INFORMATION TECHNOLOGY

ANNUAL REPORT FISCAL YEAR 2023

DIVISION OF THE CHIEF INFORMATION OFFICER

THE UNIVERSITY OF ARIZONA

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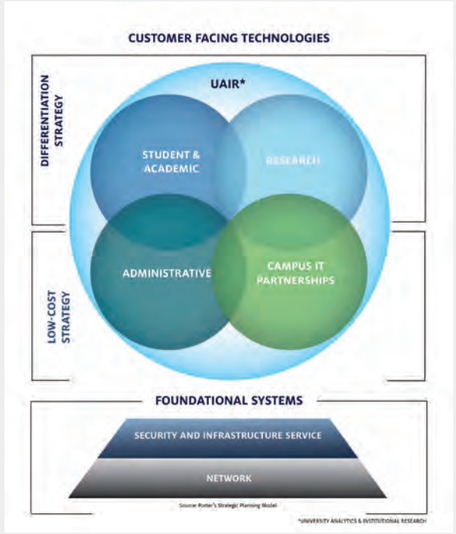
Barry Brummund,
Chief Information Officer

UITS ORGANIZATIONAL DESIGN



Dear Colleagues,

Information technology plays a pivotal role in empowering the University of Arizona to fulfill its core objectives in teaching, research, and public service. The contemporary higher education landscape unequivocally underscores the intensified reliance on technology, transforming it into an essential element. For any educational institution, including ours, the mission cannot be accomplished without embracing technology. It seamlessly interconnects with every facet of our operations, encompassing the gathering and scrutiny of research, internal communication, essential functions like payroll and environmental systems, the dissemination of knowledge to our students, and maintaining connections with colleagues worldwide.

Over the past few years, the CIO Division has been developing modernized IT services to improve the University's IT infrastructure and reduce its risk from external influences. More recently, the acceleration of our work has included expanding out partnerships, transforming digital platform to bring personalization to students and faculty, and design and implement a comprehensive information security risk management program to protect sensitive information, define roles and responsibilities and reduce risk.

This past year, Trellis celebrated five years of partnering with students and stakeholders to improve the student journey. In particular, over 90% of students were able to get all the textbooks they needed through the Pay One Price program, thanks to partnership with the BookStores and University Libraries. UAIR worked with UCATT and Faculty Affairs to explore data on student outcomes and university researchers needing high-performance processing time gained benefits through the university's distinctive computing resource, Windfall.

Please read on in this Annual Report to learn more about the projects we have launched with our partners and the progress we have made. This report is also available **online at *annualreport.it.arizona.edu***. I and all our organization deeply appreciate your collaboration and advocacy as we continue to work towards providing modern, secure, supported technology to the University.

Sincerely,

Barry Brummund
Chief Information Officer
The University of Arizona

DIGITAL EXPERIENCE TECHNOLOGIES

THE STUDENT DIGITAL JOURNEY

The modern-day digital experience that is the norm for today's students at the University of Arizona is far from what it used to be five years ago. Back then, it was a patchwork of manual processes sprinkled with applications, some on-line, some requiring multiple paper forms, many requiring signatures. It was equivalent to the best available in the early 2000s, but student expectations have changed dramatically since then. In October 2018, the University's Strategic Plan initiative, Institutional Excellence, helped drive change to the more high-quality consumer experience our students enjoy today.

Identifying the needs of students has included several student journey mapping sessions over the course of the past five years. These sessions helped the **Digital Experiences** staff identify trends, patterns, and opportunities where they could create an impact in the daily lives of students. Students, faculty and volunteers from 23 of the university's functional departments came together to identify pain points for first year University of Arizona students. These sessions include journey-mapping sessions, empathy mapping, surveys, short campus intercept polling, and design studios. Through these collaborative efforts the team found many of the pain points were attributed to a lack of integration and student-centric design. As a result, several thematic areas of student activity and interaction were identified as opportunities for fostering digital transformation and design approaches to everyday student interactions with the university.

Information to and from students was often pointed to as being misaligned and chaotic. Complaints about students having to go from one office to another for an answer to a question were commonplace. It also became clear that students didn't see school and personal life as two different things. They wanted to be able to use their digital device for everything. Not knowing where to find resources, was brought up again and again, as students came to campus used to a customized, streamlined experience where their resource finds them: (think Amazon or Google] But finding resources was often a challenge back then, especially when it came to contacting and meeting with their advisor.

Students asked for a single location where all their resources could be found and exercised. Back then, tracking their enrollment, student fees, bursars account and meal plan meant navigating multiple applications. Students wanted a central place to ask for it all and communication with resources in ways that work for them, one student joking about needing, a chat bot or text system for campus resources like a Siri who went to the University."

Administrative staff and leadership came to realize their view of the university mirrored organizational structures and did not match how students experience problems and look for solutions. For faculty and staff, it was time consuming to match information to student. Finding the correct resources for students the first time was fraught with rework, miscommunication and exception processing. Communication between resource advisors was a telephone call, email or paper trail at best. These failings of the overall system caused errors and frustration for everyone.

The solution to address these issues was the implementation of a customer relationship management platform to host reusable, repeatable sets of core capabilities that could be mix and matched for whatever the individual organization needs, with no direct cost to the unit.

Today we have **Trellis Advise** and **Trellis Progress** both accessible through a new **CatCloud** portal. CatCloud offers students the convenience of managing various activities from UArizona systems in one place. The CatCloud portal allows them to customize their user experience making it easier to access information that matters to them.

A major change for students was the ability to schedule appointments with advisors, see their CatCash balance and Bursar Accounts, view their assignments, quizzes and grades, and a use new direct channel by which to contact their faculty and instructors.

The University of Arizona is actively working to modernize and unify the digital experience for both students and employees. Recognizing the ever-evolving nature of technology, the Digital Experience Technologies team realizes expectations will continue to change, inspiring them to find new ways to serve students, faculty and staff at the university.

DIGITAL EXPERIENCE TECHNOLOGIES

FY23 METRICS

TRELLIS CRM

Total Active Users	1,239
Early Progress Reports Sent	22,135
Number of Courses	840
Appointments Scheduled	120,071

CASE MANAGEMENT

Service Cases Created	233,481

TRELLIS EVENTS

Unique Event Creators	95

TRELLIS MARKETING CLOUD

Total Active Users	393
All Units: Individual Emails Sent	18.5M

CAMPUS WEB SERVICES

Websites Supported	755
Website Launched	227
Service Requests	807

SERVICES

- Campus Web Services
- Trellis Service
- Trellis Engagement
- Employee Email & Collaboration
- Student Email & Collaboration
- Video Conferencing
- Arizona Mobile App

STUDENTS ASKED FOR A SINGLE LOCATION WHERE ALL THEIR RESOURCES COULD BE FOUND AND EXERCISED. TODAY WE HAVE CATCLOUD.

STUDENT & ACADEMIC TECHNOLOGIES

IMPROVED TEXTBOOK ACCESSIBILITY & AFFORDABILITY

Over the past 16 months, Student & Academic Technologies teams have worked with University Libraries and Arizona Bookstores towards a collective goal to improve student success at the University of Arizona while lowering the cost of course materials.

The University of Arizona BookStores introduced the **Pay One Price** program, aimed at reducing textbook costs and increasing predictability for students. Under this initiative, undergraduate students at the main campus can access all required textbooks regardless of the number of courses they take or their major. With the skyrocketing costs of textbooks in recent years, the Pay One Price program makes sure all students who attend the University of Arizona have access to their course materials without the stress associated with trying to figure out which classes they can afford to buy course materials for. The program emphasizes convenience, seamless transactions, and day one access. It also benefits faculty as it ensures they can start teaching their students on day one, knowing that all their students have their course materials.

Mark Felix, Director of Student Information Systems at UITS, explains that the university has actually offered the **Inclusive Access textbook sales model** for a number of years by adding the cost of digital course content into students' tuition and fees.

"Inclusive Access gives a student the best price available for any textbook; usually anywhere from a savings of 30-40% compared to a physical book."

Costs from one course to another change depending on the number and price of books and materials. "With Pay One Price, there is an actual cap so that students pay up to the cap each spring and fall and thereby have access to all the books they need, no matter the cost." This helps students better predict their cost of attendance each semester, alleviating the fluctuating financial burden, and giving them more opportunities to make academic choices based on their interests and less on the cost of course materials.

140
Unique combinations of book publishers and homework applications.

$250
Per semester. Any publisher, any book.

The program, which is launching in the Fall 2023 semester, will replace the existing Inclusive Access system. Accessible through students' D2L accounts a week before classes begin, the Pay One Price program works with a billing system integrated into their bursar accounts to create a seamless experience for students. Students can opt-out within the first two weeks of classes if they choose not to participate. However, Felix said that the University of Arizona is performing well in the number of opt-outs, with rates below 20%, compared to 30-40% of students opting out of similar programs at other universities.

As far as we can tell no other university has built a model with this kind of success in the country. We have made sure that almost 90% of our undergraduate students have all their course materials for a given semester.

~ Peter Neff, Executive Director, UA BookStores

Many UITS team members partnered with the Arizona Bookstores during the planning and implementation phase of the multi-year project. This included IT staff augmentation and project management to facilitate a smooth transition to the new Pay One Price program. The UITS **Integrated Digital Experience Technology Team** provided IT architecture leadership, business process mapping, vendor integration solutions and code review for the project. **UAccess Student** and **Academic Technologies** staff teamed up to ensure the Bookstore team had the right data access which was critical to a successful integration across multiple University and vendor platforms. The UAccess Student team also created several ad hoc reports to ensure business decisions on the impact of costs to different student populations were made with real data. Communication assistance also came from the Trellis team's **CatCloud** and **UCATT** to help faculty and students understand how to access their ebooks and homework applications inside D2L.

Peter Neff, Executive Director, University Bookstore has high praise for the UITS team efforts, "The technical support we received from the Student & Academic Technologies team along with all our partners at UITS worked through all the nuances of the program to make it work."

There were multiple vendor solutions in place that required a team approach to initiating change without disrupting business. **79 Consulting** played a big role in helping the Academic Technologies teams integrate the program. In some places there were vendor to vendor solutions in place so there was no need to create new code. Inclusive Access has been around for a while, however, Pay One Price is still relatively new so the University's collaboration with multiple vendors actually helped the vendors develop their product to accommodate the Pay One Price solution.

