University Information Technology Services

Annual Report 2007

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February 2008
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I. EXECUTIVE SUMMARY

The year 2007 brought several significant technological and organizational events impacting the central support units. This report provides an overview of The University of Arizona’s University Information Technology Services (UITS) organization, including a summary of accomplishments and how those contribute to supporting the University’s mission and strategic plan. This report will also outline critical issues UITS faces in the coming years—having the capability and capacity to deliver seamless business, enterprise, research, and academic applications through a reliable, resilient, and secure network.

University Information Technology Services is a newly formed organization created by the integration of three previously separate organizations. The Center for Computing & Information Technology (CCIT), Learning Technologies Center (LTC) and Office of Student Computing Resources (OSCR) now report to the University’s Chief Information Officer. This integration allows for closer coordination and alignment of services and resources to better serve The University of Arizona.

The accomplishments by UITS over the course of the past calendar year are numerous.

- The year started with a serious information technology security incident, resulting in disruption of services in the University Library and Procurement Services. Staff from UITS units as well as from all over campus were instrumental in addressing and resolving this incident. UITS was successful in promoting a heightened sense of security awareness following the incident and as a result, the University President endorsed a strong directive regarding requirements to improve security measures for technology.

- The approval of a student technology fee enabled UITS to make progress on wireless coverage for the campus. Through the efforts of UITS, internal financing was approved so that initial implementation of critical campus areas was completed by opening of school in the fall of 2006. Priorities for the location of wireless implementation were established using student input. An increase in the student technology fee was approved for fiscal year 2007-2008, allowing for further wireless coverage in residence halls and some instructional facilities prior to student arrival in the fall of 2007. The wireless coverage is now about 70% complete, with a total coverage of approximately 7 million square feet and 80 buildings.

- In March 2006, the University Finance Committee approved a change in the funding mechanism for voice and data network services to a “per FTE” model. Campus representatives, called the Network Funding Implementation Team (NFIT), were appointed to implement this significant shift in billing. From the fall of 2006 to present, this group worked to identify issues and decision points to be resolved before implementation. The team decided on the exclusion criteria for FTE, which data and voice features to include in the model, and how to gain campus acceptance. NFIT team members presented the FTE funding model to many groups, ranging from large campus community forums, to sessions with individual deans, to the President’s Cabinet.

- An advisory group comprised of prominent campus researchers was instrumental in the acquisition of a super computer system manufactured by SGI that added a six-fold
capacity increase from the previous HP system. This was accomplished within the existing budget. Members of this advisory group committed valuable time over many months to work through the procurement process. The success of this initiative is evident in the increased usage of super computer resources. A further collaboration is being finalized where departments or colleges are contributing to a super computer cluster which will further increase capacity.

- In the Fall of 2007, a new University Information Security Officer (UISO) was appointed with the challenge to develop and deliver a comprehensive information security program for the University of Arizona, in addition to being responsible for policy and planning, education and training, compliance, prevention and risk assessment. The UISO reports to the Chief Information Officer, with an additional reporting responsibility to the President of the University.

- The importance of the centrally supported course management system Desire2Learn (D2L) was acknowledged by a continued increase in usage. A great deal of emphasis was placed on support of D2L and permanent funding was identified for software maintenance, hardware support, and staffing for user support.

- The establishment of the Information Technology Student Advisory Board (ITSAB) enables UITS and the campus to seek direct input on establishing the needs and priorities to support students’ information technology requirements and how to best use the student technology fee.

- Financial Bulletin #23 provided an impetus for UITS to market itself and its portfolio of billable services to a broader customer base. Departments and units are taking advantage of UITS server co-location, backup support services, and server administration with a steady growth during 2007. In addition, workstation support added significantly to the client base. A contract with Procurement and Contracting Services added approximately 75 workstations during 2007. The College of Education is our newest client, adding workstation support, server administration, faculty technology support, and student laboratory management for the entire college.

The ongoing challenges facing UITS are many. In order to provide a reliable, resilient, and secure network to deliver seamless information technology services, UITS must focus first on the network infrastructure, then on security, and finally on the replacement of enterprise systems.

The Network Master Plan was endorsed and supported by the President’s Cabinet. The continued challenge is to find strategies so that we can take incremental steps to find funding to achieve the long-range objectives of a robust and highly functional network infrastructure. If the network is not reliable and resilient, the required services cannot be delivered. It is the foundation of the business of the institution.

Information security is an essential component to all institutional operations. It includes network security through strong firewall protection and physical hardware measures as well as protection of sensitive data and personal information.

