

A Technology Master Plan for St. Cloud State University

2003-2008

The Teaching, Learning, Technology Roundtable
Adopted May 2003

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1.0 Introduction and Background

While investment in technology can take place in a haphazard and disjointed fashion, planning those investments provides for more cost-effective and efficient distribution of technology resources. SCSU began campus-wide technology planning in 1997 when it developed a five-year plan (1998-2003). Many goals of that plan were realized, including ubiquitous campus network access and installation of one hundred electronic classrooms. Other goals have not been achieved, including a more timely replacement cycle for faculty and staff computer equipment and assessment of student learning with respect to technology.

In 2002, SCSU revived its technology planning efforts to prepare a technology plan for the next five-year cycle (2003-2008). This Technology Master Plan, really a plan to plan for technology, reviews the directions we expect to move during the next cycle. It reflects a greater dependence on technology across all campus constituencies, a heightened interest in technology at the MnSCU system level, and increasing technological sophistication in our incoming students, staff, faculty, and administrators. This plan also reflects pressure to develop and implement stronger technological support of pedagogy, especially in terms of training and development of personnel.

The process of developing the 2003-2008 Technology Master Plan has included the following steps:

- The Teaching, Learning, Technology Roundtable (TLTR) conducted a SWOT (strengths, weaknesses, opportunities, threats) analysis, spring 2002.
- TLTR brainstormed goals and strategies, spring 2002.
- TLTR asked knowledgeable people to draft sections, summer 2002.
- A technology planning subcommittee was formed (fall 2002) including
 - David DeGroote, Biology
 - Judy Kilborn, English
 - Rubin Stenseng, Center for Information Systems
 - Kristi Tornquist, Learning Resources & Technology Services
- The subcommittee reviewed MnSCU's suggested structure for campus technology master plans and developed a structure for SCSU's plan, fall 2002.
- The subcommittee reviewed and revised draft sections, fall 2002 — spring 2003.
- TLTR reviewed and revised sections recommended by the subcommittee, winter 2002 — spring 2003.
- TLTR submitted the revised sections to the Faculty Association's Technology and Pedagogical Resources committee, spring 2003.
- TLTR has requested a campus review of the draft, April — May 2003.
- SCSU's Technology Master Plan is due to the Office of the Chancellor, June 2003.

2.0 SCSU's Priority Strategic Goals for Technology

The following SCSU Priority Strategic Goal was approved by the Strategic Planning Committee in Spring 2002. This goal, along with its accompanying objectives and rationales (A-D), is currently undergoing campus review.

"SCSU will provide appropriate technologies and resources that support teaching, learning, service and access. This goal is in alignment with the SCSU Technology Master Plan."

- A. The university will provide students and faculty with classrooms and laboratories containing up-to-date, discipline-specific equipment and software.

Rationale: Technology is a means to offer students a high quality education with the skills needed to compete in the marketplace and to make that education accessible. Skills in most fields, from fine arts to technical professional fields, use some form of technology, which may range from microscopes, musical instruments, and kilns, to computers and software.

- B. The university will utilize information technology and distributed learning to support classroom learning and to provide access for outreach.

Rationale: With demographics changing (Data Source: Minnesota Higher Education Services Office), and job requirements requiring ongoing education (Data Source: MDES), many of our new students may have time and location constraints. Distributed learning is one way to make education accessible for them and allow the institution to access new markets.

- C. The university will apply appropriate technologies and resources to support teaching learning, research, creativity, scholarship, and service.

Rationale: Technology should support the pedagogy, learning goals, research, creativity, scholarship, and service that remain at the core of professional needs and development.

- D. The university will provide appropriate technologies and resources to enhance access to support services.

Rationale: The university needs an infrastructure to support services for its students, faculty and staff, including human resources functions, e-services and integrated business functions.

3.0 Risks and Assumptions

3.1. Risks

SCSU needs to evaluate trade-offs inherent in making technology initiatives decisions that are practical, responsible, and progressive.

- An appropriate balance between over investing and under investing in technology needs to be determined:
 - Over investing in technology tools during difficult budgetary times could negatively impact the delivery of the university's main services and functions.
 - Under investing in our technology tools could result in difficulty in recruiting new faculty and students, security breaches that would result in legal complications, and loss of efficiency in normal workflow.
- An appropriate balance between standardization and flexibility needs to be determined.
 - Standardization typically results in reduced costs but lack of flexibility for users.
 - Lack of standardization is typically very costly but results in absolute flexibility.
- Underestimating total cost of ownership (TOC) when investing in technology may result in the inability to maintain technology, frustrated users, and users who are not trained to use the technology to its fullest potential.
- Even during tight budget times, an innovative attitude toward technology applications is necessary to maintain SCSU's leadership role within MnSCU, within the state, and within certain departments for accreditation purposes.
- A lack of attention to privacy and security practices, regulations, and laws places SCSU's data and users at risk.

3.2. Assumptions

- This Technology Master Plan supports SCSU's strategic goal to "provide appropriate technologies and resources that support teaching, learning, service and access." In addition, the Technology Master Plan supports scholarly activity across campus.
- This Technology Master Plan addresses technology resources for all campus constituents.
- Through TLTR the university has established a mechanism for the entire SCSU community to be part of how the campus communicates about technology and to play a vital role in university technology planning.
- Academic programs are responsible for setting technology expectations, integrating them into goals for their disciplines, and assessing these efforts.
- Administrative and service units are responsible for setting technology goals, for integrating applications, and for assessing the impact of technology.
- The university is committed to a Technology Master Plan that balances human values with technological development.
- The university is committed to multiple platforms to support the complexity of campus needs but also understands the benefits of standardization where appropriate.
- The university is committed to providing access to electronic information within legal, licensing, and copyright limits.
- The university is committed to providing all of its students with the technological background needed to be successful in advanced study and in the workplace.
- University stakeholders expect a reliable and robust technology infrastructure.
- Technology stakeholders expect technology access to be available anytime and anywhere.

4.0 Technology Definition

For practical purposes, *technology* in this document means electronic communication and information technology. Conceptually, *technology* is very complex and difficult to define, but most people today think of computers as technology, and what they mean by “computers” is the machine, its software, its connections to the Internet, and the Internet itself.

In this report, what we mean by *technology* comprises

- computer hardware and software, including
 - personal computers
 - minicomputers and servers
 - printers, monitors, specialized drives, and so on
 - operating systems, communication and productivity software
- communication hardware and software
- networking hardware and software

as well as

- discipline-specific equipment
- computer classrooms and labs
- electronic classrooms
- telephones
- satellite systems

5.0 Organizational Overview

Background

Planning requires coordination to ensure a meaningful outcome. Our current technology plan that sunsets this year was developed by the Teaching, Learning, and Technology Roundtable (TLTR), established in the spring of 1997 as a subgroup of the St. Cloud State University (SCSU) Strategic Planning Committee. Prior to this technology plan, technology planning on campus was disjunctive and fragmentary. Early adopters of technology had ideas but may or may not have had support. The Miller Center as a hub of technology was only a pipe dream, and the role of technology in teaching and learning was still in question.

Beginning in spring 2002, TLTR members began to plan for this current five-year technology plan. Initially TLTR examined strengths, weaknesses, opportunities, and threats. Additionally, campus stakeholders were asked to address a number of specific technology issues. The campus community defined some issues, and others represent concerns from MnSCU.

Members of TLTR have taken materials submitted by a variety of experts on campus and have made an effort to provide a framework to continue technology planning for the next five years. The material provided in this Technology Master Plan represents the best efforts of a wide variety of technology stakeholders to further develop an effective and coordinated mechanism to meet SCSU's technology goals and mission in the areas of teaching, scholarly activities, and service to students, the university, and the community.

TLTR reflects the broadest diversity of technology stakeholders on campus. TLTR is an open committee: in addition to duly elected representation, anyone from the campus community can attend TLTR meetings and participate in the discussion. This group reviews, reflects, reacts to, and disseminates technology information to others on campus. Also, this group has been involved in, and continues to be involved in, technology planning on campus as a resource that encourages users to express successes, needs, and concerns about technology to campus decision makers.

The task of technology planning will require the efforts of a large number of dedicated individuals. The general timeline, outline, and organizational flow chart presented in this section are intended to provide the framework to complete the work plan associated with this five year Technology Master Plan. The bulk of the work associated with this plan falls on the committees illustrated in the organizational chart. These committees must represent faculty, technologists, staff, students, administrators, and a variety of stakeholders with a rich knowledge about the current status of technology on campus as well as concerns, prospects, pitfalls, and vision concerning the future of technology at SCSU. Committees will need to determine the best methods and procedures to accomplish the task at hand. This plan has defined outcomes, not methodologies, to obtain those outcomes; methodologies are best left to the committees. Some committees may determine that subcommittees can more readily manage the tasks. Others may want to work as a committee of the whole (COW). The organizational chart simply provides a framework to assist in the flow of information.

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A number of initiatives have been undertaken over the past several years to better understand technology needs and the impact technology and information have on a variety of stakeholders: students, staff, faculty, technologists, administrators, and others. These individuals need to be involved in committee work, and the accumulated data should be integrated into committee recommendations. To ignore or attempt to “reinvent the wheel” would be a disservice to the individuals and the university.

Contributions to committee work should be part of an individual work assignment or, in the case of faculty, recognition as part of service to students and the university (Article 22). TLTR should initiate formation of the committees called for in this Technology Master Plan. TLTR should solicit faculty participation via duly elected representation from the Faculty Association; student participation should be solicited through Student Government.

Finally, the timeframes set out for the sections and subsections of this Technology Master Plan need to be flexible. It may be necessary to extend the time required for the initial phase of this plan (audits, evaluations, data collection, focus groups, etc.) over a two-year period. It is more important to provide comprehensive and considered planning at the onset rather than to produce “a report” by mid-Spring 2004 for the sake of generating a report.

General Timeline

The chart appearing below represents the timeline for carrying out and reporting specific actions for most sections and subsections in Part Five of the Technology Master Plan. Each section and subsection contains a specific action component that will follow this timeline. The outline following this chart clarifies what each time blocks represents. If the section or subsection is not amenable to this general timeline, an alternative will be clearly stated in the “Specific Actions and Timeline” section. Finally, a chart mapping the organizational flow of information appears at the end of 5.0.