National data indicates that students having their course materials at the start of the semester will lead to an improvement in overall performance (GPA). With Pay One Price in place, the University has given students a better chance to succeed.

64.2%	Not purchase the required textbook
42.8%	Take fewer courses
40.5%	Not register for a specific course
35.6%	Earn a poor grade
22.9%	Drop a course
18.1%	Withdraw from a course
17.2%	Fail a course

Source: 2018 survey of nearly 23,000 higher education students by Florida Virtual Campus

FY23 METRICS

UACCESS STUDENT	
(Oracle PeopleSoft 9.2 PUM 8.58.11)	
Financial Aid Disbursed	$679.4M
(20-21 Academic Year)	
Distinct Enrollment Requests	856K
Total Modifications to System	1657
ZOOM	
(Version 5.4.1)	
Number of Sessions	1.6M
Number of Participants	6.1M
Meeting Minutes	245M

SERVICES

- UAccess Student
- Classroom & Lab Technologies
- Instructional Technologies

UNLIMITED COMPUTING RESOURCE POTENTIAL

The CIO Division's Research & Discovery department provides a high performance computing (HPC) resources to research faculty at no cost. With allocated time and windfall capacity, these resources operate at 100% capacity, ensuring research faculty have access to extensive processing capabilities.

As a leading research institution, the University of Arizona acquires supercomputing clusters with diverse hardware configurations, tailored to the specific computational needs expressed by faculty for their research. This may involve significant parallel processing, high-throughput processing, or the specialized graphical processing required for research data visualization. The University of Arizona makes this computing capacity available 24/7, 365 days a year.

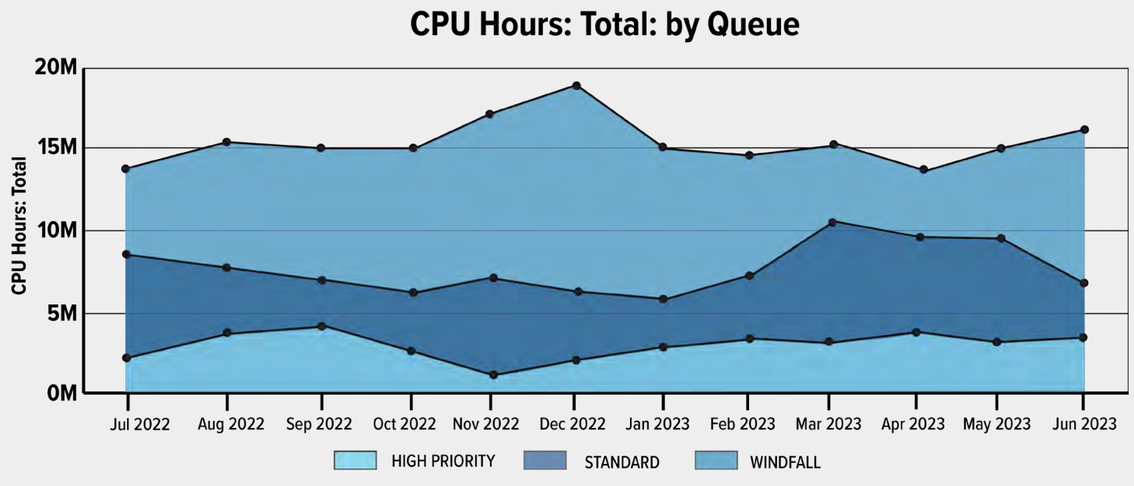
Faculty members are allocated around 40,000 compute hours per month. Any unused allocations contribute to an excess of computing power. This surplus, or windfall, is then harnessed to support research activities through an efficient queuing mechanism that manages unutilized processing time. This ongoing queuing of jobs known as windfall guarantees that the various clusters consistently operate at 100% utilization, providing support for faculty allocations and standing queue jobs at all hours. A specific faculty research case exemplifies the significant value provided by the windfall service.

Mihailo Martinović, PhD, Researcher and Scientist with the College of Science Lunar & Planetary Laboratory, employs HPC to study solar wind.

While distant objects in astrophysics are observed using various telescopes based on Earth and in space, the stream of particles our Sun emits – the solar wind – provides us with a unique opportunity to probe space environment in situ, or in its original place, examining a medium that is too close to vacuum to be

During the 2023 academic year, almost **6 million** compute jobs were executed, consuming a total of **321,783,285 CPU hours**.

One CPU hour corresponds to the work of one core in use for one hour.



Each researcher gets 100,000 GPU hours each month on Puma and 70,000 on Ocelote. The 100,000 hours equates to using about 1 ½ compute nodes 24 / 7. The high priority partition is for those researchers who contribute their research funds to buy more compute nodes. They get an allocation on top of the standard amount equivalent to the funding amount they contributed.

reproduced in a laboratory setting. Using spacecraft as probes in a plasma that moves hundreds of thousands of kilometers per second is a process that started mid 20th century and continues to this day with a fleet of several former and current missions, mostly built by NASA and ESA.

These observations offer hundreds of millions of "snapshots" into this one-of-a-kind plasma laboratory of interplanetary space. As the volume of available data grew exponentially, continuous surveys of missions became very computationally expensive and now require millions of CPU hours.

The university's HPC option to use windfall hours made these computations possible, fostering two large projects. First, the solar wind plasma density and temperature can be very accurately measured from observed interplanetary fluctuating electric field. This process requires several minutes of computational time per observed electric field spectrum, which are present every 4.4 seconds over the 30-year long lifetime of NASA's Wind mission, amounting to ~200 million observations.

Second, very sophisticated particle analyzers can detect individual plasma particles. From these measurements, the existence of electromagnetic waves, that are believed to govern the dynamics of the solar system, can be inferred. This estimate uses a mathematically complicated framework of linear wave theory and requires hours of CPU time to process each measurement. Using HPC resources, almost completely via the windfall queue, Dr. Martinović and his team processed over 5 million intervals from various missions. The resulting massive dataset was then used to train **Stability Analysis Vitalizing Instability Classification (SAVIC)**, a user-friendly machine learning algorithm capable of further processing millions of observations in seconds. This code immensely increased accessibility of the plasma stability framework to a wider community, as it is publicly available in the form of a Python package and does not require expertise in plasma instabilities to be used to its full extent.

SERVICES

- Supercomputing (HPC)
- Regulated Research Environment
- Research Support Services
- UAVITAE

ARIZONA RESEARCH

2,753 invention disclosures
knowledge development that can change the world

537 licenses & options
for university inventions

615 patents issued
Ranked no. 28 among worldwide universities granted U.S. utility patents

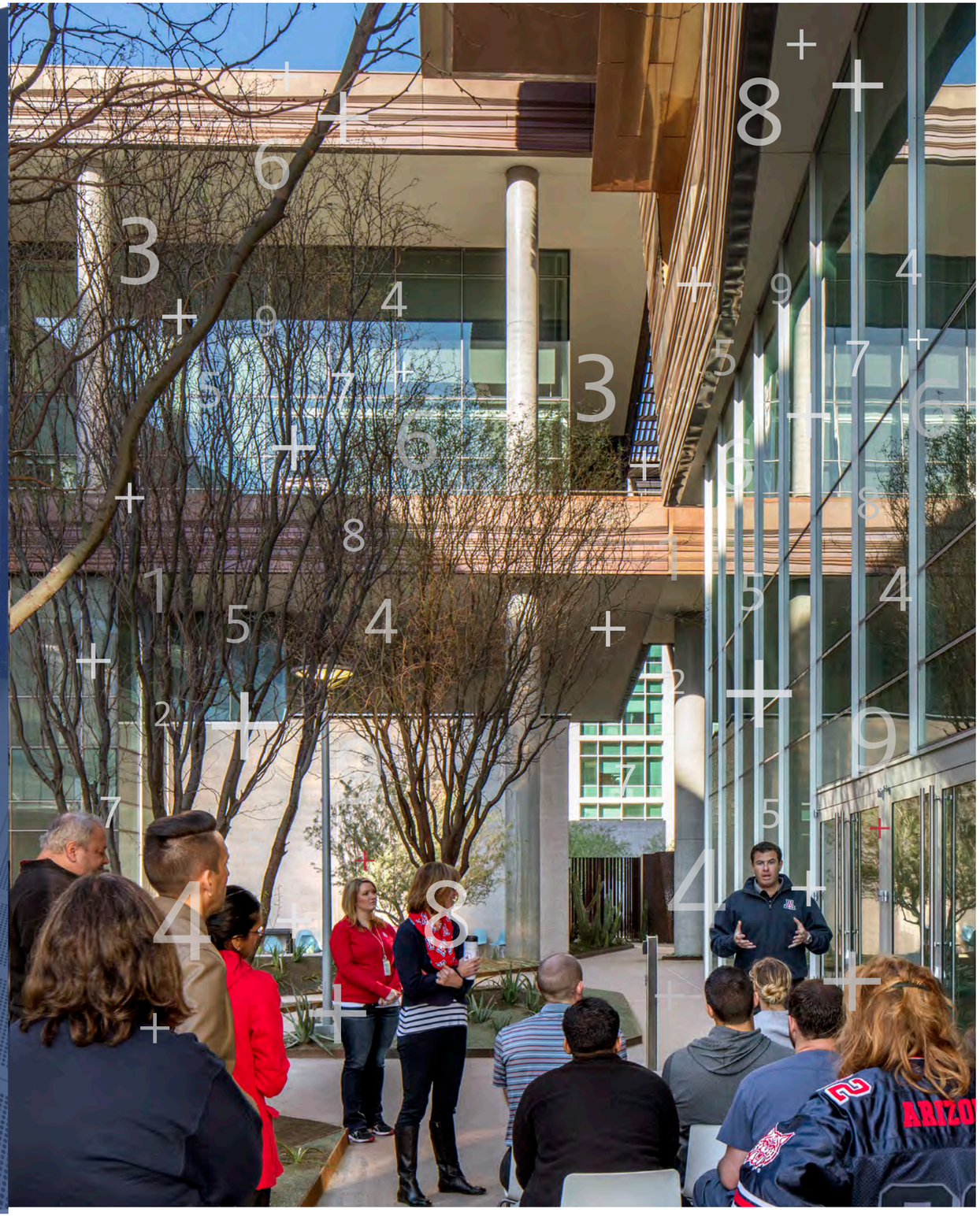
135 startups launched
commercializing UArizona inventions

Source: National Science Foundation Higher Education Research and Development Survey

FY23 METRICS

RESEARCH DATA CENTER USAGE	
Principal Investigators (PIs) Using HPC Systems	545
Active Awards Using HPC Systems	1.3K
Active Root Awards Using HPC Systems	2K
Total Sponsored Research Expenditures by Investigators Using HPC Services	$386M
Top 100 PIs Using HPC	79%

SUPERCOMPUTING CAPACITY	
Total Cores of All HPC Systems	43.8K
Monthly Faculty Compute Allocation	177K hrs./mo.
Yearly Faculty Compute Allocation	2.12M hrs.



