Information Technology Support Level Analysis

June, 2003
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EXECUTIVE SUMMARY

A comparison of the information technology services offered by the University of North Dakota (UND), both centrally and by individual colleges, schools and departments compared favorably, in general, with those services offered by peer institutions. However, the study did reveal some areas of concern. These include concerns about:

- Policies and procedures concerning the appropriate use of IT resources and compliance with the Digital Millennium Copyright Act
- Training and user support for the Peoplesoft system currently being implemented
- Hardware and software standards
- Effective use of the university IT Help Desk
- ITSS user support staffing
- Coordination of activities and communication among all the university IT support staff
- Life cycle management and the total cost of ownership of information technology
- Hosting and security of critical software applications
- Multiple electronic mail systems
- Faculty being used as computer lab managers
- Support of research IT needs
- Information technology security

Sixteen recommendations are made to address these concerns. The recommendations are:

1. Establish a process to review the roles, relationship and responsibilities of the CIO and the Directors and staff of ITSS and CILT
2. Revise the UND web site to include easy to navigate links to institutional information technology policies and procedures
3. Develop, publicize and communicate a policy statement addressing the requirements of the Digital Millennium Copyright Act
4. Develop, publicize and implement a PeopleSoft user training plan
5. Develop and implement a plan to provide business analysis support for PeopleSoft users
6. Develop hardware and software standards for purchase and support of new information technology
7. Expand the Help Desk function university-wide
8. The roles and responsibilities of the ITSS User Services and distributed desktop support staff should be reviewed with the goal of correcting the current disparity between colleges and departments.

9. Establish an information technology support council consisting of all university IT support managers and possibly their staff in order to enhance communication and coordination of support.

10. UITC should consider a university-wide Life Cycle Management policy for information technology resources.

11. Develop and implement a plan to provide a centralized hosting service for critical application servers.

12. UITC should create a policy and plan to consolidate electronic mail service across the University.

13. ITSS should initiate a program to train students to manage departmental computer labs.

14. ITSS should develop a list of IT support services available to researchers, communicate these and solicit suggestions for additional research support services.

15. An Information Security Officer (ISO) function should be established.
INTRODUCTION AND METHODOLOGY

The University of North Dakota (UND) contracted with Collegis, Inc. to provide a peer analysis of the information technology (IT) services offered by the University. The expected outcomes include a summary of “best practices” IT services, a summary of those offered by UND and several peer institutions, a gap / fit analysis, and recommendations to the administration at UND. A Senior Consultant from Colleges Strategic Services visited the University of North Dakota on March 13-14, 2003 and again on May 6-7, 2003. Interviews were held with Information Technology Systems and Services (ITSS) staff, the Center for Instructional and Learning Technology (CILT) staff, and representatives from the Library, Housing, several administrative offices, most Deans and representatives from every College and School, and the University Information Technology Council. Appendix 9 lists the names of those interviewed. The University identified five peer institutions for comparison (Southern Illinois University, the University of Missouri at Kansas City, the University of Louisville, Ohio University, and the State University of New York at Buffalo). In addition since the Senior Consultant was recently the Chief Information Officer at East Tennessee State University and is thus very familiar with the services offered there, and that institution has many similarities to UND, it too was included. An information grid was designed by the Senior Consultant and approved by the UND CIO and the Director of ITSS in order to collect similar data from each institution. A combination of web site studies, electronic mail, and telephone conversations provided the peer information. This information is summarized in this report and a number of tables and charts provide visual information on how UND compares with other institutions.
IT SERVICES GENERALLY PROVIDED BY UNIVERSITIES / BEST PRACTICES

Although information technology support organizations vary greatly between institutions, there are several areas that are, or should be, universally supported. These can be grouped into Information Technology Governance and Management, Information Technology Policies and Procedures, Client / User Support Services, Technical Support Services, and Instructional Technology Support.

Information Technology Governance

The purpose of an information technology governance policy is to institute a governance structure (1) to assist the President in executive-level strategic management decisions involving information technologies, (2) to set directions and priorities for information technology in a timely manner, and (3) to develop policies and procedures that will be implemented by the appropriate offices.

The charge to an information technology governance committee should be to assist the President in setting priorities and determining the direction for information technologies in the furtherance of the University’s instruction, research, and administrative functions. The committee should assist in setting long-range strategic priorities, overseeing related policies, and supporting the use of information technology within the University. Governance committees often commission a number of sub-committees or task forces to concentrate on specific technology issues such as administrative systems, academic support, telecommunications and networking. The information technology support organization management should participate, ex officio, in all information technology governance committee and sub-committee activities and should coordinate implementation of committee decisions. An Information Technology Forum is often used to provide periodic opportunities for discussion of current information technology issues by all members of the university community.

Information Technology Services Management

Although titles often differ between institutions, universities generally have a Chief Information Technology Officer (CIO) at the Vice President level reporting to the President, or an Executive Director / Associate Vice President reporting to the Provost or another Vice President. In either model, the CIO or ED/AVP should be charged with planning, vision, and institutional information technology leadership as well as coordinating projects, staff and day-to-day operations. Some institutions (e.g. the University of Memphis) have both a CIO and an Associate Vice President with the AVP having responsibility for managing day-to-day operations.
Information Technology Policies and Procedures

It has become increasingly critical that universities have an extensive set of written and approved polices and procedures. In many cases, these are needed to minimize legal liability, such as potential law suits based on the Digital Millennium Copyright Act. Minimally, the following three policies are imperative and should be sanctioned by the university and communicated extensively.

Fair and Appropriate Use

The primary purpose of a University’s information technology resources is to enhance and support the educational mission of the university. Access to these technology resources is a privilege granted to university students, faculty, staff, and approved guests. These resources include hardware, software, computer accounts, local area networks as well as connections to other computer networks via the Internet. Everyone using these resources is responsible for using them in an effective, ethical and lawful manner consistent with the University’s mission. A fair and appropriate use policy defines the terms under which use of institutional technology resources is granted to faculty, staff and students and what the standards of use of those resources should be. Examples of fair use policies may be found at

http://www.umkc.edu/is/cio/Policy

http://wings.buffalo.edu/computing/policy/Com_Net_Usage.html

http://www.ohiou.edu/policy/91-003.html

http://www.etsu.edu/humanres/ppp/PPP-44.htm

Digital Millennium Copyright Act

The Digital Millennium Copyright Act (DMCA) amends federal copyright law to provide certain liability protections for online service providers when their computer systems or networks carry materials that violate (infringe) copyright law. To qualify for liability protection, the University is required to have a policy under which the computer accounts of users will be terminated if they repeatedly infringe the copyrighted works of others. The objectives of such a policy are to minimize liability while also providing support for the activities of faculty and staff. In the context of copyright and other intellectual property, this means that a designated University official should be advised as soon as possible of any suspected infringement. Sample policies can be found at:

http://www.copyright.iupui.edu/

http://www.system.missouri.edu/ip/
Residence Hall Policies

Students residing in Residence Halls occasionally and increasingly put “stress” on a university’s network by uploading and downloading large audio and video files, often with disregard for copyright laws. A set of written and communicated policies on acceptable and unacceptable use of network resources within the Residence Halls is critical to maintaining acceptable network service and to minimizing legal liability of the University. Some examples of Residence Hall policies can be found at:

http://www.etsu.edu/resnet/
http://www.cit.buffalo.edu/resnet/use.html
http://www.ohiou.edu/policy/91-003.html

Support Areas within an Information Technology Support Organization

Although organization names and distribution of services varies, there are a number of information technology support functions that are critical. These may be offered centrally, or alternatively, some functions may be primarily supported within colleges, schools or departments. In either case, the following services should be available.

Client / User Support Services

This division is typically responsible for providing direct support to users of information technology including desktop hardware, application software, and web site support. Client/user support function includes all direct services designed to directly assist clients in the implementation, use and maintenance of personal technologies.

Software Systems Support

For major application systems this division may have resources that maintain the configuration and security of the application. This may also include programming to support custom modifications, database administration, operations and reporting. Software support is often further enhanced by user liaisons/business systems analysts who have knowledge of both the capabilities of the software and the functional processes being supported by the users of that software. The user liaisons are usually I.T. specialists who work closely with the users to help them realize the full potential of the systems in use and to identify appropriate enhancements. In general, user liaisons
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can be viewed as the intermediary between the functional experts and the technical experts.

Depending on the type of system in use, there may be a requirement for operations personnel to schedule jobs, print reports, and run backups. In general, modern administrative systems can function without the need for an operations staff and responsibility for system backups is shifted to systems administration staff.

User Support

User support services may include help desk operations, user training, desktop support, research support or any other direct service to users of the services of the information technology department. The desktop support group typically has responsibility for new computer installations and establishing connection to the network, software application installation and support, hardware support / maintenance, application training, monitoring of licenses, copyright compliance, PDA support, and life cycle management. Research support often includes training and support on statistical / data analysis software, data analysis, data base support, assistance in programming for parallel processing environments, and grant preparation assistance.

Web Site Support

Support for users designing and using web sites for informational and / or instructional purposes is an increasingly required service provided to faculty, staff and occasionally students. These services include design and development tools and techniques, templates for standardized appearances and ease of use, data base design and programming, training and user liaison support.

Technical Support Services

Server / Operating Systems

Technical Support Services personnel provide infrastructure design, installation, maintenance and support. Their responsibilities include installing and managing servers, their operating systems (e.g. UNIX, Novell, Microsoft NT/2000/XP, Microsoft SQL) and certain server applications. There are two classes of server applications: those that are centrally supported and generally available to a large percentage of the university community, and those that are specialized to specific departmental or program needs. The former include: Email (for faculty / staff and usually students), electronic calendar systems, web sites, file servers, and other enterprise –wide systems. Other function specific applications may be hosted on the central IT servers to ensure adequate technical and environmental support; however, support of those applications may be the responsibility of the functional user/division. Service Level Agreements are a standard method of ensuring that responsibilities are clearly defined and that there is agreement on ownership of these responsibilities. Major considerations for the IT staff that support the server environment include:
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- System administration and management
- Security – physical and virtual
- Backup and disaster recovery planning
- Environment, e.g. electrical, temperature, humidity

Networks

The network support group has responsibility for design, installation, maintenance, monitoring and security of the network backbone, distribution wiring within buildings, usually to the wall jack, and sometimes to the terminal devices. The purpose of the network is to provide users with access to institutional information resources and to the Internet. At an increasing number of institutions, this includes both Internet 1, for commodity web and e-mail access, and Internet 2, for advanced educational and research purposes. Another increasing responsibility of network support groups is the deployment, management and support of wireless networks.

Other services provided by the network support group include management of network components such as routers, switches and hubs. Monitoring and prevention of abuse and “attacks” is an absolute essential. Networked anti-virus software, firewalls, and packet shapers are a few of the tools available to enhance security. Quick response to and troubleshooting problems is expected as network services are now “mission critical.”

Telecommunications

Though cell phones and IP Telephony are gradually changing the nature of telecommunication services, “plain old telephone service” remains a standard. Universities either maintain a telecommunications staff who manage switches, wiring, desktop phones, and telephone options such as voice mail, or these services are outsourced. The decision regarding in-house management or outsourcing is usually based on economics although quality of service is sometimes a consideration. This staff often is responsible for monitoring and billing for long distance services.

Instructional Technology Support Services

Instructional technology

Support of faculty for the instructional use of technology in the classroom or at a “distance” is becoming a mission critical service. Most universities have standardized on a course management system such as Blackboard or WebCT. These systems not only provide standard and easy to use tools for online, web-based courses but also supplement traditional courses, i.e. web enhanced courses. The instructional technology support personnel typically provide faculty with training and support for instructional use of the web and the course management system, as well as training and support for other technology applications. In addition, instructional support staff are often charged with supporting faculty in developing pedagogy to effectively use
technology to enhance learning. Best practices suggest that a faculty and/or staff professional technology development plan (see [http://ats.etsu.edu/ftpdp/](http://ats.etsu.edu/ftpdp/)) be developed and accepted that outlines the developmental support required to enhance the faculty’s ability to use instructional technology. Training may include scheduled, open enrollment workshops, specialized workshops for groups with specific needs, summer institutes or a variety of other methods of including faculty in development activities. Support might include paper and web-based materials, media design and production services, one-on-one faculty assistance and other support services necessary to achieve the instructional goals of the institution. It is usually expected that instructional technology support services maintain and communicate the availability and capabilities of appropriate emerging technologies.

**Multimedia / smart classrooms**

The use of technology in the classroom has increased exponentially over the past few years. Universities are designing and installing a variety or types of multimedia or “smart” classrooms. At many institutions, classroom standards have been developed with extensive input from the faculty who will use these facilities. Thus there is a requirement for support staff with skills in the technology being installed as well as the ability to work with and train faculty. At East Tennessee State University, faculty must receive training (usually one-on-one) before they can schedule a class in a multimedia classroom. Telephones are available in the classroom with instructions on how to access support. Quick response time is critical. Undergraduate and graduate students may supplement the full-time classroom support staff in order to ensure adequate support.

**Student Support**

In spite of the fact that most students have their own computer, central and departmental computer labs are often required and heavily used. Generally, the central IT group manages open access labs while colleges and departments operate labs and computer classrooms with discipline specific functions. Many institutions charge students a technology fee to provide a funding mechanism to maintain lab hardware and software currency. Student assistance and support is usually provided by student staff that have been trained on the services offered to the general student population.

Other student support services often provided include application training, a student help desk, support for the installation and use of personal computers in residence halls and wireless network access.

**Services Provided by Colleges and Schools within a University**

As the information collected regarding the peer institutions indicates, the level of decentralized information technology services provided within academic divisions varies greatly. In cases where there are specialized discipline needs, local support is
essential. This is the case in many Computer Science programs and specialized schools such as Medicine and Law.

When centralized support is provided in a distributed organization, one model that has been shown to work is the establishment of support zones with one or more technical resources assigned to each zone. Zones may be defined as colleges, buildings or floors within a building, but regardless of how zones are defined, the staff assigned to a zone will become familiar with the needs of the users within that zone and thus provide a degree of specialized support.

In a decentralized environment, services that are universal (i.e. potentially used throughout the university) and scalable are often provided centrally. Central service might include administrative systems, server hosting, network services, telecommunications or other services that are generally applicable across a broad institutional constituency. Services that might be provided and supported locally include faculty, staff and student support and divisional computer labs. Electronic mail and other basic network application services, Help Desk, instructional and classroom support are most often provided centrally. However, best practices and effective models dictate that when services are decentralized, support budgets are decentralized as well.
IT SERVICES AT UND COMPARED WITH PEER INSTITUTIONS

A detailed description of the IT support services offered centrally at UND can be found in Appendix 1 and services offered by UND colleges and schools are described in Appendix 2. Similar services provided at peer institutions are described in Appendices 3 through 8. Institutions included in the peer review are:

Southern Illinois University – Appendix 3
University of Missouri at Kansas City – Appendix 4
University of Louisville – Appendix 5
Ohio University – Appendix 6
SUNY Buffalo (The University at Buffalo) – Appendix 7
East Tennessee State University (ETSU) – Appendix 8

This section will provide an overview and comparison of the services offered by UND and its peers and how those services are organized. Comments by the Consultant will be inserted, where appropriate. This section will be followed by a gap / fit analysis, a summary of desired services identified during the interview process, and a series of recommendations regarding the service environment at UND.

Information Technology Governance

The UND University Information Technology Council (UITC) is comparable to IT governance committees at peer institutions. All are charged with developing information technology policy, standards, services, priorities and plans.

Information Technology Services Management

Recently, the President of the University of North Dakota appointed an interim Chief Information Officer, reporting to him, in order to coordinate information technology support and services throughout the university and to chair the University Information Technology Council. The central Information Technology Support and Services (ITSS) organization is headed by a Director who reports to the Provost and Vice President for Academic Affairs. The Center for Instructional and Learning Technology (CILT) is the central instructional technology support organization and it’s Director reports to the Provost.

Of the peer institutions, UMKC, Louisville, Buffalo and ETSU have CIO’s that report to the President. Southern Illinois has a Director of Information Technology who reports to the Vice Chancellor of Administration while Ohio has an Associate Provost for Information Technology who reports to the Provost.
All peer institutions have instructional technology support organizations. The Director of this group reports to the CIO at Kansas City, Ohio, Louisville and ETSU, to the Provost at Buffalo, and to both the CIO and Library Director at Southern Illinois.

