

Information Technology Division

Bonnie Neas, Vice President



Annual Report 2007 – 2008

Our emphasis on service affirms our commitment to the campus theme "It's About People." We provide a variety of services that assist our customers, from familiar services like e-mail or voice messaging to more transparent functions such as automated system updates. Our goal is to support the scholarship of discovery, teaching, integration and application as our customers address the needs of our community and state, the nation, and the world.

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The start of a new division...

The Information Technology Division is created

In August 2007, NDSU President Joseph Chapman appointed Bonnie Neas as Vice President of Information Technology. The new division included Information Technology Services (ITS) and welcomed University Telecommunications, a department transferred from NDSU Facilities Management. The formation of this new division reflects the significant role IT plays in supporting the business, academic and research functions of the university. Developing a campuswide IT plan and subsequent budget, in conjunction with cultivating the division's vision and direction for the campus, became the focus of the first year.

Because the new organizational structure wasn't officially launched until July 1, 2008, what follows is an overview of the activities of the office of the vice president for Information Technology (VPIT), ITS and University Telecommunications for FY 2007-2008.

A Team is Born

To make the new division a reality, Bonnie assembled a core staff to serve in leadership roles, helping to set the future direction of campus IT. The members of the original team were:

- Bonnie Neas, Vice President Information Technology
- CeCe Rohwedder, assistant to the vice president
- Janet Stringer, IT budget specialist
- Cathy Hanson, HR staff resources coordinator
- Jeffery Gerst, Ph.D., CIO and associate VP for Information Technology Services
- Joan Chapek, director of University Telecommunications

Being able to maximize campus IT resources and develop long-range strategic plans for budgeting, infrastructure, human resources and enhanced technologies was a huge undertaking for this division, and it resulted in the creation of a new position, director of special projects, to assist with these responsibilities. Jean Ostrom-Blonigen joined the division team in December 2007 to develop and conduct complex financial, budget and business-related analyses as they related to campuswide IT costs, expenditures and future needs.

The Challenge: Coming Together Under One Roof

Finding suitable space for the VPIT staff became a challenge. After several discussions there was an agreement to remodel the IACC 204 conference room into offices for Bonnie, Janet and CeCe. Cathy and Jean would have offices in the IACC 206 office area. While facilities management worked on designing and remodeling the space, which began in late August 2007, Bonnie and CeCe were able to occupy space in IACC front office area. As the VPIT staff moved into its new location in April 2008, Joan Chapek moved into IACC 206A. Having the VPIT's leadership team close helps the organization's communication efforts.

Defining IT

An open forum titled "Defining IT at NDSU," was held on March 27, 2008, to provide an overview of needs, challenges and direction for technology on campus. President Chapman opened the forum with a few comments about the new division, followed by presentations from IT staff, as well as from Holly

Bastow-Shoop, chair of the campus IT Council, on the current state of technology services at the university. Students, faculty and staff were invited to participate, and were encouraged to submit IT-related questions, concerns or comments, before or after the forum using an online form. The IT leadership team would use this venue to collect, evaluate and respond to the issues. Additionally, the information gathered helps as the new division sets its directions and strategies for providing future IT goals for campus support.

Changes for ITS and Telecom

In evaluating the structure of ITS, Bonnie saw a need for reorganization. From her vision, two separate and distinct departments were recommended — Enterprise Computing & Infrastructure, lead by Marc Wallman, and Information Technology Services, lead by Jeffery Gerst. Although each department was charged to work on clearly defining its own direction and mission, they continue to function collaboratively in a way that will best meet the needs of the campus.

As University Telecommunications has evolved over the last year into a separate but distinct department within the Division of Information Technology, it has undergone a significant number of changes. As a result of several campuswide directives and initiatives, the department's scope of responsibility has increased. To reflect the greater breadth and depth of technologies supported, the department was renamed Telecommunications & Emergency Support Technologies. "Voice over IP" (voice carried on data networks), statewide telephone integration, emergency communications technologies, and video surveillance systems were some of the new services added.

Card access technologies are also currently being enhanced. The Facilities Management Department and University Telecommunications formerly held joint oversight for this service. With the reorganization, the responsibilities and support for the enhanced systems now reside solely within Telecommunications & Emergency Support Technologies. By implementing information communication technology systems for the campus, staff enables the transport and delivery of voice, video and data in partnership with other campus entities.

Technology Fee Moves to the New Division:

The transfer of the technology fee budget and portfolio from the Provost's office to the VPIT's office began in the fall of 2007. Bonnie met with students to discuss how projects have been managed in the past, and indicated that she would place a high priority on being fiscally accountable to the students with regard to the technology fee. In meetings with the committee, she shared a summary of IT changes and needs for the campus, and talked about funding some core IT programs — Student Technology Services, annual licensing and maintenance of Blackboard, wireless and other infrastructure needs. She indicated there would be approximately 1.8 million new dollars in the fund for FY 2007-2008, and that amount should continue to grow along with the continued growth in student enrollment.

Additional revenue is needed to help upgrade much of the campus and building infrastructure, and technology support. Bonnie proposed a 15% per year set-aside for campus infrastructure to include the wireless project. Her suggestion was accepted. Also, part of Bonnie's request to students was to continually fund Blackboard support and upgrades as a commitment to the campus' ongoing technology needs. Funds would be set aside each year for this, but there still would be an accountability process to let the Technology Fee Advisory Committee members know how the money is being spent. Another change Bonnie proposed was a 15% per year contingency fund, to be used for innovative projects that may come up late in the year. Bonnie's suggestions were approved.

One of the major changes in the technology fee process was in the funding schedule, which was revised to match the fiscal-year budgeting process. The new model shifted deadlines for requesting and spending

patterns, and well as changing how funds are allocated.

During the fall 2007 funding cycle, the Technology Fee Advisory Committee reviewed seven proposals requesting a total of \$155,878. Three proposals were funded at \$119,560. Additionally, two late proposals were brought forward by Bonnie, for \$135,500, which were also approved.

In the spring of 2008, nine proposal requests were received asking for a total of \$836,336. The committee recommended funding five of these projects totaling \$552,693. This figure included \$175,000 as startup money for equipment and installation for the Bison Information Network studio. This proposal was submitted as a student initiative with support from the Department of Communication to establish a video production studio at NDSU. There were not sufficient funds to cover the request, but by using the contingency fund, approval was given for the award.

