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# **NETWORK INFRASTRUCTURE AND SERVICES STRATEGIC PLAN**

June 30, 2006

## **VISION STATEMENT**

Network Infrastructure and Services (NI&S) believes technological innovation and improvements will support and enhance Virginia Tech's position in an increasingly global and competitive digital environment. We strive to anticipate the technological needs of the university community and provide leadership to create innovative and cost-effective solutions.

We believe the university will continue to rely heavily on NI&S' ability to successfully identify leading-edge technological advances and make them available now and in the future as Virginia Tech pursues national recognition as a top research university.

We believe NI&S can make extraordinary contributions to the university's outreach efforts. We will endeavor to influence the development of the information economy to improve the quality of life for the university community and the citizens of the commonwealth.

## **MISSION STATEMENT**

NI&S exists to enable Virginia Tech to succeed in its overall mission by providing and managing the university's information technology infrastructure and services. We accomplish this by:

- Identifying and incorporating solutions through the dynamic implementation and management of emerging technologies,
- Promoting sound fiscal management,
- Endeavoring to advance the capabilities of our existing information technology infrastructure and services,
- Broadly disseminating information regarding new technological developments,
- Providing network, system, and services management, maintenance, and support with emphasis on a high level of security, availability, and reliability,
- Supporting the teaching and learning, research, and outreach missions of the university, while embracing our role as a corporate citizen within the local, state, regional, and international communities,
- Remaining sufficiently flexible to pursue aggressive development and expansion of new services.

## GOALS AND OBJECTIVES

Goal 1: To provide pervasive, leading-edge technology infrastructure and services to support the vision and mission of the university and maximize the university's competitive advantage in a digital economy.

Objective 1.1: Enhance Virginia Tech's competitive advantage through continuous evaluation and improvement of the infrastructure and services provided to the university.

Objective 1.2: Effectively manage the infrastructure and services in order to provide maximum stability, availability, and reliability of services for the university community.

Objective 1.3: Engage in proactive planning and ongoing review of policies and procedures to enhance our ability to respond to user needs in a timely and effective manner.

Goal 2: To increase and continually pursue vital, integral contributions to support the university's research and outreach goals.

Objective 2.1: Increase research faculty awareness of NI&S's expertise and resources and increase the direct participation of NI&S employees in support of research activities.

Objective 2.2: Improve the effectiveness of NI&S's contribution for proposal development and project management through increased training in the areas of Sponsored Programs methods and policies, technical writing, project management skills, etc.

Objective 2.3: Support NI&S employee involvement in research and outreach efforts.

Objective 2.4: Provide support and practical learning opportunities for graduate and undergraduate students in concert with departments and advising faculty.

Objective 2.5: Sustain existing, successful outreach programs and develop new initiatives to meet the emerging needs of Virginia communities, citizens, and government.

Objective 2.6: Create an environment allowing NI&S employees to keep abreast of activities and new programs within university departments, laboratories, institutes, and research centers through invited faculty presentations, visits, and seminars.

Objective 2.7: Working with academic departments, faculty, students, university administration, and colleagues, seek out and execute strategies to apply information technology to help advance the university's recognition and status.

Goal 3: To ensure the timely provisioning of essential services which are responsive to the technology needs of the university community.

Objective 3.1: Understand and forecast user needs based on knowledge of the current information technology environment and the mission of the university.

Objective 3.2: Research and develop new, high-quality services or enhance existing services to accommodate identified technology needs.

Objective 3.3: Ensure the user community is aware of and able to use new or enhanced services.

Objective 3.4: Continually review the effectiveness of services in meeting user needs with a focus on quality of service.

Goal 4: To ensure continuous improvement of business processes and systems to maximize organizational effectiveness.

Objective 4.1: Routinely evaluate organizational effectiveness relative to the organization's mission, the relevant technology environment, and user expectations and needs.

Objective 4.2: Advance "Best Practices" concept in our business processes and systems.

Objective 4.3: Routinely evaluate and leverage business systems technology to increase efficiency and effectiveness.

Objective 4.4: Engage employees in the planning of services to be provisioned, while ensuring they understand how these services support the vision and mission of the university.

Objective 4.5: Continually review our business practices to ensure we are operating in accordance with university rules.

Goal 5: To provide the highest level of financial integrity and stability in all areas of NI&S.

Objective 5.1: Manage budgets to promote effective and efficient departmental operations.

Objective 5.2: Administer a balanced budget to ensure financial ability for continuous reinvestment in new technology.

Objective 5.3: Ensure all services are provided in a cost-effective manner.

Goal 6: To attract, develop, and retain qualified employees to enrich the departmental culture, to enhance NI&S' effectiveness and contribution to the university, and to position Virginia Tech favorably in the national and international arenas.

Objective 6.1: Create a safe, supportive, and efficient work environment promoting creativity, productivity, and high-quality standards of work.

Objective 6.2: Encourage and promote a supportive environment for employee professional development and continuing education.

Objective 6.3: Provide training opportunities for employees, including cross-training and mentoring programs, in order to maintain and improve employee skills and enhance departmental flexibility.

Objective 6.4: Promote employee understanding of NI&S's vision, mission, and goals and how they support the vision, mission, and goals of the university and those of the Office of the Vice President for Information Technology.

Objective 6.5: Promote improved communication within NI&S and with the university community in order to keep the department, the university, and the wider world better informed of NI&S-related activities and services.

## ENVIRONMENTAL FORECAST

Telecommunications is a dynamic technological field that continues to evolve at an ever-increasing pace with no slowdown expected in the foreseeable future. In the opinion of some knowledgeable observers, there is a thirty-month turnover period in technology. These constant advances hold the potential to provide the university with a suite of technology services that can greatly empower faculty, staff and students. Along with accelerating advancements in telecommunications technology, the university community's expectations of and demand for the benefits of that technology continue to grow at an exponential rate.

Any prediction of the future telecommunications environment must be tempered by the realization that not only technological, but also regulatory and economic considerations may significantly influence any projection. The telecommunications industry in general is evolving radically and is adapting to new business models as emerging technologies gain market favor. Influential regulatory legislation, the Telecommunications Act of 1996, is presently being rewritten. As this is likely to have great national impact on information technology, Virginia Tech is engaged with other universities to provide input to lawmakers involved in this process. State colleges and universities throughout the commonwealth are also adapting to increased financial and administrative responsibilities as the Restructured Higher Education Financial and Administrative Operations Act of 2005 is implemented. These changes should benefit the university, but will undoubtedly present their own set of challenges and opportunities. The Restructuring Act increases the responsibilities and influence of the Virginia Tech Board of Visitors. The Office of Vice President for Information Technology, in particular, will need to work closely with the board in order to gain approval of the structures and processes implemented to support the requirements of the Management Agreement for Information Technology.