Comments: Although the organizational structure of the university’s information technology support organization is not part of this study, a review of the roles and organizational relationships of the CIO, ITSS Director and the CILT Director is highly recommended in order to ensure efficient and effective management of university-wide services.

**Information Technology Policies and Procedures**

UND has the NDUS Policies and Procedures for computing posted on its web site. The UND Resnet has a published use policy. There is no obvious site that discusses the impact of the Digital Millennium Copyright Act. All peer institutions have extensive policies and procedures posted on their web sites.

Comment: UND web site does not provide an easy to navigate link to the IT policy statements. In addition, the policies published are essentially the NDUS policies and are not, in themselves, complete. The lack of a written and published DMCA policy should be cause of concern and could lead to increased legal liability. It should also be noted that staff report that, in spite of the lack of a formal DMCA policy, they quickly and forcefully take action against DMCA violations when they are discovered.

**Support Functions within the Information Technology Support Organization**

**Client / User Support Services**

**Software Systems Support**

Administrative systems are centralized and used by all colleges. However, the School of Aerospace Studies operates an Aviation Information Management System (AIMS) that allows organizations such as flight training schools and FBO’s to keep better track of their aircraft, students and personnel. The main functional components of AIMS consist of flight and academic records, flight operations: scheduling, dispatch and invoicing, and aircraft maintenance.

UND is currently migrating to Peoplesoft student, human resources and finance systems. The student system is hosted at UND ITSS and will serve the North Dakota University System (NDUS). The finance and human resources systems are hosted in Bismarck. There are both NDUS Higher Education Computer Network (HECN) staff and functional staff from many campuses working on the NDUS migration from legacy systems. Each module's project team is working on training materials and providing just
in time training for pilot campuses. A UND implementation team is organized to guide the future migration, including providing PeopleSoft training to the UND community.

The University of Missouri system has almost completed a similar system-wide implementation of Peoplesoft and can be used as an excellent comparison. A description of the UM project can be viewed at [http://asp.umsystem.edu/](http://asp.umsystem.edu/). UM’s system-wide training plan can be reviewed at [http://asp.umsystem.edu/Training/Training_strategy.cfm](http://asp.umsystem.edu/Training/Training_strategy.cfm). UM has created a system provided train-the-trainer program.

Other peer institutions have functional Peoplesoft systems (Louisville), “in-house” developed systems (Ohio and Buffalo), or systems from other vendors (Southern Illinois and ETSU).

Comments: Interviewees were generally not aware of a Peoplesoft training plan and who would be responsible for future training and support. The University of Missouri has emphasized the need for systematic training as a major factor in migration success. In addition, it is unclear what support services will need to be provided to Peoplesoft student system users at other NDUS campuses.

If ITSS is to provide support services for the Peoplesoft system, there must be some degree of understanding of the needs of the functional user. It is not clear (to the Consultant or those interviewed) how and by whom this support will be provided.

**User Support**

ITSS operates a central IT Help Desk to serve the UND community. The helpdesk staff reports that they help 80% of callers on the first call. There are two ITSS desktop support specialists (and one open position). Only three colleges / schools indicate that their faculty and staff extensively use the ITSS Help Desk and / or depend upon ITSS desktop support services. Five colleges and schools and about half of the administrative departments have local desktop support staff. Although they don’t operate formal help desks as does ITSS, users contact their local support specialist directly when they need service.

The source of user support varies widely at the peer institutions. All have a centralized Help Desk. Desktop support varies from mostly centrally provided support (Southern Illinois and ETSU) to almost fully decentralized user support at the remaining peer institutions. Kansas City uses departmental liaison to provide first line support. Louisville, by Board policy, provides IT generalists in schools, colleges and administrative units.

UND has a Microsoft Select agreement for university acquisition of Microsoft software. Southern Illinois, Buffalo and ETSU have a Microsoft Campus agreement that not only
provide software for university use but which also allows faculty and staff to use one copy of covered Microsoft products on personally owned computers while employed by the university.

Louisville and ETSU have similar technology replacement programs funded by the university. Basically, the university advances funds to departments to purchase technology and allows departments to repay those funds over a period of time, usually three years. This allows technology to be budgeted by departments, as are telephones and supplies, rather than considered a one-time expense. At the end of the three year period, the technology is replaced and the cycle restarts.

UND and its peer institutions all offer general topic IT training either through their information or instructional technology support organizations.

Information Technology support for researchers varies by institution. UND and all peer institutions offer statistical software, web sites, and computer resources for specialized programs and computation. Ohio has a staff statistician to assist researchers. Louisville has a supercomputer center and offers support for researchers requiring advanced computing resources. Buffalo's Advanced Consulting and Technologies organization provides web services, software, and client support for researchers. Kansas City operates a Center for Academic & Research Computing. Many also offer graphic and presentation design assistance.

Comments: User support services at UND are inefficient, often duplicative, and ITSS provided services were viewed as unacceptable by many of those interviewed. Several peer institutions offer alternative and effective decentralized support services.

The ITSS Help Desk appears well organized and supportive of those who use it. The university might gain efficiency by developing a plan for the decentralized staff to have requests for their services routed through the Help Desk. There is little or no communication and coordination between and among those providing IT services locally within individual divisions and ITSS. Sharing a helpdesk might be one way to create more communication and coordination of services.

There is no university policy on technology life cycle management and therefore there is no formal plan for or systematic replacement of technology resources. This situation could also increase the total cost of ownership of technology.

Web Site Support

UND and its peer institutions all provide web servers and web space for departments, faculty, staff and students. The level of support for those using the web for informational and / or instructional purposes appears to be more extensive at peer
Technical Support Services

Server / Operating Systems

UND ITSS hosts thirty-five to forty servers in its computer center. These run Novell, Microsoft and Unix operating systems. ITSS provides firewall protection, intrusion detection, virus protection, security management, backup management, and an uninterruptible power source. This is consistent with hosting services offered by peer institutions. However, at UND there are also a considerable number of servers within colleges and schools that do not have the environment, security or protection provided by the ITSS computer center staff. One institution, ETSU, has moved all servers into the central computer center where they can be properly managed, maintained and secured. Service Level Agreements between central IT services and the functional users of these servers define roles and responsibilities of the central support organization in supporting each server.

UND provides GroupWise electronic mail for faculty and staff and uMail for students. Several colleges / schools operate their own email systems (Aerospace, Business & Medicine). Like UND Buffalo also has a distributed mail environment. At other peer institutions electronic mail is provided centrally to all faculty and staff and, as matter of policy, alternative systems are not permitted. Students are generally provided access to their email via the web.

Comments: The distribution of critical application servers at UND is a cause for concern. Business processes depending on the availability of these resources may be subject to an unnecessary level of risk resulting from the environmental, security and operational inconsistencies that are common in an unplanned distributed support environment. The University should explore the operational benefits of providing a central hosting service for all or most institutional servers. Consideration should be given to developing a hosting environment that provides the standards of operation, security and reliability that are becoming common for critical application environments. In order to alleviate the concerns of users, any central hosting service should be governed by service level agreements between the service provider and the user/functional organizations utilizing those services.

The use of multiple e-mail systems at UND is inefficient and expensive. One of the reasons that interviewee’s gave for the distribution of e-mail
services was dissatisfaction with the functionality and reliability of GroupWise. Distribution of mail services results in costly duplication of effort and increased security risk to campus e-mail services. Beyond the direct costs and security considerations, distributed e-mail environments result in inconsistencies in e-mail addresses and capabilities that complicate both internal and external communications. It is highly recommended that UND review the current e-mail environment and develop plans to improve central mail services and minimize the level of distribution of e-mail services.

Networks

UND and all peer institutions operate high speed backbone networks, providing server application and Internet access throughout the institution.

Five UND schools and colleges support the network from the “wall” to the desktop using their local IT support staff while the remaining schools depend on ITSS for those services. UND has begun a wireless network project and wireless access is now available in two buildings with plans to expand to a third. The University’s implementation of wireless networking is consistent with that of it’s peer institutions and higher education in general. UND and all peer institutions, except ETSU, are connected to the Internet 2 and have instituted projects that utilize this high bandwidth service.

Telecommunications

UND and all peer institutions operate telecommunication networks, providing telephone and voice mail service throughout the institution. One institution (Louisville) has outsourced telecommunications services.

Instructional Technology Support Services

Instructional Technology

UND’s Center for Instructional and Learning Technologies (CILT) has a full-time staff of eight and employs 21 student assistants. CILT provides workshops and support for faculty using Blackboard, and on effective practices and pedagogy. This is similar to services offered at all peer institutions. Some institutions, such as Buffalo and ETSU, provide centralized instructional technology support based on the zone support model described earlier, as well as centralized training. All use Blackboard or WebCT as course management systems, except Louisville which has not standardized on any system. The size of the central instructional technology staff among peer institutions ranges from two at Kansas City to fifteen at Southern Illinois.

Multimedia / Smart Classrooms
CILT supports classroom technology at UND. This is consistent with the classroom support model at ETSU. The design and maintenance support provided by CILT is well regarded by UND faculty and staff and compares very favorably with peer institutions.

**Student Support**

ITSS manages two general purpose computer labs housing 160 computers and available for use by all UND students. All colleges operate specialized labs for their students. In many cases, labs in individual schools or colleges are managed by faculty and student assistants from within the school. All peer institutions operate open access computer labs (an average of four) in addition to those operated by colleges / schools / departments. Several (Buffalo, Southern Illinois, ETSU) also centrally operate computer classrooms for “hands-on” classroom instruction that can be scheduled for classes and are usually open for general use at other times.

**Services Provided by Colleges and Schools**

The source of IT support at UND varies by college and school. Medicine and Aerospace Studies have IT staff and provide virtually all services to their faculty, staff and students. Business, Education, Law and Nursing also have IT support groups that provide most IT support services for their schools. The College of Arts and Sciences and the School of Engineering and Mines have no IT staff and rely on ITSS for support.

The service environments in colleges and schools at peer institutions are as varied as that within UND. At Buffalo, Kansas City and Louisville user support is primarily provided through a distributed support model, with the central organizations providing selected core services in support of distributed staff. Other peer institutions generally provide information and instructional technology support from central organizations with varying degrees of “local expertise” within schools. Colleges of Medicine and Law all have local IT support that generally focuses on medical and legal applications of information technology.

Comments: In many departments, faculty have responsibility for managing student computer labs and classrooms. Although this is common at many institutions, some Deans and department heads believe that this is not a good use of faculty’s time and expertise. It is recommended that the University assess the impact of faculty support of technology and develop more efficient means of distributed computing support.

**Summary**

Information and instructional technology services provided at the University of North Dakota generally compare favorably with the services offered by peer institutions. There were several areas of concern identified during the research for this report and recommendations will be made to address these. Effective models of decentralized information technology support are used at peer institutions such as the University of
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Missouri at Kansas City and the University of Louisville. It is important to note that the distribution of technical support at these peer institutions has been thoughtful and well planned. At UND the distribution of support appears to have been more reactionary and without the benefit of a planned institutional support model.

Concerns have also been identified regarding the PeopleSoft implementation and the impact on the users and administrative operations. There is a need to develop a clear plan for supporting users of the PeopleSoft system.

Following is a table comparing information on organization and services between UND and the specified peer institutions, a gap / fit analysis, and a series of recommendations related to the issues identified in this report.

Comments: An area that is of concern at many institutions is that of security. This issue encompasses many of the areas of support discussed above. Security issues include: data accuracy and integrity, business continuity and disaster recovery, privacy issues related to FERPA and the Patriot Act, vulnerability to electronic “attack” on business critical systems, and policies and procedures on information use / misuse issues, such as the DMCA. UND should be very concerned that these security issues have not been thoroughly addressed and responsibilities to manage them assigned to an individual.
Table 1. Comparison of UND with Peer Institutions

<table>
<thead>
<tr>
<th></th>
<th>UND</th>
<th>So. Illinois</th>
<th>Kansas City</th>
<th>Louisville</th>
<th>Ohio</th>
<th>Buffalo</th>
<th>ETSU</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.T. Leadership</td>
<td>CIO / Director</td>
<td>Director of Information Technology</td>
<td>Chief Information Officer</td>
<td>Vice President for Information Technology</td>
<td>Associate Provost for Information Technology</td>
<td>Chief Information Officer</td>
<td>Chief Information Officer</td>
</tr>
<tr>
<td>Reports to</td>
<td>President / Provost</td>
<td>Vice Chancellor, Administration</td>
<td>President</td>
<td>President</td>
<td>Provost</td>
<td>President</td>
<td>President</td>
</tr>
<tr>
<td>Administrative System</td>
<td>Peoplesoft (Statewide)</td>
<td>SIS – SCT IDMS; FRS and HRS both Oracle; ADDS in house developed</td>
<td>Peoplesoft (U. Missouri system wide)</td>
<td>Peoplesoft</td>
<td>In House Developed</td>
<td>In House Developed – based on CA Datacom</td>
<td>SCT IA Plus (statewide system)</td>
</tr>
<tr>
<td>Email</td>
<td>GroupWise U-Mail</td>
<td>SALUKI-MAIL server / Any DOS, OS/2, Mac, or Unix client</td>
<td>Microsoft Exchange / Outlook</td>
<td>GroupWise and Athena servers. IMAP and POP clients, including Netscape and Eudora</td>
<td>Microsoft Exchange / Outlook or Mulberry</td>
<td>Microsoft Exchange / Outlook; Imail for students</td>
<td></td>
</tr>
<tr>
<td>Help Desk Software</td>
<td>Remedy</td>
<td></td>
<td></td>
<td>Heat including web client</td>
<td></td>
<td></td>
<td>Remedy</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Course Management System</th>
<th>UND</th>
<th>So. Illinois</th>
<th>Kansas City</th>
<th>Louisville</th>
<th>Ohio</th>
<th>Buffalo</th>
<th>ETSU</th>
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<tbody>
<tr>
<td></td>
<td>Blackboard</td>
<td>WebCT</td>
<td>WebCT</td>
<td>None</td>
<td>Blackboard</td>
<td>Blackboard</td>
<td>Blackboard</td>
</tr>
<tr>
<td>Instructional Tech. Support</td>
<td>Center for Instructional and Learning Technologies</td>
<td>Academic Technology Center</td>
<td>Technology Assessment and Skills Center &amp; Technology for Learning and Teaching Center</td>
<td>Instructional Technology / Instructional Support</td>
<td>Center for Innovations in Technology for Learning</td>
<td>Educational Technology Center</td>
<td>Within I.T. organization</td>
</tr>
<tr>
<td>Reports to</td>
<td>Provost</td>
<td>Director, IT and Director, Library</td>
<td>CIO</td>
<td>Vice President for Information Technology</td>
<td>Associate Provost for Information Technology</td>
<td>Provost</td>
<td>CIO</td>
</tr>
</tbody>
</table>
The following graphs illustrate the similarities and differences between several classes of information technology services at the institutions included in this study. A scale of 0 – 10 was used to describe the availability and management of each service with 10 being the most centralized, 1 being the most decentralized, and 0 indicating either that no data was provided or that the service is not available. In each graph, the UND data is the bar to the far left. The quantifying of these data was subjective with the consultant assigning a number after analyzing all provided data for a given institution.
Centralization of IT Support Services

Degrees of Centralization
- 0 – Data not available
- 1 – Completely Decentralized
- 5 – Equally Centralized and Decentralized
- 10 – Completely Centralized

Centralization of IT Support Services

Help Desk

Desktop Support
Centralization of IT Support Services

Degrees of Centralization
0 – Data not available
1 – Completely Decentralized
5 – Equally Centralized and Decentralized
10 – Completely Centralized

Centralization of IT Support Services

Degree of Centralization

Service Areas
Degrees of Centralization
0 – Data not available
1 – Completely Decentralized
5 – Equally Centralized and Decentralized
10 – Completely Centralized
UND FACULTY / STAFF / STUDENT EXPECTATIONS

During interviews with Deans and others from the Colleges and Schools at UND, each individual and group was asked four questions:

1. What IT services are offered by your College / School / Department and what are the problems / challenges / limitations you face or hear about with the IT services you offer?