In November 2007, the President’s Cabinet requested that the Chief Information Officer assess what would be required to go forward with an enterprise systems replacement strategy. The current suite of administrative systems is technologically very old and the ability to operate and
maintain these systems is at great risk. The University of Arizona is one of the few major universities that have not replaced our enterprise systems and we are at a competitive disadvantage as a result. UITS is in the process of developing a strategy to successfully overcome this obstacle.

Another challenge is to become more cost effective in overall information technology spending. To accomplish this, the CIO will continue to work closely with colleges and departments to recentralize information technology services where appropriate.

The CIO has placed a strong strategic emphasis on improving our capacity so we can continue to expand our service base. We have been in negotiations with the College of Engineering for the last several months, and we are confident that they will be migrating from their departmentally provided services to the centrally-supported model. Our challenge will be to continue to analyze our costs and find ways to provide exceptional service at the lowest possible cost to the colleges and departments while employing excellent technical staff to fulfill our contracts.

The Network Technology Solutions group continues to advocate its willingness to work with departments and units to convert their departmentally-managed networks (called CPE’s – Customer Provided Equipment) to a centrally-managed model. In the past several years, several units have taken advantage of this opportunity, thus receiving an improved level of network technology and a guarantee of central network support services for the future. This direction coincides with the goal of the Network Master Plan, that of planning for future growth and demand. The challenge is to continue to educate departments and encourage them to make this transition, thereby saving money for the departments and improving the operation of the core network.

UITS will continue to work very closely with campus customers and other information technology support units to make sure we understand the needs and co-develop appropriate solutions. As always, we take great pride in providing expert and professional support for the campus. We continuously look for ways to be more efficient with investments and resources, and remain open to future discussions of campus-wide consolidations.
II. CONTRIBUTIONS TO STRATEGIC PLAN

Strategic Direction 1: Prepare Arizona’s Youth and Ensure Access and Opportunity

The following list illustrates how information technology can support this strategic direction.
- Technology tools and services as enablers.
- Provide support for the use of technology.
- Provide the conduit to accessing information through network connectivity, commodity internet, and Internet2.
- Provision and support online learning environments and tools, such as D2L and podcasting.
- Provision and support for communications tools such as email.

Strategic Direction 2: Engage and Graduate Students Who Can Contribute to the State, Nation, and World

Knowing how to effectively use technology is crucial to succeeding in today’s world. At a very basic level, contributing to the world can be achieved through the simple use of email and the internet. Part of our responsibility as the central support for information technology is to make these tools available for students to use in their academic life and in their future careers.

Strategic Direction 3: Provide World-Class Research That Improves the Human Condition in Arizona and Beyond

The recent iPlant award is a good example of how UITS contributes to world-class research here at the UA. This project is touted as developing a new technological approach to how research is conducted through a cyber infrastructure. The most foundational component of this new environment is the network. Not only will it be used for communications among the researchers but it will also be manipulated to support the new research tools to be developed. UITS is responsible for the provisioning of the network. Another foundational component is high performance computing resources. Calculation intensive data analysis can be more easily conducted with process-intensive computers, which is the newly acquired SGI environment. UITS is responsible for the support and maintenance of these core resources.

Strategic Direction 4: Partner With and Serve the People of Arizona

Many of the specialized activities of our support groups extend beyond the boundaries of the UA. We quite often work with K-12 teachers in developing and/or expanding online learning environments. We actively seek out opportunities to partner with regional entities to address common goals. For example, we are investigating the possibility of sharing network access credentials between Pima Community College and UA so students can access online resources from any of our physical locations. In the past, we partnered with TUSD to launch a Cisco Academy program taught in local high schools. We will also partner with the City of Tucson as we build the network infrastructure for the new UA Science Center in the Rio Nuevo initiative.
III. CHALLENGES AND STRATEGIES

The ability to provide advanced information technology to achieve instruction, research, and outreach missions and provide an infrastructure to support these missions remains critical. Enhancing the current information technology environment with seamless simplicity, robust and secure technology, and unrivalled capability will strengthen the University’s academic excellence, intellectual creativity, and spirit of community.

Because directions set for central information technology are so dependent on directions set for the institution, it is difficult to define a strategy focused only on UITS without also defining a strategy for campus. Therefore, the strategy presented here will represent a combined perspective.

In order to accelerate the rate of technological innovation in support of the University’s goals and receive better strategic return from its information technology expenditures, we will move forward, internally and on campus, with the following basic objectives:

- Eliminate as much redundancy as is possible and sensible
- Look for solutions and partnerships that are cost effective
- Find ways of utilizing all campus information technology resources more efficiently and collaboratively
- Recognize security as a common element within everything we do

What follows are areas that warrant more specific strategies.