Each year the TFAC receives requests for projects that, if funded, could provide significant value to the campus. The TFAC does its best to evaluate and recommend funding for those projects that demonstrate the greatest impact toward student learning. Unfortunately, many creative and innovative ideas for technology enhancements are unable to receive funding from this source. More details regarding the TFAC activities and funding information can be found at www.ndsu.edu/tfac.

Information Technology Services

Our Mission and Organization

As the “outward facing” portion of the new Information Technology Division, ITS provides a wide range of services to meet the diverse requirements of the campus community as well as University System needs. These take a variety of forms, but all of them focus on equipping our customers with the technology tools and skills they need to be successful and make NDSU a world-class research institution.

Table 1. Sources of ITS salary and operating budgets.

Funding Source	Amount	% Total	
NDUS-Appropriated	\$2,938,316.97	39.2	
NDSU-Appropriated	\$2,164,170.00	28.9	
Student Technology Fee	\$1,551,576.00	20.7	
Server Hosting	\$250,500.00	3.3	
Network Services recharge	\$325,000.00	4.3	(estimated)
Software Licensing recharge	\$265,000.00	3.5	(estimated)
Total	\$7,494,562.97	100.0	

Our Services

Help Desk Support Services

The ITS Help Desk provides a variety of services to NDSU and North Dakota’s higher education computer network. In addition to the services mentioned below, in FY 2007-2008 the Help Desk handled 5,458 reservations for check-out equipment, and printed 1,859 plots (large format pages), which used 1,162 square meters of paper and 14,060 milliliters of ink. NDUS Help Center (Remedy) with a knowledge management system (RightAnswers) was implemented. In support of these new systems, numerous initial and follow-up training sessions were provided and continue to be held. Additionally, Help Desk staff started researching IT best practices in providing support, including analysis of IT service management, and the team also started working on an IT service catalog.

Support Services

The Help Desk provides much of its support in response to telephone inquiries. Approximately 31,000 calls were answered from July 1, 2007, to June 30, 2008 (Table 2). Help Desk staff responded to 4,896 e-mail requests for assistance. Help Desk hours over the weekend were extended to include all weekends during the year, not just those weekends when classes are in session.

Table 2. Number of calls answered by the Help Desk: July 1, 2007, to June 30, 2008

Service	Calls	Previous Year	Increase	% Total
NDSU Help Desk	21,492	18,953	13.4%	70
NDUS Help Desk	9,688	7,967	17.8% *	30
Total	31,380	26,920	15.8%	100

* indicates the increase in calls received by NDSU staff

E-mail lists

The number of Listserv e-mail lists provided across North Dakota’s higher education computer network

increased during the past year. Currently, there are 3,137 lists on the system, an increase of 12.2% from the previous year. There are approximately 312,000 subscribers to the lists.

Services for New Students

To ensure a smooth introduction for new NDSU students, the Help Desk has been working closely with the Office of Orientation & Student Success, Registration & Records, and International Programs. During the 13 summer orientation sessions and the international student orientation, assistance was provided to the incoming students regarding activation of IT services and other IT-related questions.

The Help Desk also participated in the NDSU opening event the weekend before classes started. Several desks were temporarily set up in the Memorial Union to answer questions and provide assistance while the students checked in at the residence halls.

Desktop Support

ITS staff currently manage nearly 2,800 Windows-based computers, comprising 711 cluster computers and 2,019 computers used by individuals and teams. These systems can be remotely managed using ZENworks, a Novell product. Additionally, as part of the service provided to the University System, the Desktop Support staff can “push” Windows operating system updates to supported machines at multiple institutions. These updates help minimize the chances of security breaches and vulnerabilities associated with the Microsoft Windows XP operating system or Microsoft Office applications. McAfee anti-virus software is also made available and supported by Desktop Support, and the McAfee e-Policy Orchestrator distributes updates to provide pro-active protection of system computers from viruses, spyware and malware. Assistance with this application is also offered to the NDUS community.

Managed Printing

ITS purchased 4.5 million sheets of paper in FY 2007-08 for use on campus printers. These sheets are printed on 54 printers located in 32 clusters across campus. The cost to the Technology Fee Advisory Committee for these resources was approximately \$101,000 and does not include ITS contributions. Service levels for campus printing continue to increase as ITS implements color printing, two-sided printing, touch-screen monitors and additional print locations. Currently, a print allowance equivalent to 500 black-and-white pages per active semester is provided for each student. We estimate a similar page count of 5 million sheets at a cost of \$120,000 for the 2008-09 academic year.

Cascade Program

As ITS replaces the cluster computers each year, the three- and four-year-old systems are moved into departments in an attempt to replace much older hardware. This year has been as successful as previous years. All the hardware has been delivered and is already benefitting employees on and off campus

Surplus

ITS continues to act as the campus conduit for surplus computer hardware, monitors and peripherals. Although ITS continues to scrap a significant volume of obsolete computer components, these parts are disposed of in an environmentally friendly way. ITS continues to pay for the disposal of older CRT (i.e., “picture tube”) monitors; however, the volume of these monitors dropped in FY 2007-08, due to flat panel monitors having been a standard for more than four years. Although numbers have dropped, ITS will continue to dispose of these monitors, at a cost, until 2010.

ITS continues to move usable systems back into departments at no cost. The department also sells other computers that are between five and six years old at monthly surplus sales.

Instructional Services and Training

ITS provides a variety of training opportunities throughout the year for faculty and staff. Approximately 1,090 faculty and staff members participated in one or more of the 171 classes provided during FY 2007-2008 (Table 3).



In the summer, Instructional Services offered a Faculty Development event called "Dive In" that was so popular, we had to immediately schedule a second offering. The two-day event played off of a "summer fun at the beach" theme, complete with pails, goldfish crackers and special graphics. The content included half-day sessions on multimedia, social networking, Blackboard and Wimba, with 34 faculty members completing the sessions. Afterward, participants were encouraged to set personal goals pertaining to their new technology skills and the Instructional Services staff members worked with them reach these objectives.

Table 3. Training for faculty and staff.

Training Opportunities	Participants	Classes	Total Hours
Blackboard Suite	163	26	46
Web Development	109	22	46
MS Office Suite	356	40	131.5
Graphics Applications	47	13	26
Adobe Acrobat	18	2	9
E-mail & Calendaring	63	10	14.5
Computer Basics	18	4	6
Personal Response System	25	4	6.5
NDSU Records Inventory Template Training	39	4	4
OneNote 2007	8	1	3.5
Blackboard in 30 Min	12	6	3
CMS (TYPO3) Training	212	37	74
Other Custom Training	20	2	2.5
Totals	1090	171	372.5

Blackboard

The Blackboard Academic Suite has continued to mature. Faculty adoption and student use of the Blackboard Learning System continues to increase. In fact, Blackboard has become such a standard that it is common for students to raise questions if it is not used for a particular class.