Timeline for work-year 2003—2004 and subsequent years as needed

September	October	November	December	January	February	March	April	May	June
Committee selected	Committee collect information and submit report				TLTR, TPR, & other bargaining units review				
							Dean LR&TS & Dir. CIS-AdC		
								Provost & VPAdm Affairs review	

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Outline for above timeline – standard schedule for specific actions

1 October 2003 – Committees will be constituted, establish a work plan and carry out mission.

1 February 2004 – Initial reports of committee findings will be submitted to TLTR, TPR, and other bargaining units where appropriate.

1 April 2004 – TLTR will forward committee reports with recommendations to the Dean of LR&TS and/or Director of CIS-AdC

15 May 2004 – The Dean of LR&TS will submit an implementation plan to the Provost and/or the Director of CIS-AdC to the Vice President of Administrative Affairs.

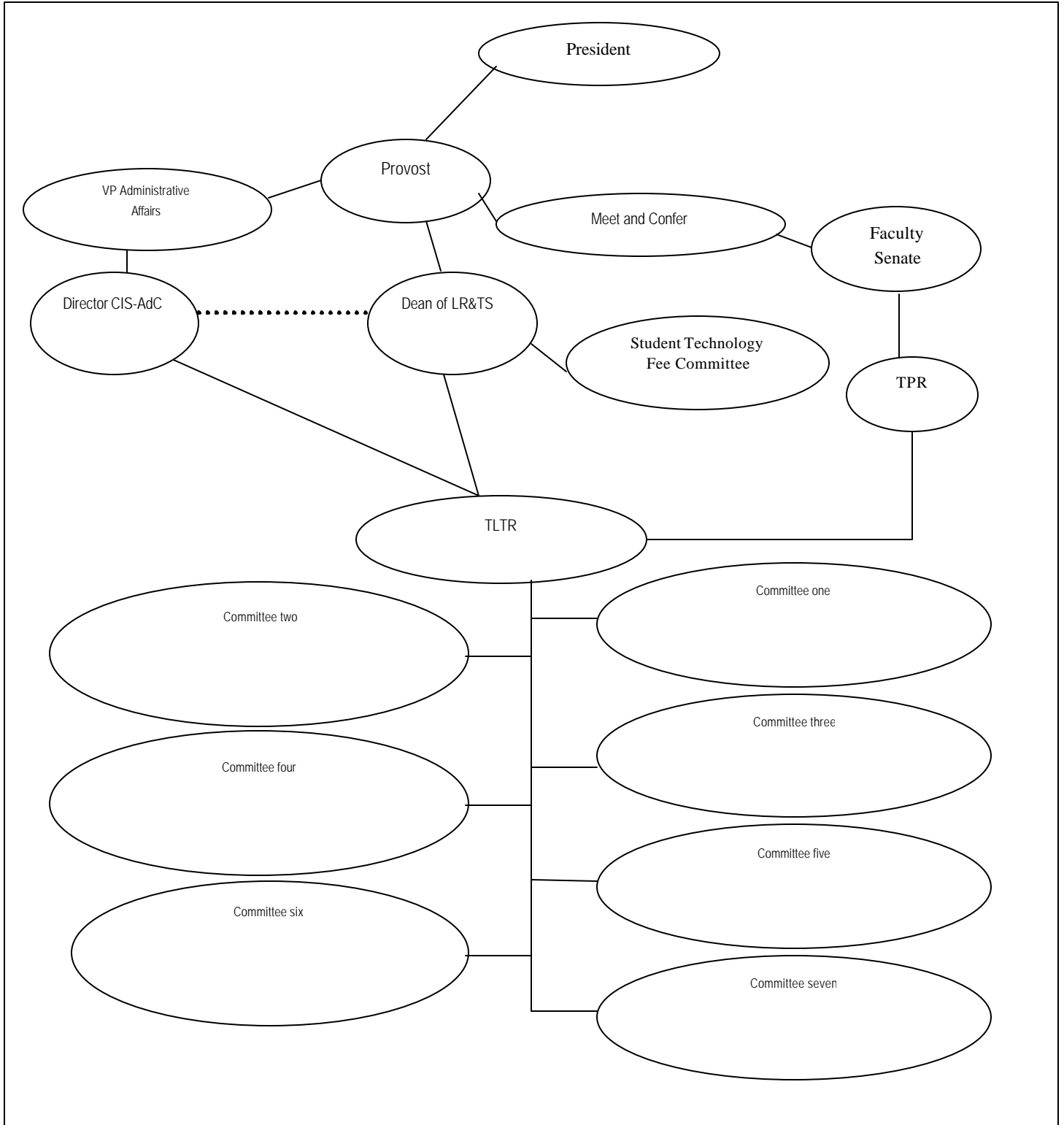
16 June 2004 – The Provost in consultation with the Vice President of Administrative Affairs, the Dean of Learning Resources, and the Director of CIS-AdC will indicate resource availability for implementing the next year's technology plan.

If it is deemed necessary and appropriate, the committee will submit follow-up reports to TLTR in subsequent years according to a similar timeline. These reports will be forwarded to appropriate decision makers.

In the final year of the plan, academic year 2007/2008, committees will review progress during the plan and submit a report based on the points to be evaluated in each section. Each committee will develop a planning document based on the progress and a review for the next planning cycle. The same timeline will be used for the next planning cycle.

Organizational flow of information: the following chart was designed to ensure the broadest participation and evaluation of committee findings relevant to technology planning at SCSU.

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5.1 Planning Alignment

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Background

Technology planning must incorporate the mission, vision, and goals of the organization and its stakeholders. Therefore, the planning framework described in 5.0 requires contributions from a variety of stakeholders across campus. TLTR will assist in soliciting expertise from within the committee itself and from the university community as a whole. The goal is to ensure that TLTR committee composition represents the best SCSU has to offer as related to technology planning. In this way, technology planning will not take place in a vacuum.

A number of planning documents have a technology component, and it is essential that work from this Technology Master Plan align with other planning documents ranging from the departmental/program level to MnSCU. More specifically, the internal and external framework and context of technology planning must consider departmental and college strategic plans, SCSU's strategic plan, the Minnesota State Colleges and Universities (MnSCU) strategic plan, the Chancellor's work plans, the SCSU President's work plans, and SCSU's Facilities Master Plan. In addition, SCSU's technology planning needs to be framed within MnSCU information technology planning efforts.

Since members of TLTR also serve on other planning committees at various levels, TLTR represents a conduit to ensure communication and alignment among these planning committees. TLTR's role is to keep apprised of committee findings and the work of other planning groups to ensure on-going communications and alignment concerning information and computer technology.

Goals

To assure alignment with system, campus, college, and departmental technology goals, in the next five years, SCSU will

- review annually any changes to the MnSCU strategic plan, the SCSU strategic plan, the Chancellor's work plan, the SCSU President's work plan, and college and departmental plans
- provide SCSU technology planning committees with information on these plans to inform their discussions
- offer feedback regarding technology initiatives as these plans are developed.

Specific Actions and Timeline

TLTR will be a conduit for broad technology planning alignment. The following actions will not adhere to the standard timeline but will occur as appropriate:

- TLTR will review all system and campus plans as they are made available. Committee referrals will be made through TLTR as appropriate.
- TLTR will proactively provide input into the process for system and campus plans in a timely manner to meet guidelines.

Resources

Time will be the primary resource invested in this enterprise. Both the Dean of LR&TS and the Director of CIS-AdC will need to be involved as appropriate.

Evaluation

- Are changes to plans reviewed annually?
- Are SCSU technology planning committees fully informed of technology plans relevant to their work?
- Is SCSU providing input in the MnSCU technology planning process?
- Is TLTR providing input in the SCSU technology planning process?

5.2 Policies and Use Issues

Background

Current technology policies at SCSU include an assortment of practices and procedures with no centralized coordination. It's been unclear who enforces policies and how they are enforced. Therefore, the campus needs a coordinated strategy for technology use and enforcement.

This need for a coordinated strategy has been intensified by increased security concerns resulting from networked computers as well as by the current political climate (including legislation like the Data Privacy Act, the USA PATRIOT Act, and the Gramm-Leach-Bliley [GLB] Act), which have increased the likelihood of subpoenas and other law enforcement involvement related to technology use and policies at SCSU. Therefore, the campus needs to determine what data is going to be retained concerning technology use and who is going to be responsible for developing, implementing, and enforcing technology policies.

Campus departments/offices that need to be involved in developing this coordinated strategy include Learning Resources & Technology Services, the Center for Information Systems, Human Resources, Records and Registration, Student Life & Development, Residential Life, the President's Office, Academic Affairs, and Public Safety. Off-campus entities that should be consulted during the formulation of these policies and procedures include MnSCU, the State Attorney General's office, and outside vendors (i.e. dial-up providers like USLink).

Goals

In the next five years, we should

- develop a coordinated plan for reviewing and developing technology policies at SCSU
- evaluate current SCSU technology policies
- revise these policies as necessary
- develop means of addressing cross-system communication so that policies can be implemented and enforced effectively across all affected areas
- communicate to users all changes in policies, including enforcement procedures
- implement new technology-use policies campus-wide

Specific Actions and Timeline

The Provost will establish an official working committee that includes representatives of all stakeholders. This committee will be charged with developing a plan to coordinate technology policies at SCSU. The committee will follow this schedule rather than the standard timeline for carrying out and reporting on specific actions:

- By May 2004, this working committee will
 - compile existing SCSU policies
 - compile relevant federal and state laws and regulations as well as MnSCU policies
 - investigate successful models of technology policy implementation and enforcement and compare these models to SCSU policies
 - revise current policies and write new policies as needed
 - develop an ongoing means of policy review and development

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- present proposed changes to existing policies as well as new policies to the campus community for feedback and to the Provost, who will bring them to Meet & Confer.
- By May 2005, the Provost will communicate to all affected areas (i.e. Human Resources, Records and Registration, etc.) approved policies so that these policies can be implemented.

Resources

Costs will primarily result from allocating employee time to developing technology use policies instead of to other projects. Once a clear plan is developed and approved, additional funds may be needed for hiring additional personnel to implement and enforce the policies.

