

INFORMATION TECHNOLOGY SERVICES

VISION PLAN

2003-2004

Executive Summary

Information Technology Services (ITS) provides mission-critical information technology services to University of Texas at Austin students, faculty, and staff. A significant part of the ITS mission is to support the University's academic programs by providing an information-technology-based environment, technological capabilities, and able staff who can assist students, faculty, and staff in their learning, teaching, research, and outreach activities.

Pre-allocated, Ongoing and One-Time Capital Funding for Fiscal Year 2003-2004

Pre-allocated to ITS **\$1,930,316**

This pre-allocation represents a 10.00% increase over the allocation for 2002-2003. See "ITS Infrastructure and Services Supported or Supplemented by Funds Other than ITAC" (page 5) for details.

Ongoing Operations **\$2,574,863**

This ongoing operations total represents a 10% overall increase and \$165,000 increase to fully fund the Microsoft Student License over the allocation for the year 2002-2003.

Student Microcomputer Facility (SMF) Operations
Payment on UT System Loan for SMF (Life Cycle Funding)
Help Desk and Training Services
Student Computer Use Survey
Microsoft Student License
Student Software Bundle
Network Web/File Storage

Summary Discussion of Projects Proposed for ITAC Funding for 2003-2004

Ongoing Operations **\$2,574,863**

Student Microcomputer Facility (SMF) Operations **\$536,831**

Salaries of our professional full-time classified staff have increased as well by an average of 5% per year and benefit costs have increased by an average of 12% per year. The third floor of the Undergraduate Library has been equipped to provide computers and printers in addition to the 2nd floor SMF. This new area requires additional staffing. Additional recurring funding to support the SMF is required to accommodate the increase in salaries and the increase in the cost of benefits.

Payment on UT System Loan for SMF (Life Cycle Funding) **\$360,000**

The Student Microcomputer Facility is on a three-year replacement cycle. This funding is aggregated to upgrade the equipment and software in the SMF. Usually a loan is obtained to completely upgrade the SMF and the annual funding is used to make the loan payments.

Help Desk and Training Services **\$763,032**

The goal of the ITS Help Desk is to answer questions and help solve problems for all computer users in the University community. The recognized strain of call center work and the transient nature of student employees make it difficult to hire and retain Help Desk staff (approximately 25 students and 11.75 full-time employees) with the knowledge and skills necessary to support the UT community. The Help Desk also

works closely with the ITS Training group to make sure short courses are offered to students on topics of interest and to help design and deliver a Freshman orientation program that communicates with more than 7,000 students at the beginning of each year. The requested amount is 75% of the total costs based on an allocation between services to students and services to faculty and staff. The allocation is based on activity logs maintained by the Help Desk.

Student Computer Use Survey **\$20,000**

Beginning in spring 2002, ITS began an annual information technology survey with the intent of monitoring the utility and perception of the services offered by ITS and other campus IT providers. The initial survey was sent to a random sample of 2,000 users and the information reaped has been used to enhance the services where appropriate and to phase out services that are no longer in great demand. The survey data has also helped identify areas where new services are desired. The effectiveness of the survey depends on its being conducted at least once a year for comparison and analysis.

Microsoft Student License **\$345,000**

The UT System Chancellor's office funded the Microsoft software license from September 1998 through August 2002. Beginning in Fall 2002 the amount of UT System support decreases each year until UT Austin assumes the entire cost of its portion of the license. This amount of ITAC funding enables ITS to offer to all students a suite of Microsoft software that most find essential: the Office suite (Word, Excel, PowerPoint, Outlook, et al.) plus Windows upgrades, plus Visual Studio. This amount will increase next year when funding from UT System ends.

Student Software Bundle **\$200,000**

The student software bundle refers to licensing and support for student-owned systems of additional software that delivers substantial large-volume economies while increasing information and network security, including anti-virus, firewall, other security tools, Eudora, MacOS upgrades.

Network Web/File Storage **\$350,000**

Growth in demand for online disk storage is driven by need to support personal Web pages, collaborative projects, roaming e-mail access, and backup for personal devices (especially mobile and wireless devices). This requires a server and storage investment which is being amortized over three years for allocation of 75MB per student.