During the past year, all campus-sponsored student organizations started using the Community feature of Blackboard for communication and organization purposes. Campus groups have created Blackboard-based organizations to assist in fulfilling their missions and to facilitate cooperative interactions, causing the number of Bb organizations to double. Because of this functionality, Blackboard has become mission critical to the campus, particularly for organizations, and for Bison Bucks access and campus announcements.

The e-Portfolio function of the Content System has enjoyed a similar increase in use. After an upgrade increased the e-portfolio functionality, allowing greater expression and flexibility, the Art Department required all its majors to create a Blackboard e-Portfolio. Instructional Services played an important role in providing training and support for this new departmental requirement.

Wimba

A new desktop video product, Wimba, was introduced spring 2008. After the NDUS arranged for all North Dakota universities and colleges to acquire Wimba, Instructional Services staff were trained and implemented a pilot project with a group of faculty members.

Wimba is a suite of Web conferencing and audio recording tools that help instructors personalize their courses with the power of the human voice. Wimba Classroom is a live, virtual classroom that includes audio, video and content sharing, which is ideal for “humanizing” distance education and encouraging collaboration at a distance. The Wimba Voice Tools allow instructors to create e-mail, announcements, sound bits, Web presentations, chats and discussion boards that use audio instead of relying totally on text. Voice Tools also includes a podcasting tool that is easy to use for instructors and students alike. All Wimba tools work within and outside of Blackboard.

There was standing-room only at the first Lunch-Bytes introductory session on Wimba, and there continues to be a great deal of interest in this powerful new tool. Faculty volunteered to participate in the training and one pilot class, HDE 777-Advanced Stress Management, was delivered using Wimba. The course was offered on campus but three distant students in North Dakota asked to take the class and so the instructor, Professor Robert Nielsen, offered the course using Wimba inside Blackboard. The students were required to buy their own web cameras and headsets, and the class met “face-to-face” using desktop audio and video. Two more courses using Wimba were offered in the Education Department during the summer of 2008.

SafeAssign

During the past year, Blackboard added SafeAssign to its system. SafeAssign, a plagiarism detection tool that compares student work to Internet documents, was added after conferring with instructors. SafeAssign compares submitted documents to a Proquest database of more than 2.6 million articles, and an institutional document archive of all papers submitted to SafeAssign by NDSU users. Given the widespread concern about academic honesty, SafeAssign can help instructors address the problem of plagiarism. SafeAssign does not decide whether plagiarism has occurred — that is the role of the instructor — but instead delivers a report of all matches found for each student paper submitted. With the right emphasis, SafeAssign can help instructors teach students what constitutes plagiarism and raise their awareness of this issue.

Web Support

TYPO3 was adopted as the university supported content management system during 2006. Since 2007, many more departments have switched to TYPO3, creating a high demand for support and training. Instructional Services trained 212 users on TYPO3 and have answered many requests for support.

Implementation of TYPO3 has been a collaborative effort between ITS and University Relations. (With the creation of the new IT Division, Enterprise Computing & Infrastructure will assume responsibility for the content management system and ITS will provide training and support.) The implementation of this content-management system has allowed the two departments to work closely as they have rolled out TYPO3 to a greater number of campus units. Clients will continue to request traditional Web support. Instructional Services will continue to provide user support for Dreamweaver, Contribute and Web server requests as we move towards institution-wide adoption of TYPO3.

Instructional support

With the addition of two new employees in Instructional Services, there is a stronger emphasis on instructional design. Tammy Cummings and Randy Wald are close to completing their master’s degrees in education. As technology offerings increase, so does the need to find the right tool for each situation

and to identify best practices in the use of these tools.

Personal Response System

The Personal Response System, introduced in fall 2001 through a Student Technology Fee award, is still supported by Instructional Services, and enjoys continued use, especially in larger courses. Instructors find the technology to be not only a time-saver for administering quizzes and grading, but also a valuable tool for engaging students, especially when there are hundreds of individuals in one classroom.

The Department of Orientation & Student Success has used PRS for the opening sessions of new student orientation for the past three years, but this summer was the first time the newer radio-frequency PRS system, which is now prevalent across campus, was used. The newer technology collected the results from the audience at least twice as fast and proved easily usable in large, anonymous crowds compared to the previous infrared version.

The “New” Technology Learning & Media Center

In spring 2008, the Technology Learning Center, the Sponge program, the student training program, and the new media studio and special media services merged to form the “new” Technology Learning & Media Center. The new name, and the changes associated with the name change, reflects the growing emphasis on visual and media literacy. The creation of the TLMC represents ITS’ desire to respond to technological developments such as the rise of Web 2.0 applications, the explosion in grassroots video production and distribution, and new learning styles related to the media and tools we use in our daily lives. Working closely with the Instructional Services team, the TLMC provides a wide range of services for students, faculty, and staff, including:

- Walk-in and by-appointment multimedia services, including CD/DVD burning, scanning, digital audio and video capturing and editing, and media conversion
- Media studio and special media services, including an audio and video recording studio, and limited video and audio production services
- Classroom project support, including help for instructors with project planning; classroom training for students; online resources; individual and small group assistance for students
- Plotting services (printing large-format posters)
- Coursework/project assistance for students on a walk-in basis
- Short technology classes (taught by students for students)

**Table 4. TLMC/Sponge Activity Report for 2007-2008:
Totals for the Year**

Service Provided	Hours
Sponge Classes	52
Sponge Classes Hours	74
Student Contact Hours (Class and walk-in)	5,242
Contact Hours	3,812

**Table 5. TLMC Activity Report for 2007-2008:
Walk-In Assistance**

Service Provided	Summer 2007 Hours	Fall 2007 Hours	Spring 2008 Hours	Totals
Student Contact Hours	500	1,800	2,100	4,400

Contact Hours	250	700	700	1,650
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**Table 6. Sponge Activity Report for 2007-2008:
Totals for the Year**

Service Provided	Summer & Fall 2007	Spring 2008	Totals
Classes	30	22	52
Sponge Classes Hours	44	30	74
Student Contact Hours (Class and walk-in)	485	357	842
Contact Hours	1,364	800	2,164

Student Training Program

During the summer and fall semesters of 2007, the student-training program was moved into the Technology Learning & Media Center. Since no classes were offered during this time, the transition provided an opportunity to revise and update student-training offerings, including courses on the new Microsoft Office and Adobe software. The following is an overview of class attendance during the spring of 2008:

- Total classes offered: 40
- Hours per class: 2
- Total hours of class time: 80
- Total attendance: 80
- Total flight attendants: 34
- Total contact hours: 780.7
- Average attendance per class: 5.3
- Avg. trainers per class: 1.85
- Avg. contact hours per class: 19.6

Video Conferencing

The expansion of North Dakota Statewide Technology Access for Government and Education network (STAGEnet) has made it possible for NDSU to expand the class offerings to the many K-12 locations throughout North Dakota utilizing the Interactive Video Network (IVN).