Evaluation

- Do we have a coordinated plan for reviewing and developing technology-use policies at SCSU?
- Are existing policies reviewed on a three-year rotating cycle?
- Are current policies revised and new policies developed as necessary?
- Do we have a list of current issues concerning cross-system communication as well as a coordinated plan for addressing these issues?
- In general, do stakeholders understand SCSU technology policies and have input into their review and development?
- Are new campus policies communicated to and implemented by affected areas in a timely and effective manner?

5.3 Technology Funding

Background

Different forms of technology have various life spans. A kiln, a microscope, a piano, and a Skinner box might reasonably be expected to have a useful life of 20 or more years. In most cases, non-computing technology in a building on campus is directly correlated with the age of the building. In the Mathematics & Science Center building, most equipment is 30 years old; the building was occupied in 1972. The equipment in the Engineering & Computing Center building is about 12 years old; the building was expanded and remodeled in 1991. Imagine the computer technology in the Miller Center being the same in 2010 as when the building opened in 2000.

Computer/information technology hardware/software — whose use on campus is widespread and whose presence is ubiquitous — has a useful life that is relatively short. Because of this, technology resources continue to take an increasingly larger slice out of SCSU budgets. Acquisition of this hardware certainly is, at first, a large percentage of the total cost of ownership (TCO). Typically, during the first year of ownership, the hardware comprises 36% of the TCO; by the fifth year of ownership, however, this percentage has fallen to 19% (http://www.educause.edu/ir/library/html/cnc9807/cnc9807.html#_Toc437594077). The cost of technology resources is not restricted to the acquisition of the hardware/software but also includes the essential associated costs of technical support, continuous training, infrastructural connectivity, and a higher rate of replacement. (See breakdowns of these costs at the Educause site listed above or in the Virginia Department of Education plan at <http://www.pen.k12.va.us/VDOE/Technology/TCO-58-68.PDF>).

Currently, technology is paid for out of a mixture of sources:

- student technology fees
- some university-wide accounts
- college and/or departmental-level equipment funds
- donor and foundation sources
- grants and contracts
- employees' personal funds.

In some areas, SCSU has budgeted well to attend to the total cost of ownership of hardware, software, and associated technologies. In other areas, success has been less apparent.

A stable funding source. A stable funding source for base level technologies is as important to employee, instruction, and learner success as is the assurance that we have budgeted for telephones.

Emerging technology. At Research I universities, “pushing the outside of the envelope” is the expected level of technology. That is not the case at SCSU, but awareness of what new technologies are “in development” will allow us some sense of how these emerging technologies might fit in the near future. Toward that end, a pool of money to experiment with emerging technologies is crucial to SCSU’s ability to stay apprised of the new technologies that our future students will demand.

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Total cost of ownership. As will be iterated in many of the subsequent sections of this technology plan, associated costs — including training, replacement, repair and maintenance, support staff, etc. — are essential considerations in the overall budgeting process.

Goals

To assure adequate technologies and services as defined in other sections of this plan, SCSU should in the next five years:

- review the current funding sources for technology
- review replacement cycles for technology
- examine cost efficiencies from standardized purchasing and procurement
- develop a plan to stabilize funding for base-level technologies that takes into account associated costs (i.e., total cost of ownership)
- develop a plan to procure and distribute monies for new technologies
- continue to solicit external funding for technology initiatives

Specific Actions and Timeline

A committee including representatives of faculty, staff, and students will be established to address technology funding on campus. The committee will follow the standard timeline (see 5.0) for carrying out and reporting on specific actions. Because of the pace at which technology evolves, evaluations must be flexible and reflect emerging technology in a context practical for SCSU. The scope of understanding the internal budgetary structure and costs associated with all aspects of technology — acquisition of hardware/software, support, training, integration of systems, etc. (TCO) — may mean the committee will require more than one year to gain an acceptable understanding of current conditions in order to provide considered recommendations for the future.

Resources

The resources to complete funding goals of this plan will require a considerable amount of time for committee members. Once their recommendations are in place, resources might be shifted across budget categories, new resource needs might be identified, or other purchasing/leasing options might need to be explored.

Evaluation

- Have the current funding sources for technology been determined?
- Has the current replacement cycle for technology been reviewed?
- Has a cost benefit analysis of standardized purchasing been developed?
- Is a plan in place to assure stable funding for base level technologies?
- Is a plan in place for funding new technologies?
- Are external funds being solicited for technology?
- Has the committee produced a final report in 2007/2008 and developed recommendations relative to technology funding for the next cycle of technology planning?

5.4 Teaching and Learning Overview

Background

Although the teaching and learning enterprises have always used technology, the classroom is undergoing a revolutionary transformation with information technology as its catalyst. Traditional classroom learning is now being supplemented with e-learning, and traditional classrooms are being renovated into electronic classrooms. Assessment, a key element of the teaching and learning cycle, is impacted by technology too: assessment is being assisted by technology; at the same time, the effects of learning with technology are being assessed. Finally, the demand for online course delivery has created a need for instructional management systems (IMS). These transformations in teaching and learning are occurring nation-wide, and SCSU needs to address the development of these movements on our own campus.

Since teaching and learning comprise the core mission at St. Cloud State University (SCSU), nearly all of this Technology Master Plan impacts these primary activities in some way. Section 5.4 of this plan, however, focuses on these core activities of teaching and learning:

- 5.4.1 defines e-learning and talks about the status of e-learning at SCSU and the particular issues that should be addressed during the life of this technology plan.
- 5.4.2 covers classroom resources. In addition to mapping out the issues regarding electronic classrooms, particularly those concerning the planning and maintenance of technology-rich classrooms, this section of the plan argues that electronic classroom spaces should match classroom pedagogy: instructional presentation spaces (with a built-in multimedia PC) are certainly appropriate for lecture classes; however, other sorts of electronic spaces (with student workstations and connectivity) are needed to support hands-on learning, group work, and collaboration.
- 5.4.3 discusses the need for training teachers in pedagogy and technology, suggests that SCSU should facilitate discipline-specific forums to determine technology needs that are specific to fields within the university, and talks about the need for enhancing technology literacy in SCSU students.
- 5.4.4 addresses the need for assessment of how student learning is affected by technology; assessment of student learning using technology; and assessment of student technology competencies the university has agreed are essential in its graduates.
- 5.4.5 focuses on the need for a stable and robust instructional management system (IMS) for the campus, given the rapidly increasing demand for online course delivery.

Goals

In the next five years, SCSU will

- create an exceptional e-learning environment
- develop excellent classroom resources that effectively support SCSU's teaching and learning missions
- ensure that technology matches pedagogy
- assess how student learning is being affected by classrooms technology use
- provide a robust and stable IMS platform to support teaching and learning

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Specific actions and timeline, resources, and evaluation are defined within each subsection of 5.4. Other parts of the technology plan that affect strongly the critical missions of teaching and learning are cross-referenced in this section of the plan.

5.4.1 E-Learning

Background

The definition of *e-learning* varies widely. For some, *e-learning* is equivalent to “distance education” or “distributed learning” since technology enables flexible scheduling, self-paced learning, and course offerings to those who are far away. For some, *e-learning* means Internet courses, although MnSCU’s E-Learning Initiative includes within its definition older technology like interactive television (ITV) as well as newer technologies, like the digital satellite capability delivered by MnSCU’s Minnesota Satellite and Technology (<http://mnsat.mnscu.edu/>), or Instructional Management Systems (IMS), like SCSU’s currently supported WebCT. For others, *e-learning* includes any teaching and learning that is enhanced by technology.

For instance, MnSCU’s E-Learning initiative, Minnesota Online, provides “offerings that students can access any time/any place” but acknowledges “that the same technologies that make it possible for students to learn from a distance also enrich the traditional learning experience.” *E-learning*, therefore, “includes teaching and learning that is enhanced by technology” — counting “some or all of the face-to-face instruction offered in a traditional academic setting” (MnSCU’s “E-Learning Initiatives Overview,” February 23, 2002). Additional newer technologies not incorporated in these definitions include Internet2 and synchronous communication technologies as well as face-to-face presentational technology (like PowerPoint).

Currently at SCSU, there is no agreed upon definition of *e-learning*; having a broad-based conversation to develop such a definition would help us to understand the current status of e-learning on campus and to uncover possible directions for the future. Useful to this conversation would be data collection about current use of technology for teaching and learning.

For instance, we already know that all of the e-learning technologies mentioned above are in use on campus although the most widely used technologies besides presentational technology are probably ITV and IMS (WebCT). However, we don't have a very complete picture of e-learning at SCSU or concrete data about the students involved in classes using technology. For instance, we know that while all ITV classes include off-campus students, not all WebCT classes do. Of the 200 Fall SCSU courses and 8000 students using WebCT, the majority of students were probably on-campus, although data needs to be collected to clarify this claim. Data collection would help us to understand

- the specific types of students taking those courses and why they are taking them.
 - Are they on-campus students simply taking the courses because they can get into the classes? Because they are interested in the flexible scheduling or the self-paced learning (if the courses are asynchronous)?
 - Are they off-campus students taking them because they live at a distance? Because they are interested in the flexible scheduling or the self-paced learning (if the courses are asynchronous)?
- the needs of students taking these courses

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- the needs of faculty teaching these classes

Many of the courses presented only via WebCT are offered through Continuing Studies. Some concerns regarding these online courses include

- training of students in technology use
- student retention
- student learning
- course quality and curriculum approval processes
- remuneration and faculty workload
- hiring of faculty, including the role of the department in that hiring (a system for vetting faculty through the department)
- technology support and technology training of faculty
- intellectual property issues relating to class materials
- recognition of faculty professional development, teaching, and scholarship relating to online teaching

Many of these issues also are relevant for technology-rich classes that are taught through regular departmental offerings.