Proposed New Ongoing Operations **\$852,680**

Internet Bandwidth **\$100,000**

Internet bandwidth demands have been increasing 100% each year for the past two years. The increased popularity of wireless services and Web-based services has continued to drive the demand. The student contribution of the total growth in Internet cost is 50% of the costs not accounted for through Resnet services. The total cost for 2003-04 bandwidth is projected to exceed \$200,000.

Network Core Infrastructure Hardware Replacements **\$542,680**

The annual cost to replace the UT Network's core infrastructure in all of the various buildings is \$ 1,085,359 based on a 4 year life cycle. 50% of this cost is attributed to student usage in alignment with the bandwidth usage across the network.

Security Services **\$125,000**

Security risk continues to grow, directly affecting academic area ability to fulfill academic, research, and business functions. The ITS Information Security Office has seen a marked increase in incidents handled -- 100% from 2001 to 2002; another 200% from 2002 to 2003. One additional security analyst is needed to identify and assess security solutions for academic areas. The analyst would create strategies, standards, and guidance for implementation and support, and link central security services with academic security operational practices. Solutions to be piloted would include a departmental vulnerability scanning environment, typical "firewall/fire blanket" protections, and appropriate intrusion detection and prevention tools. The total is based on an average annual salary of \$65,000 plus fringe benefits and \$40,000 for additional software and hardware for the Security Office operations.

Technical Staff **\$85,000**

Additional technical staff is needed to provide robust support for e-mail. This total is based on a \$60,000 salary plus benefits plus basic equipment

Proposed One-Time Capital Expense Projects for 2003-2004 **\$870,000**

ITS identified the following list of critical one-time capital projects requiring ITAC funding. Based on past ITAC funding patterns, we expect about one-half of the capital projects to be funded. The remainder of the unfunded projects or portions of projects will be shifted into later years unless alternative sources of funding can be identified. The projects are listed in priority order.

Upgrade Core Network Switches **\$80,000**

Core switches will receive additional equipment. Interconnections between the two UTnet core switches will be upgraded to 10 Gbps, thus providing capacity for several other buildings to connect at this speed. The highest speed connection currently available is 1 Gbps.

Life Cycle Upgrades for Servers and Storage **\$223,000**

Oracle server processors and memory will be upgraded to keep up with the course management usage growth. Performance upgrades for e-mail storage are needed. An upgrade to a main router will permit more high speed connections and delay the purchase of a more expensive second router. Server life cycle upgrades for Access UT, Blackboard, CLIPS/Tamino and Web mail are required.

Student Community Area in UTDirect **\$ 80,000**

Student Government has proposed joining with a student based Big 12 cooperative initiated at Oklahoma State University to develop student services tools on the Web collaboratively. They have asked for our assistance in this effort. ITS would provide a server and backup to host the software and one-time professional developer time to manage the integration of the services into the existing student portal, UT Direct, by students provided by Student Government.

Public Network Authentication System **\$60,000**

The public network authentication system for wired/wireless will be upgraded to increase capacity and improve performance. The present system was written locally and is running on desktop hardware which suffers from scaling issues. This upgrade would move the critical components to commercial systems engineered for that purpose.

mail.utexas.edu Upgrade **\$252,000**

Mail on mail.utexas.edu, the primary student e-mail server, is protected by a second storage filer called a mirror. Growth and performance are exceeding the original mirror's capability. The original load balancing hardware can no longer be maintained and will be replaced with current equipment.

Web Central **\$55,000**

Three upgrades are needed for Web Central: the addition of Open Source Web serving using Apache/MySQL/PHP which will take advantage of the vast amount of support, documentation, and recipes that use this common open source platform; software and server to provide more in depth and flexible traffic reports so that publishers can better analyze Web sites; and a development server for ColdFusion to provide both a better testing and a more robust production environment.

Network Management **\$45,000**

Hardware and software used for management and monitoring of the campus network will be upgraded. ITS presently manages over 2,000 network devices and tracks the usage patterns of over 45,000 hosts.

Enterprise Management Tools **\$ 25,000**

Additional software and hardware that simplify and secure as well as providing for manageability and reliability for academic enterprise services such as Web Central, course management, messaging, etc. will be acquired and deployed.