2. What central IT services (e.g. offered by ITSS or CILT) does your College / School / Department use and what are the problems / challenges / limitations you face or hear about with these IT services?

3. Do you use IT services provided by any other College / School / Department and if so, how is that working?

4. What additional IT services should be offered centrally by ITSS, CILT or others?

The decentralized services and centralized services have been previously described. Following is a summary of services from ITSS and CILT that interviewees indicated would be useful.

- **ITSS**
  - Consolidate research computing support into ITSS and provide support for specialized research software, including databases, presentation tools, data and statistical analysis software
  - Redundant Internet access
  - Server-based email scanning for viruses
  - Increased opportunities, including more flexible schedules, for IT-related training workshops
  - Better communication of impact of the Peoplesoft implementation on faculty and staff including training needs, skill sets that may need to be enhanced and the degree of user involvement that will be required
  - Centralized, searchable, campus wide email directory
  - Increased communication & cooperation between ITSS personnel and college IT support staff
  - Consistent hardware and software replacement program and software version consistency
  - Better online access to student services (the Peoplesoft implementation may provide this)
  - Better desktop computer (hardware and software) support, i.e. more support personnel
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- Review of network performance and services, including GroupWise, for reliability and the possibility of moving to one electronic mail system for the university
- Secure server for fee payment
- ITSS provided training for college student IT assistants
- Alternatives to faculty support of computer labs
- Authentication on wireless networks
- Database driven web sites
- Funding – keeping good staff
- Training on copyright, best practices

- CILT
  - Additional assistance with web page development and design, templates, and technical support
  - More initiatives to help faculty move towards using technology for instruction
  - Support for emerging technologies
  - Better support for off campus faculty
  - Confusion as to where you go for DE support: CE or CILT
RECOMMENDATIONS

1. **Establish a process to review the roles, relationship and responsibilities of the CIO and the Directors and staff of ITSS and CILT.**

   An organizational review is being planned as a follow-up to this report. With the lines between administrative and instructional uses of information technology becoming increasingly more blurred, it is essential that UND clarify the roles and responsibilities between the CIO, ITSS and CILT in a way that recognizes the similarities and interdependencies between them, and coordinates technology support services to make the most efficient and effective use of institutional resources. It is further recommended that UND review the information technology support structure university-wide and devise an institutional support model that recognizes both the common and specialized needs of schools and colleges and devises an institutional support model that balances centralized and distributed resources to better meet the needs of all technology users.

2. **Revise the UND web site to include easy to navigate links to institutional information technology policies and procedures**

   The current UND web site does not provide for instinctive navigation to IT policies and procedures. When IT policies are found they are limited to those established by NDUS. Managing, securing, and assuring appropriate use of IT resources is a major consideration for university officials to maximize the resource and prevent potential institutional liability. In order to enforce policies they must be clearly articulated and effectively communicated to those affected by them. For greater understanding it is often effective to provide examples of practices that are and are not acceptable within the context of the policy. UND might find it helpful to examine practices at other institutions to help strengthen its communication and enforcement of IT policies.

3. **Develop, publicize and communicate a policy statement addressing the requirements of the Digital Millennium Copyright Act**

   The Digital Millennium Copyright Act (DMCA) provides for limits on a university’s legal liability for copyright infringement by users of its network. However, proactive communication of copyright law must be provided by the university along with rapid and effective enforcement of policy. The recording and motion picture industries are very aggressively pursuing students who illegally copy and distribute copyrighted electronic media via a university’s network. Universities that are not actively working to prevent abuse are also being targeted for litigation. There are good examples of DMCA policies and
procedures on peer institution web sites that could be used as templates to expedite the development of policies and procedures at UND.

4. **Develop, publicize and implement a PeopleSoft user training plan**

Users of the PeopleSoft system must be trained and feel competent to use the new technology in order for the migration to be a complete success. Interviewees at UND indicated that they had no knowledge of plans for their training and support in the use of PeopleSoft. Although ITSS is working with other NDUS campuses and HECN on the training needs, a detailed training and support plan has yet to be developed and communicated to the user community. The University of Missouri system and the University of Louisville have well designed training programs that can be used as models by UND in preparing its plan.

5. **Develop and implement a plan to provide business analysis support for PeopleSoft users**

As discussed in a previous section, many institutions include user liaisons/business systems analysts in their IT organization who have knowledge of both the capabilities of a software product and the functional processes being supported by the users of that product. The University of Louisville’s method of supporting Peoplesoft users can be used as a model (see [http://www.louisville.edu/it/inf/](http://www.louisville.edu/it/inf/)). Although it is understood that funding is an issue at UND, the University must address the need for functional support for users in order to fully realize the potential of the products being deployed.

6. **Develop hardware and software standards for purchase and support of new information technology**

The UND University Information Technology Council should consider adopting standards for software and hardware configurations that will be supported by ITSS as well as the distributed IT support personnel.

IT support resources are limited in number and in specific knowledge. The greater the diversity of hardware and software supported by these resources the greater is the requirement for additional skills and knowledge, either in the form of new staff or increased training for current staff. Additionally, unrestricted addition of new products to the software and hardware mix increases the requirement for administration of documentation, vendor management, and a host of other logistical complications. Thoughtful adoption of standards sets limits around the support environment that maximize the effectiveness of support personnel and minimize administrative overhead.
A hardware acquisition policy can improve efficiency in the acquisition, maintenance and support of desktop and laptop computers and reduce the total cost of ownership of those devices. Standard configurations for Windows and Macintosh based desktop and laptop computers should be identified. Adopted standards should include options which allow compatible upgrades to the base configuration allowing the majority of computers at the university to be based on the standards. Along with the adoption of standards the University should establish a process to allow for the review and refinement of standards and procurement procedures on a regular basis.

7. **Expand the Help Desk function university-wide**

The ITSS Help Desk appears to function well, though interviews suggest that it is not used by over 50% of the university faculty and staff. The Help Desk function is a critical component of effective user support services. A properly implemented help desk provides systematic reporting, management and fulfillment of user support calls. This report does not generally recommend the centralization of college / school IT staff, however, it is recommended that the ITSS help desk function be expanded to include management of calls from all colleges and departments and dispatching of those calls to local resources. It is further recommended that any help desk operation outside of ITSS be consolidated with the ITSS Help Desk. This will provide for greater coordination between ITSS and local services and provide a consistent and complete record of user support activities and provide better support for future service management decisions.

8. **The roles and responsibilities of the ITSS User Services and distributed desktop support staff should be reviewed with the goal of correcting the current disparity between colleges and departments**

The three ITSS user services desktop support positions provide faculty / staff support to two colleges (Arts & Sciences and Engineering), many administrative offices, two computer labs, and supplement staff in other colleges and schools. There are at least eighteen IT staff within these other colleges and schools. Schools supported by ITSS user services staff expressed overall dissatisfaction with response time and service. It is recommended that an IT organizational review include the roles of all these staff. It is understood that Arts & Sciences would like their own IT support staff but it is not budgeted. However, there are definitely “haves” and “have nots” and the level of service available to faculty and staff varies greatly. The UITS or other administrative entity should identify this as a priority and monitor progress.
9. **Establish an information technology support council consisting of all university IT support managers and possibly their staff in order to enhance communication and coordination of support**

One frequently expressed concern is the lack of coordination and communication between the various IT support organizations throughout the university. The UITC provides an avenue for high level discussions but does not include all IT staff and does not provide the level of detailed technical discussion that is necessary to support better coordination. Two peer institutions (Kansas City, ETSU) report having established successful programs to bring technical support staff from throughout the university together to discuss plans, projects, needs and concerns. These discussions allow for sharing of experiences and group analysis of problems resulting in reduced duplication of effort in developing common solutions.

10. **UITC should consider a university-wide Life Cycle Management policy for information technology resources**

The total cost of ownership of technology is far more than just the purchase price. It also includes the cost of maintenance and support of hardware and software and periodic upgrade or replacement of system components. Generally technology components have a warranty/support life that has a fixed duration established by the vendor. When warranty or support life has expired the cost of maintaining a resource generally increases.

Institutions often cite limited resources as an inhibitor to developing and implementing policies and plans for periodic replacement of equipment. It is the reality of limited resources that demand that institutions rethink this position. Planning must take place from the first decision to deploy technology within a program if that program is to sustain its viability and quality. Failure to maintain required technology at acceptable levels of currency and operability can threaten the existence or quality of programs that rely upon it. This, in turn, can have adverse impacts upon the revenue stream and academic standing of the institution. It is essential that institutions consider both the short and long-term impacts when making technology decisions, and a life cycle management policy and plan set the parameters within which these decisions are made.

11. **Develop and implement a plan to provide a centralized hosting service for critical application servers**

Mission critical applications running on servers in locations without adequate security, management and recovery controls and services were noted throughout the university and should be cause for concern. It is recommended that a plan be developed by the IT Support Council to create a hosting service through the ITSS computer center for all mission critical
application servers. Server management, security and disaster recovery readiness in this center should be analyzed and upgraded as necessary to meet industry standards for environmental and security control. Service Level Agreements should be created to clearly define the roles and responsibilities of the hosting center and the application owners.

12. **UITC should create a policy and plan to consolidate electronic mail service across the University**

Although Buffalo reports the use of multiple email systems, the remaining peer institutions report the use of a single centrally provided e-mail service. Deployment of a single institution wide e-mail system can eliminate redundant effort, enhance support and simplify communications. Even with a single mail service, it is possible to provide multiple methods of access to accommodate the differing needs of students, faculty and staff, though the University should also limit the number of supported e-mail clients. Frequent dissatisfaction expressed with the perceived lack of functionality and reliability of GroupWise suggests that the UND should consider an alternative mail system if the recommendation to consolidate is accepted and implemented.

13. **ITSS should initiate a program to train students to manage departmental computer labs**

Although many faculty enjoy managing student computer labs, it is not always an efficient use of their time. Faculty who manage labs often rely on students to assist with lab and other local IT support. However, the students who perform these functions seldom receive appropriate training and thus cannot provide the best support. ITSS should develop a standard training program to prepare student technology support workers for their support roles.

14. **ITSS should develop a list of IT support services available to researchers, communicate these and solicit suggestions for additional research support services**

Another common frustration cited by faculty at UND was the lack of awareness of types of support available for research projects. The same lack of knowledge exists in relation to services offered from within schools such as Aerospace Studies’ Scientific Computing Center and the resources in the School of Medicine.

IT-related research support offered throughout the university should be coordinated through the Office of Research and information about those services should be communicated to researchers throughout the university.
15. **An Information Security Officer (ISO) function should be established**

An Information Security Officer (ISO) normally has primary responsibility for the day-to-day management of the institution's information security process. The ISO should be the focal point for all information security processes and be able to advise the users on how to further develop policies and procedures to provide the best possible protection to the institution's information assets.

As part of the information security planning process, the ISO should establish a mission statement and internal goals for information security which directly supports the institution’s business mission statement and goals.

Some of the possible functions of the ISO are:

- Provide assistance to users
- Reporting to senior management on security
- Preparing security budgets
- Information self-assessment
- Co-ordination with departments on security issues
- Liaison with information security auditors
- Monitoring compliance with information security policy
- Security meetings
APPENDICES

Appendix 1. IT Services Provided Centrally by UND

Information Technology Management

Recently, the President of the University of North Dakota appointed an interim Chief Information Officer in order to coordinate information technology support and services throughout the university and to chair the University Information Technology Council. The central Information Technology Support and Services (ITSS) organization is headed by a Director who reports to the Provost and Vice President for Academic Affairs. The UND University Information Technology Council (UITC) is charged with developing information technology policy, standards, services, priorities and plans.

Information Technology Systems and Services (ITSS)

The Mission of ITSS is to provide leadership, instruction and access to information and computer resources in support of higher education, research and public service. ITSS on-campus IT responsibilities include: on campus and wide area networking, University web system and e-mail services, IT help services, IT training and support, management of general purpose computer labs and clusters, server installation and administration, telecommunications, and campus technology planning. ITSS, in concert with the North Dakota University System (NDUS) CIO and other NDUS IT organizations, also has Higher Education Computer Network (HECN) responsibilities to provide all eleven NDUS campuses with: financial, human resources and student information systems, wide area networking (WAN), help desk services, and planning for statewide information technology services. There are 28 UND positions and 38 NDUS positions within ITSS. Currently the financial and human resources systems are being replaced by Peoplesoft systems and will be “housed” in Bismarck. The Peoplesoft Student Information System (SIS) is being installed at UND and will provide SIS support for NDUS institutions.

ITSS Administrative Information Systems

The current administrative systems are “institutionally developed” software running on an IBM mainframe. These are being phased out and replaced with the Peoplesoft systems. The ConnectND project will provide all NDUS institutions access to the Peoplesoft Financial, Human Resources and Student Information Systems. Little customization of the modules is currently planned. ConnectND will also include a virtual Help Desk managed the Higher Education Computer Network (HECN) staff located at UND and North Dakota State University. The Peoplesoft software will be hosted on servers running Microsoft SQL 2000. Crystal Reports will
be implemented for customized reporting. A NDUS PeopleSoft portal is being implemented as access to ConnectND using web browsers. It does not appear that the current implementation will provide a full-service campus portal that can be personalized and customized for members of the UND community. The ITSS staff supporting the PeopleSoft implementation are programmer/analysts, database administrators, and system administrators. ConnectND project teams have provided just-in-time training for pilot site implementation and are developing manuals to provide user training for the functional use of each module as it is implemented on a campus. UND’s Vice Presidents of Academic Affairs and Finance and Operations have formed a ConnectND Implementation team that will plan for change management, UND’s implementation, and campus training and support.

**ITSS Support Services**

**Help Desk Services**

ITSS operates a general IT Help Desk to assist any faculty, staff or student. The Help Desk completes 80% of calls on the first call. The remainder are forwarded to User Services or other ITSS or campus departments to resolve. The Help Desk uses Remedy software.

Colleges and Schools reporting consistent use of the ITSS Help Desk include: Arts & Sciences, Education, Engineering and Mines, and some administrative offices. Those reporting seldom or no use of the ITSS Help Desk include: Aerospace Studies, Law, Medicine, Nursing and several other administrative offices.

**Desktop Computer Hardware and Software Support**

There are six user services positions in ITSS: two (plus one vacancy) for desktop support and three for Intel server management (Novell and MS). The two desktop support personnel provide computer set-up, software, and hardware support. There is no university PC maintenance vendor. Officially ITSS does not support hardware problems. Users call vendors or the manufacturer for maintenance. Unofficially, ITSS staff often assist users when there are problems.

The Microsoft Select Agreement is maintained out of ITSS for university purchase of Microsoft software. There is no Microsoft Campus Agreement and Microsoft software is not available for faculty/staff home use.

**IT Training and Support**

ITSS offers a series of general interest technology training workshops.

ITSS will work with ConnectND project teams and the UND ConnectND implementation teams to develop plans for training and support.
ITSS provides training to its staff to maintain currency. There is no formal training plan. Team Leaders determine what is needed, who needs it and coordinates funding and scheduling.

**Student Computer Clusters**

ITSS manages two general purpose computer cluster/labs. One is in the Student Union and the other in the Library. There are about 160 computers available for general student use. A Graduate Student manages the facilities and is supplemented by ~ 20 student workers. The facilities access cluster servers and use Deep Freeze to maintain “images.”

**Network Services**

ITSS maintains a gigabit core backbone for the university. There are about 12,000 10 and 100 mbps shared or switched Ethernet ports, 300 DSL connections in apartments, and wireless access (802.11b) in the Student Union, Aerospace, Medical School, Law School and Chester Fritz Library, and planned for Education.

StageNet is the statewide government and education network. UND uses a partial OC3 allowing 90 mbps bandwidth to the Internet. UND is a member of Internet 2 and the Great Plains Network. ITSS maintains a Cisco firewall for network / server security. STAGENet is planning redundant Internet access but this is not yet available.

Internet 2 is available and used by a number of research projects.

**Novell / Microsoft OS Server Hosting**

There are 30-40 servers in the central computer center. ITSS provides firewall and intrusion detection, virus protection, security, backup and uninterruptible power.