Goals

In the next five years, SCSU will

- develop and promote a broadly-defined campus understanding of *e-learning*
- participate in MnSCU's e-learning efforts, e.g., Minnesota Online, MnVU, e-portfolios, etc.
- develop an e-learning committee to address faculty issues (including remuneration, ownership, quality, motivation, support, etc), and student support services for those using e-learning
- provide the necessary technical support and infrastructure, including the following
 - appropriate increases in bandwidth (see 5.19)
 - funding to support IMS software (see 5.4.5)
 - training for the designated campus IMS software (see 5.4.5)
 - adequate student and faculty training (see 5.17), including the possibility of a 24 x 7 HelpDesk (see 5.16.1)
 - production services to support e-course development (see 5.16.2)
- find SCSU's e-learning niche and make recommendations regarding expanded marketing and promotion
- evaluate possible financial opportunities of e-learning (distance learning)

Specific Actions and Timeline

An e-learning committee will be formed comprised of members of TPR, members of TLTR, technologists, administrators, and students.

- The committee will follow the standard timeline (see 5.0) for carrying out and reporting on specific actions.

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- The committee will address faculty issues, facilitate expanded student support services for those using e-learning, and coordinate with other appropriate technology committees concerning necessary technical support and infrastructure of e-learning.
- During the 2007/2008 academic year, the committee will produce a final report assessing the effects of technology on student learning and classrooms and a planning document for the next five-year plan. By February 1, 2008, these will be submitted for review to TLTR and TPR (and then via TPR to Faculty Senate).

Resources

One of primary resource needs for e-learning is a fully-funded and supported IMS. (See 5.4.5.) Additional resource needs include technical support and infrastructure.

Evaluation

- Has the committee developed and promoted a broadly defined campus understanding of e-learning?
- Has the committee participated in MnSCU's e-learning efforts, e.g., Minnesota Online, MnVU, etc.?
- Has the committee addressed faculty issues (including remuneration, ownership, quality, motivation, support, etc) and facilitated expanded student support services for those using e-learning?
- Has the committee addressed issues concerning necessary technical support and infrastructure?
- Has the committee found SCSU's e-learning niche and made recommendations regarding expanded marketing and promotion?
- Has the committee evaluated possible financial opportunities of e-learning (distance learning) and made recommendations regarding those possibilities?
- Has the committee completed a final report?
- Has the committee developed recommendations for the next technology planning cycle?

5.4.2 Classroom Resources

Background

Effective planning and maintenance of technology-rich classrooms involves a variety of concerns. These include the redesigning of traditional classrooms into electronic classrooms that need initial installation as well as regular maintenance, upgrades, technical support, and security. Planning for electronic classrooms in new or renovated buildings is also essential. Additional concerns about effective planning and maintenance of classroom resources include scheduling and access to technology systems requiring log-ins as well as installation of software for particular classes. Finally, effective planning of classroom resources includes consideration of new technologies, like wireless and mobile computing, Internet2, and videoconferencing.

Redesigning traditional classrooms as electronic classrooms. In the past five years, SCSU has been very successful in redesigning and equipping traditional classrooms as electronic classrooms with a basic level of instructional technology, including the following:

- an instructor's station with a built-in multimedia computer
- a projection screen
- a means of projecting materials from the local computer onto the projection screen
- a sound system
- an Internet connection
- a VCR and/or DVD

As of Fall 2003, 103 of the 144 classrooms that Academic Affairs currently schedules for courses will be equipped as electronic classrooms; a request that an additional 20 rooms be equipped through a MnSCU capital improvement initiative is in process. Our goal is to redesign the remainder of these classrooms as electronic classrooms during the life of this five-year technology plan. SCSU has been successful in developing electronic classrooms with the assistance of the Student Technology Fee Committee. This committee has budgeted for total cost of ownership (TCO) in its authorization of the renovations of 15 of these traditional classrooms into electronic classrooms spaces.

Currently, as new installations are completed, phones have been added to these electronic classrooms so that teachers have a direct connection to technology support during class times. Approval of the new phone system this spring should enable SCSU to expedite installation of phones in all computer classrooms within the next two years. (See 5.20.2.)

Existing concerns about classroom resources include the following:

- 30-40 classrooms with equipment that is five years old should be upgraded and the TCO figured into the replacement/maintenance plan for these spaces.
- Nine first-generation projectors that are seven years old should be replaced.
- Another issue is lamp replacement. As more electronic classrooms come online, factoring lamp replacement into the TCO is especially important.

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- Some computer and projector equipment has been lost to theft; replacement equipment as well as the security systems to protect against such theft — security cages, sonic alarms on cables, and costs for special locks or card swipes — must be factored into the TCO.
- Given the current budgetary pressure that is pushing up class sizes, more large classrooms are needed with media (projector and computer) and sound systems (including microphones) to meet demand.
- Given the increased use of collaboration in classrooms, electronic classroom configurations (with student workstations and connectivity) that support group work and collaboration are needed.
- Given the potential for technology failures, every electronic classroom should have a low-tech backup (such as a whiteboard and markers).

Planning for technology in new and renovated buildings. In addition to concerns about classroom technology resources in current classroom buildings, we should plan for technology every time we construct a new building or renovate an old one. Indeed, classroom technology should be a part of the overall SCSU Facilities Utilization and SCSU Physical Master Plans. Presently, Lawrence Hall is being renovated, and Centennial Hall and Riverview are included in MnSCU's requests for capital improvement. When these renovations (and others) are being planned, it is essential that primary users be involved in the design of technology spaces. In addition, every time SCSU renovates a space, the university should build into the renovation plans the costs of infrastructure for telecommunications, power outlets, lighting, acoustics, and ergonomic furniture so that retrofitting for technology is minimal. Maintaining and supporting that technology (TCO) should also be part of the planning.

Scheduling, logins, and classroom training. Additional issues concerning classroom resources relate to campus-wide scheduling and to teacher training:

- A scheduling system, perhaps a centralized scheduling system, is needed
 - to facilitate effective use of classroom space and
 - to enable departments and programs that do not “own” electronic classrooms or large classrooms with presentation equipment access to such spaces.A committee currently working on Resource 25 may be addressing these issues.
- When faculty from other departments or adjuncts use department or program systems with logins (such as the Novell network in ECC), they need access to logins. Developing a common log-in system (perhaps Campus Desktop) might take care of such access problems.
 - Faculty should be trained to teach in these electronic classroom spaces: they should be trained to integrate technology into their pedagogy (see 5.4.3) and trained so they are able to trouble-shoot equipment problems during class; they shouldn't simply be trained to set up the classroom by pushing buttons (see 5.17).

Requesting software. Computers in electronic classrooms are loaded with a bundle of core software to meet general student and faculty needs. In some cases, however, faculty need additional software to be installed on the instructor's and/or students' computers to

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achieve classroom goals, and the process and timeline for making such requests isn't always clear. Therefore, the system for requesting software needs to be reviewed and communicated to faculty to ensure that software is available on classroom computers during the class times students and faculty need to use it. This formal system should enable faculty to make software requests once classrooms have been scheduled and in plenty of time for technologists to install the software.

Integrating new technology in the classroom. Finally, SCSU needs to plan for the integration of new technology in the classroom. For instance, an important new technology is Internet2, a separate pipeline from the ones used by current commercial and educational users with a much greater capacity and speed, linking over 200 universities worldwide. Internet2 is useful

- for access to huge databases (of bioinformatics, for instance) or data, images, and digitized collections (like the Smithsonian)
- for applications like remote control of scientific instruments, such as mountaintop telescopes and electron microscopes
- for real-time access to high-definition quality video broadcasts of live performances for media streaming, etc.

In addition, videoconferencing over Internet2 is critical for connections outside of the state since videoconferencing requires a steady pipeline and is free if Internet2 is already available. MnSCU Office of the Chancellor (IT) should be asked to facilitate this application of technology. International videoconferencing and internationalization of programming would be possible via Internet2, and ITV in this way could be incorporated into every classroom.

Another relatively new technology with potential for classroom use is wireless and mobile computing. (See 5.11.1.)

Goals

In the next five years, SCSU will

- fully fund the replacement/maintenance plan for classroom resources (targeting a three-year replacement cycle for computers)
- expand the number of rooms with presentation equipment, targeting large classrooms
- expand the number of technology-enhanced spaces for teaching (student connectivity)
- plan for the total cost of ownership when planning for technology in new or renovated buildings
- explore means of addressing theft in electronic classrooms, including prevention (i.e. security systems, communication about security, and training about security) and planning (replacement costs and security systems as part of TCO)
- provide on-call support during classes (by including a telephone in every classroom)
- define the role of LR&TS technologists, college technologists, and student workers in supporting electronic classrooms
- provide training in the effective use of these spaces
 - integrating technology with pedagogy
 - trouble-shooting equipment during class

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- explore centralized scheduling and logins for computer systems to facilitate effective use of classroom space and to enable departments and programs equal access to electronic classrooms, including large classrooms with presentational technology
- formalize a system for requesting software installation in electronic classrooms and communicate that system to faculty
- explore integration of new technology (like Internet2 and mobile computing) into classroom spaces

Specific Actions and Timeline

A committee comprising technologists supporting electronic classrooms, faculty, students, and other stakeholders will be developed to focus on classroom resources for this plan.

- The committee will follow the standard timeline (see 5.0) for carrying out and reporting on specific actions necessary to accomplish the goals for classroom resources in this part of the technology plan.
- During the 2007/2008 academic year, the committee will produce a final report on assessment of the effects of technology on student learning and classrooms and a planning document for the next five-year plan. These will be submitted to TLTR by February 1, 2008, for review.

Resources

Resources to support electronic classrooms should be well defined in order to provide consistent and reliable service in these areas. Specific support should be tied to particular cost-centers, and all stakeholders should be aware of their obligation to support all types of electronic classrooms.

Evaluation

- Has the committee planned for full funding of the replacement/maintenance plan for classroom resources
- Has the university allocated resources to support full funding of the replacement/maintenance plan?
- Has SCSU expanded the number of rooms with presentation equipment, including large classrooms?
- Has SCSU expanded the number of technology-enhanced spaces for teaching (student connectivity)?
- Has SCSU planned for the total cost of ownership when planning for technology in new or renovated buildings?
- Has the committee explored means of addressing theft in electronic classrooms and made recommendations concerning prevention and planning (for equipment loss and for security systems as part of TCO)?
- Has the university provided on-call support during classes (by including a telephone in every classroom)?
- Has the committee defined the roles of LR&TS technologists, college technologists, and student workers in supporting electronic classrooms?
- Has the university provided training in the effective use of electronic classrooms?