The federal government, possibly due to the heightened awareness of homeland security, is undergoing a transition of its model for funding research. This shift has already influenced, and will continue to influence, the university's approach to research, especially in the National Capital Region, an area in which the university hopes to enlarge its "footprint". One significant aspect of the changed model requires the university to take responsibility for the security of the information used in and produced by its research. The shift in federal funding has been away from grants, which generally have vaguely defined goals, toward contracts, which have a clearly defined set of deliverables. This development is leading to closer ties with government agencies and promoting the need to become "embedded" in these agencies (i.e. develop closer ties with decision-makers) in order to attract research dollars.

Recent technological advances in telecommunications range from refinement of transmission media to new approaches in the delivery of older services. Both copper and fiber optic cable technology have matured and have increased their physical capability to provide an enhanced transmission media. Advances in copper technology have delayed the use of fiber to the desktop and have helped copper remain the industry's most popular and most cost-effective choice for horizontal wiring. Fiber optic technology has advanced greatly, particularly in the area of electronics. However, the paucity of fiber optic cable presently deployed in our inside cable plant and the relatively high costs of both the cable and its installation inhibit widespread use other than as an inter-nodal transmission media. The telephone is over a century old, yet its basic delivery structure has only recently been challenged by any alternatives. The advent of cellular services not only radically changed our concept of telephony, but also may have sparked a reconsideration of service delivery that is still developing. One new delivery method, which utilizes the traditional data network and may

open up new opportunities, is voice over IP (VoIP). VoIP promises to provide the model for the next generation of telephony delivery.

The university will benefit from its leadership and participation in the development and implementation of high-speed experimental research networks. As we have benefited from our involvement with Network Virginia, we will also benefit from our participation in high-performance research computing and communications networks, including the National LambdaRail (NLR), the Mid-Atlantic Terascale Partnership (MATP) and the Virginia Optical Research Technology Exchange (VORTEX) initiative.

Distance learning is an important component of academic outreach and will continue to play a role in fulfilling the university's mission. Interactive videoconferencing will remain in the mix as an important method of delivering distance learning to undergraduate, graduate, and outreach classes at remote centers across the commonwealth. The technology is evolving into an IP-based system and continues to undergo refinement and see increased demand. Flexibility in delivery will continue to improve; this also implies site flexibility, including the ability to add conferees wherever they are located at the time. This ability will be facilitated by advancements in the technology of data transmission and the eventual development and deployment of "fiber to the premise" (FTTP).

There are several ongoing initiatives that will impact telecommunications at the university and help set the direction for further development. A campus-wide infrastructure upgrade over the next several years will provide the university with leading-edge networking equipment and level the wiring standard across campus buildings. This upgrade will also provide the opportunity to integrate a new campus telephone system. Newer network equipment will enable the delivery of "gig-to-the-desktop," allowing the university community to utilize more bandwidth-intensive applications at individual workstations. This equipment will also feature "power over Ethernet" (PoE), a method of

delivery of low-level power to remote, network-connected devices such as VoIP phones, wireless access points, remote cameras and carded door strikes. Wireless network access is now available in most campus buildings and will continue to be extended across campus. The spread of wireless foreshadows and accommodates the widespread use of hand-held devices, or personal digital assistants (PDA's), to access the university network.

The future of telecommunications at Virginia Tech will involve the maintenance and improvement of the leading-edge, high quality systems (and information asset management) currently being provided. To do this, it will be necessary to enhance present technology, embrace new technology and investigate and position ourselves to accommodate technologies not yet fully developed. To accomplish these goals means a series of specific challenges must be addressed.

One of the greatest challenges will be to develop and implement strategies for effective information storage and management. Research at Virginia Tech, and its associated data generation, has flourished and will continue to expand. Instruction, with the development of programs such as ePortfolio, will require significant increases in data storage. Administrative offices will also require ever-increasing amounts of storage to support initiatives such as the imaging project. This information explosion will place huge demands on available resources and require the addition of new hardware and the implementation of new management strategies. In order to accommodate varied university needs, a plan for handling storage will undoubtedly include provision for on-line, off-line, and near-line access to stored information.

Perhaps the greatest risk to stored information is the loss of that information, often caused by a catastrophic hardware failure of storage media. This risk can be greatly mitigated by effectively utilizing centrally managed storage. Centrally managed storage is evolving rapidly. The latest area of development incorporates the SAN fabric with the goal of making multiple

networked storage devices appear as one “storage cloud”. However, the usefulness of this type of storage in risk reduction may be limited by acceptable system performance. The need for robust, centrally managed storage will require the deployment of high-capacity network systems which enable utilization of storage to its maximum benefit.

Another challenge will be to develop and implement strategies for effective security management. The issue of security has always been an important information technology concern. However, its significance has been elevated as a result of growing national security concerns and by the marked increase in “black hats” seeking to compromise any information system. Information technology must ensure security at three levels: the desktop, the server and the network. NI&S will maintain direct control of the network and certain sets of servers. However, desktops and some servers will be controlled by others; our influence will be limited to promoting compliance with best security practices and through the denial of network access to security violators. The task of NI&S will be to ensure the security of servers under its administration and overall network security. Network security may be defined as the sum of the security measures taken with individual network components and is accomplished by maintaining appropriate code and patches on network switches and devices, by providing network integrity and by proactively monitoring for and isolating potential violators. Continued emphasis on improving employee core competencies and certifications, such as the SANS Institute’s Global Information Assurance Certification, Cisco’s Career Certification programs and the state’s Project Management qualification, will help position staff to better manage security concerns. Security of information will be an important concern for every user, but the responsibility for network-associated security and the enforcement of security guidelines will fall to NI&S.

The methods by which computer code is developed and marketed are changing rapidly with the advent of “open source” software. Providing leadership in open source

development will position NI&S to contribute to the university and to the surrounding community in a variety of ways. It will further the university’s outreach mission by allowing interested organizations to freely use the new software. Also, by making any enhancements available to the user community utilizing these products, it will ensure that the software will continue to be improved resulting in a win-win situation for everyone involved. Open source development will also provide opportunities for small business startups to market services supporting and maintaining these products. This process may help attract endowments from successful businesses which have directly benefited from the university’s efforts in this area. Providing leadership in open source development will also heighten name-branding which will enhance the university’s national visibility.

