



TEXAS A&M UNIVERSITY
Technology Services

united



From the CIO



Texas A&M University is one of the largest higher education campuses in the nation, both in geographic size and student population. Serving as the technological backbone of an institution of this size, our campus partners entrust us with deploying innovative, efficient and groundbreaking solutions. Our role was elevated in 2022 as the campus community at-large began the process of unifying teams and core services.

Within the last year, we have focused on unifying technology services across campus, growing our team from approximately 300 employees to a team of more than 800. This laid the groundwork to streamline and strengthen the services we provide under our new name, Technology Services. We remain committed to our campus partners with a focused effort to support and empower our team. Many of our staff volunteered to serve on working groups, providing valuable insight to successfully support large-scale priorities in alignment with the academic mission of Texas A&M.

The benefits of unification efforts are already taking shape. A \$64 million 6E Wi-Fi project is underway to transform

the campus digital experience by providing faster, consistent wireless access through the Next-Generation Aggie Network. We've expanded cloud service offerings, continued to strengthen our cybersecurity framework and infrastructure, and streamlined several software and hardware offerings, including Adobe Creative Cloud and Cisco VoIP phone systems campuswide. Future initiatives include a unified ticketing system and support model, and TechHub, a centralized store for hardware purchases. These enterprise solutions will set a standard of excellence for Texas A&M while streamlining support, increasing efficiencies and reducing costs.

“**Technology Services is an organization focused on the success of our campus partners, and our approach remains steadfast in further supporting the university's mission of teaching, research and service.**

We continue to focus on building relationships across The Texas A&M University System, state agencies and academic units. We have expanded several

ongoing partnerships, including helping in developing the “Aggieland North” project at the Fort Worth campus, establishing a highly flexible data network between the university and the Texas A&M-RELLIS campus, expanding the support system at the Higher Education Center in McAllen and continuing to participate in the growth of the EnMed program in Houston.

As the research enterprise at Texas A&M expands, our need to foster new and innovative ways to meet the collaborative needs of our researchers is accelerating. We have designed a dedicated collection of cloud-based resources that allow faculty and researchers rapid access to controlled, confidential and restricted data - anywhere, at any time. We are working with the Vice President for Research to build out a dedicated IT Team focused on assisting our research programs with access to new technology and accelerating their ability to implement technology in their research faster.

Technology Services is an organization focused on the success of our campus partners, and our approach remains steadfast in further supporting the university's mission of teaching, research and service. I am proud to lead a unified team of technology professionals as we build a better tomorrow.



ED PIERSON
Vice President and CIO

NEXT YEAR, WE WILL CONTINUE TO FOCUS OUR EFFORTS ON THESE HIGH-LEVEL GOALS:

1. Collaborative customer partnerships with a customer-centric support model.
2. Enable employees to build careers by offering training, innovative opportunities and advanced career ladders.
3. Proactive IT solutions that drive ROI and create value for Texas A&M.
4. New world-class data network, designed for the needs of the future.
5. Enhanced focus on cybersecurity, at both local and Texas A&M System-wide levels.
6. Cloud and hybrid solutions targeted for research and academic needs.



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Annual Report 2022

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Looking Forward

UNIFYING OUR PATH

A university-wide initiative was recently launched to emphasize a focus on driving efficiency, effectiveness and operational excellence in support of the mission of the university. Within Technology Services, this brought significant change focused on unification through common technologies, processes and focus on customer service. Key to our efforts was to tightly align our changes with those of the other business groups as they went through a similar centralization process.

Technology Services is positioned to lead the unification of a growing organization, launch centralized, enterprise-level services campuswide and streamline processes and procedures to enhance collaboration. Key to our success will be a focus on providing advanced solutions and technology that wasn't achievable in a distributed model.

As an organization focused on the success of our customers, the commitment to continuous improvement and supporting innovation in teaching, research and service remains steadfast.

By supporting, encouraging and improving the professional opportunities of employees, Technology Services is focused on creating true career paths, not just jobs, for our professional staff.