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- Has the committee explored and made recommendations concerning centralized scheduling and logins for computer systems to facilitate effective use of classroom space and to enable departments and programs equal access to electronic classrooms?
- Has the committee formalized a system for requesting software installation in electronic classrooms and communicated that system to faculty?
- Has the committee explored integration of new technology (like Internet2) into classroom spaces?
- Has the committee completed a final report?
- Has the committee developed recommendations for the next technology planning cycle?

5.4.3 Technology and Pedagogy

Background

Technology provides both the tools and the instructional contexts for teaching and learning. Even though the earlier technology of chalk and blackboard have, for the most part, been replaced with computers and multimedia classroom spaces, technology should nonetheless support the pedagogy and learning goals that remain at the core of teaching and learning.

Technology is not neutral in the classroom (or in any other context). When teachers use technology, the technology they use should be based on classroom needs and should be selected to support or enhance pedagogy. This means that decisions regarding software and hardware will have pedagogical implications and should be based, to a great extent, on faculty input and existing research. (See 5.9.1 and 5.9.2.)

Electronic classroom spaces, too, should match classroom pedagogy: instructional presentation spaces (with a built-in multimedia workstation) are certainly appropriate for lecture classes; however, other sorts of electronic spaces (with student workstations and connectivity) are needed to support hands-on learning, group work, and collaboration. (See 5.4.2). Some disciplines have a need for special technology or specialized teaching and learning installations. These discipline-specific needs are addressed in this section of the Technology Master Plan.

Finally, training of both faculty and students should address needs that affect the classroom. What this means is that although section 5.17 in this Technology Master Plan addresses technology training for faculty in general terms, technology training should also include a pedagogical component. It also means that students should develop base-line technology competencies to enable them to do well in the classroom.

Discipline-specific needs. Some disciplines require discipline-specific technology and learning spaces that are secured and supervised spaces. Examples of discipline-specific technology include the following: a human performance testing lab; a spatial analysis lab that uses computers in a manner that requires specialized equipment, software, input and output devices not generally available in general purpose computer rooms; a broadcasting television or radio studio

SCSU needs to review the needs of these discipline-specific technology spaces to determine

- how they are managed
- what mechanisms they use to maintain or replace equipment and to support it
- what means can be used to support these spaces long-term

The existence of such discipline-specific technology spaces is often needed as part of students' education in the field and as a requirement for program accreditation.

In the past five years, educational uses of Geographical Information Systems (GIS), the burgeoning of the Worldwide Web, the proliferation of digital technologies, and the

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advent of Internet2 have opened up many pedagogical possibilities. These possibilities have exacerbated the need for attention to copyright (especially copyright of images and music used in the fine arts) as well as the need for bandwidth (see 5.19). These technologies have also introduced field-specific applications that should be explored in addition to the discipline-specific technology listed in the last Technology Master Plan.

Training faculty in technology and pedagogy. A central need for faculty teaching in technology-rich classrooms is education about pedagogy and technology. Because technology use in the classroom should support pedagogy and classroom goals, teacher training should include discussions about pedagogy and technology applications — not just training in using technology applications. The Faculty Center for Teaching Excellence or other university units might sponsor professional development opportunities, brown bag lunches, discussion groups, or demonstrations requiring knowledge of pedagogy and knowledge of technology. These might include sessions on using particular software applications or technology functions to accomplish particular classroom goals, using electronic classrooms for particular pedagogical purposes, or using large classrooms effectively to enhance student learning. Another possibility for training in technology and pedagogy is support groups like SCSU's WebCT user group.

Training students in baseline technology competencies. Faculty have indicated concerns that they need to provide technology training for students with a wide range of technology backgrounds and competencies. This technology training often needs to be incorporated into an already full classroom curriculum or added in individual sessions with students outside of the classroom. Some sort of technology training for students would be valuable and would enable faculty to concentrate on course content rather than on the technology used to support course content or student learning. This training might take the form of a Technology Skills Center, a required technology course, a set of technology training workshops that students could take voluntarily, or sessions that faculty could request for individual classes. (See 5.17.)

Goals

In the next five years, SCSU will

- investigate needs for discipline-specific technology and learning spaces on campus (including existing and new installations as well as emerging technology applications) and recommended means for addressing those needs (including the total cost of ownership of such spaces and such technology)
- determine needs for faculty education about technology and pedagogy and recommend potential training mechanisms
- facilitate a university-wide conversation about technology and pedagogy
- explore student technology literacy needs and make recommendations regarding training (see 5.17)

Specific Actions and Timeline

A committee will be formed that comprises members of TPR, InfoMedia Services work group, technologists, faculty, and students interested in technology and pedagogy.

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- The committee will follow the standard timeline (see 5.0) for carrying out and reporting on specific actions necessary to accomplish the goals for technology and pedagogy in this part of the technology plan.
- The committee will consult with appropriate individuals and work groups to assure that the committee has all necessary information for informed decision-making.
- During the 2007/2008 academic year, the committee will produce a final report on technology and pedagogy, and a planning document for the next five-year plan. These will be submitted to TLTR by February 1, 2008, for review.

Resources

Resources for technology and pedagogy would need to be determined. Primarily, costs would be mapped out by the committee and would be tied to their recommendations. They would most likely involve the costs of training faculty and students as well as the costs of installing, maintaining, and supporting discipline-specific technology applications or technology spaces.

Evaluation

- Has the committee investigated the needs for discipline-specific technology and learning spaces on campus (including emerging technology applications) and recommended means of addressing those needs?
- Has the committee determined needs for faculty education about technology and pedagogy and recommended potential training mechanisms?
- Has the committee facilitated a university-wide conversation about technology and pedagogy?
- Has the committee explored student technology literacy needs and made recommendations regarding training?
- Has the committee completed a final report?
- Has the committee developed recommendations for the next technology planning cycle?

5.4.4 Assessment

Background

Central missions of the university are teaching and learning. Certainly, within the cycle of teaching and learning, assessment plays a central role. Teachers measure the effects of their pedagogy on student learning; then they use this assessment to improve their pedagogy and, consequently, student learning. As the cycles of teaching, learning, and assessment continue, teaching and learning are examined and improved. Technology is often an essential element of this cycle: it is one tool used to enhance teaching and learning. As such, it should be assessed as well as serve as a means of assessment.

More specifically when the terms *assessment* and *technology* are used together within a university environment, a variety of concerns arise.

- First and most significantly is assessment of how student learning is affected by technology. Technology is not neutral; and, as an institution of higher learning, SCSU needs to ensure that technology applications used in the classroom are not negatively affecting classrooms or student learning.
- Second is using technology to assess student learning. Technology applications such as e-portfolios and other technology structures that support assessment can enable faculty to track individual student learning within SCSU and MnSCU as well as document the overall learning outcomes within academic programs.
- Third is assessment of student technology competencies the university has agreed are essential in its graduates. Given the technology-rich workplaces students will enter upon graduation, ensuring baseline technology competencies for our graduates will enhance their employability.

How student learning is affected by technology. Given SCSU's central missions of teaching and learning, technology must support teaching and classroom goals and must help to facilitate student learning. To determine if technology is enabling student learning, SCSU needs to look at how technology is being used within disciplines to enhance student learning of content, as well as what students are learning about technology that they can apply to field-specific situations. In other words, this view of assessing the impacts of technology on student learning assumes that

- students will have access to the technologies, the instruction, and the support necessary to develop technological competencies that will enhance learning in their academic programs.
- assessment of the effects of technology on student learning, on the classroom environment, and on teaching is best done within the departments and colleges since experts in specific fields are best qualified to establish and use Key Performance Indicators (KPIs) that are meaningful within their disciplines

Assessment of student learning is the responsibility of faculty, but it needs to be supported by the institution. In other words, reassigned time for faculty in departments and colleges that are assessing the academic outcomes of technology use is essential. In addition, coordinating

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and sharing assessment efforts across campus provide a clearer picture of the effects of technology on the university's central mission — teaching and learning — so a system for facilitating such coordination is needed. Unless resources are allocated to assessment at both the programmatic and university-wide level, it is unlikely that meaningful assessment of the effects of technology on student learning will occur.

Using technology to assess student learning. Technology can assist in assessment of student learning within and across programs and departments at SCSU as well as support testing within classes.

SCSU should explore technology that would help us to assess student learning within departments and programs and across the institution. For instance, SCSU might take advantage of MnSCU's *e*folio initiative (<http://www.efoliomn.com/>), which provides for all Minnesota citizens templates and a modest amount of storage (3 MB per site) for e-portfolios. This initiative is intended to provide Minnesota citizens with a "Web-based portfolio management system that enables students, professionals, educators and others to organize, manage and display career and educational information to advance educational and career objectives" (<http://www.avenet.net/>). However, the minimal storage allotted through this initiative would need to be addressed — as would storage requirements for any long-term or widespread use of e-portfolios or other electronic student work within campus departments or programs.

SCSU could also explore other technology structures or applications that support the collection and management of large data sets that are closely integrated with ISRS; such technology might help us to track individual student progress within institutions or to complete large-scale program assessments. SCSU has recent experience with an assessment pilot program that tied student IDs to ISRS relational data sets and provided some experience in dealing with security and access issues; the results of this pilot project may be useful in further explorations of technological support of assessment.

In addition to assisting with programmatic and individual assessment of student learning, technology is increasingly needed to support testing on campus. For instance, with a growing number of large classes on campus, concern is building about efficient means for distributing test scores to large classes without contravening the Buckley Amendment. In addition, CIS-AdC currently scans over 2000 test sets per semester. Also computer-based testing for PPST, GRE, GMAT, and TOEFL is now offered on a limited basis through an office in Atwood Memorial Center, and placement testing for the Division of General Studies program is temporarily occurring in the training center for CIS-AdC. Development of a permanent testing center that provides the technology and staff support for all of this testing online would be an efficient use of technology and should be explored. If a permanent testing center existed, scanning equipment from CIS-AdC could be moved into this center. Online testing software might also be explored as possible supports for large classrooms in particular but also for any classes using objective tests.