NDSU courses delivered over IVN in the 2007-2008 academic year remained consistent. There were 60 graduate courses totaling 151 credits and seven undergraduate courses totaling 22 credits. The interactive video courses have provided the option of on-line streaming for anytime course review.

NDSU has used the video system for more than just credit classes and training; it has also used the video system for NDSU meetings, employee interviews and dissertation defenses. Videoconferencing has played a role in how NDSU delivers face-to-face courses to our students and will evolve as technologies continue to merge and become more seamless.

Student Technology Services

The Student Technology Services program continues to provide leadership for all IT student employees. STS manages all aspects of hiring for the various IT workgroups, including recruiting, advertising, interviews and new employee orientation. A professional development program, managed by STS student managers, provides student employees with numerous opportunities to grow professionally and

personally. In addition, STS student managers work closely with the ITS communications coordinator to cover freshmen orientation events, resource fairs and other public relations activities for ITS during the year.

During 2007-08, STS managers and full time staff members reviewed the student pay scale and recommended a salary increase in response to federal minimum wage increase that will take place over three years. ITS approved the recommended pay raise for students, and the first of three scheduled pay raises was administered in May 2008.

Statistical Consulting

As in past years, the Statistical Consulting unit within ITS/Statistics provided consulting services to the NDUS through the efforts of one full-time staff member from ITS and four Ph.D. students from the Statistics Department. Consulting records for the full-time staff person indicate that more than 250 unique customers were served. This accounted for more than 1,200 recorded contacts made in person, over the phone and via e-mail. Customers served were from a wide variety of academic departments. Half of these contacts were directly related to statistical questions. Others included calls for appointments and questions related to use of software such as SAS and SPSS, and the test-scoring system.

Internet2



NDSU and UND are members of Internet2, a community of research and educational institutions promoting the development and use of advanced Internet applications and network technologies to foster collaboration in education, research and cultural exchange.

NDSU and UND, as full members of Internet2, sponsor community memberships for the nine additional NDUS institutions, EduTech and North Dakota's K-12 schools. Internet2's networking capabilities have made possible a variety of collaborative activities between NDSU and researchers around the world, between NDSU and K-12 classrooms in North Dakota, and between North Dakota K-12 schools and classrooms across the globe. Illustrative examples of Internet2 activities are reported in Table 7.

A staff retirement resulted in the current Internet2 position at NDSU to be vacated during the 2007-2008 academic year. The role description was updated and the position filled in June 2008. The new advanced applications coordinator holds primary responsibility for identifying, supporting and promoting applications of advanced networks and similar advanced technologies for NDSU, K-20 and other partners. The position will continue to provide oversight in coordinating Internet2 applications, partnering with EduTech and the North Dakota University System.

NDSU was the site of an Interim Legislative IT Committee meeting on Jan. 18, 2008. Rosi Kloberdanz, assisted by Sandy Sprafka and other IT staff, made a presentation to the committee regarding Internet2. The presentation focused the following: the importance of Internet2 for North Dakota's K-20 students and how it meets current educational needs; researchers with their collaboration and bandwidth needs; and economic development and grant opportunities. A variety of presentations highlighted activities across the state using Internet2, including:

- "The World Is Just Next Door: How North Dakota Can Utilize and Expand Its Internet Infrastructure to Attract Top-notch Scientific Researchers": Dr. L. Keith Henry, assistant professor, Department of Pharmacology, Physiology and Therapeutics in the School of Medicine and Health Sciences, University of North Dakota

- “National Ecological Observatory Network (NEON) Research and Cyberinfrastructure”: Dr. Wei Lin, associate professor of Civil Engineering, and director of Interdisciplinary Environmental and Conservation Sciences Graduate Program, NDSU
- “Roadway Environment Blowing Snow Model and Its Use in Promoting Mobility and Safety on the Nation’s Highways”: Leon F. Osborne, Jr., Chester Fritz Distinguished Professor of Atmospheric Sciences and director of the Surface Transportation Weather Research Center and the Regional Weather Information Center, UND
- “The North Dakota Health Care Research and Education Network”: Don Larson, coordinator of Computer Services, School of Medicine and Health Sciences, UND
- “North Dakota K-12 Discovers Virtual Learning”: Kim Owen, coordinator of instructional services, EduTech Education Technology Services, Valley City; and Linda Doe, technology coordinator, Hettinger Public School District
- “Seeing is Believing when Viewing Images Magnified Thousands of Times”: Dr. Thomas P. Freeman, professor, Department of Plant Pathology, NDSU
- “Sun, Earth, Moon System (SEMs) Astronomical Webcasting”: Dr. Ronald Marsh, associate professor and graduate director of Computer Science, UND
- “Electric Worlds in the Classroom: Teaching and Learning with Role-based Computer Games”: Dr. Brian M. Slator, professor and chair of the Computer Science Department, NDSU

Table 7. Illustrative Examples of Internet2 Activities.