**ITSS Technical Services**

**IBM Mainframe for HECN Financial and SIS Legacy Systems**

**UNIX Systems for Electronic Mail, LDAP and Web Services**

ITSS offers E-mail services to faculty, staff and students:
- Umail is available for students and faculty
- GroupWise for email and calendaring is available for faculty and staff
- There is an online directory but depends on users to maintain accurate information
There is University web server operated by ITSS. The content is managed and maintained by University Relations with individual colleges, schools, and departments maintaining their information.

**Telecommunications**

With a total staff of eleven, Telecommunications installs, maintains and troubleshoots outside fiber and copper cabling, manages an Avaya Definity G3r switch with ~7,000 active stations and a voice mail system using an Avaya Intuity Hi-Cap with ~3,200 active mailboxes. Telecommunications averages 2,400 move add changes (MAC) and trouble tickets per year. The Campus Operator gets up to 600 calls / day. Telecommunications has a cable plant technical staff of four; and one manager/designer who is RCDD certified.

Currently, Qwest provides for local services, AT&T provides long distance, and MCI provides 800 service. There are telephone coordinators in each department to train users and issue MAC requests. Telecommunications has a telephone training room and also provides some on-site training.

There are 2-3 IP test phones on campus. The staff are evaluating the technology. There is an IP link between UND and NDSU for 5 digit dialing to select users.

**Center for Instructional and Learning Technologies (CILT)**

The Center for Instructional and Learning Technology (CILT) provides support and leadership to faculty for integrating technology into their teaching. There are eight staff plus 21 student employees. Staff include the Director, Administrative Assistant, 2 instructional designers, 1 IT support specialist, 2 classroom technicians, and 1 graphics artist. Students: 9 classroom support, 4 videotaping, 6 office, 1 web, and 1 graphics. The annual CILT budget is ~$360,000 budget / year.

The main functions of CILT are: regularly scheduled workshops, special programs, design and maintenance of general purpose technology classrooms, and learning management system support (400 courses and 8000 student accounts using BlackBoard). Users can get Blackboard account and password assistance via the ITSS Help Desk. Functional support is available through CILT or from faculty.

CILT provides best practices and pedagogy training for faculty. The campus is still dealing with who “owns” support for faculty using technology in classroom. CILT is a place for faculty to go to experiment.

CILT provides 1:1 faculty support to the extent possible. There were 130 individual sessions documented in 2001-2002. There were also scheduled and cohort workshops serving 274. CILT developed the Academic Affairs web template which included campus standards and ADA compliance. A TECH EXPO was held during Spring, 2002 where vendors showcased latest presentation technology tools.
TECH BYTES allowed UND faculty to showcase best practices and accomplishments.

$100,000 from Student Technology Fees allowed installation of presentation capabilities in 19 classrooms and upgrades in 12 others in 2001-2002. There were 2,384 fulfilled classroom services requests in 2001 – 2002. There is a Classroom Standards Committee in partnership with Facilities that makes decisions on design and priorities.

A locally written Learning Management System, HTML EZ, is used by some at the University. It is supported by Aerospace Network.

**Research Support**

ITSS provides researchers access to SAS and SPSS statistical systems as well as computational support.

Internet 2 membership and participation in Abilene Network and Great Plains Network allow high bandwidth access and collaborative opportunities for researchers.
Appendix 2. Services Offered by Colleges / Schools/ Departments

John D. Odegard School of Aerospace Studies

The School of Aerospace Studies has an information technology support system almost completely independent from the rest of the university. Through its Scientific Computing Center (SCS), Aerospace provides its faculty, staff and students with electronic mail, file servers, and an internal network including wireless. All aviation students have laptops and wireless modems. Aerospace has developed an Aviation Information Management System that manages most aspects of the school’s information, including airplane scheduling, student services and recruiting. It has also developed a Course/Learning Management System, named HTML EZ, although some faculty, especially those in Computer Science, use Blackboard. The SCS also provides faculty with instructional technology support and web development and graphics assistance.

Aerospace uses few services offered by ITSS and CILT. The only identified services used are Internet access, telecommunications, and high speed research computing for statistical / data analysis.

College of Arts and Sciences

The College of Arts and Sciences (CAS) has over 200 full-time faculty and 60-70 part-time faculty but has no information technology support personnel. There are numerous computer labs within the college and they are generally managed by departmental faculty and students. There is no additional compensation or release time to support these activities. The College’s Strategic Plan identified the need to hire IT support personnel but this has never been funded. There is technology in the classroom supported by CILT but consensus is that much additional faculty training is needed to better use these capabilities. Many faculty use Blackboard and some use HTML EZ.

CAS uses ITSS-offered services for Help Desk support, electronic mail, Internet access, desktop support, research computing for data analysis, web space, and telecommunications. The faculty regularly use CILT for web and Blackboard support and training, and for multimedia classroom support.

College of Business and Public Administration

The College of Business and Public Administration (CoBPA) employs two full-time information technology support staff and two part-time students. These staff provide hardware, network and application support to college faculty, staff and students. They have several networked servers and provide a variety of applications, both commercial and “in-house” developed, to faculty and students. Most database
development uses Microsoft SQL 2000 but they support Microsoft Access and Oracle as well. A web portal is available, developed using ColdFusion. The CoBPA IT staff basically support all IT activities from the network jack to the desktop. They have installed a Microsoft Exchange server for e-mail and the desire is to migrate all College faculty and staff users to Exchange / Outlook. There are several computer labs, including specialized networking labs for MIS students. Many faculty use Blackboard.

The CoBPA uses Internet, network and telecommunications services from ITSS. Some faculty and staff use ITSS provided electronic mail. Few faculty or staff use the ITSS Help Desk. Classroom technology support from CILT is deemed excellent and frequently used. Many also use the CILT provided Blackboard training and support.

Division of Continuing Education

There are several technology support staff within Continuing Education (CE), primarily supporting the technologies used to deliver instruction in a variety of modes, including correspondence, H.323 (statewide IVN network), and Internet-based. There is a full-time web developer on staff. Many courses are being migrated from paper or video to Internet but they also want to maintain learning style options. The TV Center buys services from ITSS for server and desktop support but are dissatisfied with the service levels and response time. CE coordinates IT training with the ITSS staff. CE outsources database support and course hosting in order to have access to a Secure server.

College of Education and Human Development

There is one full-time Information Technology support staff within the College of Education. She is responsible for troubleshooting, hardware repairs, software support, and installing new equipment. Their major challenge is managing the technology in four different buildings. The College also hires a local school technology coordinator half-time, funded by a PT3 grant.

Education faculty, staff and students use various services provided by ITSS, including electronic mail, Internet access, telecommunications, and some desktop support. Users often call the ITSS Help Desk and there is sometimes confusion as to who has responsibility for support, ITSS staff or the College technical coordinator. ITSS is assisting the College to set up a wireless network in one of its buildings. Many Education faculty use Blackboard and the training that CILT provides. They also depend on CILT staff for classroom technology support. CILT also assisted in setting up a web site for the recent NCATE accreditation visit. Education provides a lot of training throughout the state using the state Interactive Video Network (IVN)
School of Engineering and Mines

There are no full-time information technology support staff within the School of Engineering and Mines (SEM) but they use several students to assist with day-to-day support. There are three multimedia classrooms. The Dean’s Office has a contract with ITSS for desktop and server administration but others use the ITSS Help Desk. There has been dissatisfaction with GroupWise reliability and network response time. SEM offers a distance engineering degree and thus uses the services of Continuing Education and CILT, including Blackboard.

Graduate School

The Graduate School has great interest in the university’s web site as more potential graduate students are getting information from the web rather than by phone or mail. Potential graduate students can download graduate school information and applications from the school’s web site. There is an Access database used to track prospect information and merge with MSWord for letter printing. A local consultant is on retainer for support. There is hope that Peoplesoft will provide these capabilities in the future. The university does not require electronic theses or dissertations yet and will need technical assistance to make this a requirement.

School of Law

The School of Law employs two full time technology support staff reporting to the Law Library Director, one supporting computer technology and the other supporting video. The School provides servers, electronic mail, web space and support. Students are allowed to keep their email accounts for life. Most Law computers are Macintoshes and have access to both Ethernet and wireless networks. The goal is a 3-year life cycle management for computers. There is a Mock Courtroom with interactive video capabilities. Faculty and students have access to The Westlaw Education Network and to Lexus / Nexus using Blackboard.

The Law School uses Internet access and Telecommunications support from ITSS. There is very little use of the ITSS Help Desk. Some faculty take advantage of the Blackboard training and support offered by CILT.

School of Medicine

The College of Medicine has a Chief Information Officer and staff supporting networking, desktop computing, videoconferencing, data base management, and course development on the web. The College operates a ~$500K multimedia lecture hall and examination rooms capable of remote controlled video streaming. They are researching the use of telemedicine for teaching and for home health care. The College emphasizes evidence-based medicine and how to get answers from online information. First and second year students work in groups of seven to eight and each group is assigned its own Internet and multimedia equipped study room.
The College operates its own email system and provides network support from the "wall" to the desktop. It uses the ITSS provided network support (from the wall to the wiring closet and outward), Internet access and telecommunications support. Like the School of Aerospace Studies, the School of Medicine is very self-supporting of its IT needs.

**College of Nursing**

The College of Nursing has a full-time technology coordinator and another temporarily employed on a Family Nurse Practitioner grant. There are concerns about losing this grant and thus the second support staff. Most technology in the College is funded by a program fee. Also, Student Technology Fees have funded student computer labs but they have to reapply to fund a replacement cycle. Students are used to support the College's computer labs and also provide some classroom support. These College staff provide desktop client support, network administration "to the wall", classroom design and support, videoconferencing and desktop conferencing including a server and a bridge, web site development and support, student labs and work areas for graduate students. The College uses ITSS provided electronic mail, telecommunications, and technology training workshops. They have indicated that there have been problems with the reliability of GroupWise. Nursing faculty use Blackboard extensively and the training and classroom support services offered by CILT. A few faculty use HTML EZ.

**Residence Life**

The Office of Residence Life has one full-time support staff to administer the department's networks and servers and provide desktop support. Applications include Food Pro for dining hall operations and the campus ID system (ID Works on MS SQL2000). They have been looking at automated room assignment software and hope the new Peoplesoft system can accomplish this.

There is network and telephone access in all residence halls and DSL in the apartments. Five students provide residents with desktop and network support. They also provide a resident Help Desk from 6 PM to midnight. During orientation week, they sponsor an installation fair. Students can drop off their computers for configuration and a cable, and can get assistance if needed. The staff receive reports of up to five to ten DMCA violations per week from residence hall IP addresses and follows though on each of these.

Staff use GroupWise and students use Umail provided by ITSS.

**Others**

Many administrative offices in Twamley Hall are supported by a local IT manager. He supports about 150 PCs, 3 servers and internal network. Departments served
include the President’s Office, VP Finance, VP Academic Affairs, VP Research, Human Resources, Payroll, Business Office, Purchasing, Grants, Accounting, Affirmative Action, Internal Auditing, University Relations, Budget and the Controller. The manager coordinates activities with ITSS however users do not call the ITSS Help Desk when they need assistance but rather call the local IT Manager.
Appendix 3. Southern Illinois University

Southern Illinois University reports a student population of 21,873 of which 16,863 are undergraduates and 5,010 are graduate / professional students. The University has 10 colleges:

- Agricultural Sciences
- Applied Sciences and Arts
- Business & Administration
- Dental Medicine
- Education and Human Services
- Engineering
- Liberal Arts
- Law and Mass Communications and Media Arts
- Medical and Science
- University Studies

Information Technology Support Organization and Governance

The central information technology group is managed by a Director who reports to the Vice President for Administration. There are 83 positions and they support the IBM mainframe and core administrative systems, Unix servers, networks, telecommunication. A university Computer Advisory Committee provides governance.

Sub-Units (Divisions) within Information Technology

- Business Office
- Campus Systems
- Computer Learning Centers
- Customer Service Center
- Information Systems
- Mainframe Systems
- Micrographics
- Network Control Center
- Network Engineering
- Telecommunications Services
Information Technology Reporting Structure

Administrative System

SIU utilizes several core administrative systems. The Student Information System is the SCT IDMS. Financial and Human Resources systems are from Oracle. There are several “home grown” systems including Alumni Development. They report minimal training needs for the SIS but provide much user training on Oracle systems.

Network

SIUnet is a multi-tiered network serving 91 campus buildings. The campus backbone interconnects all major buildings with fiber optic cable. Cisco routers provide the electronics to support a Gigabit Ethernet between these buildings. All undergraduate residence halls are currently wired for Ethernet connectivity and connected to the campus network via fiber optic cable. An intra-campus network exists to interconnect the Carbondale campus with the Edwardsville, Illinois campus and the School of Medicine campus in Springfield, Illinois. The campuses are interconnected via 3 separate T1 circuits running between each location. The campus area network is managed by Netview 6000, Intermapper, CiscoWorks, and Optivity. These software programs are used to monitor and manage the campus network on a 24 hour / 7 day a week basis through a Network Control Center.

Dialin to modems with speeds up to approximately 56Kbps is offered at a charge of $35 per semester in the Residence Halls only. These offer a lower subscriber / modem ratio and thus provide better access. Internet access through the free 56K modem pool, 384 modems is available to all Faculty, Staff, and Students with a valid Kerberos ID. The School of Law, College of Business, College of

Information Technology Policies can be found at:
http://www.infotech.siu.edu/csc/policies/policies.htm
Education, College of Agriculture plus Student Union and Library all have wireless networks. Internet access is via the Illinois Century network and a DS-3 into Internet 2 provides H.323 video conference capabilities.

Electronic Mail

Electronic mail running on a RISC/System 6000 is provided centrally to all faculty, staff and students. A variety of e-mail clients are supported, including SMTP, POP2, POP3, and IMPA4. A secured service provides email access via a web browser.

Help Desk

Information Technology provides an Information Technology Customer Service Center (CSC) as a central point of contact for IT customers. It is open Monday through Friday, from 8:00 AM until 4:30 PM for personal walk-in assistance, and Monday through Thursday from 8:00 AM until 7:00 PM for telephone support, during the regular SIUC semester. A student Help Desk provides walk-in consultation about any supported software, general questions regarding computer usage, and information about who to contact about specific issues.

During intersession and semester break periods, the CSC is open for walk-in and telephone assistance from 8:00 AM until 4:30 PM Monday through Friday.

Roles of the Customer Service Center

- Single entry point for IT customer problems, questions, and requests.
- TAC Team Job Request point
- “Tier-1” technical support to the faculty, staff and students of SIUC including:
  - Software tools and access to information in the SIUC computer network and the Internet.
  - Communication on and off-campus via E-mail, Newsgroups, and the World Wide Web.
  - Desktop productivity software.
  - Job processing on the mainframe computer.
- Technical support for users of the AIS system.
- Management and tracking of customer problems questions and requests from inception to conclusion.
- Administration of problem management system and knowledge base for SIUC.
- AIS problem management system for all SIU campuses.
- Paper and electronic documentation and publications.
- Administration and distribution of:
  - SalukiWare CD
o Virus protection software.

**Desktop Support**

Information Technology (IT) maintains a list (Supported Software and Recommended Hardware Standards) of supported computer hardware and software products. While customers may use this list to assist with the selection of hardware and software, the intent of the list is to identify products and enumerate the level of support available for each. Supported products are items which are available for use via SIUNet or are recommended to customers acquiring computing equipment or software products.

It is IT’s objective to support the most current version of software products because they will often offer clients more functionality and fewer problems. IT also understands that clients will often need some time to implement newer software as it becomes available. Therefore, unless otherwise noted in the product support document, IT will attempt to support the most current major, as well as the last major product version or release for client software products. If the current release has been provided for over one year then only the current release is supported.

The three general areas included in the standards document are defined as follows:

- **Client Platforms:** This area includes desktop computers and work-stations which are generally for personal use. These systems may be connected to other computers in a LAN environment as well as to SIUNet. The client software that typically runs on these desktop machines is also included.
- **Department Servers:** This area includes special-purpose computing systems which provide services to a work group of desk top 'client' computers. These systems may serve as file servers, print servers, LAN domain servers, etc.
- **University Servers:** This area includes computing systems which provide campus-wide services. These systems may provide communications services, e-mail services, computational services, batch job processing, etc.