Assessment of student technology competencies the university has agreed are essential in its graduates. Since workplaces our students will enter upon graduation are becoming

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increasingly rich and complex technologically, the university should have a campus-wide discussion of the technology literacy we would like our graduates to have. The following technology competencies (based upon March 1998's "Technology Plan for St. Cloud State University") might be a starting place for such a conversation:

- Students use e-mail and the Internet to communicate and locate information.
- Students access curricular information made available by the faculty or the university.
- Students create documents, including graphics, on a computer using appropriate software applications.
- Student search library databases and use technology to support written and oral presentations in their fields.
- Students use spreadsheets, databases, and graphics as they are used in their disciplines.
- Students create a computer-based multimedia project.
- Students understand basic computer operations.

Departments and programs should determine which of these competencies are relevant to their students, which additional discipline-specific technology competencies are needed before graduation, and how these competencies might be taught and assessed within courses, programs, and departments. Discussions within departments and colleges as well as campus-wide conversations should result in an agreed-upon set of competency goals for the university as a whole as well as discipline-specific competencies for particular fields.

Goals

In the next five years, we should

- determine current efforts of measuring the effects of technology on teaching and student learning outcomes
- make recommendations about means of encouraging departmental and programmatic assessments and university-wide coordination of such efforts
- allocate resources to support assessment of the effects of technology on teaching and learning
- facilitate departmental, programmatic, and university-wide assessment of the effects of technology on student learning and classroom environments
- investigate technology applications currently available for tracking individual students' learning or for collecting and managing large data sets for full-scale program assessments
- investigate testing software and make recommendations regarding its acquisition and use at SCSU
- explore the possibility of a permanent testing center on campus that could provide the technology and staff support for online testing
- encourage university-wide conversation about technology competencies desired in SCSU graduates as well as conversations in colleges and departments about discipline-specific technology competencies

Specific Actions and Timeline

TPR will be the committee to complete assessment goals for this plan.

- The committee will follow the standard timeline (see 5.0) for carrying out and reporting on specific actions.

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- The committee will evaluate the current status of assessment of technology on teaching and learning at SCSU, make recommendations on how to proceed with assessment, and plan how to accomplish the other goals stated in this section of the Technology Master Plan.
- The committee will consult with appropriate individuals and work groups to assure that the committee has all necessary information for informed decision making.
- The committee will implement plans for accomplishing the other goals stated in this section of the plan.
- During the 2007/2008 academic year, the committee will produce a final report on assessment of the effects of technology on student learning and classrooms, and a planning document for the next five-year plan. These will be submitted to TLTR and the Faculty Senate by February 1, 2008, for review.

Resources

Resources for assessment would need to be determined and allocated, including the costs of faculty time for assessment as well as technology support for assessment. Primarily, the overall cost of assessment would include reassigned time for faculty coordinating assessment efforts university-wide or in the colleges or departments. Technology support would include technology systems or applications used in assessment as well as technology support for those systems.

Evaluation

- Has the committee determined current efforts of measuring the effects of technology on teaching and learning in general and, more specifically on student learning outcomes?
- Has the committee made recommendations concerning departmental and programmatic assessments and university-wide coordination of technology assessment?
- Has the university allocated resources to support assessment of the effects of technology on teaching and learning, including assessment that is closely integrated with ISRS?
- Has the committee encouraged departmental, programmatic, and university-wide assessment of the effects of technology on student learning and classroom environments?
- Has the committee investigated technology applications for supporting assessment of student learning and of programs?
- Has the committee researched testing software and made recommendations regarding its acquisition and use at SCSU?
- Has the committee explored the possibility of a permanent testing center on campus that could provide the technology and staff support for online testing?
- Has the committee encouraged university-wide conversation as well as conversations in colleges and departments about technology competencies?
- Has the committee completed a final report?
- Has the committee developed recommendations for the next technology planning cycle?

5.4.5 Instructional Management System

Background

Given the rapidly increasing demand for online course delivery, SCSU needs to assure a stable and robust instructional management system (IMS) for the campus. In Fall 1998, a group within LR&TS began working with WebCT as an IMS. The software was set up on a server, and a pool of faculty was recruited to test WebCT with classes in Spring 1999. Within a year, 55 faculty were developing or offering classes involving 1,177 students through WebCT. By Fall 2000, these numbers had increased to 65 active courses with 5,148 students; two years later, in Fall 2002, approximately 200 SCSU courses involving more than 8,000 students were offered using WebCT. WebCT is currently used to deliver some entirely online courses although most instructors use WebCT to enhance traditional on-campus classes. Combined, these two approaches result in classes affecting over half of the student population of SCSU.

Although WebCT is the IMS supported on SCSU's campus, it is not the only IMS used. Some faculty use Anlon or Blackboard. Other faculty use systems they have designed themselves with the IMS features they need. Still others use publishers' sites that provide the portion of the IMS that they want to use. Clearly, an IMS has become an important resource for course delivery at SCSU.

WebCT requires an annual license fee and a dedicated server, both initially funded by LR&TS. Beginning in October 2000, MnSCU provided funding for its three-year IMS initiative; through that, SCSU received \$199,788 for instructional support for WebCT, which was used to upgrade the WebCT server and to create a server administrator position to provide greater IMS support on campus. SCSU has continued the license through August 2004.

This year MnSCU has been reviewing whether it will provide any future funding or support for an IMS for campus instructional use and, if so, what platform(s) it will support. MnSCU may choose to support a single IMS platform so that students can move among MnSCU schools with the same IMS system. There is the expectation that an IMS in such a seamless system will provide e-learning (or distance learning) for students throughout the state as well as "customized training" for the workplace. Once MnSCU has decided upon funding and support of an IMS, SCSU will need to be ready to move forward with short- and long-term IMS plans.

Goals

In the next five years, we should

- institute an IMS committee derived from the TLTR committee charged with assuring a stable and robust IMS platform for the campus
- make sure that users are kept up-to-date about changes and developments in campus instructional systems
- facilitate ongoing communication with campus users about IMS development given the potential for technological changes and the presence of external forces (such as MnSCU, the legislature, and the workplace)

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- ensure that the processes of planning, evaluating, and providing feedback about an IMS and system support involve all campus users.

Specific Actions and Timeline

These specific actions and timeline are dependent upon the actions of MnSCU in relation to IMS support beyond 2002—2003. Therefore, the committee will adhere to the following schedule rather than the standard timeline for carrying out and reporting on specific actions:

- Before May 2003, an IMS committee should develop a preliminary plan for short-term (2003—2004) IMS support. (The group should include the Associate Dean of LR&TS, IMS student and faculty users, and support technologists.) The short-term plan should include various budget scenarios covering no/partial/full MnSCU funding of an IMS so that SCSU is prepared to move forward and adjust plans as information becomes available from MnSCU.
- Once MnSCU's future IMS support plans are known, the IMS working group should develop a long-term (2004 —2008) plan that considers continued integration of a supported IMS into courses, workshops and training sessions at SCSU, as well as a clear strategy for implementing changes related to IMS use.
- The IMS committee should develop specific operating processes for enacting the following basic principles:
 - involving all campus users (faculty, students, support staff) in developing the plan and providing feedback about IMS so that the system remains responsive to users
 - developing an ongoing reporting process that actively involves the Technology and Pedagogical Resources (TPR) committee (and through it, Faculty Senate) and the Administration (on the resource level)
 - communicating to all campus users changes in IMS use resulting from the plan
 - monitoring on an ongoing basis changes in IMS support, initiatives, licensing, etc. at MnSCU; monitoring the marketplace for IMS developments; and monitoring users to determine their needs
- Biennially (May 2004, 2006, and 2008), the IMS working group should submit to the TLTR and to the Provost a report evaluating the current status of the IMS and recommending future support and developments.

Resources

Costs associated with housing an IMS on campus for course and training use include a server, server maintenance, system administration, annual software licensing, training sessions for users (including instructors and workshop materials), and ancillary software to assist in integrating materials into the IMS. At this point, MnSCU has not decided whether it will provide any funding or support for an IMS for campus instructional use, and if so, in what form and for what system(s). The status of MnSCU's support should be clear by June 2003; prior to that point, SCSU should develop a short-term plan that enables us to react quickly to maintain a stable and robust IMS platform for the campus.

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Evaluation

- Do we have a long-term plan for integrating IMS into courses, workshops, and training sessions?
- Are changes in IMS support at MnSCU, developments in the marketplace, and user needs monitored regularly?
- Are changes in the IMS on campus communicated to users in a timely, effective manner?
- Are mechanisms in place so users can provide feedback regarding the IMS?
- Are faculty using the IMS trained and supported by InforMedia Services faculty?
- Have faculty/departments assessed the IMS to help clarify how teaching and learning are affected by these systems and to help determine appropriate IMS use?
- Has the committee completed a final report?
- Has the committee developed recommendations for the next technology planning cycle?

5.5 Partnerships

Background

Partnerships with other public and private entities provide SCSU students, faculty, and staff with valuable opportunities and experiences in high-tech workplaces. Such formal and informal partnerships also contribute to the larger community and build local relationships as well as provide resource benefits that will become even more critical in the current financial environment.

We should encourage the development of formal and informal partnerships with international, national, state, local community and business groups, elementary and secondary educators, and other higher education systems to enhance collaboration and to meet the professional development needs of students, faculty, and staff living in our increasingly technological society. Given increasingly scarce resources and funding, we should encourage partnerships involving barter or in-kind relationships as well as those requiring little or no fiscal investment on our part.

Goals

In the next five years, we should encourage informal collaboration as well as formal partnerships by raising awareness of the benefits of establishing partnerships with other public and private entities. Specifically, SCSU should

- clarify the processes for establishing formal partnerships
- develop strategies to help constituencies at SCSU to leverage products, services or resources that may have value to other public or private entities
- find ways to encourage, assist, and reward people for partnering that is appropriate to their professional development.

Specific Actions and Timeline

By May 2004, TLTR will request that the Provost consider a campus-wide initiative for technology partnerships. This request will include designation of responsible parties, formed as a committee, for developing and implementing this initiative.