Uniting Technology Services across campus

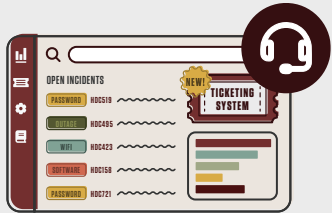
Technology Services united more than 800 technology professionals across campus to support a centralized organizational structure. By unifying campus IT, Technology Services will be able to streamline processes and evaluate technology decisions across the organization.

Unified project management

To support efficiencies and delivery of IT support campus wide, Technology Services invested in identifying employees to serve as designated project managers to support the university's high-profile technology initiatives. Three existing project management offices (Technology Services, Technology Services - Provost IT and Technology Services - Student Affairs) were centralized into one. This will ultimately allow for the implementation of a single intake process for projects and allow employees to work closely with the recently launched business relationship unit serving the unified Technology Services team.

Centralizing help desk and ticketing system

A key component in supporting the new organizational structure at Texas A&M includes establishing a university-wide help desk and ticketing system to handle requests for technology support. The enterprise system will become the main point of contact for all IT issues for employees and students to ensure higher quality, consistent customer service. Texas A&M currently has more than 16 ticketing systems with various processes in place. A central help desk system will provide campus members with a streamlined solution to create a ticket and provide broad insights on the health of campus technology. Campus members will only need to remember a single email address or URL to get assistance. Technology Services selected Team Dynamix after three vendor demonstrations and will incrementally transition campus to this tool in January 2023. Common processes and documentation will also be developed so the tool is used consistently across campus.



To read more about how Technology Services is Looking Forward, visit it.tamu.edu/annualreport

Careers

INVESTING IN PEOPLE

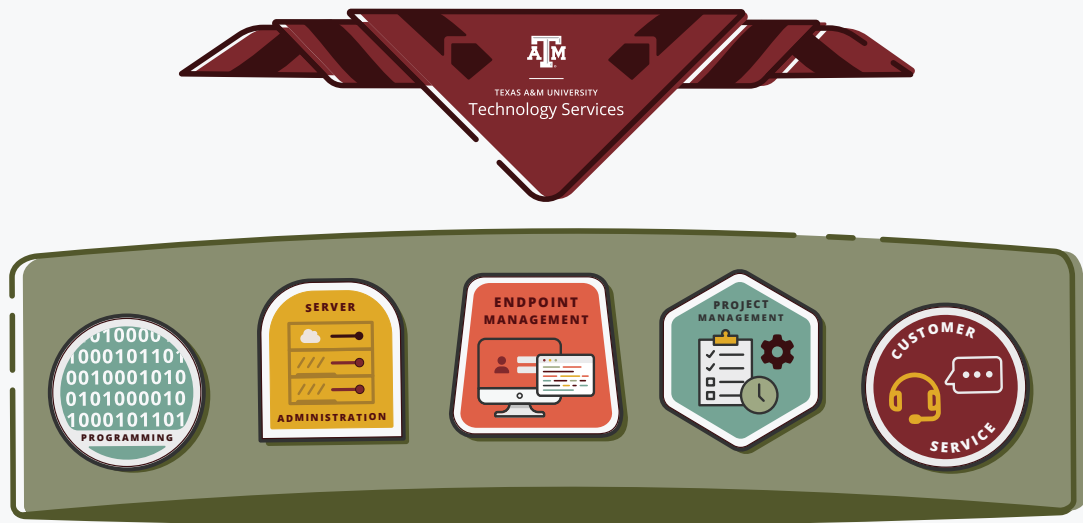
In an effort to recruit, retain and develop top IT talent, Technology Services has pursued a rigorous initiative to expand career opportunities for staff and create entry-level opportunities for students by addressing three clearly defined objectives:

- Create professional titles that better reflect the evolving IT landscape and what is found across industry.
- Establish defined career paths for all employees.
- Establish entry-level positions for student workers to be hired upon graduation.