Theme	Collaborative Activity
Education	<p>1. North Dakota continues to partner with other members of the Great Plains Network Consortium to develop partnerships in the K-20 community across the member states. Two events highlight activities from the 2007-2008 academic year:</p> <ul style="list-style-type: none"> • Live Videoconference to the Missouri Riverbluff Cave: K-12 students from North Dakota were among seven Midwest states participating in an Internet2 based event that took participants on a tour through the archaeological history of Missouri’s Riverbluff Cave. Videoconference equipment was transported into the cave for this live tour. Students interacted with the cave’s lead paleontologist who hosted this unique glimpse into prehistoric life. • Emergency Preparedness Event: Students and administrators from two small Midwestern towns connected via live videoconference to share experiences and the process of rebuilding after a natural disaster. Both Greensburg, Kan., and Northwood, N.D., experienced almost complete destruction from tornadoes during the months of May and August 2007. The similarities of these communities as they move forward to recover and rebuild were highlighted as a key theme during Kansas Distance Learning Week in March 2008. <p>2. Global professional development for teachers was just one of the benefits of the 123Vc – Jazzing Up Your Curriculum summer workshop held in June 2008. In their first year of participation, North Dakota educators collaborated with teachers from Michigan, Texas, New York and Wales during this weeklong workshop that introduces educators to the variety of curriculum-based projects and collaborations designed to strengthen</p>

	<p>student engagement and content learning. See www.123vc.net</p> <p>3. Special Event for North Dakota students - Live Surgical Suite: Total Knee Replacement, COSI Columbus (Ohio) Science Center North Dakota high school science teachers and students from Beulah, Bottineau, Elgin, Glenburn, Jamestown and Tioga participated live interactive videoconference on April 9, 2008. COSI's surgical suite videoconference programming is open to a limited number receiving sites for participation in their live interactive videoconferencing programs. North Dakota schools were connected via STAGEnet and Internet2 to the COSI site.</p>
<p>Research & Development</p>	<p>Included below are examples of current Research & Development activities that use Internet2 resources at NDSU and across the NDUS. Research communities engage in interactive collaboration, distributed data storage and data-mining; large-scale, multi-site computation; real-time access to remote resources' dynamic data visualization and shared virtual reality.</p> <ol style="list-style-type: none"> 1. North Dakota Experimental Program to Stimulate Competitive Research (ND EPSCoR). Current Internet2 membership provides ND EPSCoR programs listed below with access to global research and education networks: <ol style="list-style-type: none"> a. Science Outreach and Recruitment b. Technology Transfer and Commercialization c. North Dakota IDeA Network of Biomedical Research Excellence (INBRE) d. Tribal Colleges Programs 2. Civil Engineering: Research of the Advanced Materials Laboratory 3. The Electron Microscopy Center at NDSU has begun inviting K-12 classes to access their new scanning electron microscope via the Internet and explore samples magnified 20,000 times or more. Classes can choose from among a wide collection of slide sets owned by the lab or request specific samples based on their own curriculum. Staff at the center are interested in sharing this experience with students both in and outside of North Dakota. 4. International Water Institute. Activities of the institute provide a forum for research, public education, training, and information dissemination relating to flood damage reduction and water resource protection and enhancement in the Red River Basin.
<p>Cultural Exchange</p>	<ol style="list-style-type: none"> 1. NDSU continues to facilitate participation in two global multipoint videoconference events. Both the Megaconference and the Megaconference Jr. are twelve-hour videoconference connections that feature vetted presentations from sites around the world. NDSU staff served on program and technical committees that facilitated the event. In 2007, Megaconference participation by NDSU included presentations by the following: 1) Wendy Reed, assistant professor in Biological Sciences, discussed the vision and goals of the Dakota Coteau Field School; 2) Mary Louise Defender-Wilson, member of the Standing Rock Sioux Tribe, Louise dressed in native attire for her presentation of

	<p>traditional stories spoken in her native Dakota language.</p> <p>2. NDSU and EduTech again participated in the Fifth Annual Megaconference Jr., engaging students from 170 sites in 16 countries in this event modeled after the original Megaconference and developed to target the K12 audience. North Dakota was represented through a presentation by Dr. Allan Ashworth and Kim McVicar, along with their GraSUS students, highlighting the technology used to engage middle school science students in the group’s Antarctic expedition; Hettinger High School students again served as one of the “VJ” (video-jockey) teams for the event, guiding the schedule of events during the Megaconference Jr. event.</p>
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Infrastructure services

E-Mail Service

Although levels of spam declined since early 2007, the flood of incoming junk e-mails continues to be problem for servers operated by ITS. Staff members have been proactive in methods of addressing the problem, including refusal of e-mail from servers identified as sources of spam. The volume of e-mails from spam sources peaked in late 2007 with NDSU refusing six million incoming e-mail connections from potential spammers while accepting approximately 1 million e-mails. It is notable that even a portion of the e-mails accepted are spam. Table 9 provides an overview of incoming e-mail traffic to NDSU since late 2006.

Table 8. Weekly Blocked Incoming E-mail Traffic.

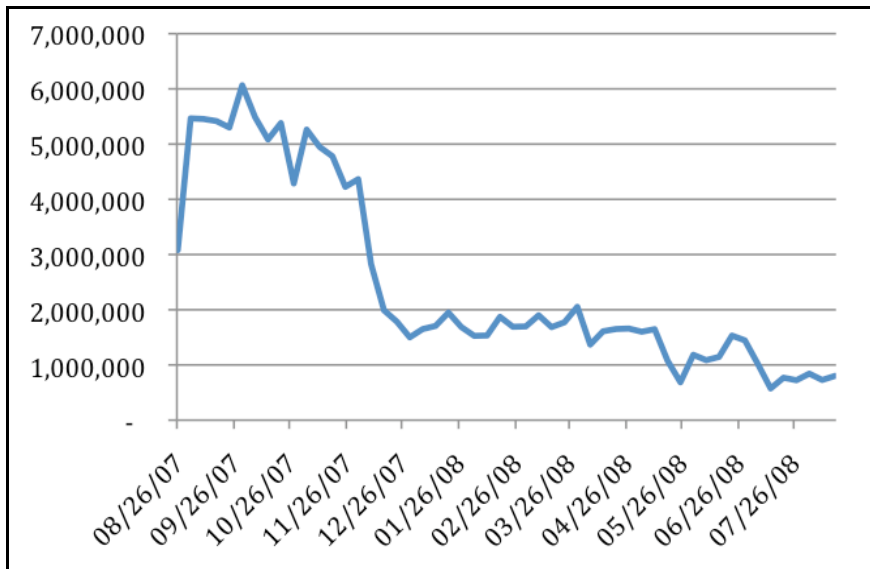
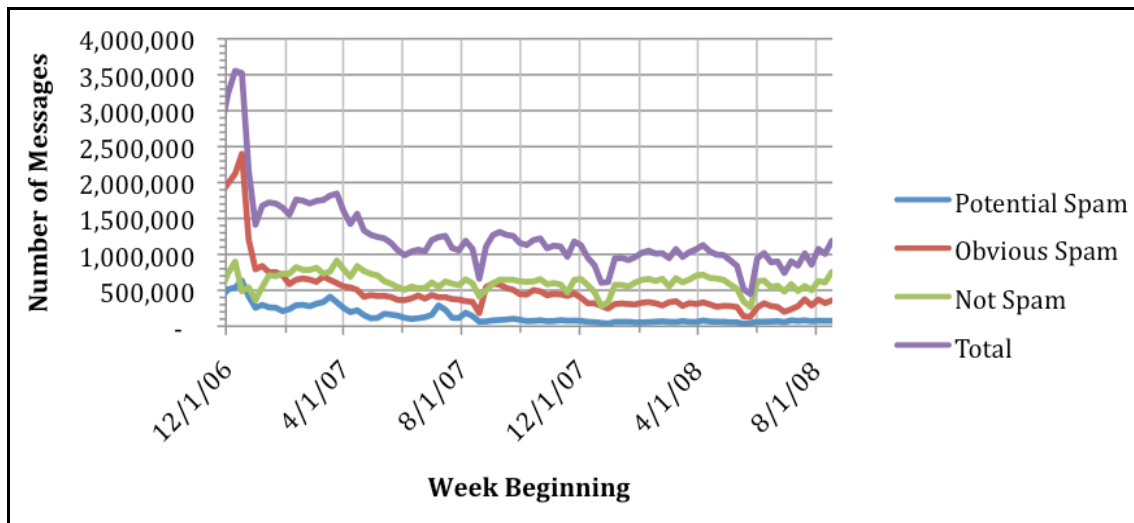