- The committee will follow the standard timeline (see 5.0) for carrying out and reporting on specific actions.
- The committee will investigate partnerships across the university, will determine what sorts of partnerships can and cannot be developed, and will clarify the procedures for developing a formal partnership at SCSU, including who must be consulted and must sign off on partnering projects. In the process of researching, the committee will identify SCSU constituencies experienced in developing such partnerships and solicit their input as well as input from those interested in developing partnerships. Based on this investigation, the committee will develop a planning guide that includes policies and procedures for setting up a partnership to assist those on campus who wish to partner.
- The committee will determine additional strategies for assisting, encouraging, and rewarding partnering. The committee might investigate such topics as the possibility of mentoring programs or the opportunity to reward partnering projects appropriate to professional development under contractual reviews, like Article 22.

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- During the 2007/2008 academic year, the committee will produce a final report on partnerships and a planning document for the next five-year plan. These will be submitted to TLTR by February 1, 2008, for review.

Resources

Many partnering projects may have no fiscal impact at all. However, some partnering efforts may require seed money for startup costs. In addition, setting up mechanisms for payments, receipts, and disbursement may have associated costs.

Evaluation

- Is a clear process for setting up a formal partnership documented in a policies and procedures guide?
- Is data on the number and size of formal partnering projects being collected by college deans for annual reports?
- Are MnSCU, the President's Office, and Public Relations compiling this data for use in reporting on and encouraging partnerships?
- Are incentives in place for assisting, encouraging, and rewarding the development of partnerships?

5.6 e-Services

Background

SCSU has traditionally provided high quality service to students, parents, faculty, staff, administrators, alumni, and emeriti. Evolving e-technologies are opening new channels for the delivery of vital services. SCSU has been, and must continue to be, a leader in delivering services in efficient and cost-effective ways that balance stakeholders' needs and expectations.

Traditional methods of delivering services – postal mail, telephone, and face-to-face – are still valid for a large segment of those served by SCSU. However, with the availability of the Internet, the increased focus on distance education, and the everyday expectation of stakeholders that services should be readily available online, SCSU must continue to develop and deliver services via the World Wide Web in a timely and client-friendly manner.

The goal of this section is to use past experience of providing “traditional” services to a wide variety of stakeholders and the more focused “e-student services” to develop a comprehensive set of online services that meet the needs of the widest audience possible. Sixteen essential student services have been identified that the Chancellor’s Office (MnSCU) expects universities to provide online. (See <http://www.eresources.mnscu.edu/> for specific information on this and other “e-” initiatives.) Although “e-student services” have been identified, online services for other stakeholders are less well defined. In some cases, online service may be important and useful to a variety of stakeholders, i.e., parking permit applications.

SCSU needs to address three areas:

1. Of the 16 essential online student services that have been identified, some have been or will be developed and delivered by the central MnSCU IT group (i.e., registration has already been developed and delivered); some will need to be developed by the individual campuses (i.e., orientation); and some may need a shared approach to develop and deliver the service online.
2. The list of 16 essential online student services may not be complete for SCSU. A comprehensive review of the list will identify additional services that are important to SCSU students.
3. Online services for other stakeholders — faculty, staff, administrators, alumni, emeriti, etc. — need to be identified and developed. A few examples might include electronic library reserves, evaluation forms from Human Resources, payroll time reporting, workflow systems to sequence and route forms for employee and student procedures, budget reports, telephone reports, and orders for printing requests.

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Goals

To ensure all stakeholder access to the full range of online services, SCSU must

- increase the active participation of SCSU staff (end users and technical staff) in the MnSCU “e-Student Services” initiative
- develop plans for delivering services not considered by the MnSCU “e-Student Services” initiative
- conduct an extensive review to identify and prioritize online services critical to SCSU stakeholders
- develop working plans to deliver local online services as seamless, complementing components of MnSCU initiatives.

Specific Actions and Timeline

A committee will be established to evaluate e-services. The committee will play an active role in the MnSCU “e-Student Services” initiative, will review the MnSCU e-service effort, determine the current state and identify future directions of the effort, and develop a strategy for SCSU's active participation in the larger MnSCU effort.

- The committee will follow the standard timeline (see 5.0) for carrying out and reporting on specific actions.
- The committee will formally review services currently available to stakeholders at SCSU, compile an inventory of online services, and compare it to the planned delivery of MnSCU services.
- The committee, in consultation with service areas, will develop a work plan to prioritize the service items that must be delivered locally. The work plan will speak to service items, priorities, and the scope of items.
- The committee will inform the campus of the service items and the priority for development. Active development of online services will begin based on established priorities.

Resources

The primary human resources required to develop and deliver online services are

- services department staff time to identify essential and potential services
- technical Web developer time to build the online components.

Both of these human resources are in limited supply; therefore, additional technical support will be required to advance online service delivery. Re-prioritizing of current development work may be necessary to focus on needed service delivery.

Additional technical infrastructure may be needed to support high-volume, Web-based student, employee, or other stakeholder services. The work plan must address estimated resource needs as the size and scope of the effort is identified.

Evaluation

- Has SCSU staff participation in the MnSCU e-Student Services initiative increased?
- Has the committee developed plans for delivering services not included in the central development plan?
- Has the committee conducted an extensive review and identified online services critical to SCSU stakeholders?
- Has the committee developed plans for delivering online services that are seamless complements to the larger MnSCU initiative?
- Has the committee submitted a final report in Spring 2008?
- Has the committee made recommendations for the next cycle of technology planning?

5.7 Communication about Technology

Background

The rapid evolution of technology demands that university community members be knowledgeable about the current status of technology on campus (policies, standards, systems, etc.) and that they be informed in a timely manner when changes and developments occur. In particular, when new technology is introduced into classrooms and offices, faculty, administrators, and staff need sufficient advanced notice to receive training and to plan for the integration of new technology into their workspaces and classrooms. When equipment, system, or software upgrades or alterations in the configurations of classrooms, offices, or other workspaces are planned, those affected need to know about these modifications in advance so that they are prepared to work around them. Additionally, when national, state, or MnSCU policies regarding technology change, community members must be apprised of these changes in order to comply with them. Finally, when policy changes are needed within SCSU, clear communication about processes are needed to enable all stakeholders to participate in discussions. When routine processes for communication are not clear and when responsibility for communication is coincidentally assigned, the resulting situations are not always conducive to effective communication.

Goals

In the next five years, the university should improve the flow of communication about technology:

- determine people and units responsible for communication about technology and assign specific communication tasks to them
- foster ongoing collaboration within the campus technology community, including TLTR, the Faculty Association Technology and Pedagogical Resources Committee (TPR), LR&TS, the Center for Information Systems (CIS), the central administration, and the colleges by establishing processes and means of joint decision-making and open communication
- use existing communication vehicles (Web, e-mail, *UNews*, etc.) and create additional systems to provide accurate, timely, and current information about technology to the SCSU community
- monitor the flow of technology information in the community, adjusting systems and communication channels to optimize access to information for all stakeholders
- provide off-campus audiences (MnSCU, legislators, parents, prospective students, alumni, emeriti, etc.) with useful and timely information about SCSU technology

Specifics Action and Timeline

By October 2003, administration will establish a committee including representatives of the various constituencies on campus to assess and monitor university needs regarding communication about technology.

- The committee will follow the standard timeline (see 5.0) for carrying out and reporting on specific actions.
- The committee will audit the communications needs of faculty, administration, staff, and students and will make recommendations to the TLTR, the Dean of LR&TS, and the Director of CIS (administrative computing) about ways to enhance communication about technology on campus.

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- On an ongoing basis, the committee should monitor communication needs of campus stakeholders and make recommendations as appropriate to the TLTR , the Dean of LR&TS, and the Director of CIS about ways to enhance communication about technology on campus.
- During the 2007/2008 academic year, the committee should conduct a follow-up audit of the communications needs of faculty, administrative, staff, and students to assess the current status of communication about technology. By March 15, 2008, the committee will make report to the TLTR, the Dean of LR&TS, and the Director of CIS about the current communication model.
- By April 15, 2008, the deans and supervisors will evaluate the report and make recommendations to the Provost concerning communication about technology on campus.

Resources

The committee should make use of existing resources, including University Communications. Additional resources may be required, depending upon the results of the committee's audit, ongoing monitoring, and the analysis of the Dean of LR&TS and The Director of CIS.

Evaluation

- Are current and newly hired faculty and staff apprised of the current status of technology on campus (policies, standards, systems, etc.) and informed about changes in technology in a timely manner?
- Has the committee made ongoing audits of campus communication needs concerning technology and communicated those via reports to the TLTR, Dean of LR&TS, and the Director of CIS?
- Has the committee provided other feedback opportunities (via the Web and other communication channels, for instance) for gathering campus input concerning communication?
- Has the committee monitored regular communication channels (such as scsu-announce and scsu-discuss listservs) for technology communication issues?
- Has the committee recommended adjustments in communication strategies and channels as needed?

5.8 Access to Technology Resources

Background

Access is a core value to a university and a user-based concept. Access to technology resources, broadly defined, encompasses not only their role as tools (e.g., access to working computers), but also as access points (to the networks, systems, and databases, etc.) that link users to other resources, such as articles or audio files. Access to technology resources can be limited through a variety of barriers.

Physical barriers arise when users have technology but are unable to use it efficiently or effectively for various reasons, including ergonomics and failure of equipment to accommodate disabilities. For instance, the university provides special software and hardware to lessen physical barriers for those with disabilities. Examples of physical barriers are

- lack of hardware or software serving patrons with disabilities
- poor ergonomics that limit or discourage work or damage employee health
- lack of adequate Internet bandwidth capacity, without which virtually all resources become inaccessible
- poor Web site design that does not allow some types of physical access
- non-functional/unreliable computers

Some physical barriers are discussed more extensively in other sections of this Technology Master Plan: bandwidth (see section 5.19), Web (5.20.3), telephone (5.20.2), etc.

Intellectual barriers arise when users have insufficient knowledge and/or skills to use technology. One resolution to this barrier is instructing users in efficient and effective technology use. For example, bare access to an array of databases, without instruction in how to use them, provides physical but not intellectual access. Examples of intellectual barriers are

- lack of instruction in the use of specialized access equipment (e.g., JAWS)
- lack of instruction in the use of complex resources
- overly complex system design
- poor Web page design
- lack of online help

Status barriers arise when campus users have inadequate access to the technologies they need for their work, learning, research, and instructional goals. Examples of status barriers are

- lack of office space
- lack of access to the types of classrooms required for disciplinary or pedagogical needs (see 5.4.2 and 5.4.3)
- lack of knowledge of technology availability and application to user needs
- inequitable allocation of funds
- an assumption that some jobs don't require technology

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Thus, some departments and individuals on campus have difficulties acquiring the hardware and software they need to do their jobs or to provide appropriate learning environments. The most direct resolution to these barriers is analysis and acquisition of appropriate hardware, software, and other appropriate technologies. (See 5.9.1 and 5.9.2.)