Developing successful employees is a top priority, with strategies being developed and implemented

to retain current talent. Technology Services has prioritized the evaluation of all current IT titles, job duties and compensation to help compete with industry opportunities and align with the university's strategy for career progression, both within technical and managerial ladders.

With technology careers growing more competitive each year, Technology Services also designed the student IT experience program to give undergraduates interested in IT a head start to begin their career. Students gain hands-on learning tied to career goals, including training opportunities and the ability to earn industry certifications, all with the ultimate goal of retaining qualified student workers in the organization.



Skills inventory to develop and align team

Technology Services developed an inventory to identify the IT skill sets of employees across campus. The inventory will be used to develop and align personnel within the Technology Services team. To date, based on the responses from 574 IT professionals surveyed, the skills inventory demonstrated the top 5 skills held represent programming, server administration, endpoint management, project management and customer service. In addition, the survey provided insight on areas where growth opportunities exist through demand management, systems development management, learning delivery, quality management and portfolio management.

This inventory allows Technology Services to identify the various strengths, skills, competencies and opportunities at an organizational level. In addition, this inventory allows for a focused understanding of each employee's aspirations for career development, whether it be technical or managerial.

The most requested training categories include macOS and iOS support (JAMF and Apple Hardware Support), leadership (supervision, governance, organizational leadership and diversity), project management (PMP, Agile and Scrum), programming (Python, JavaScript, PowerShell, .NET, C++, C# and Swift) and IT frameworks (ITIL, Six Sigma and Lean).

Providing professional development opportunities

Technology Services' professional development enhancement program provides career growth opportunities for all IT employees. This program is especially important with the recent unification of IT professionals across campus. Each employee is required to take four courses: one on project management, one on emotional intelligence and two additional elective trainings fulfilled through official Technology Services' Speaker Bureau or Technically

Speaking events, outside training and LinkedIn Learning courses, or the Technology Services book study group. This program is intended to encourage career growth opportunities for technology professionals and equip them with the knowledge and skills needed to address technology challenges.

To read more about Technology Services' careers, visit it.tamu.edu/annualreport

Networking

INNOVATING THE CAMPUS CONNECTION

Texas A&M University's data network is the backbone of our campus technological infrastructure, seamlessly connecting employees and students to the resources, information and tools they need for academic, research and collaborative success.

Over the past year, Technology Services deployed a variety of network initiatives to strengthen, expand and modernize the campus network experience. These initiatives will lay down the groundwork for one of the largest network upgrades ever launched at Texas A&M, the Next Generation Aggie Network.

By design, the Next-Gen Network will transform the campus digital experience by providing faster, consistent wireless internet by utilizing 6E technology and expanding coverage in high-traffic outdoor areas.

Upon project completion, Texas A&M will boast one of the most resilient and modern higher education campus networks in the country.

Other key actions include the expansion of the Internet of Things network in campus dorms, the launch of a new guest wireless experience and the upgrade of legacy phones, switches, routers and access points across campus.

By investing in these robust, powerful and adaptable network upgrades, Texas A&M is poised to become the smart campus of tomorrow, meeting the future demands of Texas A&M educators, researchers and students with speed, agility and excellence.



Next Generation Aggie Network

The Next Generation Aggie Network is a three-year, multi-million-dollar effort to modernize the Texas A&M University campus with 6E wireless technology and transform the campus digital experience by providing faster, consistent internet access across campus. It will expand Wi-Fi coverage in high-traffic outdoor areas and provide better support for data-intensive research efforts across the 5,200-acre campus.

As Technology Services prepares to launch the Next-Gen Network, approximately 240 buildings have had new fiber installed, which provides a consistent, high-speed fiber-optic backbone that allows for robust connectivity inside of each building. More than 7,000 wireless access points have been identified for upgrades and ultimately the number of

access points will more than double, resulting in almost 20,000 6E wireless access points on campus. These access points will be installed by zones and will boost wireless coverage in needed areas identified through surveys.