Table 9. Weekly Incoming E-mail Traffic.



IT Security

The fourth annual K-20 IT security conference, IT Security: A Call to Action for the Education Community, was hosted by ITS and EduTech on Nov. 7 and 8, 2007, at the Fargo Ramada Inn. Some 165 educators, information technology professionals, and others were able to hear nationally recognized speakers and participate in “hands on” sessions. A fifth conference is planned for Oct. 21 and 22, 2008. More information on this conference can be found at www.ndsu.edu/itsecurity.

NDSU Policy 710, Computer and Electronic Communications, was revised to include current standards and guidelines for servers used on campus and registration of servers used on campus. Policy 509, Electronic Financial Transactions, was developed with collaboration from the Office of Finance and Administration. This policy covers standards and guidelines for acceptance of electronic and online payments. Both policies were approved by NDSU administration and implemented.

Junk e-mail is plaguing university system servers with increasing severity. In the spring and summer of 2008, close to 100 e-mail accounts were compromised, which resulted in the accounts being used to send out large amounts of spam. Procedures were established to find and remedy the compromised accounts. This is only a stopgap measure. Discussion and research is underway to determine technical measures and further education to help mitigate this problem.

NDSU IT Security Officer Theresa Semmens presented awareness and training sessions on campus, for extension offices and research centers. An online course (Detection and Remediation of Malware) was presented via video to 11 participants from institutions across the state. As a member of the Research and Education Networking - Information Sharing and Analysis Center (REN-ISAC), and the EDUCAUSE Computer and Network Security Effective Practices Task Force, she was able to receive and share information on recent vulnerabilities and threats with the campus and other state institutions.

As co-chair of the Provost’s Copyright and Fair Use Education and Training Taskforce, Theresa worked with the group to develop a white paper detailing findings and recommendations based on information and practices for copyright fair use gathered from the departments and colleges. This white paper was accepted and acted on by the Provost.

Theresa and Jeff Gimbel, a Help Desk consultant, have specialized training in cyberforensics. They

provide service to NDSU and other NDUS campuses. There were approximately 120 cyberforensic investigations this year. The majority of the cases, nearly 90, involved alleged copyright violations. The rest of the cases involved unacceptable use. Two of the investigations were done in collaboration with campus law enforcement, and one case was conducted for a sister institution. Additionally, desktop and server security assessments were completed for two university units, and Theresa assisted the NDSU internal auditor, Barry Miller, with two audits.

New initiatives for the IT security office include a project to identify confidential data at risk; methods and means to prevent outgoing spam from university system e-mail servers; an online tutorial for copyright fair use; and working with new and current information technology staff from distributed departments to encourage familiarity and use of existing and current policy, procedures and standards.

Software Licensing

Software licensing functions were split between the ITS Business Office and the ITS Management and Policy Development. Pamela Nielsen is the Asset Management Coordinator for ITS and is responsible for software licensing for NDSU and the NDUS, as well as ITS physical inventory. She is part of the ITS Business Office. Marty Hoag is responsible for software licensing contract negotiations.

One of the larger software contracts for antivirus software was renegotiated this year. A new three-year agreement was negotiated and signed with McAfee for antivirus, antispyware, client-based intrusion detection software, and management software. The site license is paid for with NDUS funds and provides copies of the software for all institutional computers. In addition, the anti-virus and anti-spyware components are available at no charge to all students and employees.

Near the end of the fiscal year the NDUS CIO negotiated with Microsoft to make a campus license agreement available to individual campuses. Funding from the University System and from NDSU President Joseph Chapman allowed NDSU to implement the campus agreement on July 1, 2008. NDSU also included “home use” provisions to allow employees to purchase one copy of Microsoft Office for home use at a significant discount. The program was implemented the summer of 2008.

Additional software licenses renewed during the year included the items listed below. Some users or departments were “recharged” (i.e., charged a fee) to cover license costs; however, the charges are always a small fraction of what an individual license and maintenance contract would have been.

- SPSS NDUS site license (\$50/computer/year recharge)
- Mathematica (Wolfram Research) NDUS site license (\$75/computer/year recharge)
- AutoCad (AutoDesk) NDSU and UND site license (\$200/computer/year recharge)
- Adobe (Macromedia) NDUS volume purchase agreement (CLP 4.5) providing discounts to all institutions for a wide variety of software
- SAS limited number of NDUS Licenses (1000 licenses, no recharge)
- Microsoft Select Agreement – NDUS volume purchasing agreement offering discounted prices on a wide variety of software (will complement the Campus Agreement by providing discounted software not included in the Campus Agreement)
- ESRI (GIS software) NDUS site license (\$50/computer/year recharge)

Software licensing is a cooperative venture with ITS, the NDUS CIO’s office, campus CIOs and software licensing representatives, and campus departmental software licensing contacts all working together to effect significant savings for NDUS and its institutions.

Classroom Technology

The demand for technology in the classroom has grown significantly over the last year. Instructors have stated that they are able to teach more effectively with the technology available. This year, nine new instrumented classrooms were added. There are 78 classrooms that have technology permanently installed; the remaining classrooms are serviced with 34 multimedia carts.