3-D Printing Solutions **\$50,000**

No centrally available printer exists on campus to accommodate the printing of 3-D projects. ITS would purchase this equipment and make it available on a cost-reimbursement basis in the SMF.

Report of ITAC Expenditures – Fiscal Year 2001-2002

Awards and Expenditures 2001-2002

Information Technology Services (ITS) was awarded a recurring allocation of \$2,982,832 and \$360,000 for repayment of the UT System loan for the SMF. The one-time capital equipment allocation was \$594,789. Additional funding of \$312,713 was provided as a credit against Blackboard and Webmail expenditures. The pre-allocated amount is received as a replacement for state dollars that were originally part of the former ACITS budget. This substitution of ITAC dollars for state funds was a part of a University-wide effort to capture state funds to use for faculty salaries. This substitution of funding began in the 2000-2001 fiscal year.

<i>Pre-allocated to ITS</i>	<i>\$1,558,744</i>
<i>Ongoing Operations:</i>	<i>\$1,424,088</i>
<i>Student Microcomputer Facility Operations</i>	
<i>Payment on UT System Loan for SMF (Life Cycle Funding)</i>	
<i>Help Desk</i>	
<i>Student Computing Survey</i>	
<i>One-time Capital Expenditures (detailed below)</i>	<i>\$522,905</i>
<i>Carry-forward to 2002-2003*</i>	<i>\$242,361</i>

* (Help Desk Software and Consolidation for Help Desk projects are still in progress and planned for 2003-04 completion)

One-Time Capital Projects funded with 2001-2002 ITAC Funds

<i>Life Cycle Funding - COM building infrastructure servers</i>	<i>\$208,984</i>
Unix servers currently on three different vendor platforms will be consolidated to a more efficient single platform providing general Unix services for academic support. Old domain controllers for Windows-based services will be replaced. The Oracle backend for Blackboard will be upgraded to support the course load and usage doubling each year.	
<i>Enterprise Management Tools</i>	<i>\$9,685</i>
Additional software, controls, and hardware that simplify the management and reliability of enterprise servers such as Web Central, course management systems, messaging systems, etc. New monitoring software, updated environmental controls such as temperature sensing, and an additional tape robot will be deployed.	
<i>ColdFusion Services Upgrade</i>	<i>\$21,565</i>
Add a second server to split development/instructional and production services as well as provide redundancy. ColdFusion, a Web application development platform, can use the existing EID system and demand on the existing server is expected to double this year.	
<i>Core Router/Switch Upgrade</i>	<i>\$111,752</i>
The core routers and switches in the Network Operations Center will need to be upgraded to remain current with industry hardware/software standards and support the dramatic increases in bandwidth. New technologies to support protocols and services are implemented with new equipment installations. It is proposed that appropriate spares and memory upgrades be acquired for all equipment purchased.	
<i>Mail Server Upgrade</i>	<i>\$150,119</i>
Significant additional use of the University Mailbox Service (UMBS), the primary student e-mail system, and the increased user message store size in particular requires that the system be upgraded with additional processor and storage capacity to improve reliability and performance.	
<i>Virtual Private Networking</i>	<i>\$20,800</i>
It is important to develop hardware/software to enable utilization of Utnet services for users connected through remote Internet service providers. As a myriad of Internet service providers provide rapid deployment of high-speed access in the Austin metropolitan area, UT's ability to provide services to an increasing number of University of Texas at Austin students, faculty, and staff requires a standard service offering. This effort will initiate the essential infrastructure and standards for such a service.	

ITS Infrastructure and Services Supported or Supplemented by Funds other than ITAC

Many services and activities for students, faculty, and staff in the ITS portfolio are funded in whole or in part from sources other than ITAC. The services below receive some or all of their financial support from non-ITAC funds.