Information Technology manages the Microsoft Campus Agreement that makes certain Microsoft software available throughout the University. In addition, every faculty and staff may install one copy of the software on a personally-owned computer.

**Telecommunications**

The University has a Nortel MSL100 telephone switch, installed Spring 03. It consists of the base switching system; telecommunications management system;
voice mail system; automatic call distribution software; and first-year warranty on all new equipment and software purchased and installed by Shared Technologies. Also included in the contract award are four years of additional maintenance on the new equipment and software, as well as a total of five years maintenance on all other existing telecommunications equipment presently on the Carbondale campus. This system will allow the Nortel remote switching centers purchased in 1986 to work with the new hardware and software of the Nortel switching platform, thus extending their service life. There are three switching centers on campus: the main switch is located in the Student Center, and two remote switches are located in the Communications Building and Grinnell Hall.

Shared Technologies included fiber optic switching equipment to replace existing outdated analog telecommunications equipment linking the two remote switching centers to the main switching center. This equipment can also be utilized for transporting video and data communications at high speeds across the campus in the future. This equipment also has the capability to provide a self-healing ring in case of a failure at any of the switching centers.

A wireless gateway server was also included at no additional cost. This server will support the University's venture into voice service over the Internet and provide a solid footprint for convergence of campus voice, video, and data communications into a single network rather than the current multiple infrastructures currently being utilized.

Telephone moves, adds and deletes are managed by a subcontractor and telecommunications is beginning to experiment with IP Telephony.

**Student Computer Labs**

Information Technology manages four campus Computer Learning Centers (CLCs) with a total of 550 PCs. The CLCs are open to all students, staff and faculty with valid SIU Carbondale identification. In addition, IT operates eleven computer classrooms that can be scheduled for classes but are open for general use when not scheduled.

Over 500 PCs, Macs, and Unix workstation are in various department labs.

**Research Support**

Information Technology provides researchers with statistical analysis systems on a mainframe (SAS, SPSS, Lisrel, BMPD) and on the desktop (SAS and SPSS in OCs).

**Instructional Technology Support**
In January of 2001, Information Technology and Library Affairs created the Academic Technology Center (ATC), located in Morris Library. This was a merger of IT’s Customer Service Center (CSC), Library Affairs' Instructional Support Services (ISS), and Library Affairs' Systems Services. The new center's objective was the leveraging of the skills and resources of IT and Library Affairs toward their joint instructional technology initiatives.

ATC staff discovered an important unmet campus need: training in the routine use of popular software, such as Microsoft Office products Excel, Word, and Access, which was not available elsewhere on campus. The combined teaching skills of ATC staff included a detailed understanding of the use of the software packages, experience in instructional design, knowledge of evaluation design and interpretation, and the programming skill to create the Web-based registration and data evaluation components.

A multimedia specialist provides a wide spectrum of technology support from web interface design to web course development and streaming multimedia. Expertise is available in the development of multimedia and graphics, internet communications, and online course analysis. Traditional web development is combined with expertise in the latest software for creating advanced sites and incorporating multimedia components. Training and support are available in the development of web-based environments.

The ATC Director reports to the Director of Information Technology and the Dean of the Library. There are fifteen (15) support personnel. They provide one-on-one support as well as scheduled workshops on Microsoft products, Web ADA, WebCT and Security issues.

Twelve classrooms have been upgraded to Smart Classrooms and have received new podiums, projectors, computers, document cameras, VCRs, SMART Sympodiums, lighting, and audio systems. Twenty-two other classrooms will soon be upgraded. Over 380 classrooms have an Ethernet connection.

**College / School / Department Support Services**

In general, IT support services at Southern Illinois University are provided by the central IT organization. All colleges and schools report having numerous computer labs. Many can be scheduled for classes. In addition, a few of the colleges report specialized facilities and services.

The Computer-Assisted Instruction and Research Laboratory in the College of Liberal Arts at SIUC serves all of the departments in the college by providing computer lab space for undergraduate and graduate courses. Half of the CAIRL-CoLA houses Macintosh micro-computers where students are able to work on various types of class assignments; the other half of the CAIRL facility houses nearly two-dozen PCs that provide faculty and students access to the on-line
library card catalogue, the Internet, and mainframe computer-assisted
instruction materials.

The SIUC New Media Center in the College of Liberal Arts is a state-of-the-art
multimedia computer facility. It is designed to serve the needs of faculty and
students who wish to explore the use of computers in teaching, research and
multimedia production. In addition to the labs described above, many of the
individual schools and departments within the College of Liberal Arts have their
own computing labs and resources.

The College of Mass Communication and Media Arts offers a New Media Center
with state-of-the-art multimedia labs, other computer labs with Internet access,
audio and video studios and labs, and research resource centers such as the
Communication Resource Center and the Larry Brown Media Management Lab.

The College of Science offers a modem pool so its faculty and students can
assess the Internet and e-mail from home.

The School of Law has three technical support staff. The School offers students
Internet connectivity through both its wireless and wired Ethernet networks. The
wireless network is available throughout the entire Lesar Law Building, and eleven
wired Ethernet connections are available in the Law Library and the student
lounges.

The SIUC School of Law PC Computer Lab (PC Lab) offers fourteen workstations
with Pentium personal computers (connected by a local area network), Microsoft
Word, Internet Explorer, e-mail (using Webmail), computer-assisted legal
Instruction (CALI) lessons, access to the university’s computers, and the
convenience of laser printing for distinctive documents and resumes. The lab is
open 24 hours a day, although staffing is available only during normal library
hours. Additional software programs are added on an ongoing basis. Use of the
School of Law Computer Labs is restricted to Law Students only.

Information Resources in the School of Medicine is comprised of the medical
library, information services and technologies, telecommunications, and
administrative computing functions (centrally supported software, which is used
throughout the Medical School). Selected services include e-mail and calendaring
systems, videoconferencing, online directory services, web server support,
mainframe computer support, loanable technologies, and education and training.
Appendix 4. University of Missouri – Kansas City

The University of Missouri at Kansas City (UMKC) enrolls approximately 13,000 students (FTE of 8,332: undergraduate 5,333, graduate 1638, and professional 1363) and has 14 colleges and schools:

- Arts and Sciences
- Biological Sciences
- Business and Public Administration
- Computing and Engineering
- Conservatory of Music
- Continuing Education
- Dentistry
- Education
- Graduate Studies
- Law
- Libraries
- Medicine
- Nursing
- Pharmacy

Information Technology Support Organization and Governance

UMKC information technology is managed by a Chief Information Officer and consists of the following units:

- Central Systems
- Multimedia Technology Services
- Networking & Telecommunication
- Operations & Administration
- Support Services
- Training & Communications

Table 2 describes the responsibilities of each division.

Information Technology Advisory Council (ITAC) consists of representatives from Vice Chancellors' offices, Deans, Directors, Faculty Senate and Staff Assembly. Its charge is to review policy and strategic planning for campus-wide information technology.

Policies and procedures are posted on the university web site at http://www.umkc.edu/is/cio/index.html#Policy
University web pages are hosted on a Windows 2000 server running Microsoft Internet Information Server supporting full Front Page extensions, FTP, and NT file system access. Official University web pages are web pages relating to the official business of the University such as the course catalog or departmental pages maintained by University Communications. UMKC offers personal web pages for students on the campus web server.

**Administrative System**

The Administrative Systems Project (ASP) is a University of Missouri system-wide project to streamline and make more efficient and user friendly the finance, human resource, and student administrative processes and systems that support the core missions of teaching, research and service. To achieve this goal will require a combination of process examination/redesign, system replacement, and cultural change.

The President of the University System is responsible for the Administrative Systems Project. KPMG is an implementation partner. The software system chosen is Peoplesoft. The system is comprised of four separate modules, EPM (Enterprise Performance Management), Finance, HRMS (Human Resource Management System), and Student Administration.

Campuses and departments must decide which of their employees will need to use PeopleSoft and thus they will need to be trained. ASP trains people designated and sent by the campuses to be trainers. It is then the responsibility of those trainers to deploy training to employees at their campus/location. A training strategy was developed during the design phase of ASP. Training for end users is offered in advance of deployment of new modules, uses a train-the-trainer model, and is offered at the campuses (i.e., everyone does not have to come to Columbia to be trained). Training will contain information on both the new processes and procedures to be put in place, as well as the new software used to perform those processes. There will also be ongoing training after the new software is put in place for new employees and for those who would like to refresh their skills.

The University adopted a strategy of not modifying PeopleSoft unless there is a strong business case to do so. During each redesign, a team of representatives from each University of Missouri entity will learn about PeopleSoft's related functionality. The team will be asked to assess what the University's needs are and design a process that best meets the ASP vision. Their focus should be first on understanding why the University does what it does today, and second on what it would like to do today (or tomorrow) that cannot be done today. Where the team's redesign is not supported by PeopleSoft, there will be the need to evaluate adding functionality to PeopleSoft (a "bolt on"). There is an established decision-making process for this type of situation. As teams go through redesign, they will look to adopt practices and policies that minimize administrative overhead.
Crystal Reports version 7 for PeopleSoft has been chosen as the reporting tool.

Network

Networking/Telecommunications manages and maintains the campus voice, data, and video network including outlets for phones and data, as well as, wireless, pagers, radios, and voice mail. This unit is also responsible for Networking/Telecommunications, Help Desk, training, and directory listings.

ResNet is part of UMKCnet, a high-speed local area network supported by UMKC. This is a service provided by UMKC and Information Services to residents of the UMKC dorms. Residents have unlimited access to the Internet.

There are Internet 2 projects in School of Dentistry, Arts & Sciences, Biological Sciences, and Communication Studies.

The following table illustrates the UMKC network.
Electronic Mail

In the past the University's approach to electronic mail was uncoordinated among campuses or even departments on the same campus. This led to 25 to 30 different electronic mail systems. University wide with no common directory. To address this problem a University-wide task force was assembled in January of 1997 to formulate a system-wide email strategy for all faculty, staff, and students. This group met frequently for three months and reviewed almost every major electronic mail system on the market. Due to the high cost associated with including students, it was decided that faculty and staff would be the major target of the email strategy. Two software packages, HP Open Mail and Microsoft Exchange were selected for further review. Based on the strategic direction of the University, and projected long-term future of each product Microsoft Exchange was unanimously selected as the best solution. This achieved three primary goals: a single e-mail system University-wide, a common directory University-wide, and reduced support issues associated with multiple e-mail systems.

Help Desk

The UMKC Call Center serves as the front-line, technical support contact for the university. Its main purpose is to provide support to current staff, faculty, and students by resolving computer-related issues. The Call Center staff works closely with Support Services' Desktop Support and Workstation Replacement areas to offer a complete microcomputer support package for faculty and staff.

Call Center assistance is also available for students with dialup, email, and Residence Hall networking issues. Lab assistants are available to help with software support for students at any of the Information Services Labs for software installed there. Limited support for home computers is also available.

Desktop Support

Information Services (IS) and the Information Technology Liaisons (IT Liaisons) work together to provide computing and networking support to faculty, staff, and students in each school and department. The first contact for technical questions should be the IT Liaison assigned to the user’s area.

The IT Liaisons also form a vital two-way communication path. They bring IT news and developments at the operational and functional level from IS and the other liaisons to faculty, staff, and students, and they bring IT concerns, interests, and issues from areas they support to IS and the other liaisons.

This communication occurs through monthly meetings, subcommittees, announcements, and listserv. A liaison’s attendance and participation is important if all voices are to be heard. A liaison’s reporting this information back to the areas
they support is equally important. With this two-way communication, the diverse IT needs of the campus are met.

The UMKC Workstation Support Standards Subcommittee was formed with the purpose of establishing and maintaining the level of support given by Information Services to workstations and their associated software and hardware. A system consisting of three Support Levels, each with its own characteristics, has been established with this goal in mind. Furthermore, an associated Support Matrix has been created, where an appropriate Support Level is assigned to each system supported by Information Services.

The following model explains the three levels of technical support offered by Information Services. Supported products have been categorized according to this system and can be referenced in the Support Matrix.

**Level I – Campus-Wide Support**

Information Services makes a strong commitment to providing advanced support including the installation, configuration, usage and troubleshooting of these products. Many times, the support resources for these systems will be outside the Information Services organization, such as at the UM System level; however, support issues will be routed to the supporting group accordingly.

Level I products have the following characteristics:

- Critical to the University mission
- Widely used across campus
- Evaluated as being one of the top products in its class
- Runs adequately on workstations meeting the UMKC standards for new microcomputers
- Sufficient support resources exist
- Valid licenses exist

**Level II – Specialized Support**

Distributed support personnel outside the Information Services organization support products at this level. Information Services personnel may be involved in the installation of these specialized systems; however, limited or no support for the usage of these products will be given. Information Services staff may also be able to suggest alternate avenues for additional support.

Level II products have the following characteristics:

- Critical to the University mission
- Highly-specialized, niche software
- Not accessible at a campus-wide level
University of North Dakota
I.T. Service Level Analysis

- No guarantee of running on workstations meeting the UMKC standards for new microcomputers
- Sufficient support resources exist
- Valid licenses exist

**Level III – No Support**

All other products will not be supported by Information Services. Products at this level will not be displayed on the Support Matrix.

Level III products have one or more of the following characteristics:

- Not vital to the University mission
- No valid license exists
- No support expertise or resources for the product exists in Information Services

**Telecommunications**

UKMC charges for telephone installation and use. Most campus phone numbers can be directly reached from off-campus by dialing 816 235 before the four-digit station number. The University's telecommunications system has SMDR that logs all internal and external calls.

**Student Computer Labs**

There are four centrally operated labs in the University Center (25), Library (48), Residence Halls (10) and the Northland Campus (25). Each College / School operates their own student computer labs.

**Research Support**

The Center for Academic and Research Computing offers Alpha servers running UNIX and OpenVMS. In addition, SAS and SPSS are available for statistical analysis.

**Instructional Technology Support**

The Technology Assessment & Skills Center (TASC) provides campus-wide multimedia computer training for UMKC faculty and staff. Computer Based Training, using UMKC's NETg Xtreme Learning site, is an additional resource available to meet unique training needs. Here, the computer acts as a personal tutor, presenting instruction in an interactive multimedia format. With this self-paced, self-directed format, one can customize training by selecting only topics of interest, or let the program guide through each lesson starting with the basics.
The Technology for Learning and Teaching Center (TLT Center) advances innovative uses of new technologies in the discovery and presentation of knowledge. The mission of the TLT Center is to further the University's strategic vision of a "Virtual University" with "information age educational opportunities independent of time and place."

The TLT Center provides comprehensive, high quality resources to support faculty from all academic disciplines in the use of technologies to enhance and extend teaching and learning; support research and development through the innovative application of technology; explore, analyze, and assess outcomes of new pedagogical paradigms of learning in an era of technological change.

The purpose of the Center is to provide the equipment, expertise, and technical support needed to discover, understand, and integrate new technologies into classroom teaching to enhance teaching, learning, and research in all disciplines. The Center provides a venue for faculty to formulate goals and objectives and describe needs for incorporating technology into their individual disciplines. The Center is a place where faculty, in collaboration with each other, nationally recognized scholars, and Center personnel can: learn about new and existing technologies; evaluate new educational software; author web pages; design web based instruction and multi-media; integrate computer simulations; assess the effectiveness of technology in student learning; and determine which traditional and innovative methods and resources are most appropriate for a given student learning objective. The Center encourages interdisciplinary collaboration and works cooperatively with the academic instructional materials laboratories. The outcomes of this collaboration will enable students to participate in building their knowledge using technology as one of the tools of scholarship - to prepare scholars for the 21st century.

The TLTC has a staff of two. It offers a variety of services to faculty members at UMKC. These include one-on-one consultations, workshops covering a variety of topics, and consulting on special projects.