There are four interactive panels installed in classrooms, which provide the type of functionality found in electronic whiteboards. The main benefit provided by the use of interactive panels, instead of the electronic white boards, is the size of projected image. When using an electronic white board the image can only be as large as the physical board, when using an interactive panel the instructor writes on a panel that doubles as a computer monitor. The image from the panel is projected through a ceiling-mounted projector, allowing the projected image to be as large as needed for adequate student viewing.

An assessment was performed to determine needs for improving the appearance and reliability of the technology in the instrumented classrooms. Funding was provided to revamp the classrooms; allowing for a more professional appearance; decreasing troubleshooting, maintenance hours and equipment failures; and, most important, to prevent tripping hazards. There are two components to this project: 1) organize and standardize the cabling, mounting hardware, and locks inside the teaching podium and 2) relocate and/or add new communication/power cables from the wall to podium, reconfigure cabling at the ceiling projector to provide a more aesthetic look, remove old PRS cabling/brackets, and purchase/install better cable channel material that will better conceal and anchor the cables.

Staff Development

President Chapman certainly recognized the growth of information technology on campus when he formed a new division—Information Technology and named Bonnie Neas as vice president. Bonnie's challenge would be to engage staff from ITS and Telecommunications in conversations about how this division would best serve the campus needs through convergence and restructuring the current organization. Over the course of the year, as Bonnie began to approach and implement organizational changes, several new positions were created, some existing staff were realigned, and 14 new staff were hired as part of either filling new positions or existing vacancies created by 11 staff leaving the organization for other opportunities.

As typical to most organizations, there are staff who retire, resign or take on new roles within the organization. We recognized Sandy Sprakfa, classroom and media technologies manager, as she retired from the organization after serving NDSU for 30 years. Sandy was instrumental in leading local, regional and national technology initiatives, including the Internet2 endeavor. Dick Jacobson also made a move to the NDUS office in north Fargo. Although Dick has had system responsibilities for a number of years as the NDUS security officer, his long tenure in ITS at meant that his departure was a significant change in the team structure and that his expertise is no longer as readily available.

Additionally, Rosi Klobberdanz, ITS director of client services, accepted a position with the North Dakota University System as executive director for Academic, Research and Learning Technology (ARLT), and moved to the Skills Training and Technology Center, on Feb. 1, 2008. In making this announcement, Rosi said: "Although I will miss ITS and the outstanding staff I've worked with over the past 24 years, this is a wonderful opportunity — one that will allow me to work together with all the University System campuses to keep pace with the demands of an ever-changing IT environment, and helping to enhance and advance the University System's goals."

Recruitment and Retention Challenges

This past year we have seen an increase in candidates applying for our positions. However, the key is finding *qualified* workers suitable to our specific needs. The combination of skills sought, emphasizing management and supervisory skills in conjunction with solid technical experience has led to positions going unfilled for months. Although our recruitment costs were down considerably from last year, we still spent over six thousand dollars and that does not include a contract we had with Dice.com, an online IT-focused recruitment Web site. Breaking this down, the cost per hire average is \$464 (14 positions), considerably less than last year at \$1,572. Part of this savings results from advertising several position openings together.

The question remains, what really attracts candidates to a position? We have chosen to create more catchy display ads by focusing on the benefits NDSU offers and appealing to those folks who might want more than just monetary satisfaction from their employer. We know our salary isn't going to be the drawing card. Referencing a strong professional development program, flexible work culture, and an all employer-paid family health care plan, may sound attractive and draw job seekers.

Holding onto Top Performers

The challenge of "hiring and training" new staff and providing them with good direction and leadership continues to be a difficult task even for the seasoned manager. Getting new staff up to speed, involved in the campus community, and productive requires good leadership skills. Leadership development will be a big focus of our organization in this upcoming year as part of our effort to grow and retain employees.

One of the key issues beginning to challenge us is the demographics of our work force. Knowing that we have four distinct generations of workers in our organizations creates a culture of complimentary and sometimes conflicting values, needs, communication and work ethic. Learning to be sensitive and understanding of issues related to generational communication needs to part of our leadership training effort as well. Whether we speak broadly about generational themes to retain staff or individual needs, reward incentives may be different.

EduTech

EduTech provides information technology services and education technology professional development for K-12 schools. EduTech's mission is to provide North Dakota educators and students with opportunities that extend learning in the classroom and beyond, focusing on the use of technology to improve student achievement. Information Technology Services operates EduTech under an agreement with the Information Technology Department.

EduTech and ITS collaborate on education technology projects and support similar server infrastructures. Both participate in the use of Blackboard, Internet2, H.323 videoconferencing and other initiatives. The collaborations allow for sharing of resources and eliminate duplication.

EduTech's core services to schools include:

- Professional development
- PowerSchool implementation, training and support
- Helpdesk service
- Software discount programs
- End point protection for school computers
- Server-based services including e-mail, Web hosting and blogging/podcasting hosting

University Telecommunications

Our Mission and Organization

University Telecommunications is responsible for all NDSU campus telecommunications operations and issues, and serves as NDSU's representative to outside entities such as other NDUS institutions, the state's Information Technology Department, business community partners, vendors and other professional organizations.



A Telecommunications staff of eight, with a FY 2007-2008 budget of \$3,730,853, provides oversight, strategic planning, coordination and management of the university's transport facilities infrastructure, voice networks, call management, Voice over Internet Protocol, cellular communications, BisonLines long-distance service, cable television, security card access and video surveillance. Telecommunications also provides the infrastructure and technologies necessary for emergency preparedness. (See Figure 10) Telecommunications is unique as a communications utility relating to business aspects, as it operates on a cost-recovery basis. These services are provided to 4,900 NDSU students, faculty and staff through the provision of administrative services, marketing, customer support and billing of resale services, services on the main campus, and four remote campus locations. These services are provided over a network of:

- 46 underground utilities (accessible through vaults/manholes)
- 22 miles of underground facilities (includes 13 miles of fiber optics) plus an additional 80 miles of leased infrastructure to connect remote campus locations
- 63 miles of coax cable for cable television in all residence halls and approximately 18 administrative and academic buildings

Telecommunications is also responsible for installation; expansion, 24-hour operations and maintenance; fraud control; disaster avoidance and recovery; as well as the monitoring and reviewing of telecommunications legislative and regulatory issues affecting higher education. Telecommunications currently contracts with Network Services in ITS, a long-term partnership, on a time-and-materials basis to engineer, design and maintain voice, video and telemetry applications.

Telecommunications has organized and maintains a thriving partnership with approximately 150 representatives, called Telephone Administrators, from NDSU business units. This alliance serves as Telecommunication's first line of support and allows the respective campus departments to customize the voice technologies, call management, voice messaging software and systems, and cellular technologies to fit their respective departmental business applications and services. Annual Telephone Administrator training and user group meetings keep this collaborative effort organized. In addition, Telecommunications provides administrative and technical support to Valley City State University and the North Dakota State College of Science. Sharing these real time systems/platforms, which are high in cost and maintenance, allows remote campuses to provide competitive and cost-effective services.

Working closely with the University Police and Safety Office, our newest function of emergency

communications technologies involves the implementation of infrastructure, technology and support for several systems. Telecommunications is responsible for providing and supporting broadcast alerts through voice messaging, blue-light emergency phones, panic alert buttons, as well as the Emergency Alert System for the CATV network, which allows for the interruption of cable programming for emergency notification. In addition, Telecommunications provides project management and implementation support for NotiFind, the state's emergency notification system.

2007-2008 Accomplishments

Transport Infrastructure, Public Networks and Voice Technologies and Networks:

- The Stop-N-Go Center, the latest remote NDSU facility, has deployed and is now using Voice over Internet Protocol technology to provide transparent voice communications. Leased public networking provides connectivity via NDSU's data network.
- NDSU approved the expenditure of \$230,000 during 2007-09 for its first IT Division project, the installation of single-mode fiber (Phase I). The bid for this project has been awarded at \$216,513. The project will deploy fiber optic cable to strategic locations on the NDSU campus for greater bandwidth and higher connectivity speeds. Phase I of the project will design and deploy seven initial trunk cables to strategic points, allowing the flexibility to further extend this infrastructure to respective campus buildings as funds become available and/or applications dictate.
- NDSU approved the use of \$120,000 in general fund deferred maintenance dollars and an additional \$60,000 in other funds to upgrade the card access security system to accommodate the change from magnetic stripe card-readers to proximity card access, as well as providing integrated video, to a new vendor, CBORD.
- Voice network and call center software upgrades totaled \$98,467 in FY 2007-08 to accommodate the latest systemic and Voice over IP enhancements.
- Telecommunications staff members have begun the series of certification processes with AVAYA, the university's telephone system vendor, and examinations as part of AVAYA professional certification and development program.

Card Access and Video Surveillance Technologies:

- Telecommunications began implementation of a new CBORD security card access control system to manage its existing 220 doors. The feature-rich system allows enhanced tracking and configuration of door access and ties the software to integrated alarm management and surveillance solutions. Implementing CBORD's integrated security solutions allows NDSU to use technology that provides a "big picture" view of security operations, enhancing the safety of our community.
- The university has also approved and initiated the implementation of a single-card solution using proximity technology for door access. Telecommunications has begun to transition existing building magnetic stripe door hardware to proximity readers. The new system will allow NDSU's card-related services to be better integrated and will provide enhanced security and access, as well as handicapped accessibility.
- Telecommunications works closely in partnership with the University Police and Safety Office to centralize the growing demand for video surveillance technologies. To be effective, policy development, procurement, 24-hour maintenance and operation of these systems must be centrally designed and managed. NDSU has approximately 78 existing cameras on the campus and plans to augment this technology with new construction expansion. Due to high implementation costs, there was limited activity in this function during FY 2007-08.

- NDSU approved \$80,000 in initial one-time funding for video surveillance systems (Telecommunications Priority #3 in NDSU's 2007-09 IT Plan). This amount was not expended during FY2007-08, and will be carried over to FY2008-09. These dollars will be used to fund the first year of one full-time position, as well as operating dollars, for the management of emergency support technologies. Ongoing funding for this position has been approved. Future expansion of centralized card access and video surveillance is being planned to support the emergency systems and infrastructure needs of the Disaster Resistant University Mitigation Plan.

Emergency Communications Technologies:

- In conjunction with CableOne, NDSU's current cable television signal provider, an Emergency Alert System has been installed on the campus cable television network. This system allows the campus cable television signal to be interrupted in an emergency, prompting a centrally administered full screen audio and visual emergency message exclusive to the campus.
- As a part of NDSU's overall Campus Emergency Notification System, a number of large televisions have been placed in central areas around the campus to take advantage of the Emergency Alert System just installed on the campus cable television network.

Cellular Technologies:

- Telecommunications manages NDSU's State Mobile Device Contracts, which are currently awarded to Alltel and Verizon Communications. Management support is provided to approximately 475 on-campus cellular customers. Over the past year, Telecommunications has followed the significant congressional discussions related to current IRS policy governing employees' use of cellular devices.

Overview of Technologies Provided

Infrastructure Technologies

Transport Infrastructure Technologies

- Fiber
- Copper
- Cable television coaxial networking
- Underground – duct/conduit/vaults/manholes
- Voice Frame/Cable Management
- Wire to wire provisioning

Telecommunications Technologies

Voice Technologies

- Dial tone (Enterprise PBX including 5 remote servers)
- Telephones (Analog, Digital, VoIP)
- Local and long distance calling services
- Voice Messaging (Audix)
- Music on hold
- Headsets
- Specialized and outside lines (OPX, FAX, 1fb, modem)

Call Management Technologies

- Custom Phone Features/Buttons
- Custom Calling Features
- Automatic Call Distribution (ACD)
- Extension to Cellular (EC500)
- Message Manager
- Meet-me Conferencing
- IP Softphone
- IP Agent
- IP Softphone Video
- CentreVu Supervisor

Cellular Technologies

- 470 Users
- Smartphones

CATV Technologies

- Cable Television head-end and distribution

Emergency Support Technologies

Card Access Technologies

- Now completely managed within Telecommunications including partnership with Facilities Management for installation and support
- Currently transitioning from supporting both proximity and magnetic swipe door access to only supporting proximity
- Door monitoring and reporting
- 250 Doors
- Currently supporting two card access systems while migrating to CBORD

Video Surveillance Technologies – New Area

- Integration to CBORD card access
- Video Recording

Emergency Communications Technologies – Growing Area

- Emergency Alert System (EAS, CATV)
- Broadcast Messaging (Audix)
- Blue Light Phones
- Voice support for Notifind
- Panic Buttons
- Plans for integrated phone voice recording at 24-hour Communications Center

Figure 10. University Telecommunications Operational Functions.