ADMINISTRATIVE TECHNOLOGIES

“We became very informed, very organized, and all of that came from the experience brought to us by this UITS Administrative Technologies Team.”

Lane Spalla,
Emergency Management Coordinator
Office of Public Safety

BUILDING COLLABORATIVE TEAMS

Administrative Technologies works collaboratively to support the business units' applications at the University through multiple projects at different stages of implementation and maintenance. Large-scale projects include University-wide "enterprise" applications, that impact the finance, human resources, and research aspects of the business of the University.

The teams in Administrative Technologies offer several layers of application development and support. An example is when code updates are offered by the software vendor and reviewed for technical specification by the developers. There are over 17 unique vendor software integrations into the university's employee workforce system that the UAccess Employee team must error check whenever a change is being implemented. These include benefits, retirement, insurance, payroll, applicant tracking, international employee portal, each have unique coding and integration needs.

The Administrative Technologies business analysts review software updates for value to the end-user business case. Once an update is determined to be of value, developers process the update and any custom changes needed in a test environment. Working groups collaborate with business users on potential changes to application and determine optimal time to implement changes. And this is where the Administrative Tech team excels.

The team's value to many business departments and colleges across the university is their ability to build collaborative teams of disparate units and guide a project with often a very large group of stakeholders. Though the technology involved usually falls under the UITS portfolio of services, building a cohesive group effort that results in a successful project completion is where the Administrative Technologies team stands out.

A great example of the team's ability to gather a collaborative effort on projects, is the Administrative Technologies' team response to a request for help to make improvements to the **UAlert System**. UAlert is the university's emergency mass notification system that broadcasts urgent messages in times of crisis.
Lane Spalla, Emergency Management Coordinator for the University's Office of Public Safety tells of how the Administrative Technologies was called upon to assist with cleaning up data and establishing an automated process for ongoing updates to cell phone data in UAlert. But he quickly described that the team's true value was much more than that of application development. "We had to look at the phone number registration processes from the student and human resources perspective as well as the technology process to ensure the data was up to date and maintained." Tim Schwab, Executive Director of Administrative technologies told him, "Give me a day or two and we'll figure something out." He came back with a whole team of people.

The roster of the working group (still meeting regularly after implementation) started with **UAPD** and **Office of Emergency Management** and was expanded exponentially to eventually include **Facilities Management, Risk Management, Dean of Students, Office of University Initiatives, Housing and Residential Life** and even **online and distance education.** Spalla clarified, "We not only had to do this on the main campus, but this program needed to be functional statewide."

The Administrative Technologies team led this effort. "They kept us focused. They defined responsibilities and lines of authority. It was a technical issue but impacted humans statewide." Anyone associated with the university community, including visitors and neighbors, had to be considered as the working group began redefining the UAlert system procedures and processes.

When facilitating change over such a broad area of units, colleges and communities, creating a governance team and structure is often the best way to make sure everyone has a voice. The resulting changes then are not made in isolation and without regard to varying levels of needed outcomes. "With the governance team that was put together the registered membership of UAlert went from 60,000 to just over 100,000. The database was refreshed and the team could feel confident that the data reflected current to today's students, employees and community members.

"We became very informed, very organized, and all of that came from the experience brought to us by this UITS Administrative tech group." The Admin Tech team brought technology change management practices that have been previously used in such large projects in the past, and the result was a smooth delivery of a critical system.

"And what I really liked about it is that though they brought that organizational structure to this team, they didn't try to take over. They worked to keep this team organized, and they showed us ways to find the proper leadership to define who is responsible for what and to hold them accountable."

> "What had been alert responsibilities placed just on UAPD in the past became a campus-wide governance group."
>
> *Lane Spalla, Emergency Management Coordinator, Office of Public Safety*

Over a period of several months, the Admin Tech team helped to identify where UAPD and the Office of Emergency Management needed help with the UAlert system, and found ways for them to initiate the changes, and then maintain the structure of the meetings. "They kept minutes and sent out agendas, had responsible action items for different people. And it really helped us take on a monumental task."

As with many enterprise applications, the UAlert system is in a constant state of upgrades that bring better processes and smoother management capability by the Office of Public Safety and the Office of Emergency Management. The Administrative Technologies team continues to be involved with Lane and his team. "I would say that not only did they organize us, but to this day they are still involved because we still have those meetings on a bi-weekly basis that are still organized administered by UITS. They are the ones that are inspiring and keeping us on track with things that we still need to accomplish."

FY23 METRICS

UACCESS EMPLOYEE
(Peoplesoft HCM 9.2.041 PeopleTools 8.59.07)

Total Payroll Amount Processed	$1.18B
Average Unique Visitors Per Day	3.2K
Average Number of Paychecks Processed Annually	526K

UACCESS FINANCIALS
(Kuali Financials v7 2010-10-30 with Rice 2.7.0)

PCard Transactions	217K
Average Monthly Travel Reimbursements	1.8K
Active Accounts	22K

UACCESS RESEARCH (Kuali Research Saas)

Active Parent Awards	4K
Average Unique Visitors Per Month	558

EDGE LEARNING (Saba 53.0.6.7)

Average Unique Daily Users	94.5K
Completed Certifications	93.7K
Completed Courses	142.8K

CONTRACT INFORMATION SYSTEM (v.1.0)

Contracts Entered	33K
Active Users	266

eDISCLOSURE (V9.0.1)

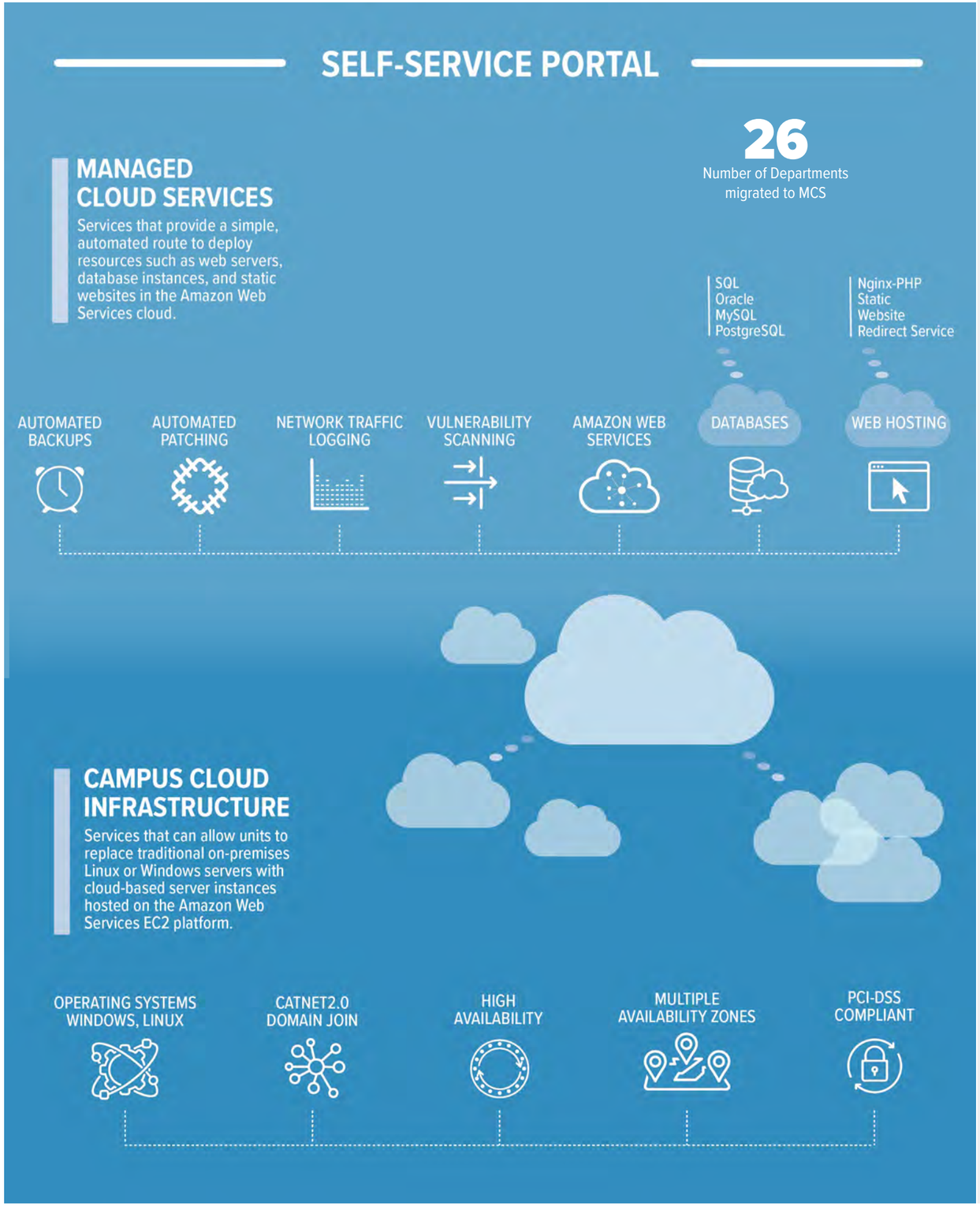
Average Unique Visitors Monthly	162K

eIRB (V9.2)

Average Unique Visitors Monthly	1.2K

SERVICES

- UAccess Employee
- UAccess Financials
- UAccess Research
- EDGE Learning
- Contract Information Systems



MANAGED CLOUD SERVICES

Server infrastructure comes with costs—system patching, software licensing, upgrades, hardware environment upkeep and security, and eventual replacement. Cloud infrastructure has its own big learning curve, its own cost model, plus the same system and software issues.