- **Instructional Technology:** A series of IT Topics are available to assist faculty in acquiring the skills necessary for the development of web-based authoring, and both large and small projects. Specifically, topics will be aimed at using the software (WebCT, Dreamweaver, Authorware, etc.) supported by the TLTC, and using the hardware resources (scanning, digitizing audio/video, etc.) available at the TLTC. Topics will be varied and will be directed toward those with little or no experience and also toward those with more advanced skills.

- **General Consultation.** A number of hours each week are set aside for general consultations with faculty who may be thinking of submitting a special project proposal or who have general questions about integrating
technology with their teaching. One-on-one or small group sessions are available to help answer questions on a variety of topics, such as: where do I begin, what tools are best for the job, which software package is best, what is the latest technology that can help me achieve my goals, how much time will it take me to achieve my goal, etc.

WebCT is administered and supported by the Technology for Learning and Teaching Center.

Multimedia Technology Services provides campus video production, multimedia presentation technologies, cable TV channels, satellite and Internet programming and scheduling as well as instructional computing.

Training and Communications provides hands-on and video technology training for faculty and staff and computer based training free of charge to the entire campus. Training and Communications also produces or coordinates the various IS publications and special events.

An Instructional Technology Assessment was performed by Eduprise (now a division of Collegis) in November of 2000. It can be viewed at http://www.umkc.edu/is/cio/eduprise.pdf.

College / School / Department Support Services

The IT Liaisons provide much of the desktop support at UMKC supplemented by IT staff. However, most colleges and schools provide faculty and students with some level of local support. For example, the College of Arts and Sciences has a webmaster. The School of Biological Sciences provides support to faculty with online instruction support. The School of Computing and Engineering employs a computer operations manager and has six computer labs with over one hundred computers. The School of Law Library includes computer, network and multimedia specialists.

The School of Medical has several organizations that provide various types of technology support. The Office of Educational Resources is an 18-person department whose primary directive is to provide support for the development of educational materials for the undergraduate program at the School of Medicine. These services range from audiovisual services to medical photography to graphic design. Most undergraduate services are provided at no charge.

The Medical Education Media Center’s mission is to provide an instructional resource lab offering audiovisual and multimedia computer-based learning for faculty, staff, and students. The collection of over 4,000 items is composed of anatomical models, audiotapes, laserdiscs, slide sets, tutorial software and video programs for lecture support and self-study.
Evaluation & Computer Resources provides software and computer assistance for the School of Medicine, testing services and database assistance. The department includes the Medical Education Media Center and the Technical Learning Center. It also works with the Office of Educational Resources to develop and maintain the School of Medicine's Web site.
Table 2. Services Provided by UMKC information Technology Services

<table>
<thead>
<tr>
<th>Central Systems</th>
<th>Multimedia Technology Services</th>
<th>Networking &amp; Telecommunications</th>
<th>Operations &amp; Administration</th>
<th>Support Services</th>
<th>Training &amp; Communications</th>
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</thead>
<tbody>
<tr>
<td>Responsible for management, administration and support of large-scale and shared computing platforms, including enterprise file and print services, enterprise host-based computing systems and electronic mail services.</td>
<td>Responsible for the management and support of campus video production, taping and editing services.</td>
<td>Responsible for the design, engineering, installation, maintenance and repair of campus information transmission systems, including coordination with global networks and coordination of FCC licenses.</td>
<td>Responsible for entire division’s budget and financial planning, including pricing, billing, forecasting and auditing.</td>
<td>Responsible for campus-wide dispatch Call Center, analysis of Call Center data and accumulation of solutions in the knowledge database.</td>
<td>Responsible for internal and external IS training, with focus on personal computer software and hardware training for UMKC faculty and staff.</td>
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<tr>
<td>Responsible for capacity planning for existing and anticipated enterprise systems.</td>
<td>Responsible for the management, installation, maintenance and repair of multimedia presentation technologies.</td>
<td>Responsible for the management of the campus network, including cable and port assignments, network addresses, phone numbers and user names; security, performance monitoring, traffic analysis and</td>
<td>Responsible for the entire division’s project coordination, planning and management.</td>
<td>Responsible for complete life cycle support for standard workstations, including procurement, installation and ongoing support; hardware and software support; and asset tracking, inventory management, lifecycle planning, and the workstation.</td>
<td>Responsible for internal and external IS communications, including the design and development of electronic and printed publications, reports, public relations events and special presentations.</td>
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<td>Responsible for system-level security on campus, through</td>
<td>Responsible for the management, scheduling and programming of metro-area educational and campus cable TV channels.</td>
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<tr>
<td>Programming and scheduling of multimedia transmissions via satellite and the Internet.</td>
<td>Forecasting; and publishing the campus phone directory.</td>
<td>Planning for new computing facilities and student labs; and ongoing maintenance of established facilities.</td>
<td>Replacement program. Responsible for departmental client consulting and distributed support, in partnership with IT Liaisons, to facilitate technology initiatives.</td>
<td>Assisting IS in running a high-performance organization through staff development, change management and organizational planning. Responsible for assisting IS in continuous improvement of products and services, including training on evaluation process, data collection and analysis, and evaluative instrument.</td>
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<tr>
<td>Responsible for design, development and programming of custom applications, database applications, administrative reports and interfaces to enterprise applications.</td>
<td>Responsible for providing telecommunication services and devices to clients, including consultation and service activation.</td>
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<tr>
<td>Responsible for advanced statistical analysis, account generation and access privilege feeds to enterprise systems.</td>
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Appendix 5. University of Louisville

The University of Louisville had a headcount enrollment in 2002 of 21,089 and employed about 5,400 faculty and staff. It has twelve colleges and schools:

- Arts and Sciences
- Business and Public Administration
- Dentistry
- Education and Human Development
- Graduate School
- Social Work
- Law
- Medicine
- Music
- Nursing
- Public Health and Information Sciences
- Speed Scientific School (Engineering)

Information Technology Support Organization and Governance

The Information Technology support division is headed by a Vice President for Information Technology reporting to the President and is organized into ten units responsible for delivering a variety of services to the University community:

- Communications Services
- Data Center Services
- Imaging and Television Services
- Information Systems
- Operations Center
- Printing Services
- University Publications
- Instructional Technology / Instructional Support
- CopyIT Centers
- Office of the Vice President

The Academic and Administrative Technology Committee (with representation from all academic and support units, the Office of the Vice President for Information Technology, and the constituency assemblies) advises the University on information technology issues, and it plans long-term developments to maintain the university’s leadership statewide in information technology.

Information Technology policies can be found at http://www.louisville.edu/it/ITpolicies.html
Administrative System

The University of Louisville primarily utilizes the PeopleSoft ERP solutions for the university's information systems. This includes Student Administration, Human Resources, Financials, and EPM (Enterprise Performance Management) for data warehousing. Since 1997, an increasing number of Information Systems (IS) staff have been dedicated to the implementation, upgrade, enhancement, and maintenance of these applications. One aspect of these solutions is the requirement for functional analysts to work as part of the overall support team. The functional analysts are experts in their particular business functions, and become the experts for the functionality of the particular ERP module that supports their business operations. They work side-by-side with the technical staff to support the ERP applications, and in most cases, have their offices in IT while still reporting to their respective business offices. Today, the ERP efforts consume approximately 83% of the total IS staff, with the remaining staff devoted to the support of a handful of non-PeopleSoft applications, document imaging and web development activities on a fee-for-service basis.

The I.T. staff supports its Peoplesoft users in the following ways:

- Analyze customer requirements for information systems and write requirements definitions, scope documents, feasibility studies and Requests for Proposals
- Support customers' missions and processes through consultation, problem identification, problem resolution and avoidance, and technological direction
- Design, develop, implement, enhance, and support information systems
- Provide desk-top integration with information systems
- Evaluate, recommend, implement, upgrade, enhance, and support purchased information systems
- Provide data management
- Plan, organize, schedule and coordinate information system projects
- Provide cost analyses for information systems projects
- Coordinate contract services for departmental computing needs
- Establish, maintain and enforce design and programming standards
- Identify new hardware and software technology for information systems
- Evaluate, recommend, implement and maintain database management systems
- Research and acquire end-user tools (e.g. reporting tools, OLAP tools, et al)

Network

The University of Louisville has a campus network that spans three major campuses and several remote locations. It is installed, designed, and managed
University of North Dakota
I.T. Service Level Analysis

by the department of Information Technology/ Communication Services division. It consists of a router based TCP/IP network which is connected to the Internet, the Commonwealth of Kentucky Network, Louisville Academic Medical Center (LAMC), the Louisville NAP and the Kentucky Educational Computing Network (KECNET). The physical topology of the entire router based network including all intra-facility and inter-facility cabling will be extended by Information Technology/Communication Services personnel only.

Wireless networks are installed as a complement to the wired network. Wireless networks provide a shared bandwidth that does not provide the security or performance of a wired network.

Each Access Point installation is $1850.00 and includes: Access Point, antennae, wired Ethernet connection, secure housing if needed. A monthly charge is applied to each AP of $88.00 and includes: Wired Ethernet line to AP, maintenance, operating support, and administration.

The policy of the University is that only authorized Information Technology staff may install, manage or change the network infrastructure. Unauthorized changes to the network can seriously compromise the reliability, performance, security and availability of the network and its services. In addition, illegal wiring may be in violation of FCC regulations, and fire or building codes which may create a public safety hazard.

It is a violation of this policy for departments or individuals to install their own communications infrastructure, or modify the existing communications infrastructure in any way. Departments or individuals installing their own communications wiring or networking equipment will not receive IP addresses for their computing systems and will be subject to disconnection from the university network.

Communication Services facilitates the efficient and effective use of delivering and networking information technology.

- Provide efficient and effective delivery of and access to information technologies (Voice, Data, and Video Networks)
- Assist customers in the efficient delivery of and access to information and network design
- Research, develop, and deploy effective networking and infrastructure standards
- Provide network management and engineering services for all control, scheduling, operations, switching, and change management of the voice, data, and video distribution and infrastructure
- Design, maintain and install all cable, fiber, coax, and other network infrastructure facilities to support the campus community
• Coordinate network service delivery, including installation, maintenance, communication, and billing services
• Investigate and evaluate new network and telecommunication services and products in order to provide efficient and cost-effective technology solutions for the University
• Provide overall management for long distance services, account management, and billing

There is a Security & Account Management group whose mission is
• To protect and secure the University's computing and telecommunications resources.
• To provide disaster recovery coordination for the IT data center.
• To serve as a resource to university units for their disaster recovery planning.
• To process customer requests in a timely manner for:
  a. New computer accounts
  b. Changes to existing computer accounts
  c. Access to data and applications
  d. Problem determination and resolution

Electronic Mail

The University offers two electronic mail options:

• GroupWise – graphical-based, client/server GroupWise application, integrating e-mail, calendaring, scheduling and task management

• Athena – a UNIX e-mail server. Clients include Pine, Netscape Communicator (POP or IMAP), and Eudora (POP)

The decision to use GroupWise, Athena (UNIX) e-mail, or a mixed environment is based on the groupware/e-mail needs of the workgroup or department.

Student e-mail (web-Mail) provides a browser-based interface to the Athena server.

Help Desk

The IT Help Desk provides information and assistance to all members of the University of Louisville community 24 hours a day, 7 days a week, 365 days a year. Heat is used for request tracking, including a web client for users to directly enter requests. The IT Help Desk File Cabinet contains links to almost every document relating to computing at UofL. An extensive list of topics can be found at: [http://www.louisville.edu/it/helpdesk/filecabinet.html](http://www.louisville.edu/it/helpdesk/filecabinet.html)
Desktop Support

The University’s Information Technology staff provides 24-hour on-call support for its systems, and provides training, support and documentation for information systems including end-user tools.

The University Administration has endorsed the recommendation of the Strategic Review of Information Technology to "establish a two-tier support structure for faculty and staff." This structure includes "the appointment of full-time IT generalists in academic schools, colleges, and administrative units" (tier I) and "the establishment of Information Technology as the second tier of support, providing deep technical expertise and institutional planning, standards, training and campus-wide systems."

Norton’s Anti-virus software is available throughout the university.

Workstation Consulting offers assistance with hardware requirements, pricing for individual PCs or for large quantities, and financial assistance through the University’s PC Finance program.

The Workstation Replacement Program was initiated as part of a strategy of consistent technology replacement, and as a way to assist units with limited funding. It utilizes CAR(Continuing Annual Requirement), which encourages the establishment of a technology budget or a plan for technology replacement.

Under this program, the university buys the equipment for the department and the department repays the university over a period of two or three years. The equipment is the property of the department, and it can deploy it in whatever fashion it wishes, during and after the finance term within the limits of university regulations.

This plan allows for the replacement of technology on a consistent basis without competing with other projects and departments for funding. This consistent replacement allows the department to stay current with ever-changing technology requirements.

I.T. supports a workstation replacement program. There are two plans:

- **Platinum Plan** – for 12% annually of the computer purchase price, department gets unlimited support, software installation and support, network connection, OS updates, and application updates, including virus protection.
- **Gold Plan** – for existing computers – for $315, department gets same as above.
Telecommunications

The University of Louisville is currently outsourcing the telecommunications service of call handling processing to Bellsouth. This arrangement is provided via the Telco’s Meridian Digital Centex (ESSX arrangement) through a Northern Telecom, DMS100/200 Digital Switch. This arrangement provides a comprehensive set of efficient, low-cost voice, data, and video services as needed. The services originate in the Telco’s central office and are accessed city-wide as requirements dictate for off campus services.

IT/CS is currently supporting approximately 8,000 dial tones across the city and state. Also, IT/CS is responsible for the connectivity from each building’s Main Distribution Frame (MDF) out to the departmental rooms. This includes riser cables, termination blocks in Intermediate Distribution Frames (IDF), and station cable in each room.

The Video Services Team repairs Television production and broadcast equipment and operates and maintains broadcast, microwave, ITFS, Metroversity, satellite uplinks, downlinks and other broadcast related systems. They operate and provide interfacing with other broadcast and multimedia systems throughout the state and country.

Video Services also maintains campus cable (Insight) system for all three campuses (Belknap, HSC and Shelby). The team installs and repairs cable drops (outlets) in university buildings. To insure that standards are met, Video Services checks for compliance with FCC, FAA, and EPA rules and regulations, regarding broadcast licenses.

Student Computer Labs

The four IT Computing Centers provide access to and full support for the latest communications and desktop productivity applications, including Host Explorer, GroupWise, Microsoft Office, Netscape Navigator, and WS_FTP. Additionally, access is provided to faculty courseware, such as SPSS. Optical scanners and software are available at the HSC, North, and South Computing Centers to scan graphics and text.

All IT Computing Centers are ADA-compliant with regard to their physical accessibility. IntelliKey computer keyboards is available for those with hand/eye coordination or mobility disabilities. For those with visual disabilities, Braille printers, a Kurzweil reader, CCTV/reverse-image readers, and the ZoomText Xtra Level 2 software is provided.
The IT Computing Centers partner with faculty by making courseware available to students. The courseware installation and support procedures outlined below delineate the responsibilities of the IT Computing Centers and the faculty member.

Installation

- A completed and signed "CourseWare Installation Request Form" (located at http://www.louisville.edu/it/compctr/policies.html) must accompany each courseware installation request.
- Courseware must be received by IT Computing Centers’ staff at least one month before it is required to be made available for student use. Please note that installation times may vary, and that the average time for most courseware installations (from initial request to completion) is one week.
- It is the responsibility of the faculty member to contact the courseware publisher in advance of the installation and secure copyright clearance for the courseware. Courseware installation will not begin until a copy of the copyright clearance has been received by IT Computing Centers’ staff. The copyright clearance must clearly delineate how many users may use the courseware concurrently.
- Courseware must be furnished on original media. The faculty member agrees to allow IT Computing Centers’ staff to keep a copy of the original installation media for as long as the courseware is to be made available.
- The faculty member must furnish a complete set of documentation or a suitable equivalent for IT Computing Centers’ staff to place on reserve.
- The faculty member agrees to test the courseware before IT Computing Centers’ staff will make the courseware available for student use.

Support

- Students will be referred to the faculty member for support beyond locating and executing the application. Please note that the IT Computing Centers and the IT HelpDesk do not support courseware.
- If students encounter operational errors using the courseware they should be instructed to contact IT Computing Center staff on-site immediately, so that the problem can be addressed quickly.
- IT Computing Centers staff will notify the faculty member of any courseware unavailability as far in advance as possible.