<i>Communications</i>	<i>Custom Contract Support Services</i>
<i>Data Center Operations</i>	<i>Departmental Contract Services</i>
<i>Help Desk</i>	<i>Internal Facilities Management</i>
<i>IT Security Office</i>	<i>Management and Administrative Services</i>
<i>Printing Services</i>	<i>Research and Statistical Consulting</i>
<i>Resnet</i>	<i>Software Distribution Program</i>
<i>Student Microcomputer Facility (SMF)</i>	<i>Telesys</i>
<i>Training</i>	<i>UMBS</i>
<i>Unix Timesharing Services</i>	<i>UTNet and Internet Bandwidth Services</i>
<i>Video</i>	<i>Web Office</i>
<i>WNT/Exchange Enterprise</i>	<i>Telecommunications</i>
Total Non-ITAC Infrastructure and Service Funding	\$22,422,056

Appendix A

Network Status

Established in 1987, the Networking Services group of UT Austin's Information Technology Services (ITS) maintains UTNet. UTNet is a campus-wide high-speed digital data network available to all computer users on the UT Austin Campus. UTNet also comprises a core set of network-based services, which are made available to all of its users.

UTNet has grown over the last 15 years to become what it is today: an information resource that is essential to the academic, research, and business operations of the University. Recently, the UTNet backbone network has been re-engineered, which has resulted in a large increase in network performance. The new Ethernet switching core is the current backbone system to which all new and renovated building networks are attached. The complete UTNet system is actually several systems linked together. While some technologies have been replaced, much of the equipment that has been installed over the years is still in use. As such, the UTNet system includes several generations of equipment reflecting the rapid evolution of networking technology.

UT Austin is the largest university in the United States, and consequently the campus network serves a community of approximately 70,000 people (50,000 students and another 20,000 or so faculty and staff) in over 139 buildings, organizations and remote sites. Ten years ago, UTNet served a mere 400 computer located at about 20 sites. By 1992 the number of connected computers had increased to 4,000. From 1994 on, the combination of the World Wide Web and the widespread adoption of low cost, high performance desktop computers led to an explosion in network access and utilization. Currently there are approximately 35,000 computers on UTNet, a number that is roughly twice as large as the number of telephones on campus. The current population includes some 5,700 computers on the ResNet system, a 6,500 port dormitory network for students who live on campus. More than 8,000 dial-in user accounts are supported by the 2,500 lines of the Telesys dial-in system, and over 80,000 users have e-mail accounts on the mail.utexas.edu system.

There are nearly 500 Web servers on campus, with approximately 300,000 pages of information being indexed on a regular basis. Currently, 75 percent of UTNet traffic is Web-related, with hundreds of Web traffic flows per second (each flow is the result of a "Web-click") being delivered by the backbone routers during the busy part of the day. There has been an 8,663 percent increase in the number of assigned IP addresses ("hosts") from November 1988 to May 1998. Traffic moved across the UTNet backbone by routers was measured at 68Mbps during the busiest time of the day in 1993 to 177Mbps during the busiest time of the day in 2003. 2003 Internet traffic has increased 100% over 2002. The increase in traffic has not abated during the last 10 years.

Wireless network services were implemented in 2002 and the early part of 2003 to provide 316 wireless access points and 768 dynamic wireless device addresses for a total of 1,084 total wireless addresses. A new authentication system supporting 3,000 wireless users was completed in the first quarter of 2003.

While everyone depends upon the UTNet system to get their work done, few people ever think about the network and fewer still know how the network functions. Instead, everyone simply assumes that the network will be there when they need it. This level of confidence is an appropriate response, since no one using e-mail or the Web should have to know how the underlying network system operates. This level of confidence is also a powerful indicator of how successful the UTNet system has been in delivering reliable, production-quality services 24 hours a day, seven days a week. From the outside, the network appears to most users as something so reliable that they can take it for granted. The UTNet capabilities to handle the new evolving network based video conferencing technologies and the increased reliance upon data backup and storage across the network are significant as areas where the transparency of the network has been demonstrated. However, a look "under the hood" at UTNet reveals a complex and dynamic system in a constant state of change.

Telecommunications Infrastructure

ITS maintains extensive communications networks for user access to the University's computers from desktop computers and workstations and for data communications between computers and with the Internet. The campus computer network, UTNet, is not a single entity, but a system of networks, equipment, and software that enable information to be sent between campus computers and computer sites all over the world. The network employs optical fiber media for inter-building computer communication.

UT Austin is a member of the Greater Austin Area Telecommunication Network (GAATN), which has completed installation of 250 miles of optical fiber to connect educational and government facilities. The Pickle Research Campus and the main campus are connected by optical fiber. UT Austin utilizes a connection to the Internet through a common carrier by a 155Mbps circuit.