University Information Technology Services (UITS) is taking the guesswork—and much of the cost—out of cloud with **Managed Cloud Services (MCS)**. With pre-configured software environments in **Amazon Web Services (AWS)**, campus units can transition from local servers to cloud environments that are already setup with best practice security, up-to-date operating systems, and licensed, maintained software for numerous SQL database and web hosting solutions. In addition, MCS covers the licensing, storage, and cloud compute costs.

By using AWS cloud hosting, colleges and business units can enjoy significant cost savings on server infrastructure and say goodbye to the hassle of server management. They also align with Arizona's Cloud First policy, which encourages the adoption of cloud technologies whenever possible. In addition, MCS network security, data encryption, automated patching, backups, and monitoring services strengthen the University's security measures.

"The big advantage of using MCS is that it comes at no additional cost to colleges and departments," remarked Mandi Cross, Lead Engineer of Cloud Computing in Infrastructure Services. Many units across campus are already using MCS for their research, such as Biosphere 2.

With Managed Cloud Services, deploying resources like web servers, database instances, and static websites in AWS, hosting in the cloud becomes a breeze. UITS takes care of the deep IT aspects like security, maintenance, and operational stability of the AWS accounts, while faculty and staff retain full control over their data and configurations. This means they can tap into the vast resources of AWS without needing specialized AWS knowledge or direct account access.

UITS also shoulders the responsibility of risk management across the University's network and server infrastructure, handling automated backups, patching, and scanning for network vulnerabilities, ensuring that departmental data remains secure and systems stay up-to-date.

With the introduction of Managed Cloud Services, UITS aims to make life easier and more efficient. These comprehensive solutions alleviate the burden of managing server infrastructure on your own. Academic and business units will be able to focus on productivity, rather than hardware or cloud management.

Not every IT staff person has the training, time, or both to maintain best-practice configuration and security in Amazon Web Services environments. Jeff Switzer, one of only two IT employees at the **National Phenology Network**, said, "Wherever we can partition off different responsibilities it helps us focus on the things that we want to do, not the infrastructure problems. Taking some of the security risk responsibility off, too, I can sleep a little better at night."

Jeff and NPN rely on Managed Cloud Services to host their relational databases, where the software licensing is also covered by the UITS service. For him, "It was a really opportune time because our infrastructure was aging, and we were trying to figure out what to do. We didn't have a lot of money to purchase new hardware."

With centrally provided solutions, UITS is helping the University achieve efficiencies of scale, increase security, decrease risk, and free up staff time for truly unit-specific needs.

FY23 METRICS

AWS Units Converted	145

ACCESS MANAGMENT

Access Flow Requests	12.4K
Access Flow Tasks	242.7K
Roles Managed	1402

SERVICENOW

Service Requests	91.6K
Incidents	67.2K

CONTACT CENTER TELEPHONY

Calls	446K
Units Using	46
Agents	625

UARIZONA'S WORLD CLASS NETWORK

Network authentication architecture at the University of Arizona has created a new chapter in how networked devices connect. It is a transformation for which we are considered a vanguard in this technology but what may soon become the standard for our peer universities too.

In the world of authentication, devices such as laptops, smartphones and tablets, reach out to their domain authenticator to establish a secure connection to the local network and through it, their applications, networked resources and the internet become available to them. This authentication process is like a handshake that once established, allows the device to pass data to and from other resources connected to the network.

This explanation is very basic—what our **Managed Cloud Services (MCS)** team has created is much more sophisticated. UITS began the move to cloud services in 2017. Known as the **Cloudaprise** project, the scope was to shift enterprise applications off locally housed (on-premise) servers into a cloud environment. This created the capacity for flexibility (elasticity) in processing usage based on demand during heavier activity such at the start of fall semester and spring registration. It also provided a much greater amount of storage capacity.

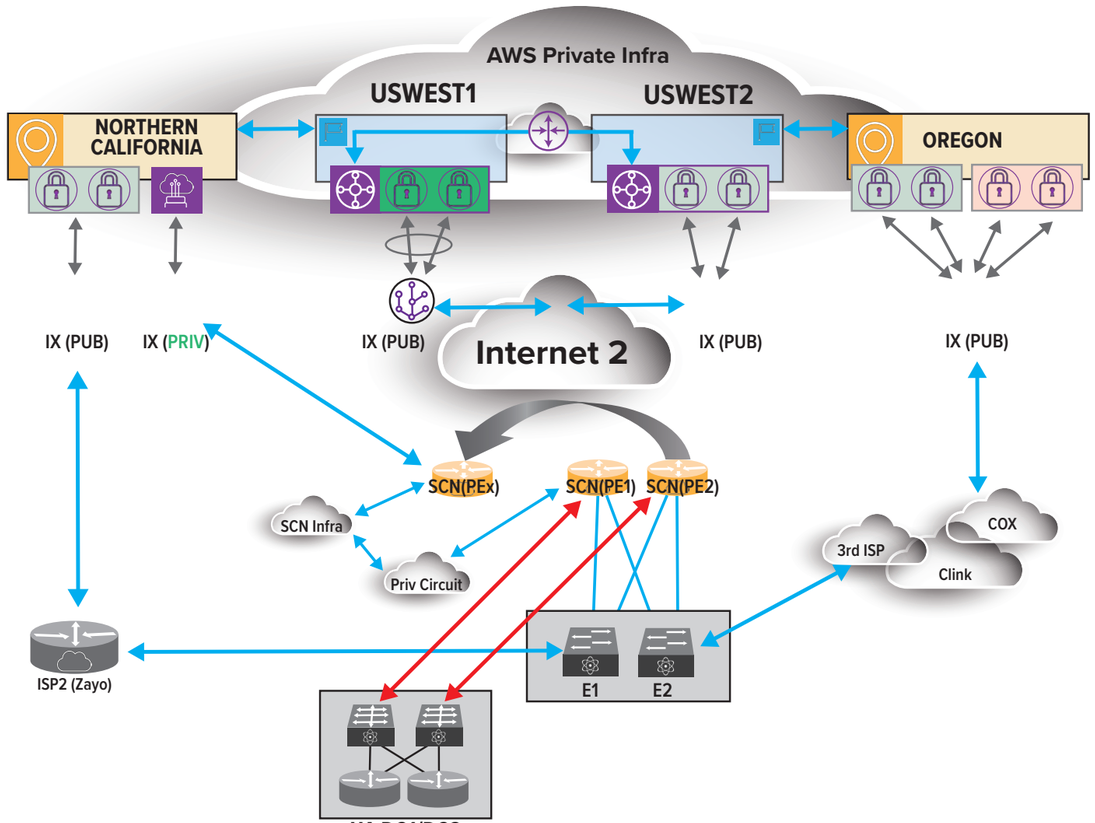
The university's network authentication service is **Microsoft's Active Directory**. The original instance of this service was codenamed **Catnet 1.5**, built to primarily authenticate the enterprise applications and networked devices—most of which were wired devices. The introduction of WiFi (wireless networking) nearly 15 years ago changed the network landscape. As researchers, students, faculty and staff moved further into the use of WiFi to connect their resources onto the university's networks there was a shift in the physical and virtual infrastructure and increased demand for a different level of authentication architecture.

Once students, faculty and staff returned to campus after the pandemic, this heightened need for a more robust authentication process inspired the cloud management team to think beyond traditional practices. Moving authentication into the cloud was a huge step that no other university had tried and took an industry level of expertise the CIO Division has been fortunate to retain.

To achieve this authentication method, the UITS architecture had to be temporarily isolated from the broader campus community to prevent interference with other university IT systems and processes as development moved forward. Once the system separation was made, UITS was able to deploy a newer network architecture into the AWS cloud, which gave it the elasticity and scalability being sought. The subsequent upgrade to the rest of the university infrastructure and move to **CatNet 2.0** was successfully completed in 2023. The team overcame tremendous skepticism in the idea of authenticating WiFi services in data centers hundreds of miles away. Jason Sullivan, the University of Arizona's network architect reflects, "but of course light travels quite quickly, and we have very redundant service between here and there."

As the rest of University's IT departments migrated to the newer, more robust CatNet 2.0 in the cloud, the scalability of the architecture proved itself. "If we look at the failure rates 2 years ago, prior to this innovative architecture change today, a tremendous amount of our traffic was failing because the on-prem service was poorly architected for a multi-use infrastructure." Jason went on to explain, "And now it's architected well. It's highly redundant, and we have no authentication problems." A slight caveat to this is there could be WiFi authentication failure when someone moves out of range of one access point and in range of another during authentication.

The following page shows a simplified graphic mapping the redundancy of the university's internet connectivity and subsequent cloud authentication process. Access to the internet comes from two primary sources, **Internet1 via multiple AWS** availability zones across the U.S. and the **Internet2 accessible via the Sun Corridor Network.** Both sources have public and private secure internet access redundancies to the university. Additional redundancy is available from commercial Internet providers, should it be needed.



SUN CORRIDOR NETWORK

The Sun Corridor Network is Arizona's regional research and education network, and it is the University of Arizona's connection to Internet2. Internet2 provides a secure, high performance, low latency network built to serve a national, globally interwoven technology infrastructure and collaboration among the nation's researchers, scholars, and learners. Founded in 2013 by the three state universities, ASU, NAU and UArizona, the Sun Corridor Network created high speed connections with each university and with Internet2.