Research Support

The Dahlem Supercomputer Laboratory is located in the Henry Vogt Building at the J.B. Speed Scientific School of the University of Louisville. In its confines is located Velocity, an IBM RS/6000 SP2 supercomputer, 20 Hewlett Packard X terminals, and 25 Dell workstations. Velocity is a RISC (Reduced Instruction Set Computing) scalable parallel system based on the IBM PowerPC chip. The
system currently consists of 28 nodes with a total of 112 processors, each at 332 MHz, 28 GB of memory, and 543 GB of disk storage. Velocity's 35.7 Gigaflops of aggregate processor speed is used for a wide range of research in addition to the support it provides for academic studies.

**Instructional Technology Support**

Instructional Technology/Instructional Support (IT/IS) assists the University and its extended community in the utilization of instructional technology. IT/IS promotes and facilitates the use of a comprehensive program of resources and training to enhance teaching effectiveness, strengthen research, improve productivity, and encourage distance learning. It's Director reports to the Vice President for Information Technology.

The University of Louisville offers many computer training opportunities through Instructional Technology/Instructional Services. Training is offered in different formats including: & all day, short courses, departmental, and a self-study lab. The courses are available to all faculty and staff of the University of Louisville each semester.

University IT/IS office provides Instructional Technology Classroom Design & Development. See [http://www.louisville.edu/it/itis/classroom_support/](http://www.louisville.edu/it/itis/classroom_support/)

**College / School / Department Support Services**

The University of Louisville has a policy that first tier information technology support should be within the College or School or department. Therefore, there are support personnel within each school. For example, the College of Arts & Sciences has four IT staff: the Assistant to the Dean for Technology, two Technology Consultants and one website coordinator. The Arts and Sciences Technical Support Team provides support to all faculty and staff of the College. For, Staff cooperate with departments with dedicated support persons to provide additional support. Services include technology consultation, implementation of technology plans, recommending disaster recovery options, analyzing security weaknesses, computer usage assistance and training, computer deployment, and hardware and software troubleshooting.

The School of Law supports faculty,, staff and student information technology needs through staff in the Library: an Automation Librarian and a Computer Services Manager. Westlaw, LexisNexis, computer-based exercises from CALI (Center for Computer-Assisted Legal Instruction), the Interactive Courtroom, and more add 21st Century tools to a traditional legal education. State-of-the-art instructional technologies, a web-based Intranet, two computer labs, the Allen Courtroom’s contemporary litigation environment, and a full-time technology staff provide a wealth of services to every Brandeis School of Law student.
The Law Library maintains 22 computers and two network laser printers in two labs reserved exclusively for law students. Lab computers are connected to a high-speed, local area network on which every student is given an account. The account gives the student file storage space on the student server. The Law Library also has six network-ready carrels for notebook computer users.

Each lab computer features the Windows NT operating system; Microsoft Office and Corel WordPerfect Suite; Microsoft Internet Explorer; CALI exercises; and access to Westlaw and LexisNexis legal research services, the World Wide Web and electronic mail.

Brandeislaw.Net is the Brandeis School’s Intranet, an internal web site that serves as our “community bulletin board.” Students can download course syllabi, assignments, handouts, old exams, and other materials; browse job listings from the Career Services Office; review the Public Service Program’s placement catalog; and get news, calendars, schedules, and more.

Technology is becoming part of law teaching and learning as the faculty incorporate presentations and Internet resources into the classroom experience. Students, as well, are frequently given the opportunity to deliver in-class presentations and develop technology skills that will serve them in their professional lives. Three of the Brandeis School's classrooms are equipped with brand new “smart podiums,” each of which includes a computer, document camera, VCR, projector and Internet access.

The School of Medicine supports information technology though the Biomedical Engineering department with two desktop specialists and one student computer lab manager.
Appendix 6. Ohio University

Ohio University has 16,332 undergraduate and graduate / professional students and 775 full-time faculty. It has 10 colleges and schools:

- Arts & Sciences
- Business
- Communication
- Education
- Engineering
- Fine Arts
- Health & Human Services
- Honors Tutorial
- University College
- Osteopathic Medicine

Information Technology Support Organization and Governance

The university's Information Technology organization is headed by an Associate Provost for Information Technology who reports to the Provost. Computer Services (CS) provides administrative systems for financials (CUFS), human resources, student information (SIS), and other applications; also training, computer labs, test scoring, computer-based testing, site-licensed software. Communication Network Services (CNS) provides phone system, Oak e-mail and web space, online directory, help desk, computer repair, networking installation and upgrades, and videoconferencing.

The Associate Provost chairs the Information Resources Council which functions as a representative advisory committee with respect to information resources policy, standards, services, and allocation of resources. There are 27 members representing Colleges and administrative departments. There are no student representatives.

I.T. policies and procedure manuals can be found at http://www.ohiou.edu/computers/pubs.html

Administrative Systems

All centrally maintained university administrative systems are developed and maintained by the Administrative Systems group. These systems include:

- Student Information System (SIS),
- Student Financial Aid (SFA),
- College and University Financial System (CUFS),
- ...
University of North Dakota
I.T. Service Level Analysis

- Human Resource Management System (HRMS),
- Central Food Services, and
- Life-Long Learning.

The Administrative Systems Development staff create and maintain software for these systems. The software runs on a number of different platforms, including IBM mainframes, Windows NT Server, Solaris, and Digital Unix. Access to the information is provided through the particular application and in many cases also through the Web.

Network

The Ohio University Wide Area Network ("WAN") provides data communication within and between all of the campuses of Ohio University. The Ohio University WAN includes high-speed connections between the Athens campus and the regional campuses (1.54 Mbits/sec) and a high speed connection (45 Mbits/sec) from Athens to the Internet through OARnet (the Ohio Academic Resource network).

Every office, classroom, lab, and departmental meeting space on campus comes standard with at least one Ethernet jack for accessing the campus network and the Internet. Additional jacks are available for a fee, as are 100 Mbps Fast Ethernet connections for use with servers or network-intensive personal computer applications.

A number of University offices are equipped with dedicated WAN port connections. These are effective for text access to central systems, including OAK, OUVAXA, and the IBM mainframes. They are now more expensive than the direct network connections that also permit graphical Web browsing and higher-speed data access, so very few new WAN Port installations are planned.

The Wide Area Network is available for dial-up access via modem connections. There are three conventional modem pools:

- 18 slow-speed modems provide service up to 2,400 bits/sec, from off-campus and from on-campus.
- 22 high-speed modems provide service up to 14,400 bits/sec from on-campus only.
- 72 high-speed modems provide service up to 56,000 bits/sec (X2 and V.90) from off-campus only.

These modem pools provide a menu system for easy access to OAK, ALICE, and other central systems at Ohio University. The two high-speed modem pools support all the industry standard data compression and error correction protocols. There are no fees for using any of these three modem pools. These free modem pools do not support direct internet access.
There is also dial-up Internet access, provided through Communication Network Services (CNS). There are now 72 modems for this service available from off-campus and another 48 modems available from on-campus, all operating at 56,000 bits/sec (X2 and V.90). This service costs $1 per hour for connect time during peak hours, and less during off hours, billed by the minute. These lines support PPP for TCP/IP connections. These modems are local telephone calls in Athens and the immediately surrounding areas.

Ohio University CNS currently offers free wireless Internet access in selected locations on the Athens campus. All that is needed is a wireless-capable computer and a valid Oak ID and password to begin using this service!

Residence hall telephone circuits can be used with modems for dial-up to the University’s modem pools, as described above. Each room has one Ethernet jack.

Ohio University is connected to Internet 2. The current users include the following: The Accelerator Lab, Stocker Lab, Clippinger Labs, the Permanent Virtual Connection (PVC) between OARnet and OARnet’s POP, the Radio and Television building, and the internal network is in the process of being upgraded.

**Electronic Mail**

Oak is Ohio University's e-mail, on-line directory, and personal network file storage environment. An account on Oak includes 12 megabytes of free e-mail storage, a customizable entry in the University's on-line directory, and the option to publish a personal web page. The Oak account also is the key to on-line services at Ohio University like class registration, course materials on the Blackboard web site, free software, and inexpensive off-campus Internet access.

**Help Desk**

The Support Center handles computer, Internet, and Oak e-mail questions, trouble reports, repairs for University and personally-owned computers, equipment check-out and sales, password resets, virus recovery CDs, and disk repair, as well as providing expert technical advice on purchases and upgrades. There is a factory-authorized warranty service center for Gateway and Apple computers.

**Desktop Support**

Both the Computer Services Center ISL and the Alden Library ISL have program advisors (consultants) on duty during the hours that the lab is open. Advice services include helping to resolve problems in using computer hardware and software, but do not routinely extend to tutoring in the academic subject at hand. The advisors are provided with reference manuals for the software in use in each
ISL, and work with the user to identify the problem and discover its solution. These student workers are typically hired in their first or second year at the University and continue until they graduate, so average experience levels are quite good.

Computer Services staff members are also available to assist faculty members and graduate students in using existing software or developing new programs to support the instructional and research missions of the University. The Staff Statistician provides assistance with the use of several commercial statistical software packages.

Non-credit seminars and other forms of instruction are offered to users free of charge on a quarterly basis. Topics vary according to need, and include introductions to using the Internet, IBM Mainframe CMS, SPSS, SAS, Excel, Microsoft Word, PowerPoint, Access, PageMaker, PhotoShop, Lotus 1-2-3, WordPerfect for Windows, CRAY Job Submission, CRAY FORTRAN Vectorization and Optimization, OAK Internet Access and E-Mail system use, Microsoft Word for Windows and Word for Macintosh, MacDraw, and Web Page authoring. Information is available on-line describing the courses and their current schedule.

Reference materials for the IBM mainframe systems and user manuals for the major supported software packages are available in the Computer Services Center and Alden ISLs. Handouts prepared by Computer Services serve as an introduction to most supported software, and are available free of charge. These include a 120-page introductory book, Mainframe User's Guide and Reference.

**Telecommunications**

Telecommunications is a part of Communication Network Services and provides telephone, voice mail, long distance, repair, and move / add / change service throughout the university including residence halls. Students, faculty, and staff can make long distance calls from any on- or off-campus Ohio University telephone by using an 8-digit “Bobcat” Account Code. This code also works like a calling card to place long distance calls when traveling.

The Bobcat Account Code is a unique, university-issued 8-digit PIN that allows:

- Long distance calls from any office or residence halls, at discounted, direct-dial rates
- Long distance calls while traveling or from a non-university off-campus telephone by dialing an 800 number
- Voice mail and/or a second line for a residence hall room
- Access to the campus network and the Internet via modem using DialNet.
Student Computer Labs

Ohio University provides fifty-six computer labs that are available for students to use. These student labs contain 777 IBM PC and compatibles, 400 Apple Macintosh systems, and 66 (Unix or VMS) engineering workstations. Of the 1,240 PCs, Macs, and workstations, at least 946 have network connections and so can also be used to access central services, including the Web. The labs also contain 46 terminals for use with central computers, and in addition, 18 Rapid-Check E-mail terminals are available at other locations around campus.

Some of the labs are available only to those enrolled in particular classes when the professor is there; others are available only to students in a particular department; other computer labs are available over 100 hours a week to any student who wants to use them (and many other arrangements). Labs available to all students include the four labs operated by Computer Services.

Research Support

Computer Services supports research activities, primarily faculty and graduate student, in a number of ways. The IBM mainframes and the OUVAXA system are available for sponsored and un-sponsored research. The campus network can be used to access external computational resources, including those of the Ohio Supercomputer Center and the Internet 2, discussed above. Many research projects benefit from the statistical consulting services and access to commercial statistical software for PC and mainframe use, provided through Computer Services. These include Windows-based SPSS, AMOS, SAS, S-Plus and SigmaPlot.

Instructional Technology Support

The Center for Innovations in Technology for Learning (CITL) is an academic support facility available to faculty interested in instructional innovation. It’s Director reports to the Associate Provost for Information Technology. Faculty seeking assistance in designing, developing and assessing instructional resource materials and technology-based tools and applications can visit the CITL lab or contact a CITL staff member to set up a consultation.

CITL provides extensive support for Blackboard. See details at http://kant.citl.ohiou.edu/bb/bb_support.cfm

CILT has published a 7-step model for using Blackboard in a course. It can be found at http://kant.citl.ohiou.edu/toolkit/7Stepmodel.pdf

CITL supports a computer lab available to Ohio University faculty for use in designing and developing digital IT resources for classroom or online teaching and learning environments. There are a series of User Guides available to assist
in using the lab hardware and software. These user guides are available via a web browser as well as in a printable .pdf format.

The Ohio University Guide to Instructional Technology Services can be downloaded from http://kant.citl.ohiou.edu/techguide.cfm

The Center for Information Technology Education (CITE) was created as a central place for the information technology academic programs to coordinate collaborative projects among themselves. The Mission of CITE is to:

- Assist Ohio University’s information technology programs in providing a quality education to produce graduates who can meet the future information technology workforce needs of the state of Ohio
- Direct interested students to the information technology program that best meets the student’s goals
- Promote collaborative research, teaching, and grant writing opportunities among Ohio University’s information technology programs
- Work with other organizations to address the concerns of technology infrastructure within southeastern Ohio

**College / School / Department Support Services**

Desktop and some network support is very distributed in some colleges at Ohio. For example, the College of Arts and Sciences has a staff of fourteen specialists, mostly distributed to individual departments. The College of Engineering and Technology has an IT staff of three. The College of Health and Human Services has a technology coordinator with ten associates. The College of Osteopathic Medicine operates an Office of Information Systems and Instructional Technology with a staff of sixteen.
Appendix 7. SUNY – Buffalo

The State University of New York at Buffalo (also known as the University at Buffalo – UB) has 17,290 undergraduate and 8,548 graduate / professional students. It has fifteen Colleges and Schools:

- Architecture and Planning
- Arts and Sciences
- Dental Medicine
- Education
- Engineering and Applied Sciences
- Public Health and Health Professions
- Informatics
- Law
- Management
- Medicine and Biomedical Sciences
- Nursing
- Pharmacy and Pharmaceutical Sciences
- Social Work
- Roswell Park Cancer Institute Graduate Programs

Information Technology Support Organization and Governance

Buffalo's Computing and Information Technology (CIT) provides IT services to the university. There are six departments: the Office of the Chief Information Officer (CIO), Academic Services, Administrative Computing Services, Operational Support Services, Technical Services, and the Educational Technology Center. The CIO is a Vice President and reports to the President of the University.

The CIT’s organization chart can be viewed at:
http://wings.buffalo.edu/it/about/cioorgchartmarch2003.pdf

There is an Information Technology Coordination Committee charged with:

- Structuring and defining projects
- Developing project plans, including budgets and schedules
- Providing project leadership
- Monitoring budgets and schedules
- Reporting on project progress to the Steering Committee
- Conducting process reviews, technical reviews and analyses

There is also an Administrative Systems Advisory Board with a number of working groups:

- Business Systems
- Office Systems
• Web Team
• Library Systems
• Student Systems
• Infrastructure (w/ 8 working groups)

Buffalo has a series of Appropriate Use Policies and General Usage Policies and Procedures posted on their web site at http://wings.buffalo.edu/computing/policies/

Administrative System

CIT’s Department of Administrative Computing Services provides business systems and student related systems, most running on an IBM mainframe. There is an initiative to move new and existing software systems to the UNIX environment. Software systems have been developed using CA Datacom, Oracle for reporting, and Sybase for the Alumni Development System.

Business Systems include:

• Payroll
• Personnel
• Accounting
• Budget
• Campus Parking
• Entity
• Revenue Distribution
• State Employee’s Federated Appeal

Student Related Systems include:

Those that support the Admission process:

• Current Status Report
• Undergraduate Admission
• Graduate Admission
• Medical School Admission
• Non-UB Academic History System

Those that support the students

• Current Status Report
• Academic Skills
• Course System and Schedule 25/25e
• Degree Audit and Reporting
• Entity
University of North Dakota
I.T. Service Level Analysis

- Exam
- Grading
- Housing
- Institutional Studies Information System
- NCAA Athlete Tracking
- Registration
- Student Online Access to Records
- Student Demographics
- Student Medical Insurance
- Transcript

Alumni support includes:

- Alumni Development and Advancement Management

MyUB is a web-based, personal portal to the online UB resources. MyUB delivers customized information specific both to individual users and their academic or professional interests.

