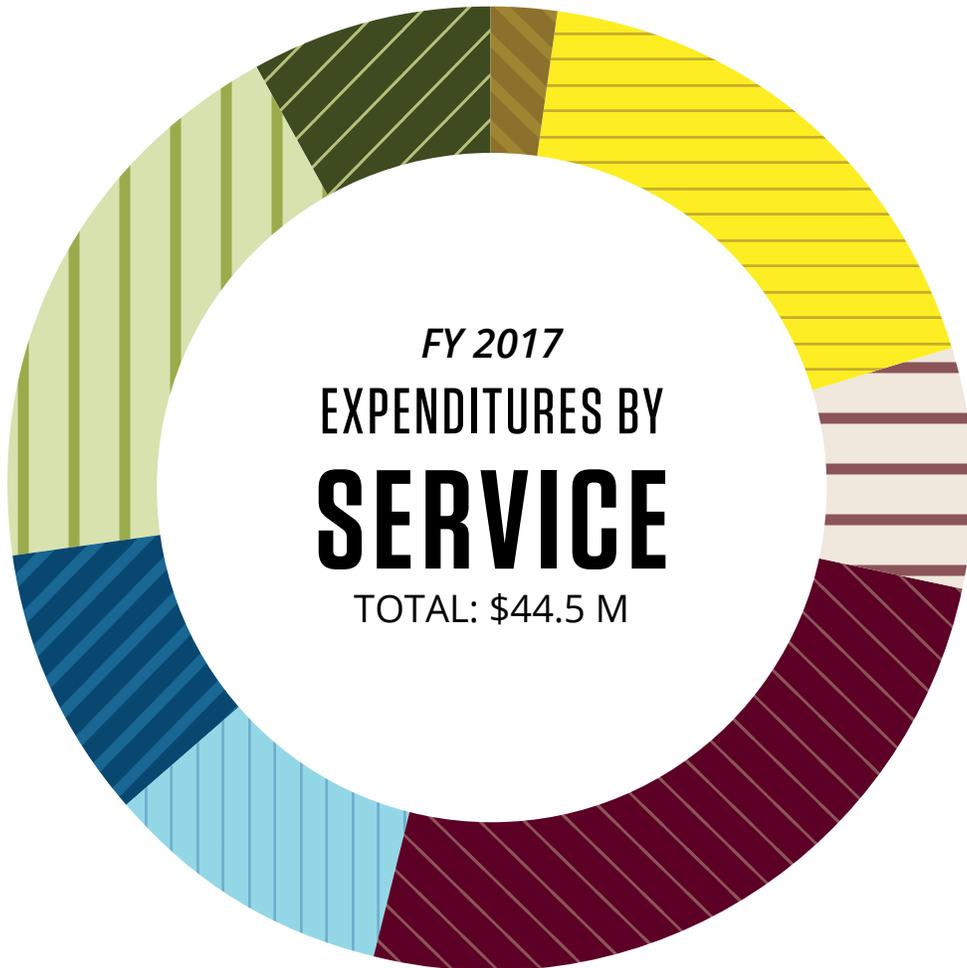
*Help Desk Central answered 139,000 requests in 2017, providing IT support to campus members 24/7/365.*

### Enhancing Service and Campus Outreach

- Repaired over 750 student-owned computers and provided extended warranty coverage to 12 different colleges/departments.
- Answered over 139,000 requests through Help Desk Central. A total of 89,774 requests were answered by phone, 13,876 through walk-in assistance, 12,520 via chat, and 23,337 through email.
- Updated over 475 Knowledge Base articles and created over 180 new article entries.
- Began working with the College of Engineering for curriculum development focusing on experiential learning and lecturing on practical project management.
- Helped equine owners and regulatory officials across Texas use the Laserfiche framework to access reports from the Texas A&M Veterinary Medical Diagnostic Laboratory. Custom code developed by the Division of IT employed an innovative use of URL encryption and custom web services.
- Began using central funding for many university business unit telecommunication services for Fiscal Year 2018.
- Received Laserfiche expanded licensing for 520,000 licenses throughout The Texas A&M University System. All campuses have now implemented Laserfiche.
- Saved almost \$131,000 in labor costs since May 2016 after implementing Schedule Source software. The tool allowed the consolidation of hiring and student employee schedule management efforts for Help Desk Central and reduced the number of hours required for scheduling.
- Provided network setup and support for Hackathon, Chillenium, Big Event, SEC Nation, "Deep From the Heart: The One America Appeal" concert, Casting Crowns concert and Board of Regents meetings.
- Added an interactive map to the TXSmartschools.org website and imported new, more accurate data as supplied by the Mosbacher Institute for Trade, Economics, and Public Policy.
- Began Change Management for all Systems Engineering services to better understand and document services and the procedures that support them.
- Relunched project coordinator program and trained 84 people.
- Provided continued support and enhancements for Meal Plan Tracker, the online tool used by students, faculty and staff. Over \$47 million in meal plans were purchased using the system in 2017.



# EXPENDITURE SUMMARY



Division of Information Technology

M. Dee Childs, Vice President for Information Technology and Chief Information Officer

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