Sun Corridor Network
Arizona's Research and Education Network

NUMBER OF NETWORK DEVICES

42	NETWORK CORE
3.8K	DISTRIBUTION NETWORK
11K	WIFI ACCESS POINTS
118K	UNIQUE WIRELESS DEVICES
47.3K	UNIQUE WIRED DEVICES

SERVICES

- Network Core & Internet2 ISP
- Campus Data Network
- Voice Services
- Network Management
- Network & Data Center Operations

CAMPUS IT PARTNERSHIPS

HELPING CAMPUS NAVIGATE UITS SERVICES

The CIO Division has enhanced its ability to help the University of Arizona's 72 colleges and divisions in securing their data storage and staying vigilant against security threats. To simplify the introduction of these secure services, Campus IT Partnerships established a team of navigators. These navigators act as a central connection for liaisons appointed by the dean or senior vice president of each unit.

CITP executive director Maysoon Eshelman explains that the navigators play a crucial role as advocates for colleges and divisions, aiding in the implementation of new services and serving as their main UITS contact. Navigators are well-versed in their units' business needs, address challenges, and respond to technical queries. They collaborate closely with UITS project managers and service owners to route questions and requests effectively.

The navigator's role is to deeply know and understand their units' needs, priorities, concerns, and questions. The UITS navigators have had numerous meetings with their college or department liaison and IT personnel, including site visits when needed to understand a unit's technology needs better. The navigators and liaisons also meet monthly to share information between central UITS IT professionals and IT staff from the 72 colleges and divisions.

The first major project liaisons undertook was collecting an extensive inventory of their units' IT assets, including private networks, servers, and workstations. UITS central service owners hosted office hours and **Microsoft Teams** channels to support the liaisons in this effort.

Mike Morris, IT Liaison from and Senior Director of IT for the College of Science, visited office hours often. "It was really convenient to be able to drop in and ask any questions I had." Another option he took liberal advantage of was to contact his college's navigator at UITS.

When the unit liaisons submitted their toolkits, they reported nearly **50,000 IT assets**, such as over **3,600 servers**. The toolkit analysis revealed some surprising findings. One notable discovery was the significant number of "Internet of Things" (IoT) devices connected to the campus network. The toolkit reports also shed light on the aging infrastructure present at the university. Additionally, the investigation uncovered 21 independent Active Directories and 9 departmental email systems,

Mike pointed out, "Each of these toolkits represents hundreds of hours of work from the liaisons and the other IT staff who helped them gather information." He added that the process benefited everyone. "IT staff appreciate having a solid inventory documented for their unit."

The toolkit responses initiated hundreds of meetings between CITP and individual units to help better understand each unit's unique situation and needs. Sometimes units were able to easily recognize more efficient and secure options they could take advantage of such as moving off on-premise servers to Managed Cloud Services. When there were custom situations—such as researchers' specialized needs around storage and regulated data—UITS was able to evolve and develop new services to fit their unique needs.

In addition to infrastructure, the navigators are also building awareness and relationships with people. For example, the College of Science includes 21 separate academic departments, and within just Lunar & Planetary Laboratory there are 10 different active projects, each with specific IT needs. These needs are unique with IT staff especially assigned to handle the technologies.

Occasionally, the oversight of infrastructure and services in the College of Science falls under the purview of a faculty member or researcher.

Navigators also facilitate connections between campus units. When a department needs a service another department already has, navigators help make that connection. The toolkit responses revealed that departments often share common challenges and needs. Some were duplicating efforts or separately contracting services that could be more efficiently handled through group or enterprise contracts.

The collaborations between liaisons from campus units and navigators from UITS are setting the foundation for a successfully modernized and secured campus infrastructure.

INFORMATION SECURITY

FY23 METRICS

FIREWALL (BORDER) BLOCKS

Firewall Blocks Per Day	355M

SECURE MONITORING

Log Aggregation	284TB
Phishing and Spam Emails Blocked Per Day	2M

RISK MANAGEMENT

Percent Units Completed FY23 Plans	96%
Number of FY23 Completed Security Plans	184

SECURITY AWARENESS TRAINING

FT Faculty/Staff Participation in Training	99%
Application Developer Training Participation	94%

CHANGING THE CULTURE OF SECURITY AWARENESS

The CIO Division is fully committed to enhancing security awareness within the University of Arizona community. This commitment is evident in how IT professionals are encouraged to become security experts through various teachable initiatives, safeguarding both personal and university proprietary information. The **Information Security Office (ISO)** leads these initiatives, tasked with protecting the University's computing and information assets from emerging security threats, ensuring compliance with laws, regulations, and university policies.

The ISO team has adopted a very human-centric and strategic approach to lead security awareness initiatives, inspiring a shift in the University community's security culture. The rationale is that a true change in security awareness, implementation, and data protection requires the full participation of the University's leadership, staff, faculty, students and researchers.

In 2017, the University of Arizona's technology deployment was a web of independent and often obsolete information technology infrastructure. There was a lack of rigor in establishing and maintaining digital security, including end-user devices of various brands and platforms, numerous applications requiring software patching, and limited cybersecurity knowledge among employees. There was not a common practice in securing the University's information resources.

Dual-authentication had not yet become the norm for personal and financial data. The presence of hackers and nefarious cyber criminals added urgency to develop active learning and practicing of data security by all employees so not to jeopardize instruction and administrative processing that depended on the university network.

Positive change ensued in 2018 from a State of Arizona audit of the university's IT systems, revealing individual technology centers and rapid growth of risk to the university's digital domain. Recognizing the imperative to heighten data security, the ISO team was expanded to collectively steward the rapidly changing digital space, ensuring its security, accessibility, and benefit to all.

ISO used strategic thinking and innovation to forge several processes that updated technology and educated the community. Partnerships across colleges and divisions fostered shared rules and norms of behavior, creating new capacities to guard against cyber threats. By FY 2021, the ISO team designed and implemented a comprehensive security program to protect sensitive information, reduce risk, and define roles and responsibilities.

The **Information Security Risk Management (ISRM) Program** serves as the central program, providing an integrated, prioritized approach to addressing risk to university information resources. It aligns with the University's business and academic objectives, involving collaboration with individual IT units. This five-part program includes **data identification and collection activities, risk assessment, risk analysis and planning** in coordination with ISO staff, and the submission of a **security plan** collaboratively reviewed with ISO data security experts.

Establishing **security and risk manager roles** within units broadened knowledge and communication channels between ISO security experts and the many owners of data information and information systems throughout the university. Through recent years of progress, the importance of building and maintaining trust in the university's multifaceted digital domain is complex, but it is imperative that units work on it together.

Security awareness training has been a commitment of the University of Arizona and mandatory for all employees since 2008. In 2018, the training underwent redesign, and in 2021 was migrated into EDGE Learning which allowed easy end-user access and the ability to track the annual commitment for all staff. With the enforcement of awareness training, compliance has grown to 99% of full-time employees completing the training in FY 2023. The long-term success of the training is measurable by employees' efficacy in their vigilance against potential cyber threats at work and at home.

The ISO staff approached enhancing security awareness for executive staff through collaborative policy development. Over a 12 month period, 17 new and updated policies were implemented and published in 2019. This tremendous effort represented the initiation of a cohesive, University-wide information security strategy. The ISO has continued to work with an **ISO Policy Working Group,** comprised of representatives from multiple college- and department-level IT professionals, to continuously review and revise the 17 policies establishing security roles and collaborative processes now embedded in the culture of IT departments and units across the university.

SUPPORT SERVICES

FY23 METRICS

24/7 IT SUPPORT CENTER

Total Technical Support Requests	608K
Non-Technical Support Requests	380K
Classroom Support Requests	2.3K

CONTACT CENTER SERVICES

Calls	608K

DESKTOP SUPPORT

Units Receiving Desktop Support	77
Faculty/Staff Receiving Desktop Support	1.9K
Service Requests	5.7K

CLASSROOM SUPPORT

Number of Supported Classrooms	223
Number of Classrooms Upgraded	31

KNOWLEDGE-CENTERED SERVICE

Number of Knowledge Articles	541

MODERNIZING IT SUPPORT FOR EMPLOYEES

IT support staff provide critical functions for campus security, including ensuring that workstations are running updated patched operating systems and software. While some departments have robust local IT teams, others have only one or two, or no IT staff. This can lead to uneven employee support and cybersecurity risks.

In August 2019, CIO Division leadership witnessed UITS support techs help some members of the campus community update their computers to the latest operating system to meet new technical and security needs. They saw that computers several OS versions behind took hours to bring up to current platform levels.

This realization of how many devices were running obsolete system software caused the UITS Support team to begin looking at **unified endpoint management (UEM)**. The immediate value UEM could bring to the university is the ability to perform updates and security patches centrally for all enrolled devices. Instead of updating desk-by-desk or department-by-department, a UEM system can secure thousands of computers at once.

Technology Lifecycle Care (TLC) was implemented as a new service in 2021 to address state audit security priorities and provide a more modern service platform for units.

In addition to the UEM system, Technology Lifecycle Care offers desktop support services to departments. Regardless of IT staff size, departments can choose to outsource their desktop support to TLC, where their employees will have a dedicated support team and multiple modes of contact to request help, in addition to security upgrades always being a priority.

Using unified endpoint management as the basis for the service, a relatively small TLC team can provide security updates to end-user devices, including centralized encryption and patching to improve workstation security. This service also provides for efficient remote desktop support with customers and in-person provisioning and support of equipment at the **Tech Studio,** Support Service's walk-in support center. The UEM holds an **application catalog** with vetted software customers can download at will, and an **Admin by Request feature** for customers or IT staff to make changes that require operating system level access. For maintaining and tracking of equipment, there is an **automatic inventory** of enrolled machines in **ServiceNow** and **data reports** for instant response to audits or information needs.

In Spring 2023, the Support Services team began migrating departments that were already using UITS desktop support into the TLC service. The **College of Veterinary Medicine** and the **Division of Human Resources**, who had their own in-house IT staff, also joined TLC.

By June 30, 2023, TLC was supporting 1,981 customers in 68 departments, with over 1,000 devices fully secured, monitored, and supported in Workspace One.

The College of Veterinary Medicine has had one or two full-time IT employees since launching in 2020. However, director of operations Kathy McCarthy was excited to onboard into TLC with full desktop support. "Our IT person can take time off, go on vacation, and our operations and our customer needs for faculty and staff are still being met."

Kathy and her staff appreciate the assistance. "There still is plenty of IT support needed at our college. Being able to pass off desktop support was a huge plus so our IT personnel can help navigate other issues that that come up. And the TLC team has been so responsive. Their customer service is 5-star."