Other examples of preparation happening across campus include work on the Texas A&M Health Science Center network, with the Next-Gen Network team proactively surveying wireless signals, network switches and equipment closets. This initiative will create network parity across the main Texas A&M campus and the Health Science Center. Phase 1 of the project is nearing completion with Phase 2 set to begin in 2023.

Streamlined guest wireless experience

In December 2022, Technology Services launched a redesigned and more secure guest wireless experience. The old process required visitors to submit an email or phone number to gain access to the internet. This was a slower process that required approval by campus cybersecurity. Now when campus visitors click to join the Texas A&M campus network, they are directed to a page asking them to agree to the terms and conditions, much like requesting to join a hotel guest network. Once guests have agreed to the terms of service, they are immediately granted five days of internet access. Guest wireless networks are necessary because they allow cybersecurity teams to restrict guest activity, giving visitors access to an internet connection and nothing else.

This new network also provides a more secure environment for visitors and campus members. All internet traffic is directed to a demilitarized zone (DMZ), a more secure and isolated area outside the front gates of a network's firewall, giving Technology Services the ability to monitor traffic more efficiently. By streamlining and upgrading the guest wireless network, the Texas A&M campus community and its guests can continue with their visits as planned, in a more efficient and secure manner.

To read more about networking, visit it.tamu.edu/annualreport

Cybersecurity

FORTIFYING OUR SECURITY

Each month, more than 99 percent of all incoming network traffic at Texas A&M is identified as malicious and blocked, meaning that more than 37 billion cyber attacks are stopped. These attacks can put higher education institutions like Texas A&M at risk every day, especially since we operate one of the largest campus data networks in the country. On any given day, Texas A&M has roughly 120,000 unique devices on the network and manages thousands of terabytes of research data.

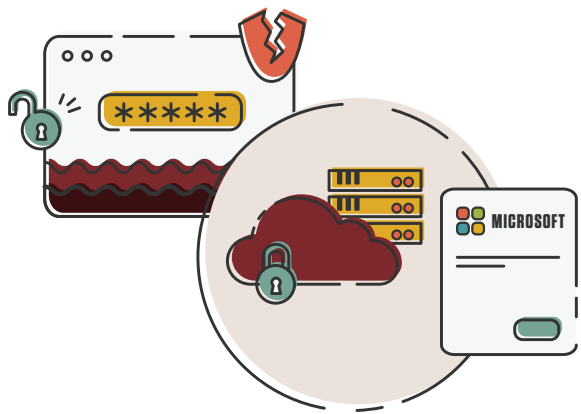
Key to our efforts is a strong partnership with the security teams across The Texas A&M University System. By blocking hundreds of millions of attacks daily, Technology Services and our partners are able to enhance the university's security shield and discover solutions to current and future safety challenges.

Consistent efforts continue to educate the campus community on staying cyber secure, but new progress has been made this past year to further enhance three

primary areas: two-factor authentication, cloud-based solutions and asset management.

In addition to upgrading Duo, the university's two-factor authentication interface, Technology Services is in the process of installing Duo self-service kiosks across campus, allowing for real-time device enrollment in a secure environment. The migration to Microsoft 365 allowed Technology Services to implement dual security layers to all Texas A&M email services, reducing the opportunity for accounts to be compromised. In Spring 2023, a cybersecurity asset management system will be launched to effectively monitor every technology asset on campus and help prevent security breaches.

Texas A&M is a national leader in cybersecurity, and by continuing to invest in the needed infrastructure to protect our campus and the people who work here, we are committed to fortifying our security so we can focus on uninterrupted teaching, research and service efforts.

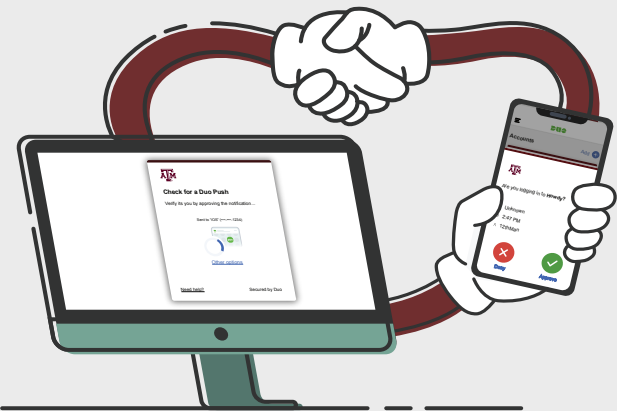


Modern authentication keeps Texas A&M safe

Technology Services ensures Texas A&M University is safe from millions of cyber attacks each year. Securing email is essential as more than 75% of cyberattacks begin with an email message. After migrating the on-premise Texas A&M Exchange email to the cloud-based Microsoft 365, Technology Services saw an opportunity to ramp up email security by moving all Microsoft 365 accounts from basic authentication to modern authentication by September 1, 2022. Modern authentication is more secure because it requires multi-factor authentication like Duo, a capability not possible with basic authentication.

Throughout the spring and summer, Technology Services collaborated with divisions, units and departments across campus to move all Microsoft 365 email accounts to modern authentication. The process involved targeted communication efforts and hands-on assistance from distributed IT professionals and Help Desk Central, including extensive self-help documentation and virtual Q&A sessions for staff and faculty. A dynamic PowerBI Dashboard was also created so campus IT professionals could track which users and devices were still using basic authentication. This proactive approach prevented numerous obstacles as staff and faculty began moving to new organizations during early centralization efforts.

All accounts were transitioned to modern authentication well before the start of the fall semester. By successfully completing this effort, Technology Services ensured Texas A&M email accounts are safer and university IT services are less susceptible to attack by compromised accounts.



Duo interface changes

In fall 2022, Technology Services upgraded its Duo two-factor authentication interface, which makes logging into Texas A&M applications simpler and more secure. Technology Services made this change ahead of schedule as the Duo vendor required all interfaces to be updated before early 2023. This implementation timeline allowed Technology Services to avoid interference with the beginning or end of an academic semester.



Duo enrollment kiosks

Technology Services is making Duo two-factor authentication enrollment easier with a self-service kiosk on the main Texas A&M campus at Help Desk Central. This kiosk enables the campus community to enroll a second device by swiping any Texas A&M ID at the kiosk. Technology Services will unveil more of these kiosks to the campus community in 2023.

To read more about cybersecurity, visit it.tamu.edu/annualreport

Research Support

STRENGTHENING THE RESEARCH COMMUNITY

Created to support researchers and their technology needs, a new dedicated unit within Technology Services has been established to empower the Texas A&M research community. By engaging with researchers across the university, Technology Services identifies, supports and facilitates a variety of technology solutions, creating real-world results and providing an innovative, secure environment for conducting research. Areas of specific focus include expanding access to research cyberinfrastructure, software, laboratory solutions, facilities support and technology-based community engagement programs. Our key partnership with the Division of Research will expand the ability of Technology Services to assist in the acceleration of the research teams' ability to start up new projects faster and more effectively.

Modern research endeavors are dependent upon cyberinfrastructure. From sensors in the field to instruments across the lab and into the cloud, the research technologies team provides the tools, people, processes and innovation pathways needed to support advancement in research. The foundational goals focus on strengthening the process for accessing information, creating collaborative research data environments, increasing IT professionals' knowledge to support researchers and delivering a variety of research technology applications to meet the needs of the research community.

By providing new and innovative technologies and aligning with the Division of Research's strategic planning efforts, the level of support provided to the research community will be elevated to collectively and positively enhance outcomes. This concerted focus is a tremendous opportunity to expand Texas A&M's position as a leading tier one research institution, ambitiously pursuing and expanding its research enterprise.

Cloudbolt – Self-service research application

In collaboration with researchers at Texas A&M, Technology Services created the first iteration of a cloud-based self-service research application: Secure Technologies for Aggie Researchers (STAR). Using Cloudbolt, a software application, STAR provides instant access to cloud resources including virtual servers, cloud storage, artificial intelligence tools and relational databases. The goal of the Cloudbolt application is to significantly reduce the amount of time needed for researchers to access cloud-based resources. The

application underwent multiple rounds of testing and review by researchers participating in the STAR program to improve its usability and adapt to meet their needs. The service will be expanded in the future to include additional cloud-based offerings needed and to provide insights into the utilization of cloud services to help manage researchers' use of the cloud.

STAR platform

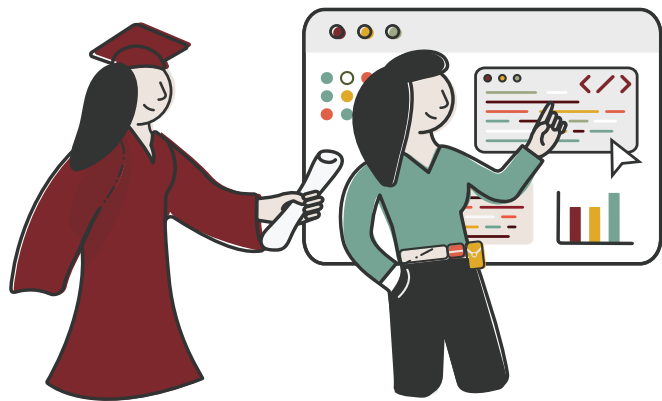
Technology Services serves an integral role in empowering the Texas A&M University research community by identifying and providing innovative research technology solutions and removing the worry of managing information technology resources. The cloud-based platform Secure Technologies for Aggie Researchers (STAR) uses Amazon AWS with the intention to develop a secure research environment using Microsoft Azure. This platform enables researchers to have rapid access to tools that are financially feasible, secure and accessible. Technology Services wants to specifically address the process of navigating the pre-proposal, proposal and award phases where information technology resources are planned and procured. By streamlining this process, researchers are enabled to be more competitive and successful.



To read more about research support, visit
it.tamu.edu/annualreport

Partner Success Highlights

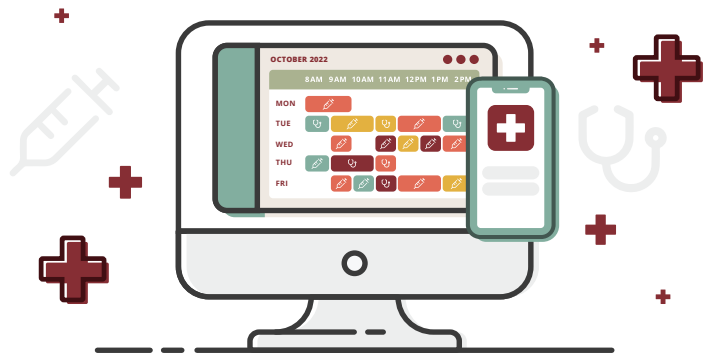
The driving force behind each goal is the success of our campus partners. We use our technology expertise to help make their vision a reality, bringing efficiency and innovation to those efforts.



Careers Career paths for students

As technology careers grow more competitive each year, Technology Services designed the student IT experience program to offer undergraduates interested in information technology a head start in their career. The program provides opportunities to gain hands-on learning tied to long-term career goals, including training opportunities and earning industry certifications. There is a concerted effort to recruit and retain student workers through job fairs, social media campaigns and targeted email, creating a pipeline of graduates prepared to fill entry-level positions.

In collaboration with the Division of Human Resources and Organizational Effectiveness, the job descriptions of entry level roles have been evaluated, ensuring minimum requirements align with the skills needed. In addition to student worker career paths, this internal partnership has led to modernization of employment titles in an effort to create more transparent, defined career ladders for current employees, both in managerial and technical positions.



Research Support Flu Online Scheduling System

The Flu Online Scheduling System (FLOSS) application was developed as part of a Texas A&M Health collaboration to support the influenza and COVID-19 vaccination clinics. Lead developer Zach Tanton partnered with the clinical team lead, Dr. Christine Kaunas, to develop this application. Existing electronic medical record systems did not facilitate the registration and customization needed to offer online appointment registrations and validate required information needed by Texas A&M University officials.

The application debuted in October 2022 and facilitated more than 2,070 appointments. The custom application allows clinic personnel to determine the number of appointment slots to open based on clinician availability and vaccination supplies. Optimizing clinical flow by matching scheduling with available resources allowed for quick in and out times for vaccinations, improving patient satisfaction and providing an efficient process.

Networking Internet of Things expands beyond dorms to classrooms

Over the past few years, the Internet of Things (IoT) has become one of the most pervasive technologies of the 21st century, giving us the ability to connect everyday objects such as TVs, speakers, wearables and even appliances to the internet.

In January 2021, Technology Services launched a pilot program for IoT in three residence halls and a handful of buildings on campus. The TAMU_IoT wireless network lets campus members connect smart devices that wouldn't connect to TAMU_WiFi in the past, allowing the university to link each device to the user's account to ensure the network remains secure.

More than 5,000 IoT devices have registered on the network since the fall 2021 semester and the demand continues to increase.

Currently, students can connect up to five smart devices at a time to the internet.

In 2022, Technology Services expanded the IoT pilot network to a handful of buildings on campus, including Thompson and Fermer Halls. Research assistant and former Texas A&M engineering student Jorge Roa is a strong advocate for increasing the use of IoT in the classroom. "Further focus on IoT is essential to students' futures in this field. It's equipping them with more tools in their toolbox."

The IoT network makes a dramatic difference in student capstone projects. By harnessing the functionality of IoT, students can expand their knowledge and usage of technologies they encounter in daily life. An example is the use of autonomous guided vehicles. Without IoT, they can drive around only with a routine path, but with IoT, they are able to interact in real-time with users' voice-commands, just like a Google Home or an Echo Dot on wheels.

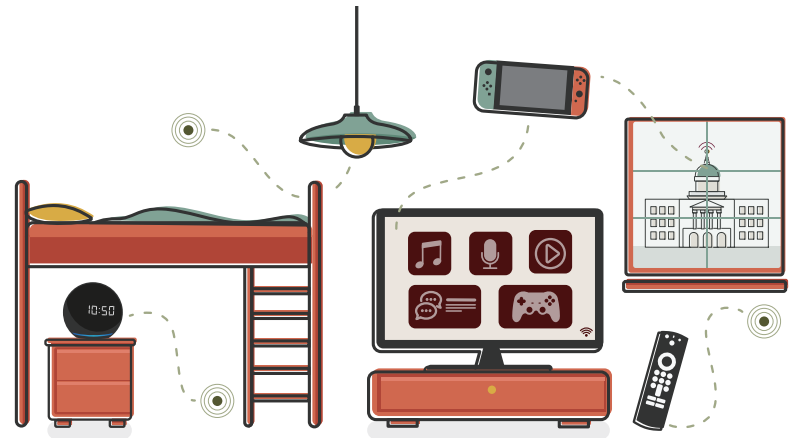
"IoT is one of the fastest-growing technologies, and it's in high demand by everyone. It is our job to make sure the

campus IoT network is both safe and effective," said Networking Engineer Jacob Scoggins, who played an integral role in launching IoT on campus.

Bringing the IoT network to Texas A&M is more than an effort to stay relevant. Global access

to IoT will change the game in education and research. For example, researchers and students working with "smart agriculture" can utilize robotic units and reporting devices to remotely analyze and log data from the field, storing information in the cloud or to a centralized service for researchers.

With IoT, the future of education and research technology, Technology Services is working to build a campus network where smart devices work seamlessly and securely.



To read more about partner success, visit it.tamu.edu/annualreport



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