Goals

In the next five years, SCSU should

- identify and assign to the appropriate entities the task of monitoring and improving access to technology resources.
- put in place computers, software, Web pages, etc., to address access needs of those with disabilities. These should be fully functional, reasonably up-to-date, and meet Americans with Disabilities Act (ADA) specifications.
- instruct faculty, staff, and student users with disabilities in the use of equipment designed to accommodate disabilities.
- ensure that Web pages are accessible.
- instruct faculty, staff and student users in the proper way to use technology to reduce ergonomic concerns. Technology and associated furniture and peripherals should be selected and designed to place the least possible strain on users.
- develop proactive policies and procedures regarding ergonomics.
- determine a process for ensuring access to classroom and discipline-specific resources.
- review employee and student technology access needs in light of possible status barriers.

Specific Actions and Timeline

A committee will be established to address technology access issues. Committee membership should include, but not be limited to, representatives from Human Resources, Student Disability Services, Health Services, Infomedia Services, and the Web Council. The committee will follow the standard timeline (see 5.0) for carrying out and reporting on specific actions.

Resources

Handling equipment replacement cycles appropriate for people's work and learning environments, ergonomic concerns, disability access, and associated training needs will take ongoing investment of funds.

Evaluation

- Have the tasks of monitoring and improving access to technology resources been identified and assigned to the appropriate entities?
- Do computers, software, Web pages, etc., meet the access needs of those with disabilities?
- Are faculty, staff and students with disabilities instructed in the use of equipment designed to accommodate disabilities?
- Are SCSU's Web pages accessible?
- Are faculty, staff and student users instructed to use technology to reduce ergonomic concerns? Are technology, furniture, and peripherals selected and designed to place the least possible strain on users?

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- Has the university developed proactive policies and procedures regarding ergonomics?
- Has the university determined a process for ensuring faculty/departmental access to classroom and discipline-specific resources?
- Have employee and student technology access needs been reviewed and addressed in light of possible status barriers?
- Has the committee completed a final report in 2007/2008, including recommendations for the next technology planning cycle?

5.9 Desktop Computing Overview

Background

Desktop computers are, like phones, essential technology for day-to-day university work; therefore, maintaining minimal standards for computer systems is important, especially in an environment of budgetary austerity. When the total cost of ownership for desktop computing is considered, establishing baselines for systems actually saves money long term, most notably in terms of technology support and system downtime. Moving to a range of supported core systems might also enable SCSU to save money through bulk buying.

This section addresses in its two subsections on hardware and software standards and compliance relating to desktop computing. Each subsection covers the same basic points of evaluation: standards, actions leading to effective uniform service, cost savings, timely replacement of upgrades, and an assurance of institutional legal compliance.

For the past five years, the SCSU Microcomputer Standards Committee has regularly published recommendations — www.stcloudstate.edu/tltr/appendix8.asp — to provide users with guidelines for purchasing hardware and software. Acquisition of technology implicitly means support will be necessary. Standard hardware and software make it possible to provide knowledgeable support for that technology campus wide. In a world of unlimited resources, being able to support all permutations of hardware and software configurations might be possible; in our world, it is simply not practical.

Providing standards has additional benefits. The level of training can be focused and the downtime to the user can be reduced when problems arise. Limiting the number of options means more hardware can be purchased and “economy of scale” employed. Conservation of resources can be obtained by negotiating campus-wide software license agreements. These types of agreements are currently in place for a number of software titles.

Purchase of technology is not a one-time matter. The concept of *total cost of ownership* (TCO) means that in addition to the initial purchase price, the costs of maintaining that technology over its usable life need to be considered when planning and purchasing it. TCO is currently estimated at approximately \$1,000/year per workstation. This precept provides a basis to plan and budget for regular and consistent replacement/upgrades of hardware and software.

SCSU has an institutional obligation to legal compliance with regard to hardware usage and software license agreements. However, no consistent or manageable procedure is in place to assure legal compliance. This is not a need but rather a requirement, particularly if we intend to continue to purchase hardware and software in large quantities and by license agreements.

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Goals

In the next five years, SCSU should

- evaluate microcomputer standards and ensure that they align with general computer usage on campus; if not, the university should adjust standards to meet current user needs
- determine the effectiveness of various technology support that working groups provide to users for hardware and software defined by the standards (see 5.16)
- investigate “economy of scale” opportunities for institutional investment in hardware and software
- evaluate the principle of *total cost of ownership* to determine appropriate levels of funding for existing and future technology acquisitions
- enforce legal compliance standards for hardware and software usage (see 5.2)
- assure continuous quality training for technologists relative to standards-defined hardware and software
- communicate standards, purchasing opportunities, level of support, and legal compliance obligations to users

Guidelines for specific actions and timeline, resources, and evaluation for hardware can be found in 5.9.1 and for software in 5.9.2.

5.9.1 Desktop Computing – Hardware

Background

Users frequently purchase computer hardware through the Computer Store on campus. Personnel at the Computer Store are aware of the recommended standards articulated by the Microcomputer Standards Committee, and they encourage purchasers to align their request with these standards. Following the standards in hardware purchases assures users of technology support. However, the level of understanding among users regarding the Microcomputer Standards and support for hardware technology is not clear. (See www.stcloudstate.edu/tltr/appendix8.asp.)

Different platforms and hardware accessories are available: both PC and Mac/Apple; desktop and laptop, wired and now wireless. Past policy has been to support the range of computing environments that meet the needs of the vast majority of users. This is not to suggest that diversity of products should be limited, but to ensure judicious use of available resources.

Defining a limited set of hardware options would provide an opportunity to employ “the economy of scale” principle to equipment purchases, which could produce significant savings. Other ownership options should be investigated, including leasing. At this juncture, a mechanism to coordinate timely and regular purchases of hardware does not exist.

Lastly, the current evaluation of *acceptable use* of hardware on campus is spotty. Technologists from the various HelpDesks and college technologists are aware of university policy. Currently, MnSCU is drafting a policy for “computer and information technology resources acceptable use.” Once this policy is finalized, it will be necessary to evaluate campus policy and determine its level of alignment with MnSCU policy. (See 5.2 Policies & Use.) Beyond these nuts and bolts points, it is essential to apprise the campus community of SCSU's institutional responsibility to comply with legal standards for hardware and software use.

Goals

In the next five years, SCSU should

- continue to evaluate and articulate the recommended standards to all campus users
- identify the needs of the majority of users and determine the most cost effective approach to
 - purchasing and replacing/upgrading hardware on a regular cycle
 - aligning technical support based on hardware choices
- determine if users have appropriate technology (see 5.9.2)
- evaluate support and replacement of “common” computer use areas, such as open computer labs (see 5.10) and electronic classrooms (see 5.4.2)
- maintain practical diversity within the campus computing environment with an understanding that all systems cannot reasonably be supported
- continuously monitor hardware to assure legal compliance with SCSU and MnSCU policies
- regularly disseminate to the campus community compliance policies

Specific Actions and Timeline

A committee will be established to evaluate hardware on campus. This committee should be constituted from the Microcomputer Standards Committee and any additional users currently underserved by this group.

- The committee will follow the standard timeline (see 5.0) for carrying out and reporting on specific actions.
- The committee will evaluate the campus standards for hardware currently in place.
- The committee will determine the most effective method of evaluating hardware use and needs (both general and discipline specific) and recommend a replacement cycle. Some possible approaches might include Computer Store records, business office records, or departmental surveys.
- This cycle of hardware evaluation should continue on a biannual basis, alternating with a biannual comprehensive evaluation of software (see 5.9.2).

Resources

As with other components in this plan, making firm estimates about the costs associated with implementing the articulated goals is difficult. Personnel will need to be assigned to or be part of the committee to assist with data collection. The role of the committee and administrative decision makers will be to determine the most effective use of resources to meet the greatest number of users' needs. The concept of *total cost of ownership* should be investigated and used, if appropriate, in the evaluation of technology needs.

Evaluation

- Has the committee employed campus standards for hardware in developing recommendations?
- Has the committee effectively evaluated user hardware needs and made appropriate recommendation?
- Has the committee addressed the acceptable use policy on campus relative to MnSCU policy and communicated these policies to the campus community?
- Have administrative decision-makers acted upon the committee's recommendations so that user needs have been met?
- Has the committee provided a final evaluation of its work in 2008 with recommendations for the next technology planning cycle?

5.9.2 Desktop Computing – Software

Background

SCSU faces many of the same issues in supporting a variety of software packages and multiple versions of these products as it does with hardware. These issues include purchasing standards, individual preferences, technical support, and legal compliance.

Frequently, users purchase software through the Computer Store on campus. Personnel at the Computer Store are aware of the recommended standards articulated by the Microcomputer Standards Committee. They encourage purchasers to align their request with these standards. However, the level of understanding among users regarding the Microcomputer Standards and support for software is not clear. (See www.stcloudstate.edu/tltr/appendix8.asp.)

Based on history and user preference, a variety of systems and software are available on campus. The principle operating systems are Windows for PC platforms and MacOS for Apple platform, respectively. Some specific uses of Linux can be found, particularly in the COSE. In addition, SCSU has a campus-wide agreement for a number of Microsoft products. These products are routinely installed on new machines at the time of purchase. Also, a KeyServer has recently been made available for some important but not necessarily widely-used software applications, e.g., statistical and graphics applications. MnSCU continues to pursue a system-wide software agreement for an Instructional Management System (see 5.4.5 IMS). As with hardware, SCSU supports a range of software products that meets the needs of a vast majority of users. Even so, with the limited technology support and available budgetary resources on campus, adequately supporting all software products would be difficult.

Lastly, the current evaluation of *acceptable use* of software on campus is spotty. