



# TIER 1 STRATEGY

**UTSA**  
The Office of Information Technology

In 2016, The University of Texas at San Antonio will be well on its way to becoming one of the preeminent public research universities in Texas, drawing national and international recognition as a leader in research, education, and public service. Known for its commitment to the advancement of knowledge, UTSA will be a leader in developing innovative partnerships responsible for the distribution of new ideas and creative endeavors that will improve the lives of citizenry around the world. (*Excerpt from UTSA in 2016*)

# REVISION HISTORY

February 1, 2011 – Revision “A”, Original Release

February 4, 2011 – Revision “B”, (various grammatical corrections. No content changes)

# ASPIRANT INSTITUTIONS

## Short-term aspirants:

Arizona State  
University

University of California,  
Riverside

University of  
Connecticut

University of Central  
Florida

University of Oklahoma

## Introduction

There are some measurable matrices that define Tier 1 institutions (i.e. \$100M in grants); but none defining a Tier 1 department within an institution. It comes down to what “we” believe to be Tier One. When our peers recognize us as a Tier One organization (as one of the best) and strive to copy or “be just like us”, that is when we can declare we have reached such a goal.

## Aspirant Institutions

The aspirant institutions are a group of medium-to-large public universities without medical schools in large metropolitan areas whose key performance characteristics are currently higher than UTSA’s. Those institutions whose performance might be reached within the time frame of the current strategic plan (2016) comprise the near-term aspirants. Conversely, long-term aspirants represent a group of institutions whose performance levels might be reached by UTSA in a somewhat longer timeframe.

## Long-term aspirants:

University of California,  
Santa Barbara

University of Colorado,  
Boulder

Rutgers University

The University of  
Texas at Austin



# Contents

|   |    |
|---|----|
| Being Tier 1 .....                                | 6  |
| Technology Infrastructure .....                   | 8  |
| The Network .....                                 | 8  |
| Telephony .....                                   | 8  |
| Data Center .....                                 | 9  |
| Application and Data Services .....               | 10 |
| Disaster Recovery .....                           | 11 |
| Research Infrastructure .....                     | 11 |
| Funding the Infrastructure .....                  | 12 |
| Customer Service .....                            | 14 |
| Managing Our Support Requests .....               | 14 |
| Proactive Service .....                           | 15 |
| Student Support .....                             | 15 |
| Classroom Management and Support .....            | 16 |
| Leveraging our Assets .....                       | 18 |
| Training .....                                    | 18 |
| Video .....                                       | 19 |
| Instructional Design .....                        | 19 |
| Communication and Marketing .....                 | 19 |
| External Grant Opportunities .....                | 20 |
| Information Security - .....                      | 22 |
| Risk Management .....                             | 22 |
| Systems Security .....                            | 23 |
| Threat Management .....                           | 23 |
| Security Awareness, Outreach and Consulting ..... | 24 |
| Policies and Procedures .....                     | 26 |
| Project Management .....                          | 28 |
| Summary .....                                     | 30 |



# Being Tier 1

While UTSA's research community strives to reach the Tier 1 goals associated with research, and the academic areas strive to improve their results in delivery of the educational mission, service organizations must also have strategies that elevate them to a level that can support the university's mission and goals. As such, OIT must have a definitive strategy for reaching Tier 1 levels.

A Tier 1 institution stresses excellence. Excellence can be reached only through significant investment in people, facilities, training, and research. Our efforts (especially successes) must be publicized in a manner that establishes the perception of quality and excellence. Since achieving Tier 1 status is largely based upon peer perception and recognition of accomplishments, OIT needs to improve its peer perception by increasing involvement with advanced groups such as Internet2, Educause, LEARN, etc. We need to engage in activities that take UTSA's name and reputation beyond the confines of UTSA. We should strive for recognition as a leader amongst our peers (other universities in Texas and beyond)

Our challenge in evolving from our current state to an environment that exemplifies Tier 1 status is defining strategies with the potential of propelling us beyond day to day progress. In the time it will require us to reach today's Tier 1 levels of service, our aspirants will have also progressed. Our strategies must be farther reaching.

The journey and vision will not be easy and we must embrace our successes and failures in a way that gives the department courage to take reasonable risks. Our history has been to remain in safe harbors, which has produced a department of steady movement, but not the kind of progress required for the future. The exciting part of this journey is that we have the resources to accomplish these goals and we are positioned for success.

As advances in technology continue, the lines of responsibility will increasingly blur and require our units to become more integrated and co-dependent. Project prioritization and management will become increasingly important to our success. Also, as expected, the organization will continue to evolve to take advantage of skills and efficiencies between personnel. This does not necessarily require frequent organizational realignment, but does require employees to be adaptive and flexible to meet customer needs rather than focusing on a single service or job duty.

We have chosen a metaphor based on "walls", as it has in a technology context, provided a good delineation for management and identification of services when it comes to networking and telephony. The network/phone jack in the wall has been considered the point where infrastructure ends and support services begin: behind the wall is infrastructure and in front of the wall are customer services. In this document, we have extended the metaphor to describe other areas, bringing strategic understanding of their role in the OIT organization.



# Technology Infrastructure

“Behind  
the Walls”

We believe that our core infrastructure services are comparable with other Tier 1 institutions, yet we must continue to maintain and enhance them so that no gaps develop in our technological position.

## The Network

The core component of our infrastructure is our network. The network provides the backbone behind all of our electronic services and platforms. Significant investment by the university has been made over the past three years which will result in a 10 gigabit backbone across the entire campus – 10x that of other institutions within the UT System and most other institutions in the country. Our next steps will need to include the **prioritization of traffic types on the network** as more real-time applications are deployed (VoIP, IP video conferencing, etc.).

Additionally, we need to increase the level of engagement/involvement of OIT in advanced technical network issues such as regional optic networking, creative use of vendor relationships (NextG DAS deployment at Texas A&M, etc). Recently, the UT System approved a request to allocate \$23 million to support a research infrastructure. As part of this fund, 10 Gigabit connectivity will be provided to UTSA from our institution to all other UT institutions, The Texas Advanced Computing Center (TACC), and regional / national networks such as the Lonestar Education and Research Network (LEARN), National Lambda Rail (NLR), and Internet2 (i2).

The demand for wireless networking will continue to rise, and we must be able to **deploy wireless connectivity in areas of high user density**, such as large classrooms and auditoriums. Such deployments will require a different design to handle up to 500 users within a small area to support the next generation of educational methods, student use of personal computers and other portable devices in a classroom setting.

## Telephony

We must provide better communication by increasing reliability and taking advantage of new technology to reduce costs and increase customer value. Key initiatives are designed to consolidate many office needs to the desktop; thereby reducing the cost of support, and enabling **seamless communication both on- and off-campus**: UTSA has invested significantly in the existing telephony infrastructure. Recent upgrades of the PBX hardware and software, billing systems, and third-party add-ons have established a good foundation from which to build. Migrating to IP telephony will provide both traditional voice and new IP-based services.

The next generation of telephony services for UTSA will be centered on offering **enhanced IP communications and collaboration services** to users. These services will include locally managed teleconferencing, desktop video conferencing, instant messaging, fax to the desktop, presence information, and automated call answering/routing. These will be accomplished with the existing PBX



infrastructure, replacement of the analog devices and infrastructure with the IP infrastructure and IP/soft phones, and the continued leveraging of our Microsoft Campus Agreement with Office Communication Server, and updated Microsoft Exchange environment. Successful implementations in this area should reduce the overall cost of support for these infrastructures, as well as **more integrated services** for users.

Automating services to reduce support requirements, accelerating the completion of tasks, and increasing accuracy is also important. We must **allow the customer more self-service opportunities** for troubleshooting, customizing, and monitoring through online services, training, and support.

## Data Center

Our goal is to lower data center and IT infrastructure costs by lowering power consumption, retiring old equipment and better utilization of existing equipment, resolving energy issues leading to downtime, and re-designing the data center according to industry standards and best practices. In this way, we can achieve dramatic energy savings, and increase ROI via centralized management, tiered storage, consolidation and capacity management.

One of the key technologies for achieving our goals in the data center is server virtualization. Through server virtualization, we are able to consolidate hardware, thus reducing our hardware investment by better utilizing existing capacity. Additionally, we need to reduce the time it takes to make servers available. Faster server provisioning means the customer no longer will have to wait several weeks for hardware to be ordered or for an operating system to be loaded. Our goals in this area will be met when we can offer **automated server provisioning** via a web portal where our can self provision server resources without intervention from our server teams.

We must **expand our storage infrastructure** and the resources that are available to our students, faculty, and staff. This includes disk space for high performance research computer clusters, email, streaming multimedia video, distance learning, the student information system, and general file storage (I drive, S drive, etc.). Doing this in the most efficient manner requires us to collapse and consolidate into a single SAN fabric providing increased reliability, availability, and interoperability utilizing as much of the existing hardware as possible. By utilizing a single SAN fabric topology, OIT will be better positioned to provide more robust services in a timelier manner.

**Information Lifecycle Management (ILM) and tiered storage strategies** are critical to managing storage on many levels. An ILM strategy is composed of policies and procedures that define the management of data from the time it is created to the time it becomes obsolete and is archived or deleted. With the emergence of storage arrays that enable in the box storage tiering, we can now match storage resources to service level requirements of our key applications based on performance, availability, functionality and environmental considerations all from a single management interface. Emerging data de-duplication technology eliminates redundant copies of stored data, enabling up to 300:1 data reduction for backup and storage applications. By leveraging these technologies to minimize redundant data, we will be enabled to achieve higher utilization of our resources.

## Application and Data Services

One of the key areas where UTSA should stand out beyond other peer and aspirant institutions is its availability and use of data, as well as effective applications that utilize that data. For Tier One status, we need to **focus on core services** which will differentiate UTSA from its competitors.

On the data services side, OIT must establish a set of data repositories that enable the housed data to be analyzed displayed, manipulated, and accessed by other applications. **Where data can exist, it should exist.** For example, Active Directory should contain complete information regarding employees and students. These data exist, but are not easily accessible at the time of need for the user (ex. while in Outlook, users do not have access to a person's phone number). **Data must be readily available when needed.** Data must be consistent, up to date, reliable, and appropriately secured. When possible, expectations of data "currency" should be met, meaning that data feeds and batch processing should be eliminated or reduced based on current business factors.

On the application side, OIT must be able to deliver **applications with up to date interfaces** that meet or exceed user expectations, including meeting Electronic Information Resource (EIR) requirements established by the Department of Information Resources (DIR). A recent example of this requirement is BlueBook: a web-based application established to meet the requirements of Texas House Bill 2504 (HB2504). This application was successful due to: a properly designed data model, an interface design that is current and familiar, and a development process that was controlled. OIT has taken steps towards being able to replicate the success of BlueBook by hiring a data modeling professional, preparing to hire a user interface specialist into the development group, and utilizing the Project Management Office (PMO) for management of strategic development projects. OIT must leverage these assets in the delivery of at least two core applications: FAIR and INSIGHT. FAIR is a critical system in managing and evaluating faculty, and is no longer an optional application within the university. Its existing poor design must be replaced with a newer, more stable design that is more intuitive than the current one, and makes it easy for faculty to manage their information. INSIGHT, while in the near-term is an application for technology management, will become a critical platform for university management in the future.

Finally, OIT must **take strategic advantage of SharePoint** as a single, comprehensive data and information delivery mechanism. The data and development teams must become experts in development within SharePoint so it can be utilized to its fullest capabilities. All possible avenues for managing data and information outside of SharePoint should be eliminated and moved into SharePoint to provide a single point of access for reasons of efficiency and reducing the cost of maintaining multiple platforms.

While the applications mentioned above are strategic, it is the guiding principle behind them that is the true strategy. That principle is **easy to use, time-saving applications** that enhance our decision-making processes and reduce overhead. Taking advantage of mobile capabilities should enhance our ability to succeed in this area. Less administrative overhead should lead to more availability of people and monetary resources, leading to more capabilities in the University for reaching its mission.

## Disaster Recovery

While UTSA is in a geographic region that is not as susceptible to most regional natural disasters such as hurricanes, earthquakes, or floods as other regions within the country, OIT must ensure that it has an **appropriate disaster recovery architecture** that can support at minimum a localized disaster such as a building failure or tornado.

Given that UTSA has multiple locations in San Antonio, and that some infrastructure exists in the downtown campus for disaster recovery, OIT needs to establish its facility downtown as the official offsite disaster recovery location. This involves consolidating equipment downtown from various other locations, investing in upgrades to the downtown facility, and modifying DR processes that support the disaster recovery architecture. With over 200 virtual machines running on blade servers on a single storage array, we are still in the dangerous situation of having “all of our eggs in one basket”. We risk losing the storage array, the blade chassis the servers reside in, or cooling or power in the data center. With this level of server density, we must have a business continuity solution in place on separate hardware, located at in an official remote location.

## Research Infrastructure

As the university strives to become a Tier One research institution it is imperative we have the **infrastructure in place to support research**. The most basic service is providing space for computational research equipment. By having a majority of the high-capacity computing infrastructure centrally located, we will be able to consolidate and improve support. Additionally, our capabilities can be better quantified in grant proposals where agencies are looking at UTSA’s capabilities in computing. Lastly, we need to reduce wait times for researchers to be productive by having a facility capable of handling their requirements on demand.

While the majority of the data center would be occupied by the College of Science and College of Engineering, it will be equally available to all researchers at UTSA. Although the data center will supply physical space for more research equipment, it needs to be augmented with an increased level of central support services, including data storage, additional high-performance computational capabilities, private networks, and backup and recovery services. Such an infrastructure will be much more cost effective, and will entice other researchers to choose UTSA over other institutions.

Connecting our research environment to internal and external resources will also be critical. Recent UT System allocations in support of research will provide UTSA with 10-Gigabit connectivity from our data centers to regional networks and resources such as the Texas Advanced Computing Center (TACC) and other institutions in the state of Texas. UTSA’s current network upgrade project will provide the same connectivity across campus, and we will only need a strategy for providing this connectivity, where necessary, to research areas (office, lab, etc).

## Funding the Infrastructure

Performing the above tasks with a high level of professionalism and quality do not, by themselves, require significant additional funding. However, the unit will need consistent and sufficient amounts of funds in order to stay current with technology and perform the research function indicated. Additional staff positions may need to be addressed as the number of faculty, students and courses supported increases.

**Maintaining a master plan for infrastructure** additions and replacements is a requirement for OIT to become and remain a Tier 1 organization. A plan that stretches out for 6-10 years is required. However, it must be understood that any long term plan for technology is subject to significant revision due to the amount of change that exists in technology year to year. A foundation for such a plan would include annual or periodic investments in storage, computer power, data center infrastructure (UPS, Cooling, etc), wired and wireless networks, annual maintenance costs, and acquisition of software and hardware not currently in the environment.



# Customer Service

“Outside  
the Walls”

It would be difficult to overestimate the value of customer service on our path to Tier 1 status. The key driver of this vision is to optimize the use of resources and **increase customer satisfaction through automation, self-service**, and a proactive approach to addressing issues before they become problems. Adopting a One-and-Done approach with our customers will allow employees to grow professionally, focus on the next level of service, and move into new arenas which will be in demand by the university in the years to come while keeping costs to a minimum. One-and-Done is an approach to making every process as simple and as Self-Serve as possible, a goal of taking each process to One-Step rather than multiple hand-offs and manual processes or hardcopy documents that can slow progress. A key example of this is account management. As it is one of our most frequent issues, responsibility for correcting account issues should be handled on a first-call basis without need of transferring or reassigning the issue.

At the heart of the support model are technological innovations that allow us to be effective and efficient; generating an experience for the customer that mimics what they experience outside of the university in their daily lives. In other words, we must meet the ever-increasing levels of expectations of the users of our services.

## Managing Our Support Requests

The start of any customer service process is of course the initial contact from the customer. Our customers should be able to **initiate a support request by contacting OIT on a single support number**, emailing via a single support email, completing an online form, or initiating a chat session with a support technician. From that point, we must be aligned, organized, and equipped to handle that request seamlessly and in a manner that meets or exceeds the expectation of the requestor. We must provide a recognizable brand for this single point of access to virtually any service provided by OIT.

Furthermore, we must have a system in place that allows us to **prioritize requests and issues** and deal with them in an appropriate manner. For example, any issue with classroom equipment, the registration system, student printing, Blackboard access, and payments should take precedence over most all other types of calls. Priority must also extend to different individuals at different levels within the university.

The Customer and Operations Support department of OIT must be aligned to take advantage of this model. The current units (Academic Labs, Desktop Management, Telephone Services, Support Services, Software Licensing, and Academic Technology) must be integrated in such a manner that we can **handle the request without requiring the customer to understand or navigate our organizational structure**. This also means that it may be necessary for groups to overlap their capabilities. For example, where we may have limited password change capabilities in the support services team, it may need to be expanded to academic technology and the academic labs so that all

entities can become a touch point for our services, thus minimizing the passing of a request from one person or group to another.

Migrating to standard troubleshooting templates for Support Services will improve services and our ability to manage tickets between the OIT Support Services, Network Team, Server Teams, Security Office and Application Development and Support. A common template along with proper procedures will facilitate the receipt of more accurate information from users which will allow us to quickly assign the ticket to the appropriate group resulting in more timely resolution to the customer.

We must also be able to track and manage our support log in a consistent manner. All active **requests must exist in a single ticketing system**, and we must have **Service Level Objectives (SLO's)** in place for them. Management must be continuously informed of requests at risk of missing the stated objective, and the support organization must act to minimize the number that does not meet the objective. The basis of our Service Level Objectives should be a integrated OIT Services Catalog that is available online..

While not a specific part of our support operation, it should be noted that all other areas of OIT should be looking for and **implementing opportunities to help streamline the completion of requests** through automation and self service. Each team should be evaluated on their progress in this area. Examples include self-provisioning of server resources, online password recovery, and assigning applications in Active Directory instead of manual installations.

## Proactive Service

While requests initiated by customers are considered reactive, we also need to build into our support model a **proactive approach to customer service**. Anticipating issues or problems or gathering them before they escalate to the point that the customer submits a request is true customer service. For example, we can acquire information on computer orders through purchasing in an automated fashion. We should be utilizing this information to prepare for the eventual delivery of that equipment so that tasks such as data transfers or encryption are already planned and scheduled before the equipment arrives. It is to our advantage to establish processes that allow us to be proactive. Other such process may include:

Establishing a small group of service staff who routinely visit high-visibility areas (president and vice presidents' offices, dean's offices, and other high profile customers to check in and ask for any issues that may be arising.

Installing displays in the customer services area that show at a glance the health of the network, including outage areas, key server status, and classroom technology status. Knowing in the early morning of a classroom issue before the first class gives us an opportunity to correct the issue before anyone experiences it.

## Student Support

While our traditional help desk has focused on faculty and staff support, we have relied almost solely on the academic computer labs for student support. This must change. OIT must **develop support services for students** to assist them with utilizing the technology and technology services that UTSA provides them. While we may rely on the computer labs as the main in-person contact point for the

students, we also need to provide access to online, email, and chat support, as well as telephone support. This support must be provided in a manner that spans all areas from network accounts to Blackboard.

This key to supporting such a large number of students without an expensive overhead is making the student more self-sufficient. Taking this approach will free up resources to work on more complex issues rather than consuming time and energy on the more manual tasks .

As mentioned earlier, the computer labs should remain the primary personal interaction point for students based on their hours and accessibility to the students. In regard to the labs themselves, they must too evolve from a physical facility to a “**lab without walls**” environment where students do not have to go to any particular facility to access applications, copy, scan, print or release print jobs. We have taken steps towards this goal with significant enhancements to MyApps, and with the implementation of an upgraded printing system allowing students to print from anywhere and pick up their documents from one of many printers around campus. We need to continue in this direction, looking for additional ways of providing access to university services in a 24x7 manner. Opportunities still exist with MyApps, Blackboard, and our Virtual Private Network (VPN).

## Classroom Management and Support

As mentioned earlier, it is important that OIT be able to **prioritize classroom issues** towards the top of the priority list. Classroom issues result in degradation in the teaching process, and therefore degradation in our ability to fulfill our mission. The processes we use to maintain the equipment in the classrooms in a working order must generate a >99% availability. This will require proactive processes and tools, as well as supporting processes capable of reacting to issues when they arise. Remote management and troubleshooting capabilities must be utilized significantly to meet this objective.

UTSA must maintain a position on the **leading edge of technology for its classrooms**; as they are an important component of the “face” of OIT and the university both to the students and to faculty. While we need not be an early adopter of the latest and most expensive technology, as we move more toward Tier 1 status, we must certainly stay relevant to our faculty.

With High Definition becoming a widely used standard for video components, UTSA needs a plan to upgrade all conventional classrooms, laboratories and special venue facilities to High Definition (HD) video. Incorporating HD and digital components into the teaching facilities will complement the teaching and learning experience with crisper images, increased access to recorded lectures and improved collaboration. This upgrade includes the Interactive Television system (ITV).

Additionally, emphasis must be placed on enabling more students to remain in the university using all our facilities and delivery methods in conjunction with the latest technology. Academically successful students are able to engage or interact in learning environments, relating new information to prior knowledge. They retain what they learn in a lecture and use that information across multiple environments to recognize new patterns and gain a better understanding of the materials presented. However, students with poor academic performance and those most prone to leaving UTSA prior to graduation often have problems making correlations to prior knowledge. They may attempt to engage, but quickly become overwhelmed either because they cannot retain the information presented or because it was presented in a way they could not easily comprehend. We must expand our ability to

capture classroom lectures and deliver this content on any platform the student chooses to utilize. With the dynamic nature of students' use of technology, we must be able to adapt our methods to their needs. In other words, we need to remove as many hurdles from the student's progress as possible and continue to evolve as their needs change.

Our challenge is to adopt technology that enables students to problem-solve, explore, and make "smart" mistakes while having access to all available materials at their convenience. Only by placing the students' needs as a priority and thinking as a "best in class" adopter of academic technology can we achieve our goals as a university.

# Leveraging our Assets

“Beyond  
the Walls”

Over the past decade, technology implementations have become far easier for infrastructure teams and technologists, yet it still remains a significant challenge to leverage technology in such a way that provides measurable improvements towards our goals. The primary mission of the leveraging arm is to **assist UTSA students, faculty, and staff in utilizing technology** to their strategic advantage, whether their tasks are administrative, managerial, or delivering the educational and research missions of UTSA.

Most of the measures used to define Tier One institutions are focused on research expenditures, funding, the number of graduate programs, and the academic qualifications of incoming freshmen. In looking at the Office of Information Technology as a Tier 1 organization within a Tier 1 university, we must determine the **key measurements that indicate our organization's status** towards being Tier 1. Determining those measurements and defining related goals, monitoring our progress towards achieving those goals, and **putting strategies into place** that leverage the infrastructure and services OIT provides are the main objectives of our leveraging group.

If we look at our resource allocation and effort today, we find that overall our focus is not directed mainly on faculty and students. While we provide services for the whole campus, we really do not impose a priority model for our support that addresses the mission of the university. OIT needs to adopt a **focused model of priorities** that is more evident to the campus. We must provide a distinguishable focus towards faculty and student services and support. This must be done without adversely affecting staff support. We must work collaboratively with the University community to develop ideas and concepts in support of teaching and learning, community engagement, and research. We will advance the University's mission of access and excellence by employing best practices in instructional design, video production, and operational efficiency.

## Training

One of the key services we must offer to leverage our infrastructure is training. Faculty need to be provided with **timely and useful training** on the topics and tools they will use in delivering technology-supported courses, and students need access to training in order to use the technology provided by OIT (MyApps, SharePoint, etc) and the use of software tools necessary to complete their coursework (SPSS, Matlab, etc). We must be able to **link up training opportunities** with both faculty and student needs in a methodical, automated fashion. Successful training efforts will include both face-to-face and online resources and will result in more effective education and improved student academic performance.

As we cannot provide training and support for every technology that exists on campus, we must identify and promote **university standards for technology**. For example, what is our official course

management system or clicker technology? We must establish these standards and build our training efforts around them. We cannot spread ourselves too thin or we lessen our ability to reach our goals.

Our leveraging model must be based on partnership and training, rather than simply turn-key support. For example, as the number of hybrid and online courses increases, we must move away from a model where our staff is completely responsible for course creation, content migration, etc. We must assist the faculty in achieving these functions themselves over time.

## Video

Video needs need be supported across a spectrum of use: from lecture capture/streaming to webcasting to mobile video to broadcast quality, to well-produced video products. The use of specific **video technologies must to be aligned with the teaching and learning mission** of the university. Non-aligned projects should be supported as time and resources allow, and should be produced on a cost-recovery basis. UTSA is in the enviable position of having the ability to professionally support all of these video needs. These capabilities need to be more consistently communicated to the faculty so that we can better support the use of video in their classes.

## Instructional Design

One of the most critical areas where we need to focus our leveraging activities is providing **research-informed current instructional design** support for faculty as they use educational technology in their courses. Templates, "course in a box" and step-by-step products could be developed and disseminated to interested faculty in order to facilitate rapid course development, but deeper and more innovative approaches will be supported through partnerships with the developing faculty. Producing "best practices" and white paper documents based on research will ensure that we remain pointed in the proper direction.

Students must also be provided technology support. OIT must establish strategies that also **help students leverage the technology resources** at their disposal. Students should not be able to get through their academic career and not be aware of the technology resources available to assist them. Coupled with an updated student technology support model, the activities focused on helping students take advantage of the technology available to them should improve student academic performance.

## Communication and Marketing

Another key activity of improving the utilization of our services is communication and marketing. We must be very strategic and deliberate on what we do in this area, and continue as we have started in establishing goals and metrics to determine the success of what we do. As mentioned earlier, we need to establish more focus **by targeting faculty and students more heavily**.

Customers should be able to choose how they want to communicate with us. We must offer both push and pull options that allow customers to opt-in to receive communications from OIT by topic area, Customers should not receive any communications that they did not ask to receive, with the exception of catastrophic emergency communications. Every deliverable coming out of OIT is produced with the OIT brand in addition to the UTSA brand. OIT has a high brand perception within the UTSA community.

## External Grant Opportunities

It is important that OIT be in a position to **respond to appropriate grant opportunities** that can provide funding, research, development, and implementation capability for leveraging technology to improve our educational capability. Successfully competing for external grants is also recognition of our ability to support the research and teaching missions of UTSA while driving innovation across the campus.



# Information Security

“Protecting  
the Walls”

A Tier 1 institution understands that to ensure adequate protection of its information resources, a **risk-based approach** must be employed to prioritize activities to protect against unauthorized information disclosure and modification, as well as disruption of systems supporting essential business functions. An inadequate information security program can result in disruption of mission critical business processes, sustained reputational damage, loss of grants and other funding sources, legal expenses, fines, and substantial personnel commitment. Effective information security extends far beyond centrally-managed technology. A culture of information security must be embraced. Information security is not something that can be bolted on – it requires both **centrally-managed and distributed technology management**, supported by effective processes, and behaviors adopted by all users of university information resources. And this requires strong executive level support and a top-down approach.

Effective information security at a Tier 1 institution is a challenge due to constant changes in the IT environment, ever-expanding compliance requirements and the rapid pace at which threats are evolving. With adoption of cloud computing the boundaries of the network are blurring. With the proliferation of mobile computing and personally-owned devices, risk is increasing while control is decreasing. Threat sources and motivations are diverse. Cybercriminals profit from fraud, companies and foreign governments gain competitive advantage from information theft and insiders cause damage by inadequate training and negligence. Though university information resources are attacked millions of times per day by external attackers, most data breaches are due to insiders via negligence, inadequate training, insufficient procedures, and malicious intent.

## Risk Management

Effective information security begins with a firm understanding of the university's information and its relative importance. This will ensure that the right level of protection can be applied to IT systems based on their sensitivity with respect to confidentiality, integrity and availability, as well as applicable compliance requirements. Data classification, system classification and system inventory processes will be used as the basis for a **tiered approach to systems security and threat management**. This will reduce the burden on central OIT and distributed IT staff, allowing them to focus scarce time and resources on the security of systems that are highly sensitive. Data owners will perform **annual risk assessments of sensitive systems** in collaboration with business process owners and OIT to validate that the level of risk associated with those systems is acceptable. When the risk exceeds a business unit's risk tolerance, the data owner will develop and implement plans for the necessary controls and resources, or in certain cases the business unit will accept the associated risk.

## Systems Security

Strong protective and detective controls are required on IT systems because controls on servers and endpoints are the last lines of defense. Appropriate baseline security controls must be deployed to all devices. An **enterprise-wide Active Directory in conjunction with a configuration and asset management system** will allow for these controls to be deployed and validated. Additional controls will be deployed to higher sensitivity systems. Timely operating system patch management will reduce the window during which vulnerable devices are exposed to threats to mere days. Since most attacks have shifted from attacks against the operating system to attacks against applications, application patch management for the most widely-deployed applications will ensure a more holistic approach to patch management. Since the effectiveness of malicious software detection continues to degrade industry-wide due to the skyrocketing number of malware strains and other factors, the enterprise malicious software detection system will require active and constant management. Application white listing will be implemented on high risk systems to further reduce the likelihood of malicious software installation. Automated vulnerability assessments of sensitive servers and multi-user applications will be performed on a regular basis and will become an integral process for identifying and remediating vulnerabilities.

Faculty, staff and students need to be able to access information resources regardless of their location via home broadband, cellular networks and Wi-Fi, and they'll be doing so increasingly from smart phones and tablets. Since many of these devices will not be controlled by the university, a security posture assessment system will be implemented to allow for quarantining and remediation of devices connecting to the UTSA network which do not meet **minimum security requirements**, such as being current with security updates and running approved malicious software detection software.

## Threat Management

The university currently relies heavily on detection of attacks from external sources. This is no longer a viable methodology since millions of attacks against UTSA systems occur each day, identifying the attacks which must be given attention is difficult, timely reaction is often infeasible (especially outside of business hours) and by the time an attack is detected, the damage may already be done. We will move to a **protective threat management model**, supplemented by around the clock detection managed both by OIT staff and by an outsourced provider capable of providing support 24x7. An intrusion prevention system will be implemented at the network border to automatically block attacks based on attack signature and the reputation of the source IP address that is interacting with the network. The intrusion detection system will further identify and report potential attacks which we chose not to block by default, both from external and internal sources. And because web sites have become the most prominent malware attack vector, a network-based malicious software detection system will be implemented in conjunction with a system which will allow blocking of web sites hosting malicious content. An incident response team made up of OIT staff will be formed and ITAs and ISAs will be trained to assist on a local level to ensure **effective incident detection, reporting and response**.

## Security Awareness, Outreach and Consulting

Nearly half of data breaches are caused by insiders and human error is responsible more than 60% of the time. Because of this it's essential that end users understand that they play a critical role in preventing breaches. OIT will **expand its awareness campaigns** using a range of delivery methods to target general users and specific audiences in language they can understand in order to educate them about risk, threats and steps they can take to protect information resources. OIT will be expanding awareness and collaboration through regular ISA and data owner working group meetings and by partnering with departments, committees and working groups to educate their members and solicit feedback to better understand business needs and adjust the information security program accordingly. The current unstructured, un-promoted consulting function will be expanded into a set of specific consulting services to assist with security architecture design, control analysis and security plan development.



# Policies and Procedures

“Describing  
the Walls”

A Tier-One institution fosters a passion for exploration of ideas, for learning and debate. Policy serves to establish the level playing field which supports the pursuit of new ideas. Though dispute is encouraged, policy is founded in regulatory and statutory realities that have been devised and adopted by the leadership of the institution.

In order to achieve tier one status UTSA will need to **evolve educational programs, policies, practices and procedures** that provide a continuity of governance and regulation, while encouraging advancement. The policies will provide a background, a separate infrastructure that permits currency, exploration and dissent while maintaining a solid and informed approach to governance and regulation.

OIT needs a great deal of procedural stability, based on principles and experience, to undergird the development and expansion of services and technologies. If the department is charged with supporting the kind of endeavors that would lead to Tier 1, it is critical to expand the technical and procedural infrastructures that support the university’s primary mission. It is also necessary to bridge any gaps between OIT and the university’s leadership and to ensure our alliance is built upon excellence and quality.

OIT will continue in its efforts of reviewing, updating, and reformatting its policies and standards, and establishing new policies as needed. It is important that **policies and procedures be maintained and revised based upon currency in issues** and projects which require policy modification or guidance. A new architecture for the design and development of policy and self-help must be established. The complexity of technology policies has increased dramatically over the last few years, and application of the policies must become easier.



# Project Management

“Building  
New Walls”

It has become second nature to use the term Project for every endeavor an organization conducts and therefore almost everyone in an IT environment has engaged in a Project at one time or another in their career. But, just because the term is used often, it does not mean that an organization is at the top of its game when it comes to Project Management. In order to keep up with the demands of an ever growing institution like UTSA, the Information Technology Department has instituted a Project Management Office (PMO) to **implement project structure** and therefore increase the number of successful projects delivered.

However, it is not just about increasing the number of successful projects. With the University on its path to becoming a Tier One institution, every group must adapt a new mentality to face up to the challenges and opportunities. The OIT PMO must be the foremost authority for OIT Project Management Framework and Methodologies. It must have an established **documented framework for managing work packages at all work levels**, and all Strategic Initiatives should be managed by a certified Project Manager from the Project Management Office using the established methodologies. These methodologies should promote and require criteria and metrics for what constitutes successful projects at all levels.

The PMO must develop and maintain a library of techniques, processes and best practices (One stop shop for training, templates and tools) online for use by the entire organization. Following these practices and utilizing the resources should enhance success of projects of all sizes and complexities.

In the bigger picture, the OIT PMO is managing projects that engage every area of the university. Our goal is to define success for a project from the university's perspective. For example, FAIR is not successful until all faculty are using the application successfully (and painlessly), and the university is reaping the benefits of the single source of faculty information.

In this role, we will work with every area of the university, where and when appropriate, to ensure our success.





## Summary

OIT is in an excellent position to move itself towards an organization that exemplifies excellence, collaboration, and strategic partnership. We are not starved for skilled employees, but we do need to ensure that employees are in positions that best take advantage of their skills, that skills continue to be enhanced throughout the organization, and that **morale and job satisfaction rank high** at all times. As we have already begun our journey towards Tier 1, we now need to truly set our sights on the end goals, and take deliberate steps towards those goals.