Within individual buildings, local-area networks (LANs) connect to UTNet by means of switches and routers. These switches and routers perform address filtering to reduce message traffic on the backbone and the individual LANs. The result of this network configuration is that a workstation connected to an Ethernet, Token Ring, or LocalTalk LAN in a particular building has access to the campus-wide network and thence to regional, national, and worldwide networks. Telesys Dialup System (<http://www.utexas.edu/its/telesys/>)

ITS provides telephone dial-in services on a monthly fee basis (\$12 per month) to faculty, staff and students who have a desktop computer and a modem. Telesys supports multiple communications protocols and includes features for data compression and error detection. Over 2,500 modems are currently in use serving 13,000 subscribers. Most services require a user ID and password for authentication.

Access to National Academic Networks

UT Austin participates in several national networks (e.g., Internet 2) through which its users can exchange mail and files with colleagues at other sites, get access to databases and servers, and remotely log in to other machines. Most of UT Austin's systems are connected to the Internet. Access to the Internet is provided through the Texas Higher Education Network (THEnet). THEnet connects the UT System component institutions, as well as approximately 300 other educational, governmental, and industrial research organizations and to all major Internet backbones operated by commercial Internet providers such as Sprint, ANS, UUNet Technologies, and Performance Systems International.

The University of Texas System Network (UTSN)

The UTSN is a part of the Texas Backbone Network, which is a cooperative endeavor with State of Texas Department of Information Resources, Texas A&M University, and The University of Texas. The UTSN is an inter-institutional network for carriage, coordination, and integration of voice, video, and computer communications managed and administered from the network operation center (NOC) located in the Service Building at UT Austin. The UTSN is managed by OTS, on behalf of UT System Office of Telecommunications and Information Technology. Management and operational policies for UTSN are established by the OTIT. Policy development is done in collaboration with the UT Clients through the UT System Strategic Leadership Council (SLC) and the UT System Information Technology Management Council (ITMC). Consultation concerning operational procedures, service levels, and technical issues is provided to OTS by the UT System Telecommunications Advisory Council (TAC).

Appendix B

Computer Lab Status

The Student Microcomputer Facility (SMF) has been providing on-campus computer access to students since January 1994. With more than half a million check-ins every year, the 193 computer workstations and on-site assistance in the SMF are available more than 140 hours during a normal long semester week, staying open without closing from Sunday through Friday with additional hours available on Saturday.

Equipment was reallocated to the third floor of the Flawn Academic Center in early 2003 to allow for greater use of multimedia resources in the Undergraduate Library.

Appendix C

Classroom Technology Status

ITS has two technology classrooms. The classrooms are located in the Computation Center building, room 8 and the Flawn Academic Center (the Undergraduate Library) in room 227.

Appendix D

Curricular Innovations

ITS provides servers, technical, and customer support for Blackboard and WebCT course management systems. Also provided is access to Usenet news and to locally created mailing lists and newsgroups.

Appendix E

Help Desk

The goal of the ITS Help Desk is to answer questions and help solve problems for all computer users in the University community. The operation includes a rapid response telephone, e-mail, and walk-in consulting service, with escalations to experts in many disciplines, including Resnet support, Blackboard, applications assistance, new technologies, alternative operating systems, as well as statistical and mathematical analysis. A carry-in service is available to students who may need help configuring their own computers and for those who are dealing with a virus attack or other security concern. The Help Desk also works with ITS Training Services in identifying areas of particular interest to students and then offers classes, both hands-on and lecture, that are then made available at no additional charge through the ITS short course program. The ITS Help Desk responds quickly to many hundreds of contacts every day, with spikes of more than 1,000 contacts on busy days.

Appendix F

Information Security Office

The ITS Information Security Office (ISO) strives to educate, enlighten and empower the UT community to maintain a safe and secure computing environment for University teaching, research, and public service. Their charge is to protect the security, availability, confidentiality, and integrity of the University's information technology (IT) infrastructure and resources. They manage IT security risk, direct university security policy and standards creation, monitor and test IT security, lead incident response and security investigations, and assist technology managers with security management.