Academic Technology

While the use of learning technology is clearly important to UA’s mission, the support and use of various tools and technologies is pursued independently by a variety of different groups. The Learning Technologies Center does provide a central support service for units and individuals to use when needed. They also support several core instructional tools: Desire2Learn, Polis and Sakai. Departments and units also use a variety of tools specific to their discipline and unit.

Some feel having a variety of tools is advantageous and allows faculty the ability to choose a product most comfortable to use. One challenge with so many tools is deciding which tools warrant central support. Another challenge arises when faculty move from one tool to another; it’s not always easy or possible to succinctly move the course material between tools. Students also have to deal with using multiple tools across different courses.

Administrative Computing

There is an ever-increasing need for accurate, integrated information not limited by existing functional boundaries. Our ability to address this need is restricted by systems that are aged and functionally out of date. The central systems are surrounded by extensions, augmentations, and supplemental systems maintained by individual departments and other operating units.
In November 2007, the President’s Cabinet requested that the Chief Information Officer assess what would be required to go forward with an enterprise systems replacement strategy. The current suite of administrative systems is technologically very old and the ability to operate and maintain these systems is at great risk. The University of Arizona is one of the few major universities that have not replaced our enterprise systems and we are at a competitive disadvantage as a result. UITS is in the process of developing a strategy to successfully overcome this obstacle.

**Network Infrastructure**

The network must minimally keep up with and preferably exceed the speed demands of the community. We have a 10-year vision in place with the Network Master Plan, which has been completed and recognized as a priority strategic direction for the University. A new FTE based business model will be instituted beginning in the 2008/2009 fiscal year. Wireless is being deployed with the funding from the recently approved student technology fee.

Additional funding for the Network Master Plan is our next big challenge. The core of this funding needs to be focused on upgrading the core campus network, the internal building networks and the quality of service components, such as redundancy and stability.

**Research Technology**

The role and importance of information technology in support of research continues to grow. Primary support for researchers falls to the local technical support units in the colleges and departments. In addition to the unit specific support, there are several centrally supported high performance computing resources administered by UITS, such as the High Performance Computing System and the Research Support Group. The remaining challenge is to define whether there is a need for additional resources.

**Security**

The recent security incident has driven security to the very top of the priority list. Protecting the campus network and information assets continues to be a challenge and we strive for more proactive approaches.

Securing the university network, computer systems and data is a challenge given the uniqueness of the environment: heavily decentralized, diverse, open network with a substantial amount of networked devices accessible from on and off campus where information technology security roles and responsibilities vary depending on the campus department or college. Add to that the amount of valuable information available—personal, medical, and financial—and the University becomes a huge target. There is a dramatic increase in the level of activity focused on the end user to steal identity, compromise machines and propagate viruses. Phishing, Spyware, and brute force password attacks are now commonplace. The complexity of these threats coupled with current and upcoming federal and state legislation require that we strengthen our security posture specifically with respect to the interface between campus and the external internet.
We have come to a point where we must move from the open environment our community has come to expect to a more secure and monitored environment that more effectively secures our campus in a consistent standardized manner without limiting our academic freedom. Given the limited centralized network and systems staff dedicated to security, our future direction must include implementing security related processes and procedures throughout campus. These processes and procedures need to promote and enforce responsible computer and data use amongst all campus affiliates. This will require setting University policy, standards, guidelines and best practices that everyone must follow. We must educate users on their responsibility and hold all members of our campus community accountable to help minimize the University’s exposure to the ever growing number of threats.

Servers and Storage

In response to a growing momentum for centralized server and storage services, UITS will continue to expand these offerings. An important step to anticipating need is to understand the pattern of applications and data across campus. This information will allow the University to make judgments about which systems and data should be managed centrally and those that should remain in the units. What is also needed is a sizable investment of funding to “jump start” the service to a level that can handle a large increase in demand. Purchasing more upfront will allow for bulk rates thus potentially lower fees for campus units.

It is very common practice for departments and units to acquire and maintain servers to support various applications and services specific to their unit. Many times this equipment resides on individual desks and/or closet space. Very few units have the resources needed to locate their equipment in a facility consistent with UITS standards. Nor do they have 24x7 monitoring and support. As was seen in the recent security incident, this practice has become a very risky vulnerability making it exceedingly difficult to protect the information assets of the institution.

In any case, this issue is tied to the overall concept of centralization which requires a much broader decision making body. Until then, UITS will continue to offer these services and respond to opportunities as they arise.

Summary

The challenges are numerous, but the leadership of UITS is poised and ready to execute current strategies and continually analyze new technology innovations that might enable even faster progress.