**Network**

The University operates a high speed internal network, connected to the Internet. IT provides all UB student, faculty and staff with access to the Internet; also public computing areas, dorms, and OpenPorts in the Library. Remote access with over 1000 high speed modems allows faculty, staff, and student campus resources and Internet access from home.

Students have Internet access in the residence hall rooms, the public and departmental computer labs, and off-campus residence sites. ResNet is the physical cabling and support services that makes it possible for students who bring their personal computers to campus to access computing, library, and academic services directly from their rooms. Each student in a university Resident Hall or Apartment has a dedicated Ethernet hook-up that links their PC to the world. ResNet service is provided at no additional cost.

UB is an Internet2 participant, helping to develop and test the next generation of Internet applications with pilot projects to enhance teaching and your learning & research experiences at UB.

**Electronic Mail**

Electronic mail is provided by CIT using Microsoft Exchange servers and Microsoft Outlook client. The UBITName is the key to access email on the UB mail server, MyUB, and other online services. CIT has upgraded its email delivery system to an Internet Mail Access Protocol (IMAP) client/server based
system. An advantage of a client/server environment is increased accessibility to your email. Some email programs store the user's personal preferences, mail messages and address books on the email server; users are then able to access their email from multiple locations and have these resources available to them.

In addition to the Central Email System, many departments and computing nodes on campus maintain specialized email systems to provide services specific to their departmental needs. E-mail can be accessed from anywhere on the internet using any email program which supports the IMAP or POP email protocols (including Mulberry, Netscape Messenger, Outlook Express, newer versions of Eudora, and many more).

**Help Desk**

The CIT Help Desk is the primary means of contact for CIT services. It can be reviewed at: [http://cit-helpdesk.buffalo.edu/](http://cit-helpdesk.buffalo.edu/)

Copies of CIT documentation are available at all public IT computing areas and cybraries. Most of the online documents are available in PDF format only.

**Desktop Support**

The User Services group in CIT Academic Services assists the university community with the appropriate use of information technologies. Its primary services include providing consulting, documentation, and training for supported applications software and operating systems, and managing a number of public computing sites on campus.

Student consultant staff the Help Desk and the various public computing sites. Professional staff are available (by referral from the Help Desk) for in-depth consulting on a variety of advanced topics including statistical packages, mathematical / scientific packages, database systems, programming, and high performance computing. They also provide guidance about adaptive computing workstations which can help the disabled with their computing needs.

IT training programs for students have two components: general workshops that are particularly geared towards students, and in-class teaching programs where an instructor may invite staff to give a regular workshop in a class during their usual meeting time.

User Services provides up-to-date documentation (both on-line and hard copy) in a variety of formats. These include regular publications such as “Basics” for new users to UB computing, various course materials, introduction, technical documents, web pages and help systems.
The Microsoft Campus Agreement allows CIT to distribute certain Microsoft applications (including various versions of the Windows operating system and the Microsoft Office suite of applications) to members of the University community. The MCSA is funded by the student technology fee. UB Micro, UB’s on-campus non-profit computer retail store, is in charge of the MCSA.

CIT has joined the University Libraries to offer information technology workshops to the University community on many different topics. These workshops offer a hands-on classroom approach and are free to all members of the University community.

CIT offers two options for the repair of computers and related equipment:
- UBMicro provides computer repair services, including a 10% discount on equipment purchased at UBMicro.
- Operational Support Services provides hardware repair for the UB community for university-owned computers and peripherals, telephone and data communications equipment, and media equipment.

**Telecommunications**

Operational Support Services provides telecommunications services to the University community.

**Student Computer Labs**

Five Student Computer Labs and 3 “hands-on” computer classrooms are managed by CIT. An array of other labs is managed by the colleges. At present there are well over 1800 personal computers and workstations in campus labs and “hands-on” computing classrooms run by CIT, nodes, and departments.

**Research Support**

Advanced Consulting and Technologies (ACT) provides Web Services, Software and Client Support for faculty, staff, students and researchers at the University at Buffalo. Services include:
- Wings Web services (for Departments, Researchers and Courses)
  - UNIX system administration for Web site owners
  - Web Development programming (Perl CGI)
  - Oracle database programming
  - Video streaming (Real Networks server)
  - Search engines
  - Security issues
- Software Support (on all OS platforms)
  - Testing, distribution, installation, and user support for the following software on all OS platforms
    - Oracle database products
• Mathematics (Maple, Mathematica, Matlab)
• Microsoft Office products
• Mulberry Email client
• Statistics (SPSS, SAS, SPlus)
• Operating Systems Support
  o Microsoft Windows 2000 and XP
  o Citrix Environment
  o Linux
  o UNIX timeshares
  o Apple Macintosh
• Listserv
• Computer Discipline Consulting
• Disk Space
  o Primary contact for handling disk space and quota requests for academic courses.
  o Provide DFS/ACL (access permissions) user consulting.
• Oracle Academic (for teaching database programming)
• UBiquity Server and Software Support (Citrix)

iMedia is a University resource available to faculty, staff, and students who need design assistance or image creation for their instructional or research projects. They provide photography, multimedia, and graphic design, as well as consultation and customized training in graphics applications. Their primary mission is to assist faculty, staff, or students in the development of media resources that suit their particular instructional or research work. Many of iMedia’s services are provided free, or at the cost of materials or other necessary expenses. In those cases where charges to customers do exist, estimates of any costs are always provided, with an emphasis on highest quality/lowest cost alternatives.

Medical Illustration & Graphics (MIG) provides medical illustration, graphic art, technical drawing and related consultation for faculty, staff and students to facilitate teaching, research and learning at the University at Buffalo.

Instructional Technology Support

Educational technology initiatives are coordinated by the Vice Provost for Educational Technology who oversees the Educational Technology Center (.ETC) and manages the Academic IT Nodes.

The Academic IT Node infrastructure provides direct “hands-on” support for faculty seeking to apply technology to their instructional, research, and administrative activities. There are currently eight academic technology nodes.

The Educational Technology Center is dedicated to curricular research and development at the University at Buffalo. Its aim is to help faculty and other UB
instructors to design instructional technology applications and to develop Web-based and multimedia courses. The ETC is a joint project of the Provost's Office, CIT, the Libraries, and UB faculty. Its aim is to focus a major part of IT development at UB in order to consolidate efforts, encourage cooperation, and provide university-wide access to the latest equipment, software, and support.

The ETC is guided by the ETC Advisory Board. The Distributed Computing Consultants (DCC) Executive Board consults with ETC staff and librarians on the development of the Resource Center collection, which is housed in the ETC and can be searched in the ETC Library Catalog.

Several areas provide positions for individual and group research and development. In the main room of the ETC are six Windows 2000 Professional workstations with the same configurations as those in the classroom. Two Macintosh computers, an SGI workstation, a Dell AV workstation, and a Sun Ultra 10 workstation are in another work area. Printers and scanners are available at every position.

The ETC Classroom is a standard "ETEC" room, with a computerized teaching station, a ceiling-mounted projector, screen, visualizer, and VCR. There are twenty PCs (including one handicapped-accessible position) and a network printer. Classroom PCs are Pentium II @ 450Mhz, each with CD-ROM, zip drive, and 17" monitors, running Windows 2000 Professional. Software on these computers includes Microsoft Office 97 and 2000, Netscape Communicator, Internet Explorer, Mulberry, Adobe Acrobat, and most of the software found on the Tech Tools CD. The classroom can be reserved for workshops, presentations, and instruction in various IT applications. It is not available as a classroom for regular courses. When not reserved, the PCs in the room can be used by UB faculty, other instructors, librarians, and IT professionals. In addition to the computer hardware mentioned above, the ETC has specialized equipment, some of which can be borrowed.

Workshop topics include:

- Blackboard on UBlearns
- Web Creation: Beginning
- Digital Imaging and Presenting
- Instructional Design
- Web Creation: Intermediate
- Adobe Photoshop
- Database
- Multimedia

The University at Buffalo now centrally supports an eLearning environment, UBlearns. Faculty and departments use UBlearns to deliver courses and programs in online learning spaces. The need for instructional, interface, and graphic design consultation related to development of eLearning is growing.
eLearning staff at the Educational Technology Center are available to help assist faculty and departments develop, plan, and implement eLearning courses and programs.

UBlearns is a web server at UB that hosts Blackboard, a comprehensive and flexible e-Learning software platform that delivers a course management system. To use Blackboard on UBlearns, you must be a registered UB student. Blackboard on UBlearns is web-accessible 24 hours per day, seven days a week.

College / School / Department Support Services

Most colleges have their own IT support teams. For example, Medicine has 14 staff with 3 graduate assistants in their Office of Medical Computing. The College of Architecture and Planning has three full time staff and 15 graduate assistants that support 12 servers, a Media Services Room, a 32 station Computer Instruction Lab, and a 60 seat multimedia Educational Technology Classroom. The College of Arts and Sciences has 13 I.T. support staff. The School of Pharmacy and Pharmaceutical Sciences has an Educational Technology Center responsible for faulty and staff support, networked servers, computer labs, classrooms and a conference center.

Details of the services offered by each College can be found on the web sites.

The University provides Distributed Computing Consultants to facilitate the development and distribution of information technologies that enhance the mission of the University. Communication within this diverse environment is provided by maintaining an open forum that crosses traditional organizational boundaries. Although the DCC forum's mission is to address the issues and needs of IT support people associated with UB, any UB associated faculty, staff or student who wishes to participate and contribute in the DCC program is welcome to do so.
Appendix 8. East Tennessee State University (ETSU)

ETSU has 11,131 students or 9,431 FTEs. There are 8,286 FTE undergraduates. The remainder are graduate and professional students. There are 8 Colleges and Schools:

- Arts & Sciences
- Business
- Continuing Education
- Education
- Graduate School
- Quillen College of Medicine
- Nursing
- Public & Allied Health

Information Technology Support Organization and Governance

ETSU has a Vice President & Chief Information Officer (CIO) reporting to the President. The Office of Information Technology (OIT) has three Directors, reporting to the CIO. OIT provides university-wide networks, server management, administrative systems, Help Desk, desktop support, instructional technology support, training, and telecommunications. IT Governance is provided by the Information Technology Governance Committee, chaired by the CIO and reporting to the President. The ITGC membership includes all Vice Presidents, chairs of five Subcommittees (Administrative, Academic, Networking, Student Technology Access Fee, and Web), and representatives from Physical Plant, Faculty Senate, Staff Senate, Student Government Association, Dean’s Council and OIT Directors ex officio.

Information Technology policies can be found at:
http://www.etsu.edu/oit/ppp/policies/default.asp

Administrative System

ETSU is part of the Tennessee Board of Regents system. The Board requires all TBR institutions to use the same administrative system. Currently this is SCT/IA Plus but plans are being advanced, but not currently funded, to replace this older system with either SCT Banner or Peoplesoft. There is a staff of seven within OIT that provide both programming and liaison support for the Plus systems: Student Information System, Financial Resources System, Human Resources System, and Alumni Development System. “Web for Students” running on a secure server allows students to apply, register, drop / add, pay tuition, and view personal academic information online.
Network

OIT provides network support to the desktop. Independent network installations are not permitted by policy although there are some wireless hubs that still do not conform to standards. There are over 12,000 network ports in every office, classroom, common areas, and residence halls. Most of the ports are 10 mbps shared Ethernet but there is an effort underway to upgrade most of these to 10/100 switched Ethernet, especially in the College of Medicine offices and labs. The network backbone is connected to TNII (Tennessee Information Infrastructure) with a bandwidth of 9 mbps and to a local Internet Service Provider with a DS-3 (45 mbps). There are numerous T-1 links to Centers in Bristol, Kingsport, and Greeneville as well as medical family practice sites throughout the region. They are not yet connected to Internet 2 but have begun discussions. There is a TBR committee exploring options.

Electronic Mail

All faculty and staff have accounts on a Microsoft Exchange server and use Microsoft Outlook or Microsoft Web Client for email access. Calendaring is also provided by Exchange / Outlook. Most systems on the network use the MAPI protocol for connection. Mail is accessible also by the Microsoft web client. Students use browser / web accessed I-mail. All students automatically get an email account, populated by data from the Student Information System.

Help Desk

All requests for OIT services must go through the Help Desk. Remedy software is used for ticket / task management. Until recently, Help Desk staff were able to assist only a small fraction of calls on the first phone calls. New staff have been hired and trained to provide greater up-front, first-call assistance. The Help Desk processes about 10,000 requests per year.

Desktop Support

OIT User Services has a staff of seven hardware / software desktop support technicians, and six user liaisons assigned to specific colleges / buildings. This zoned support allows individuals to focus on special needs of different constituencies, e.g. physicians. The liaisons are more skilled in supporting the uses of technology while the technicians are skilled in keeping it working.

There is an internal lease program that encourages colleges and departments to get desktop technology on a three – four year replacement cycle. The University buys the systems and the college / department repays over a three year period. At the end of the period, the system is surplused.
ETSU, as part of the TBR system, is licensed for certain Microsoft software under
the Microsoft Campus Agreement for a fixed annual fee. All university computers
have this, as well as other, software installed when purchased. Faculty and staff
can also use one copy of Microsoft Office on a personal computer as long as
they are employed by the university.

Telecommunications

Five Northern Telecomm Meridian switches, linked by a SONET ring, provide
telephone service to ~4,500 telephones, including one in every residence hall
room. Sprint provides maintenance as well as local service access. Long
distance and 800 services are provided by Qwest but this is being bid again.
Two video networks provide commercial cable TV in the residence halls and
satellite downlink distribution and distance education throughout the university.
OIT staff consists of one Telecommunication Manager, two telephone
technicians, one switch technician, one video technician, and an RCDD project
manager.

Student Computer Labs

OIT operates five computer labs, three of which can be scheduled for classes.
There are 450 computers in these labs. All colleges and many departments
operate their own computer labs. The five OIT labs are managed by one OIT
staff, several student managers, and ~100 student workers who also provide a
student Help Desk. The newest lab is called a Student Technology Center as it
provides computing and multimedia classroom equipment for student use.

Instructional Technology Support

There are currently three OIT staff supporting instructional technology, in addition
to the six liaisons in User Services. These are a Director and two training
coordinators. There are also two technicians (plus several graduate students)
providing multimedia classroom design, construction, and maintenance. Until
recently, there was a Teaching and Learning Center; however, this has been
closed for economic reasons and the pedagogical support for faculty is now
provided by the Instructional Technology Support Director. Distance Education
supports on-line and video courses with a staff of four.

Since 2000, ETSU has converted twenty two classrooms and lecture halls into
multimedia facilities. In most cases, this has included “gutting” the rooms and
installing new electrical, lighting, audio, acoustical and seating, as well as
equipment such as computers, projectors, Smartboards, A/V and Elmo’s. There
are four tiers of these multimedia classrooms. Tier one has network and
electrical access for students and cost about $125,000 each. Tier two and three
do not have student network access (although wireless is now being added in
new classrooms) and have varying degrees of renovation. Tier Four is actually a mobile multimedia cart that can be moved from one classroom to another.

**College / School / Department Support Services**

The College of Medicine has three IT staff that support specialized databases and IT projects. They also support a medical practice management system. Like other Colleges at ETSU, most IT support is provided centrally by OIT and the College’s IT staff concentrate on medical applications.

The College of Education has a Director of Technology and one support staff that manage several computer labs and works with faculty on IT projects, including a $1.5M PT3 grant.

The College of Business includes the Computer Science department and one technical staff is associated with this program. This staff manages specialized computer science labs. Other computer labs in the College are staffed by students and faculty, with OIT assistance.

The College of Arts and Sciences includes the Department of Technology that operates the Digital Media Center / Program. The department has a Technology Coordinator that manages several discipline-specific labs. The Digital Media Center has a staff of three, who also teach.

The Colleges of Nursing and Public and Allied Health have one shared computer lab manager.
# Appendix 9. Those Interviewed at UND

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