The Technology Lifecycle Care team supports employees with their workstation hardware, manages application account provisioning and assists with adding printers. This allows IT to focus on other tasks like supporting conference room technology and digital signage, requesting Zoom Phones, and managing departmental Box accounts.

SERVICES

- 24/7 IT Support Center
- Contact Center Telephony
- Classroom & Lab Technologies
- Access Management
- Technology Lifecycle Care
- Managed Services

UNIVERSITY ANALYTICS & INSTITUTIONAL RESEARCH

FY 23 METRICS

UACCESS ANALYTICS

(Oracle Business Intelligence Enterprise Edition Version 12c)

Active Daily Users	746
Active Subject Areas	175
Reports Run	9M
Nightly ETL Jobs	10K
Active Dashboard Pages	4,282
Queries Run	35.9K

EXTERNAL REPORTING

Total Surveys	137

IMPROVED DATA TO SUPPORT EQUITY

Improving the student experience at the University of Arizona is an ongoing initiative that is worked towards by every department and college at every level of the institution. As the terms “college-readiness” and “student success” continue to shift and align with the social and economic landscapes of higher education, UAIR has spent the past fiscal year collaborating with campus colleagues to support the institutional data needs of the faculty serving as course instructors on campus.

In an effort to better meet student educational needs and identify new ways for the university to address potential inequities in the classroom, UAIR served as an executive sponsor of the **Analytics Certificate for Course Equity and Student Success (ACCESS)** Fellows program. With Chief Data Officer Ravneet Chadha signing off on the program and several members of UAIR serving on the program’s Advisory Board, UAIR was a key partner in the fellowship’s development. The program focused on improving access to student and course data so that instructors felt empowered to redesign their courses to reduce educational barriers and inequities for their students. A key deliverable of this program was the development of the **Student Course Outcomes Dashboard**—a dashboard designed to guide instructors through their own courses with the student experience in mind, plus an increased access to course outcome and student data for faculty serving as course instructors.

In partnership with **University Center for Assessment, Teaching, & Technology (UCATT)** and **Student Success & Retention Innovation (SSRI),** this fellowship aimed to provide faculty with access to data that supports equitable improvements to student courses. This project was funded by the **Provost Investment Fund (PIF)** and, as the facilitator of the university’s Enterprise Data Warehouse, UAIR’s role was crucial in this grant-funded project.

Data-Driven Decisions & Dashboard Development

The Student Course Outcomes dashboard was designed to guide instructors through their course analytics using three orienting questions: “Who are my students?,” “What grades have my students historically earned in my class?,” and a final question with the same approach to “what grades have my students earned,” but using other outcomes such as “persistence at the university” or “persistence in major.”

Utilizing aggregated data to uncover the student experience with a specific class in mind can influence both the course’s design and outcomes. Instructors gain new insights on how to move forward with their course design when they have access to both student- and course-related data. While access to this course outcomes dashboard is still limited to fellowship participants, the potential benefit for the broader community of course instructors is clear, and plans are in place to make this dashboard more widely accessible in the 2024 fiscal year.

Empowering the University Through Equitable Change

In the spirit of supporting UArizona faculty and course instructors with access to more robust data, UAIR’s initiative to support equitable change through data at the university can be seen in much of its work over the past fiscal year. The continuation of the **Faculty Pay Equity Study**, in collaboration with the **Office of the Provost**, for tenure-track faculty is an ongoing project with yearly reharmonizations in place to identify necessary salary adjustments faculty.

Additionally, this fiscal year the **Student Course Survey (SCS)** dashboard was revitalized with an updated dashboard and data process that provides university instructors access to course survey responses in a form that is easily digestible and is connected to strategies for improvement. The SCS dashboard was a result of collaborative effort between UAIR, Faculty Affairs, and the SCS team in UCATT.

Innovating approaches to student success and course equity means that the faculty at our institution must see equitable changes to make equitable changes. Improving access to institutional data for faculty and course instructors is one way UAIR supports equitable change at the University of Arizona.

SERVICES

- Student Data
- Employee Data
- Financial, Budget, Research & Space Data
- Interactive Factbook
- External Reporting
- Enterprise Data Warehouse

COMMUNICATIONS & MARKETING

MESSAGING TECHNOLOGY IN THE COMMUNITY

In the information technology industry, the “soft skills” involved in communication can be just as important as “hard skills.” UITS technologies improve productivity and efficiency in the University’s administrative offices, research labs and classrooms, but technology changes can complicate the University community’s workflows. New or updated technologies require a carefully thought-out communication strategy that includes campus leadership, service stakeholders and campus IT professionals, as well as end users.

It’s especially important to share technical information in a way that’s easy for others to understand, especially when introducing something new, present proposals for innovative ideas and project or explain the workings of a new system or program to a general audience. Communication skills also play an important part in collaborating with peers or reporting to administration.

The UITS Communications & Marketing team works closely with project teams to strategize and implement communications plans around new or changing systems. This can include crafting and sending emails and announcements, writing articles, preparing presentations, developing website content, and creating marketing materials when needed.

The team focuses on writing clearly and concisely, centering the point of view of the audience. Messages need to clearly engage the community with an understanding of who should read the content and why, what steps they may need to take, and where they can go for more information or support.

The Communication & Marketing team’s communication skills are not only beneficial for written materials but also come in handy for presentations. In situations where it’s crucial to convey information clearly and captivate an audience, such as in presentations to peers or external departments, the team focuses on emphasizing key details and presenting them in an engaging manner.

Within the IT community, the CIO Division gives technology professionals an opportunity to share their talent and projects at the IT Summit. Communications & Marketing provides event planning, volunteer coordination, creative design, attendee engagement and, most importantly, solid marketing and messaging.

The IT Summit resumed full in-person attendance in 2023 with over 400 IT professional attendees from across the university. The summit featured many sessions and a keynote panel discussion led by the **University’s Chief Technology Officer, Darcy Van Patten**, on “ChatGPT: Developing AI Literacy and Harnessing Human-AI Interactions for Positive Impact.”

The team supports internal communications, as well. From helping to distribute information to all areas of the division to supporting employee engagement, Communications & Marketing is part of providing a positive culture for division employees.

In FY22, with the help of the Communications & Marketing team, the CIO Division sponsored two community service projects. The first, in support of the **United Way of Tucson** and **Southern Arizona Days of Caring**: a playground beautification project at Laguna Elementary School.

Shortly after that event, the CIO Division sponsored an **American Red Cross blood drive** on the University of Arizona’s main campus.

Todd Merritt, an information technology manager in Research & Discovery, was one of the first donors to arrive. “Donating blood made me feel like I was helping out someone in need and made me feel connected to my community. On top of that, it was quick and virtually painless!”

FY23 METRICS

News Stories For The Web	50
Infographics	7
Emails Sent Via Trellis Marketing Cloud	346
Median Open Rate Of Trellis Emails	50%
Department Newsletters	69
Email Recipients	603K

SERVICES

- Website Content
- Writing and Editing
- Graphic Design
- Videography/Photography
- Public Relations
- Events Management
- Fundraising/Development

BENCHMARKING & STRATEGIC PLANNING

The CIO Division conducts an annual benchmarking analysis to assess our strategy and operations relative to higher education peers and IT units across the University of Arizona. The analysis compares strategic priorities, services, organizational design, personnel, operating and capital expenditures, suppliers, and operational maturity to inform data driven decision-making with University leadership, IT leadership and IT staff. This information is published in the University's IT Annual Report to foster transparency and support strategic planning activities.

EXTERNAL BENCHMARKING

The University of Arizona, a land-grant university with two independently accredited medical schools, is one of the nation's top public universities in the U.S. News & World Report (USNWR) national university rankings. The University is also ranked in the top 20 in research expenditures among all public institutions and is a member of the Association of American Universities (AAU). In FY23, UArizona's IT expenditure was 6.1%, which was the smallest expenditure compared to higher education peers in all other benchmark categories.

INFORMATION TECHNOLOGY AT UARIZONA

The University of Arizona's IT community is comprised of 1018.5 professionals across central and distributed job functions that support college, institutional, auxiliary and enterprise-wide services. The annual expenditure in FY23 for IT across the University was $153.9M.

UNIVERSITY INFORMATION TECHNOLOGY SERVICES

The CIO Division operates and manages central IT services for University of Arizona faculty, staff and students. Within the division, there are 360.8 total IT FTEs represented in 19 UCAP IT job families. The annual expenditure in FY23 for the CIO Division was $82.4M.

	UArizona	ABOR Peers	Public AAU	USNWR Public 2024 Top 50 National Universities
Faculty FTE	2,920	3,593	2,817	2,697
Student FTE	40,537	42,631	39,577	35,607
Research Expenditures	$770.0M	$911.4M	$726.9M	$659.7M
Total Expenditures (Net Hospital)	$2,220.9M	$2,676.7M	$2,195.4M	$2,034.5M
IT Staff FTE (Central + Distributed)	812	989	905	779
Central IT Staff FTE	327	379	421	349
Distributed IT Staff FTE	485	609	484	430
Total IT Expenditures (Central + Distributed)	$135.3M	$194.1M	$169.1M	$142.6M
Central IT Expenditures	$69.3M	$78.4M	$85.0M	$72.3M
Distributed IT Expenditures	$66.1M	$115.7M	$84.1M	$70.3M
IT Staff per 1K Student FTE	20.0	23.0	22.8	21.1
IT Expenditures as % of Total	6.1%	7.9%	8.0%	7.2%
Number of Institutions	1	5	12	14

*UArizona is not included in any of the benchmark group averages

Sources:
[1] Integrated Postsecondary Education Data System (IPEDS) - Human Resources Component FY 2022
[2] IPEDS - Enrollment Component FY2022
[3] NSF Higher Education Research and Development Survey 2021
[4] IPEDS, Finance Component FY 2021
[5] Educause Core Data Service Survey FY 2022

UNIVERSITY IT FY23 WORKFORCE & IT EXPENDITURES

UNIVERSITY IT WORKFORCE FTE

	CIO	Provost	Health Sci	CFO	RII	UAGC	TOTAL
Start FY23, ALL	326.6	244.8	116.8	96.8	27.0	0.0	811.92
Hires/Transfers In	75.1	52.6	41.5	35.0	9.0	131.0	344.1
Attrition	40.8	44.1	23.8	24.8	4.0	0.0	137.5
End of FY3, ALL	360.8	253.3	134.4	107.0	32.0	131.0	1018.5
Turnover Rate	11.9%	17.7%	18.9%	24.3%	13.6%	N/A	16.2%
% Recv. Comp. Increase	99.7%	100.0%	97.9%	100.0%	100.0%	N/A	99.6%
% Recv. Promotion	17.1%	11.2%	6.3%	13.9%	8.7%	N/A	13.1%
Comp Ratio (Avg % of Midpoint)	82.1%	82.2%	83.3%	83.3%	81.5%	101.8%	84.9%
Supervisor (Count)	71	133	65	52	24	32	377
IT Staff/Sup Ratio	5.1	1.9	2.1	2.1	1.3	4.1	2.7

UNIVERSITY IT FTE BY JOB FAMILY GROUPINGS

	CIO	Provost	Health Sci	CFO	RII	UAGC	TOTAL
ITSupport	88.8	76.2	42.0	26.0	9.5	47.0	289.6
ITInfrastructure	37.0	41.5	20.6	10.0	7.0	19.0	135.1
ITNetwork	33.0	3.0	0.0	0.0	1.0	4.0	41.0
ITSecurity	17.0	0.0	2.0	1.0	0.0	6.0	26.0
ITPM	19.6	5.8	3.0	2.3	0.0	9.0	39.6
ITApplications	90.9	43.5	24.8	43.0	7.5	20.0	229.6
ITWebDev	16.0	34.0	9.1	15.0	5.0	2.0	81.1
ITInstructionalTech	7.0	30.5	17.0	0.0	0.0	4.0	58.5
ITAnalysis	39.5	18.8	16.0	9.8	2.0	20.0	106.1
Research/Data Science	12.0	0.0	0.0	0.0	0.0	0.0	12.0
TOTAL	**360.8**	**253.3**	**134.4**	**107.0**	**32.0**	**131.0**	**1018.5**

UNIVERSITY IT PERSONNEL & EXPENDITURES - IT JOB FAMILY GROUPS

	CIO	Provost	Health Sci	CFO	RII	UAGC	TOTAL
Salary	$27,711,823	$18,281,538	$9,140,922	$8,134,342	$2,358,521	-	$65,627,145
ERE	$8,762,013	$5,740,986	$2,881,349	$2,569,902	$741,627	-	$20,695,876
Software, etc.	$27,631,024	$7,166,576	$4,474,270	$3,847,537	$1,015,192	-	$44,134,599
IT Equipment	$3,054,271	$6,719,871	$2,767,609	$1,318,535	$615,684	-	$14,475,970
Network & Equipment	$6,505,134	$2,324,021	$2,171	$131,979	$13,230	-	$8,976,535
TOTAL	**$73,664,265**	**$40,232,992**	**$19,266,321**	**$16,002,294**	**$4,744,253**	**-**	**$153,910,126**

Sources:
UAccess Financials
Payroll Expenditure Listing (PEL) with SET
G-MF Income/Expense - Productions
All Funds Reconciliation Transfers

CIO DIVISION FY23 WORKFORCE

CIO DIVISION WORKFORCE ANALYSIS

	Start FY23	Hires	Attrition	Transfers In or Out	End FY23	Turnover Rate	% Recv. Increase	% Received Promotion	Compa Ratio	Supvr. Count	IT Staff / Sup Ratio
Digital Exp. Tech	36.6	4.1	5.9	9	43.7	14.8%	100.0%	12.9%	81.9%	8	5.5
Student & Acad Tech	31.0	3.0	2.0	-6	26.0	7.0%	100.0%	18.2%	80.3%	6	4.3
Research & Disc. Tech	17.0	3.0	2.0	0	18.0	11.4%	100.0%	0.0%	77.5%	5	3.6
Admin Tech	27.6	3.0	2.0	0	28.6	7.1%	100.0%	3.8%	80.2%	4	7.2
UAIR	46.5	4.0	6.0	0	44.5	13.2%	100.0%	9.8%	86.2%	9	4.9
Info Security Office	10.0	5.0	1.0	0	14.0	8.3%	100.0%	0.0%	83.5%	2	7.0
Support Services	69.0	31.0	13.0	-8	79.0	17.6%	97.9%	23.9%	81.1%	9	8.8
Network Technologies	42.0	16.0	5.0	7	60.0	9.8%	100.0%	13.5%	84.3%	12	5.0
Infrastructure Technologies	46.9	5.0	4.9	-1	46.0	10.5%	100.0%	13.5%	82.3%	13	3.5
CIO Admin	23.0	8.0	4.0	-1	26.0	16.3%	100.0%	26.3%	89.5%	9	2.9
TOTAL	**349.6**	**82.1**	**45.8**	**0***	**385.8**	**12.5%**	**99.6%**	**13.7%**	**82.8%**	**77**	**5.0**

***23 Transfers In/Out**

CIO DIVISION IT FTE BY JOB FAMILY GROUPING

	Support	Infra	Network	Security	Project Mgt	Apps	Web Dev	Instr. Tech	Analy-sis	Rsrch / Data Sci	Non-IT	Grand Total
Digital Exp. Tech	6.8	3.0	-	-	2.0	15.9	15.0	-	1.0	-	-	43.7
Student & Acad Tech	1.0	1.0	-	-	-	24.0	-	-	-	-	-	26.0
Research & Disc. Tech	-	4.0	-	-	1.0	2.0	-	-	-	11.0	-	18.0
Admin Tech	1.0	-	-	-	1.6	26.0	-	-	-	-	-	28.6
UAIR	2.0	2.0	-	-	1.0	-	-	-	36.5	1.0	2.0	44.5
Info Security Office	2.0	-	-	12.0	-	-	-	-	-	-	-	14.0
Support Services	58.0	12.0	-	-	2.0	-	-	7.0	-	-	-	79.0
Network Technologies	10.0	2.0	33.0	3.0	6.0	5.0	-	-	-	-	1.0	60.0
Infrastructure Technologies	8.0	13.0	-	2.0	5.0	18.0	-	-	-	-	0.0	46.0
CIO Admin	-	-	-	-	1.0	-	1.0	-	-	-	24.0	26.0
TOTAL	**88.8**	**37.0**	**33.0**	**17.0**	**19.6**	**90.9**	**16.0**	**7.0**	**37.5**	**12.0**	**27.0**	**385.8**

Sources:
UAccesss Employee
HCM Census Data
All Active Employees

CIO FY23 FUNDING SOURCES AND USES

REVENUES

Carry Forward in $12,720,411

	Institutional	Investment from Fund Balance	Service	Strategic	Student	TRIF	Subtotal
Digital Exp. Tech	$2,579,514	$1,482,350	$335,291	$4,349,230	$723,064	-	$9,469,449
Student & Acad Tech	$2,171,173	-	-	$600,151	$4,425,044	-	$7,196,368
Research & Disc. Tech	$1,758,515	-	$72,482	$41,930	-	$1,115,988	$2,988,915
Admin Tech	$6,563,193	-		$589,708	-	-	$7,152,901
UAIR	$8,530,073	$453,900	$299,655	$605,786	-	-	$9,889,414
Info Security Office	**$4,195,733**	-	-	**$226,992**	-	**$82,083**	**$4,504,808**
Support Services	$4,122,827	$1,123,762	$1,198,647	$109,201	$4,235,501	-	$10,789,938
Network Technologies	$4,285,131	$5,602,460	$7,131,224	$117,484	$2,370,306	-	$19,506,605
Infrastrucutre Technologies	$8,398,366	$715,441	$11,314	$322,471	-	-	$9,447,592
CIO Admin	$8,050,410	($9,377,913)	$36,621	$777,608	$1,247,590	-	$734,316
TOTAL	$50,654,935	$0	$9,085,234	$7,740,561	$13,001,505	$1,198,071	$81,680,306

EXPENDITURES: PERSONNEL

	IT	Non-IT	ERE	Subtotal
Digital Exp. Tech	$2,587,106	$20,064	$830,766	$3,437,936
Student & Acad Tech	$1,987,253	$0	$633,934	$2,621,187
Research & Disc. Tech	$1,498,902	$0	$478,150	$1,977,052
Admin Tech	$3,064,699	$0	$977,640	$4,042,338
UAIR	$4,379,095	$161,260	$1,454,461	$5,994,816
Info Security Office	$1,411,634	$0	$450,311	$1,861,945
Support Services	$4,351,672	$31,094	$1,378,395	$5,761,161
Network Technologies	$3,446,932	$45,449	$1,114,070	$4,606,452
Infrastructure Technologies	$3,730,282	$31,094	$1,199,107	$4,960,482
CIO Admin	$668,629	$1,124,735	$569,038	$2,362,402
TOTAL	**$27,126,205**	**$1,413,695**	**$9,085,872**	**$37,625,772**

EXPENDITURES: OPERATIONS & CAPITAL

	Software	OpEx, Non-Software	Capital/Network	Admin Service Charge	Subtotal
Digital Exp. Tech	$4,173,168	$1,221,291	-	$22,467	$5,416,926
Student & Acad Tech	$3,714,098	$730,803	-	$86,275	$4,531,176
Research & Disc. Tech	$257,861	$779,202	$1,603,015		$2,640,078
Admin Tech	$2,954,247	$815,816	-	$1,086	$3,771,149
UAIR	$1,742,234	$1,779,784	-	$95,851	$3,617,869
Info Security Office	$2,608,771	$192,145	-		$2,800,916
Support Services	$446,607	$1,489,463	$2,256,203	$93,439	$4,285,712
Network Technologies	$2,601,323	$8,475,658	$3,675,913	$141,880	$14,894,774
Infrastrucutre Technologies	$3,222,597	$4,054,559	-	$2,032	$7,279,188
CIO Admin	$208,353	$366,824	-	$66	$575,243
TOTAL	**$21,929,259**	**$19,905,545**	**$7,535,131**	**$443,096**	**$49,813,031**

Carry Forward Out $6,667,257

CIO DIVISION SERVICES

DIGITAL EXPERIENCE TECHNOLOGY (9531)

Service	FTE	Personnel Exp	Operations & Software Exp.	Capital & Network Exp.	Total Exp
Employee Email and Collaboration Administration	3.9	$507,062	$1,702,852		$2,209,914
Integrated Digital Experience Development	3.8	$411,872	$120,088		$531,960
Customer Relationship Management (Trellis)	6.8	$791,666	$2,660,091		$3,451,757
Student Email and Collaboration Administration	0.4	$46,958	$566,543		$613,501
Web Services and Consulting	14.9	$1,680,378	$367,353		$2,047,731

STUDENT & ACAD TECHNOLOGIES (9523)

Service	FTE	Personnel Exp	Operations & Software Exp.	Capital & Network Exp.	Total Exp
Academic Technologies Administration	4.6	$481,069	$1,581,980		$2,063,049
DRC Support	0.9	$109,307	-		$109,307
Student Administrative Systems	17.9	$2,030,811	$2,949,197		$4,980,008

RESEARCH & DISCOVERY TECH (9524)

Service	FTE	Personnel Exp	Operations & Software Exp.	Capital & Network Exp.	Total Exp
Research/HPC Consulting	4.6	$600,227	$81,262		$681,489
High Performance Computing Administration	6.5	$806,938	$464,591	$1,603,015	$2,874,544
Research CyberSecurity Administration	5.5	$456,146	$476,676		$932,822
UA Vitae Administration	1.0	$113,741	$14,535		$128,276

ADMIN TECHNOLOGIES (9522)

Service	FTE	Personnel Exp	Operations & Software Exp.	Capital & Network Exp.	Total Exp
Financial Services Systems	13.3	$2,101,020	$1,886,915		$3,987,935
HR & Employee Learning Systems	13.5	$1,592,234	$1,470,334		$3,062,568
Research Administration Systems	3.5	$349,084	$413,900		$762,984

UNIVERSITY ANALYTICS & INSTITUTIONAL RESEARCH (9940)

Service	FTE	Personnel Exp	Operations & Software Exp.	Capital & Network Exp.	Total Exp
Administrative Data Management	10.1	$654,109	$3,986		$658,095
Customer Experience & Support Services	2.6	$305,723	$6,621		$312,344
External Reporting	6.7	$606,475	$10,919		$617,394
Data Warehouse Administration	4.9	$501,131	$14,919		$516,050
Student Data Management	26.3	$2,680,678	$2,073,920		$4,754,598
Systems & Data Engineering	7.1	$723,128	$96,902		$820,030
UAIR Administration	3.3	$523,572	$1,411,028		$1,934,600

INFORMATION SECURITY OFFICE (9521)

Service	FTE	Personnel Exp	Operations & Software Exp.	Capital & Network Exp.	Total Exp
Governance, Risk, and Compliance Administration	4.1	$625,144	$512,831		$1,137,975
Security Operations Center	7.9	$1,236,801	$2,287,993		$3,524,794

CIO DIVISION SERVICES

SUPPORT SERVICES (9530)

Service	FTE	Personnel Exp	Operations & Software Exp.	Capital & Network Exp.	Total Exp
Application Support	3.1	$269,590	$17,699	$28,765	$316,054
Classroom Technologies Administration	7	$484,131	$162,284	$1,013,135	$1,659,550
Desktop Support	13.7	$922,543	$143,646	$22,610	$1,088,799
Endpoint Management	2.5	$273,644	$1,166,353	$1,127,653	$2,567,650
Student Computing Labs	4.8	$322,821	$290,200	$64,040	$677,061
Student Help Desk	25.9	$1,639,457	$101,027		$1,740,484
Extended Services	7.8	$938,504	$141,230		$1,079,734
Data Center Operations	10.8	$910,470	$10,991		$921,461

NETWORK TECHNOLOGIES (9526)

Service	FTE	Personnel Exp	Operations & Software Exp.	Capital & Network Exp.	Total Exp
Network Operations	22.5	$2,658,732	$4,732,211	$3,282,488	$10,673,431
Network Services	7.6	$527,888	$86,736	-	$614,624
Voice Operations	14.4	$1,419,831	$1,444,932	$325,586	$3,190,349

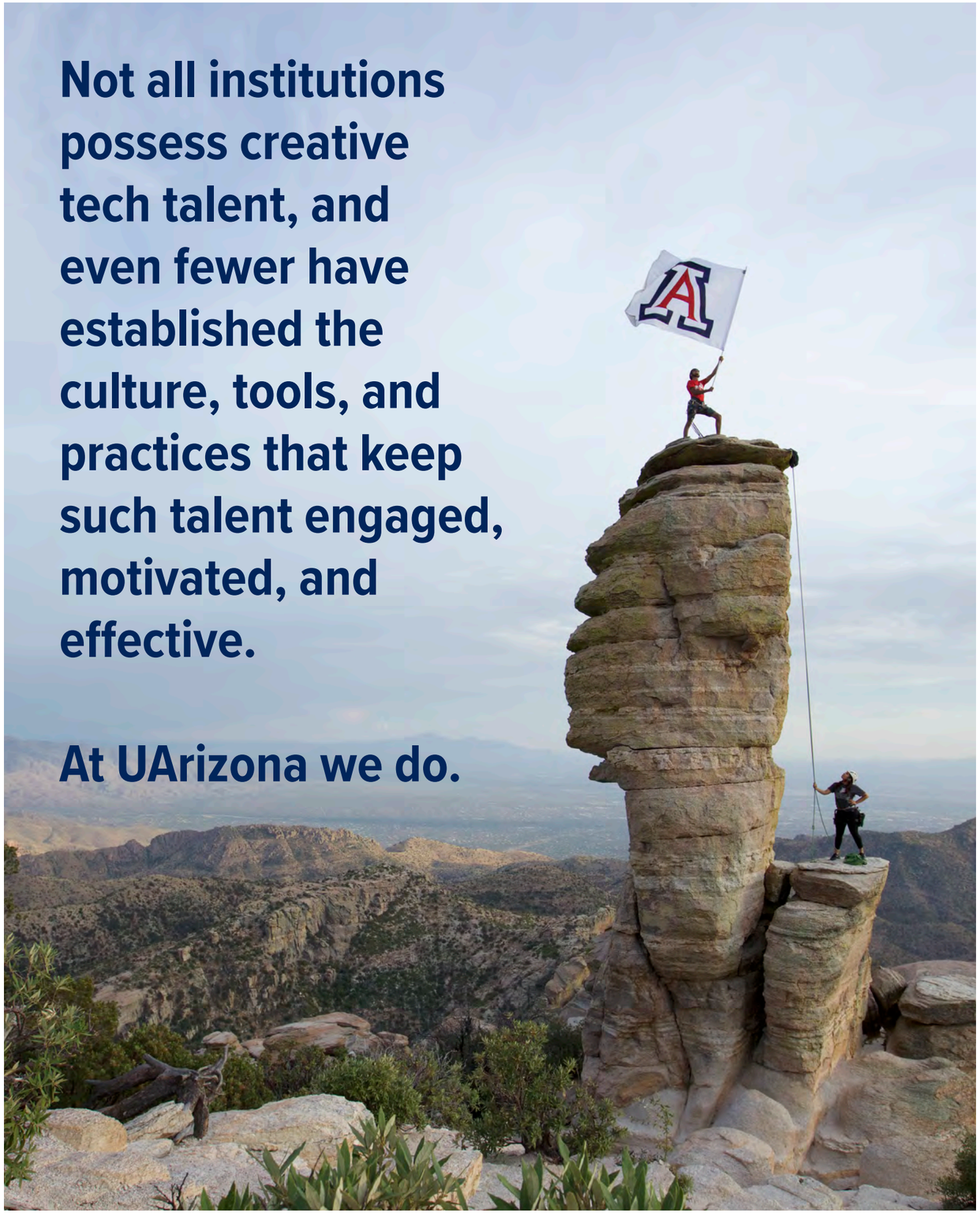
INFRASTRUCTURE TECHNOLOGIES (9529)

Service	FTE	Personnel Exp	Operations & Software Exp.	Capital & Network Exp.	Total Exp
Infrastructure Services Administration	10.6	$1,326,264	$906,268		$2,232,532
Identity & Access Management	9.5	$1,048,537	$1,065,863		$2,114,400
Service Management	-	-	$248,403		$248,403
Managed Services	1	$38,709	$155,724		$194,433
Campus Cloud Infrastructure	4.3	$492,031	$3,018,038		$3,510,069
Campus IT Partnerships	7.3	$787,358	$811,152		$1,598,510
Campus IT Architecture	5	$630,613	$796,186		$1,426,799
Cloud Operations	4.9	$636,971	$277,462		$914,433

CIO ADMIN (9520)

Service	FTE	Personnel Exp	Operations & Software Exp.	Capital & Network Exp.	Total Exp
Business Services	17.1	$1,647,809	$250,459		$1,898,268
Marketing and Communications	3	$333,736	$39,440		$373,176
CIO Administration	2	$380,857	$226,623		$607,480
Planning	0		$58,722		$58,722

Service	FTE	Personnel Exp	Operations & Software Exp.	Capital & Network Exp.	Total Exp
Total	**359.1**	**$37,625,772**	**$37,327,085**	**$7,467,292**	**$82,420,149**



CIO EXECUTIVE LEADERSHIP

Barry Brummund
Chief Information Officer &
Vice President, University Planning

Laura Bracamonte
Executive Assistant

Ravneet Chadha
Chief Data Officer, Associate
VP, University Analytics &
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Lanita Collette
Deputy CIO,
Chief Information Security Officer

Maysoon Eshelman
Executive Director
Campus IT Partnerships

Jeremy Frumkin
Senior Director
Research & Discovery
Technologies

Susan Legg
Executive Director
IT Support Services

Michael Medina
Executive Director
Support Services

Tim Schwab
Executive Director
Administrative Technologies

Kelly South
Senior Director
Communication & Marketing

Darcy Van Patten
Chief Technology Officer

Chris Wolf
Senior Director
Finance & Administrative Services

THE UNIVERSITY OF ARIZONA
Office of the CIO

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