The proliferation of network applications and services will continue to increase the demand for greater bandwidth. NI&S will continually monitor performance and capacity in order to upgrade the capabilities of the network appropriately. We will also work closely with campus system administrators and other groups to ensure network applications are managed wisely and effectively. Expansion of web development and IP-delivery of distance learning and asynchronous classes are areas which will place added demands on network bandwidth. Efforts that may well benefit from coordination between client and service provider include the implementation and use of digital signatures as well as identification management. Applications which assay personal computers for malicious programs, viruses, and spyware (such as Checknet and Safetynet), Radio Frequency Identification (RFID) which utilizes embedded, scannable RF tags for asset management and real-time database updating will also require increased bandwidth. The greatest increase in demand for bandwidth may well come from the increased availability of richer, interactive, multimedia classrooms which feature shared graphics and real-time interaction. Better information exchange and coordination with client groups will be required to meet these and future needs.

Another challenge for NI&S will be provisioning the network capability needed to support the emerging field of “pervasive computing.” Pervasive computing is an example of “calm technology” and has been defined by Gupta and Moitra (2004) as “*saturating an environment with computing and communication capability, yet having those devices integrated into the environment such that they ‘disappear’*”. The ready availability of pervasive computing in such applications as event notification, location and context awareness, intelligent space utilization and ambient information usage presents the potential for several significant, positive, impacts on productivity. Some of these impacts include enhanced opportunities for communication, coordination, collaboration and exchange of knowledge, improved access to information by limiting time and space constraints, enhanced decision-making capabilities and heightened user awareness of environmental surroundings. Future designs for office and home will likely incorporate some aspects of pervasive computing.

The changing face of research reflects the emergence of strategies such as “cluster hiring” of faculty and staff and the development of knowledge centers which focus on new fields such as nanotechnology and computational modeling. The recently formed Nanoscale Science and Technology group brings together elements of biology and information technology at the nanoscale level; artificial skin and improved computer chip technology are two results of this focus. Computational Science and Engineering utilizes a mathematical modeling approach to create a new way of doing science. It is a team approach augmented by computing power. The difficulty is wading through an ocean of newly generated information and deciding what is important and what is not. This process requires “clear visualization” or the ability to visualize and project an immediate picture of the results of experimentation. This implies the ability to manage vast storage and shared memory and requires near-instantaneous retrieval and intelligent presentation of data in addition to reliable, secure network access. Providing support for the high-performance

computing essential to this research environment will be challenging for NI&S.

A continuing challenge will be to provide support for research as it strives to embrace a new funding model. This model favors contracts over the more traditional grants and will require more direct contact with federal decision-makers and more involvement in their funding processes. NI&S must be able to support these embedded research proponents as well as provide research groups with robust, high-performance networks which emphasize security, reliability, storage capacity and flexibility and convenient access to other high-speed research networks.

The climate for obtaining and retaining research funding will continue to become increasingly competitive. This challenge will require NI&S to provide researchers with the latest technological tools in order for them to maintain and improve their competitive position. In the intense pursuit of any competitive advantage, researchers and support personnel will come to regard currently maturing technologies in much the same way they regard other fundamental services (i.e. “wireless like air”). The implementation and support of emerging technologies and the maintenance and upgrading of existing technologies will be critical to meet expectations and to foster continued funding success.

In its ongoing efforts to enhance educational standards, the university plans to enroll over nine hundred additional graduate students and to intensify undergraduate study. With Information Technology’s support, the university hopes to harness some of this student effort for various information technology-related tasks. Students will serve as security specialists, system and application administrators, and programmers. Students will act as research computing, network engineering, and learning technology interns. This arrangement will provide a unique perspective and will strengthen our ability to provide network and server security.

An opportunity and challenge facing NI&S will be the development of a successful strategy to take advantage of the convergence of various telecommunications technologies. The lines which have traditionally divided technology into separate, diverse fields, commonly described as “voice, data and video”, have become blurred and will continue to disappear. While a challenge, successful implementation will not only empower instruction, research and outreach, but should also increase university community satisfaction and result in reduced maintenance costs. Demand for these converged technologies will drive NI&S to adopt a new philosophy and to position itself to better deliver these services.

One strategy will be to provide the university with a combination of appropriate physical facilities and advanced cable plant to allow new technologies to develop and grow. A rich infrastructure will allow future expansion and

quick adaptation to emerging technologies. By expanding and improving facilities and cable plant, “enabling technology”, NI&S will contribute greatly to the university’s ability to provide a flexible response to changing requirements.

Information technology will continue to be an area of change and challenge as we approach an environment which relies heavily on near-instantaneous and continuous access to information from anywhere, at any time, on any available medium. This “ubiquitous information access” implies the delivery of services with high capacity, reliability and security. The developing needs of instruction, research and outreach will drive NI&S to this goal. The key to success will be to maintain an organization possessing sufficient business agility to be able to deliver unique services that meet university demands.

# **NETWORK RESEARCH AND DEVELOPMENT**

## **MISSION STATEMENT**

Network Research and Development (R&D) leads the strategic development of communications services and infrastructure for Virginia Tech and provides technical leadership to the university community. R&D creates the framework for an exemplary communications system by evaluating technologies, specifying architectures, and optimizing processes in anticipation of future demands.

## **GOALS & OBJECTIVES**

Goal 1: To advance communications services and infrastructure.

Objective 1.1: Advance the capabilities of the network by recognizing promising technologies and taking advantage of new products, services, and technologies.

Objective 1.2: Increase availability through redundancy and reliability.

Objective 1.3: Manage end-of-life and decommissioning of legacy technologies.

Objective 1.4: Improve methodologies and practices for network management and configuration to increase service and availability.

Objective 1.5: Advance, develop, and support network-based, end user services.

Objective 1.6: Assess services through university community involvement, satisfaction measurement, and market research.

Goal 2: To improve ways to capture and disseminate ideas.

Objective 2.1: Create symposia for regular communication of ideas within the campus IT community and with collaborators.

Objective 2.2: Promote collaboration and partnerships with key vendors and other IT organizations.

Objective 2.3: Establish documentation methods and processes that are efficient and dynamic in their ability to capture and disseminate ideas.

Objective 2.4: Expand training opportunities for employees.

Objective 2.5: Create a work environment where people feel they have welcome access to R&D employees.

Goal 3: To promote, establish, and develop organizational practices that drive the service life-cycle.

Objective 3.1: Involve all areas of the organization in life-cycle development.

Objective 3.2: Promote a project-oriented development process.

Objective 3.3: Operate with fiscal responsibility.

Objective 3.4: Optimize work processes, examine organizational practices and promote effective change where appropriate.

Objective 3.5: Facilitate understanding of R&D's role, value, and services within the IT organization.

Objective 3.6: Develop technical processes and practices for the delivery of services.

Goal 4: To ensure continued technical excellence of R&D engineering employees and foster an environment for creative thought.

Objective 4.1: Nurture creativity, interaction, and team-building through flexible and innovative practices.

Objective 4.2: Develop practices for increased exposure to emerging and speculative end user technologies giving employees a broader view and allowing anticipation of future requirements.

Objective 4.3: Attract, promote, and retain engineering staff through an environment that rewards technical excellence.

Objective 4.4: Continue to expand resources supporting technical work, including lab tools, technical documentation, library materials, and technical software.

Objective 4.5: Pursue measures to increase employee efficiency.

Objective 4.6: Maintain R&D's technical edge by encouraging collaboration and participation in external peer groups and academic discourse.

# NETWORK AND SWITCH ENGINEERING

## MISSION STATEMENT

Network and Switch Engineering designs, implements, and manages a reliable, scalable, adaptable, and secure telecommunications infrastructure. We accomplish this by:

- Employing best practices for systems and facilities management to ensure the operational integrity, security, and optimal performance of network systems
- Applying a practical combination of standards-based solutions and proprietary or speculative technologies to meet the unique needs of the university
- Maintaining effective relationships with internal units and external partners, leading to timely and effective service delivery and resolution of reported problems
- Providing telecommunications consulting and engineering services to the university community in support of special applications

## GOALS & OBJECTIVES

Goal 1: To provide a highly reliable, scalable, secure, and manageable network infrastructure that provides for converged services.

Objective 1.1: Develop and implement plans to phase out obsolete systems, services, and protocols.

Objective 1.2: Provide enhanced IP-protocol support (e.g. mobile IP, IPv6, multicast).

Objective 1.3: Continue to design and construct secure facilities such as equipment rooms, power, and HVAC.

Objective 1.4: Expand wireless LAN coverage throughout the extended campus.

Objective 1.5: Implement quality-of-service controls throughout the network infrastructure.

Objective 1.6: Adopt switching equipment and software with consistent capabilities, management controls, etc.

Objective 1.7: Implement a new voice system utilizing the converged network and providing advanced services.

Objective 1.8: Implement 10/100/1000 Ethernet to every communications outlet.

Objective 1.9: Upgrade the television distribution system to take advantage of emerging technologies.

Goal 2: To develop or acquire new tools or enhance existing tools to enable efficient and effective support of the network infrastructure.

Objective 2.1: Promote the use of software tools with open, consistent, and extensible interfaces.

Objective 2.2: Develop automated provisioning tools to improve resource assignment, infrastructure modification, and service activation processes.

Objective 2.3: Extend existing tools used for engineering change and review processes providing improved configuration management and capacity planning capabilities.

Objective 2.4: Improve or develop internal monitoring and diagnostic functionality for environmental, control, security, CATV, and out-of-band management systems.

Objective 2.5: Overhaul internal authorization and directory systems to simplify personnel changes and the tracking of assigned assets including software licenses.

Goal 3: To improve business, engineering, and communications processes throughout the organization.

Objective 3.1: Define the processes for project management, marketing, and logistics that appropriately and efficiently support our mission.

Objective 3.2: Develop a preventative maintenance process for all power, HVAC, and access control systems to ensure the safety, reliability, and security of all NI&S systems and employees.

Objective 3.3: Coordinate with the university's architectural and engineering staff to ensure telecommunications equipment rooms are constructed to conform to documented, best-practice guidelines.

Objective 3.4: Design improved documentation practices and pursue access to information resources from mobile computing devices.

Objective 3.5: Pursue new technology to make system access more user-friendly and secure.

Objective 3.6: Reduce mean-time-to-failure resolution through improvements in system access and security, change management, resource assignment, and escalation processes.

Goal 4: To provide improvements in the work environment and resources to attract and retain top quality employees.

Objective 4.1: Develop an internal training program to improve the overall knowledge, skills, and abilities of our employees.

Objective 4.2: Pursue staffing to competitive levels with competitive compensation.

Objective 4.3: Pursue resources to improve employee efficiency.

# **VIRGINIA TECH OPERATIONS CENTER**

## **MISSION STATEMENT**

The Virginia Tech Operations Center (VTOC) supports the university's missions of teaching and learning, research, and outreach by providing a 24x7, centralized, single point of contact for computing and telecommunications services support to all Virginia Tech affiliates through:

- Support and consultation on computer desktops
- Support for use of central computing, telecommunications, and multimedia services
- Development of software tools and utilities
- Reclamation of surplus computers to insure compliance with requirements set forth by Virginia Tech standards and guidelines
- Advocacy for the university community

## **GOALS & OBJECTIVES**

Goal 1: To provide comprehensive Information Technology (IT) support to address the university's technology concerns in a timely, professional manner.

Objective 1.1: Develop an IT support website, providing integrated access to knowledge, tools, and support staff for the university community, internal staff, and external partners.

Objective 1.2: Analyze, assess the need for, and as appropriate, recommend a mechanism for "walk-in" and "house call" services to meet the need for hands-on support for complex technology concerns.

Objective 1.3: Develop a business process to deliver the "right answer, right now" and with the appropriate level of service.

Objective 1.4: Implement a methodology for assessing the university community's satisfaction with IT support services.

Objective 1.5: Define the degree of support provided by the VTOC for the broad range of university applications and technologies.

Goal 2: To facilitate the creation and dissemination of IT support knowledge to the university community, internal staff, and external partners.

Objective 2.1: Develop a workflow for the publication of information content created by the unit.

Objective 2.2: Develop a workflow for facilitating the publication of information content created by other IT units.

Objective 2.3: Provide access to IT support knowledge resources (e.g. Knowledge Base, CNS web pages, 4Help) for our information consumers (e.g. internal staff, external partners, university community).

Objective 2.4: Develop and implement a process for the distribution of “hot topics” to appropriate outlets in a timely manner (e.g. via syndication frameworks for websites).

Goal 3: To ensure IT system events requiring immediate attention are proactively escalated and resolved, minimizing impact to the university community.

Objective 3.1: Provide 24x7 systems monitoring using standards-based tools and applications.

Objective 3.2: Establish requirements for monitored systems to ensure an appropriate level of integration with fault-monitoring systems and define contacts and escalation procedures.

Objective 3.3: Provide appropriate access to IT support tools (e.g. Remedy) for systems administrators, ensuring timely communication of resolution status and historical record of reported problems.

Goal 4: To develop and continuously refine internal business processes ensuring optimal use of resources and promoting an agile, adaptable, IT support environment.

Objective 4.1: Assess, define, and pursue as appropriate, the administrative requirements for the Operations Center.

Objective 4.2: Evaluate and select appropriate software for employee scheduling and integrate with related business processes.

Objective 4.3: Establish a workflow for developing and publishing policies and procedures.

Objective 4.4: Assess need for, and as appropriate, identify resources and staff to provide, IT support to the unit (e.g. desktop management, systems administration).

Objective 4.5: Develop and implement a process for authorizing necessary access required to perform job functions.

Goal 5: To foster and facilitate a high degree of coordination and communication among IT units, taking full advantage of the support unit’s unique positioning between the university community and IT service providers.

Objective 5.1: Participate in university, college, and department IT unit meetings, such as DCSS, Microsoft Account Review, anti-virus evaluation, PKI,

Ombudsmen, and software upgrade planning, to ensure an appropriate level of unit representation and increase awareness of activities throughout IT.

Objective 5.2: Work with university-level *IT Acquisitions* to develop a process to ensure the VTOC is aware of new software acquisitions with sufficient lead time to provide adequate support for the software.

Objective 5.3: Provide opportunities for the unit to share knowledge with university departments by developing additional tools, publications, and presentations.

Objective 5.4: Pursue an IT operational practice to address timely involvement of the VTOC in the development and deployment of new enterprise applications and changes to existing applications.

Objective 5.5: Pursue access to all applications the VTOC is required to support.

Goal 6: To attract and retain qualified employees and promote further professional development critical to the effective delivery of IT support.

Objective 6.1: Establish appropriate employee development and evaluation plans and assess employees' performance at regular intervals.

Objective 6.2: Identify professional certifications emphasizing competencies critical to the IT environment at Virginia Tech.

Objective 6.3: Foster employee professional development by emphasizing the importance of core competencies and the achievement of appropriate levels of certification.

Objective 6.4: Develop an internal peer-mentoring program to allow employees to achieve their full potential.

Objective 6.5: Define requirements and implement an ongoing employee-training program that meets the unique requirements of the 24x7 environment.

# SYSTEMS SUPPORT

## MISSION STATEMENT

Systems Support provides reliable and secure, mission-critical electronic communications, central computing resources, and stewardship of university information assets in support of the university's mission of teaching and learning, research, and outreach.

Systems Support accomplishes this by providing leadership in the areas of:

- Systems administration
- Information storage management
- Electronic mail and news services
- Consulting and engineering services
- Capacity planning
- Systems performance management
- Research into future technologies
- Production for High Performance Computing

## GOALS & OBJECTIVES

Goal 1: To lead pervasive computing efforts by providing a centralized, state-of-the-art, content aware, self-managed storage environment accessible to all levels of systems from high-end servers to the desktop.

Objective 1.1: Develop a remotely replicated network storage environment with “snapshot-like” technology, reducing or eliminating the need for a traditional backup/restore process with the ability to easily provide disaster recovery of information assets.

Objective 1.2: Accommodate “Information Access Point” technology allowing diskless or dataless systems to connect to the university-wide network storage service (i.e., Storage Cloud) for access to information assets.

Objective 1.3: Promote life-cycle management of information by providing a policy-based, hierarchical, and content-aware storage service.

Goal 2: To anticipate and support the university's needs by establishing and fostering internal and external professional relationships.

Objective 2.1: Become more involved in university activities and expand lines of communication in support of better understanding of current and future needs and to allow for more effective training opportunities.

Objective 2.2: Build coalitions with other higher education institutions, industry organizations, and vendors to provide enhanced services and maintain a leadership position in IT systems support.

Objective 2.3: Pursue external funding opportunities where appropriate.

Goal 3: To provide a secure, 24x7, high-availability, computing resource environment with standards-based, centrally managed, hardware and software configurations.

Objective 3.1: Effectively manage and secure computing resources to provide maximum stability, availability, and reliability of services to the university community.

Objective 3.2: Support a high-availability environment by performing in-depth service monitoring including trend analysis and predictive capacity planning.

Objective 3.3: Develop and promote the use of best-practices in systems standard configurations and access controls.

Objective 3.4: Provide mechanisms to maintain optimal uptime of services including redundant hardware resources, a rigorous test/research environment, and the ability to perform live updating of operating systems and application software.

Objective 3.5: Develop and promote a “life-cycle” management strategy in order to ensure planning for the purchase of computing resources is timely and fiscally sound.

Goal 4: To provide state-of-the-art electronic communications and groupware services to all members of the university community and any affiliated constituency.

Objective 4.1: Establish standards-based groupware services accessible via a myriad of client platforms supporting location-independent access.

Objective 4.2: Encourage continued research and development efforts, including interactions with vendors and other higher education institutions, to eliminate threats (virus, spam, etc.) to electronic communications.

Objective 4.3: Effectively use content-aware storage service to manage information assets associated with electronic communications.

Goal 5: To foster a more effective, highly trained, workforce by developing location-independent systems administration tools and educational opportunities with lower administrative overhead.

Objective 5.1: Sponsor peer-to-peer training, local seminars, and other learning opportunities for all support staff and the university community.

Objective 5.2: Encourage development or purchase of tools and utilities allowing remote-presence computing support (e.g., remote console access) and use of mobile or remote office technology.

Objective 5.3: Pursue staffing resources to provide administrative process assistance and better utilize highly skilled employees.

Objective 5.4: Promote more team-building exercises and improved work environment.

# **SYSTEMS DEVELOPMENT AND ADMINISTRATION**

## **MISSION STATEMENT**

Systems Development and Administration exists to research, develop, implement, administer, and support secure and reliable IT application solutions that enable and provide strategic advantage to NI&S, the university, and communities served by the university's outreach mission.

## **GOALS & OBJECTIVES**

Goal 1: To develop, support, and improve secure, reliable, cost-effective, and responsive IT solutions to support the vision and mission of NI&S.

Objective 1.1: Maximize server, database, client, application, and business process security. Emphasize a routine practice of user security education.

Objective 1.2: Maximize system availability. Leverage emerging technologies to provide improved redundancy and reliability in order to meet the demands of 24x7 requirements and expectations.

Objective 1.3: Maximize system performance and response time through effective monitoring and tuning.

Objective 1.4: Provide secure and reliable system backup processes to ensure rapid and reliable recovery of systems and information.

Goal 2: To develop, support, and improve software applications to maximize the efficiency and effectiveness of the organization and provide strategic advantage to the organization and the university community.

Objective 2.1: Empower the operational units to make rapid and accurate strategic decisions based on enterprise information.

Objective 2.2: Maximize organizational efficiency and allow for flexible reactions to a rapidly changing environment.

Objective 2.3: Provide users of telecommunications services with greater access to relevant business information and effective procurement and management tools.

Objective 2.4: Provide development and operational support for Blacksburg Electronic Village initiatives and services.

Objective 2.5: Efficiently integrate and leverage sources of data external to the primary enterprise information system in order to maximize the value of each.

Goal 3: To continuously improve the quality and effectiveness of systems development and systems administration by evaluating and adapting best practice methodologies, researching and implementing emerging technologies, and investing in professional growth.

Objective 3.1: Research and implement relevant emerging technologies, best practice methodologies, and industry standards to improve development and system administration quality and effectiveness.

Objective 3.2: Continually review and analyze effectiveness of current systems and infrastructure and evaluate opportunities to reduce cost, improve integration, and adhere to industry standards.

Objective 3.3: Research and implement relevant open source technology to reduce cost, improve integration opportunities, and adhere to industry standards.

Objective 3.4: Continuously invest in professional development by participating in relevant and feasible training opportunities, technology organizations, and user groups.

Objective 3.5: Research and implement relevant, best-practice, system analysis and project planning methodologies to improve communication between strategic planners, users, and developers.

Objective 3.6: Leverage relevant management methodologies and communications technologies to ensure effective communication among systems development and administration employees.

# **VIDEO/BROADCAST SERVICES**

## **MISSION STATEMENT**

Video/Broadcast Services (VBS) supports the university's missions of teaching and learning, research, and outreach by developing, producing, and distributing synchronous and asynchronous instructional content. VBS services include:

- Television studio and location services
- Multimedia authoring
- Video-on-demand
- Media duplication and archival services
- Reliable scheduling, technical support, and operation of interactive videoconferencing (IVC) systems and networks
- IVC testing, engineering, research, and development
- Real-time management of distance learning classrooms including the monitoring of connections and sites
- Campus cable TV scheduling

## **GOALS & OBJECTIVES**

Goal 1: To provide high-quality, reliable solutions and services in video/media production and distribution technologies.

Objective 1.1: Provide professional video production services including planning, script writing, lighting, set and sound design, videography, graphics creation, video and sound editing, and mastering for distribution, according to the required specifications and within budgets.

Objective 1.2: Provide authoring of multimedia programming resulting in creative and interactive instructional material. Authoring services include content research and acquisition as well as video, audio, and graphics production taking full advantage of the most current technologies.

Objective 1.3: Provide reliable university community care services of IVC facilities through event management, on-site technical support, event support, and advanced engineering support.

Objective 1.4: Provide timely instructional playbacks, uplinks, and downlinks in support of the university's educational mission.

Objective 1.5: Provide programming to Adelphia Cable Entertainment for distribution throughout the town of Blacksburg.

Objective 1.6: Route educational programming to campus cable system from teleport and production studios.

Objective 1.7: Continually review the effectiveness of services in meeting the university's needs with a focus on quality of service.

Objective 1.8: Effectively manage the video/media production and distribution infrastructure and services in order to provide maximum stability, availability, and reliability for the university community.

Goal 2: To raise awareness of the high level of technical and creative capabilities available at Video/Broadcast Services to enable the university to take best advantage of our services in support of its education, research, and outreach missions.

Objective 2.1: Establish closer ties with deans, department heads, and faculty.

Objective 2.2: Demonstrate best practices for distance learning for faculty use in course development.

Objective 2.3: Establish closer ties with intra-campus instructional technology groups.

Objective 2.4: Create press releases for publication to highlight recent activities.

Goal 3: To provide for the immediate and future deployment of advanced distance learning and content-distribution technologies.

Objective 3.1: Conduct continuous evaluation and improvement of infrastructure and services.

Objective 3.2: Engage in proactive planning and ongoing review of policies and procedures to enhance our ability to respond to the university's technology needs and changes in a timely and effective manner.

Objective 3.3: Research and develop high-quality, new services and/or enhance existing services to meet functional and/or technological needs.

Objective 3.4: Engage employees in the planning of services and implementation of technology change while ensuring they understand how these services support the university's mission.

Objective 3.5: Research trends and developments in the media/communications industry and set directions based on informed decisions.

Objective 3.6: Conduct research and development to provide for the evaluation of new IVC technologies and determine the most timely and cost-effective acquisition and implementation paths.

Objective 3.7: Establish technical requirements, test, and implement a transition of Virginia Tech's ATM-based interactive video conference classrooms to IP H.323.

Objective 3.8: Organize and participate in a focus group of IVC faculty, Institute for Distance and Distributed Learning (IDDL), academic, and outreach administrators to demonstrate, test, investigate, and recommend implementation of instructional technology tools and enhancements in an H.323 environment.

Goal 4: To attract, develop, and retain qualified personnel to enrich the departmental culture and to enhance Video/Broadcast Services' effectiveness, to foster stronger morale among VBS employees, and to promote our positive contribution to the university-at-large.

Objective 4.1: Create a supportive and productive work environment promoting creativity and high-quality standards of work.

Objective 4.2: Encourage and promote a supportive environment for employee development and training.

Objective 4.3: Provide cross-training opportunities to enhance understanding and cooperation and improve communication.

Objective 4.4: Improve employee understanding of Video/Broadcast Services' mission and goals and how they support the vision, mission, and goals of NI&S, the Office of the Vice President for Information Technology, and the university.

# FIELD ENGINEERING OPERATIONS

## MISSION STATEMENT

Field Engineering supports the university's missions of teaching and learning, research, and outreach by designing, installing, documenting, and maintaining standards-based telecommunications infrastructure that is reliable, adaptable, secure, and flexible enough to meet the university's evolving technological needs. We accomplish this through:

- Professional inside and outside cable infrastructure design and installation
- Quality assurance
- Management of infrastructure database
- Design of capital projects and renovations
- Safety compliance
- Warehousing and logistics
- Service activation
- Research, testing, and evaluation of cabling components
- Development of customized cabling systems and products

## GOALS & OBJECTIVES

Goal 1: To continually pursue and apply advanced technology in support of the latest advances in high-speed telecommunications applications.

Objective 1.1: Research and develop new high-quality services and/or enhance existing services.

Objective 1.2: Provide campus-wide wireless access.

Objective 1.3: Develop and improve the data-carrying capacity and capabilities of the telecommunications infrastructure.

Goal 2: To ensure the availability and reliability of equipment required to meet the university's needs.

Objective 2.1: Develop a five-year comprehensive plan and budget for needed equipment (e.g., vans, lifts, warehouse facility, tools, inventory control equipment) to maximize service-provisioning levels.

Objective 2.2: Establish a maintenance schedule to extend the life of equipment.

Objective 2.3: Establish a state-of-the-art inventory management system (e.g., a "Radio Frequency ID" inventory tag system) to facilitate the speed and accuracy of the Field Engineering equipment and material inventory process.

Objective 2.4: Develop a life-cycle plan to replace aging equipment to ensure that services remain reliable.

Goal 3: To maintain positive relationships with and fully support the university community.

Objective 3.1: Focus Field Engineering processes on the university community's satisfaction.

Objective 3.2: Provide a full range of telecommunications services that are responsive to the specific needs of the university community. Examples include the deployment of wireless networking campus-wide and ongoing upgrades from 10/100Base-T to gigabit to the desktop.

Objective 3.3: Use feedback for continual process improvement. Examples include coordinating activities with Physical Plant to minimize disruption of university spaces and planning work schedules to avoid disturbing classes in session.

Goal 4: To continually improve Field Engineering efficiency in the installation and documentation of telecommunications infrastructure.

Objective 4.1: Assess, evaluate, and implement new technologies in order to automate the work order and real-time documentation processes to help eliminate errors and increase efficiency.

Objective 4.2: Coordinate with other workgroups in NI&S to reduce duplication of effort.

Objective 4.3: Continually identify and document operational procedures to provide a smoother, more timely workflow.

Goal 5: To improve communications within the unit so all Field Engineering employees will be able to share information between workgroups.

Objective 5.1: Facilitate efficient exchange of information among NI&S workgroups.

Objective 5.2: Incorporate a mechanism to allow Field Engineering employees to provide feedback to the Field Engineering workgroups.

Goal 6: To engage in continuous employee development to retain qualified employees to enhance Field Engineering's effectiveness and contribution to the department and university.

Objective 6.1: Promote and provide a supportive environment for employee development.

Objective 6.2: Encourage and recognize employee accomplishments, promoting a positive working environment.

Objective 6.3: Provide ongoing cross-training with other workgroups to allow Field Engineering employees to better understand the overall work flow.

Objective 6.4: Ensure a safe work environment for Field Engineering and other university employees by providing training, equipment, and current operational procedures.

Objective 6.5: Work with departmental management to create and implement meaningful employee development plans.

# **SUPPORT OPERATIONS AND FINANCIAL MANAGEMENT**

## **MISSION STATEMENT**

Support Operations and Financial Management Units (Business Services, Network Administration, Human Resources, and Budget and Financial Management) are responsible for fiscal and budgetary management, purchasing, human resources, and evaluation and implementation of new service offerings for the university community. Our joint mission is to enhance the ability of NI&S to make timely, accurate, and cost-effective decisions in support of daily operations, initiatives, and long-term planning.

## **GOALS & OBJECTIVES**

Goal 1: To provide leadership in support of system operations, design, maintenance, and integrity.

Objective 1.1: Promote integration of new technologies into existing systems.

Objective 1.2: Ensure security of voice systems by proactively monitoring for misuse and potential fraud.

Objective 1.3: Ensure NI&S complies with state and federal regulations and required changes are accurately reflected in departmental systems.

Objective 1.4: Propose and implement enhancements to current business systems in order to increase efficiency and support deployment of new service offerings.

Goal 2: To provide high-quality support and services to the university.

Objective 2.1: Keep abreast of new or enhanced services in order to educate the university community as to their availability, use, and cost.

Objective 2.2: Respond in a professional and timely manner in order to improve processes and services.

Objective 2.3: Provide timely and accurate billing.

Objective 2.4: Restructure the services portfolio to provide the university community with a variety of bundled service packages.

Goal 3: To develop and improve operational policies and procedures in order to enhance our operational effectiveness and our ability to respond to the university's needs in a timely and effective manner.

Objective 3.1: Analyze and refine business practices.

Objective 3.2: Continually review departmental policies for accuracy and to ensure all procedures are documented.

Objective 3.3: Simplify the processes required to administratively support a new service reducing the time from conception to implementation.

Objective 3.4: Eliminate paper-based processes, where applicable.

Goal 4: To engage in sound financial analysis, planning, and practices to ensure continued growth and fiscal stability.

Objective 4.1: Perform effective and efficient budgetary management.

Objective 4.2: Pursue new methods of financing and new revenue streams.

Objective 4.3: Continually review and redefine rate structures to reflect changes in current and projected costs of providing services.

Objective 4.4: Promote closer integration and improved communications with university planning organizations.

Objective 4.5: Continually review and modify our business practices to ensure NI&S is operating in accordance with university and commonwealth policies/procedures and federal rules/regulations.

Objective 4.6: Provide timely and accurate reporting mechanisms.

Goal 5: To promote a work environment which maximizes employee productivity and morale.

Objective 5.1: Ensure employees have the appropriate training and cross-training to perform their job duties effectively.

Objective 5.2: Proactively strive to improve communication throughout NI&S.

Objective 5.3: Continually review current office design, equipment, and work environment and make changes, as appropriate.

Objective 5.4: Identify, promote, and support an environment where employees' efforts are encouraged and contributions are appropriately recognized.

# UNIVERSITY SUPPORT

## MISSION STATEMENT

NI&S University Support units (Ordering & Provisioning, Student Telecommunications, and Public Relations) support the university's mission by providing information on the availability, applicability, and costs of telecommunications services and by recommending and provisioning the services best meeting the university's telecommunications needs. These units also provide information to the university community about these services and solicit feedback for other NI&S support units.

## GOALS & OBJECTIVES

Goal 1: To provide quality services and support to the university community.

Objective 1.1: Evaluate the needs of the university community.

Objective 1.2: Advocate, develop, and promote creative service offerings as appropriate.

Objective 1.3: Promote changes to meet identified needs.

Objective 1.4: Develop and provide training and learning resources for related service offerings.

Goal 2: To communicate effectively internally and within the university community.

Objective 2.1: Keep abreast of and apply best practices for conducting effective meetings to attain desired objectives.

Objective 2.2: Work to ensure our goals align and support the goals of NI&S, IT, and the university.

Objective 2.3: Work to balance information-gathering with decision-making to support the timely implementation of projects.

Objective 2.4: Identify, implement, and review communications protocols (lines of communication), internally and with the university community, on an as-needed basis.

Goal 3: To enhance support by implementing tools, for use by the NI&S support units and by the university community, to improve productivity.

Objective 3.1: Lead a project to assess the need for the development of interface support tools.

Objective 3.2: Work within NI&S internal groups to develop and promote the use of enhanced checks and balances, digital signatures, and increased availability of GPS/CAD software.

Objective 3.3: Review the needs of NI&S support units to ensure they have the equipment/tools to perform their jobs effectively and efficiently.

Goal 4: To promote highly trained, effective, and professional employees.

Objective 4.1: Develop a training program for university support staff.

Objective 4.2: Define ways to support departmental efforts to hire and retain quality employees.

Objective 4.3: Provide a supportive coaching environment for university support staff.

Objective 4.4: Advocate employee development through a department-wide mentoring program.

Goal 5: To establish a quality work environment to enhance employee efforts to support the university community.

Objective 5.1: Continually monitor and review the work environment to ensure it meets the needs of the organization.

Objective 5.2: Identify ways to strengthen information sharing through all levels of the organization.

# **BLACKSBURG ELECTRONIC VILLAGE**

## **MISSION STATEMENT**

Blacksburg Electronic Village (BEV) exists to increase the availability and encourage the use of information technology to enhance social capital and broaden economic opportunity in Virginia communities.

## **GOALS & OBJECTIVES**

Goal 1: To accelerate the evaluation, testing, and deployment of state-of-the-art telecommunications infrastructure.

Objective 1.1: Maintain a relationship with the Town of Blacksburg to provide both a field laboratory and a national model for community networks.

Objective 1.2: Encourage the development of commercially viable, competitive environments for converged (voice, data, video, etc.) telecommunications infrastructure.

Objective 1.3: Accelerate the testing and deployment of innovative community-based IT applications and services of value to the communities.

Goal 2: To provide the broadest possible access for communities worldwide to BEV ideas, programs, infrastructure, and services.

Objective 2.1: Maintain and enhance the BEV-in-a-Box e-Village application to enable rapid, low-cost deployment of e-Villages.

Objective 2.2: Offer the BEV-in-a-Box e-Village application at cost to Virginia communities as a way to bootstrap and incubate both civic and commercial Internet-based activity.

Objective 2.3: Enhance, maintain, and promote the Community Connections Program.

Objective 2.4: Enhance and maintain the Virtual Business Incubator Program.

Goal 3: To establish and maintain relationships with university colleges and departments to allow BEV to be a vehicle for bringing academic resources to bear in communities.

Objective 3.1: Collaborate with academic departments and other programs to enhance academic program offerings through the use of technology.

Objective 3.2: Use the e-Village concept as a vehicle to increase direct involvement with university outreach programs suitable for Virginia communities.

Goal 4: To pursue funding and develop external public and private partnerships to increase investments in community networks and applications.

Objective 4.1: Engage with the Blacksburg Electronic Village, Inc. to facilitate partnerships and fundraising.

Objective 4.2: Develop ongoing relationships with corporations, community organizations, and funding agencies having BEV-related interests.

Objective 4.3: Develop proposals for financial support with program partners.

Goal 5: To participate in professional and civic organizations and promote broad visibility and understanding of, as well as support for, BEV efforts.

Objective 5.1: Maintain membership in, and attendance at meetings of, selected organizations related to community IT infrastructure and services.

Objective 5.2: Maintain a “message agenda” and regularly publish and present in selected venues.

Objective 5.3: Update and maintain the BEV’s own e-Village--technically and visually.

# UNIVERSITY PRINTING SERVICES

## MISSION STATEMENT

Printing Services provides a means to produce and deliver tangible documents to support the university's missions of teaching and learning, research, and outreach. Services include:

- A full-service print facility
- Full-service digital copying/printing centers
- Management of the university contract allowing departments to lease copiers/printers
- Pre-sort standard (bulk) mailing according to postal rules and regulations
- Copyright clearance according to federal copyright laws

## GOALS & OBJECTIVES

Goal 1: To provide leading-edge technology infrastructure to maximize Printing Services' effectiveness and usefulness for the university community.

Objective 1.1: Develop a plan to place existing equipment on a replacement cycle.

Objective 1.2: Investigate and plan for new products or services and the purchase of equipment needed to provide these services.

Goal 2: To raise the awareness of products and services throughout the university community.

Objective 2.1: Review and update the current website on a regular basis to provide accurate information.

Objective 2.2: Investigate and implement new ways of informing the university community of products and services.

Goal 3: To ensure continuous improvement of current services and products and to develop new services and products needed to maximize Printing Services' effectiveness and value to the university community.

Objective 3.1: Assess and evaluate student print needs yearly to determine how to restructure current services and offer new services.

Objective 3.2: Continually review and expand the copier management program.

Objective 3.3: Assess the need for a graphic design service and develop the service if needed.

Objective 3.4: Investigate new technology and equipment to enhance the production and pursue funding for these technologies.

Goal 4: To provide financial integrity and stability in all areas of Printing Services.

Objective 4.1: Review rates and the rate-setting process.

Objective 4.2: Investigate and implement methods to provide funding for equipment upgrades.

Objective 4.3: Find ways to reduce costs, while maintaining service levels.

Objective 4.4: Continually assess and work to improve inventory processes and controls.

Objective 4.5: Continually review and work to improve business processes and systems.

Goal 5: To attract, develop, and retain qualified employees to enrich the departmental culture and to enhance Printing Services' effectiveness and contribution to the university community.

Objective 5.1: Provide training opportunities for employees.

Objective 5.2: Promote a supportive environment for employee development.

# UNIVERSITY MAIL SERVICES

## MISSION STATEMENT

Mail Services exists to provide timely, efficient, and cost-effective mail services to faculty, staff, and students. It provides a critical infrastructure support service through convenient delivery and pickup from the United States Postal Service. It also improves the quality of student life by providing students with convenient delivery of printed materials from student organizations and departments associated with student life.

## GOALS & OBJECTIVES

Goal 1: To provide dependable, regularly scheduled, mail pickup and delivery to departments.

Objective 1.1: Coordinate schedules with departments in order to provide timely mail pickup and delivery.

Objective 1.2: Through cross-training, promote employees' flexibility to maintain consistent delivery in meeting varying levels of mail demand.

Objective 1.3: Encourage feedback to analyze needs in order to provide better mail service.

Goal 2: To provide efficient and effective mail services to residential students.

Objective 2.1: Coordinate with the Office of Student Programs to maintain and service consolidated mailrooms on campus.

Objective 2.2: Provide high-quality service with a personal touch at residential mailrooms.

Objective 2.3: Provide information to students on ways to limit "unwanted" (junk) mail.

Objective 2.4: Encourage feedback to analyze needs in order to provide better mail service.

Objective 2.5: Develop policies and procedures to emphasize protection of students' privacy.

Goal 3: To pursue the most cost-efficient mail services and parcel pickup and delivery.

Objective 3.1: Investigate and assess technological advances in mail-handling equipment.

Objective 3.2: Investigate and assess advances in mail-related software.

Objective 3.3: Review and refine policies and procedures in order to improve departmental efficiency.

Objective 3.4: Provide current information to the university community on best mailing practices.

Objective 3.5: Negotiate best price and service for domestic and international mail and package-handling services.

Goal 4: To attract, develop, and retain highly competent employees.

Objective 4.1: Provide on-going training in order for employees to be knowledgeable of changes in mail policies and procedures.

Objective 4.2: Provide opportunities to access developmental programs.

Objective 4.3: Provide effective cross-training in order to maintain flexibility and to increase employee morale and interest.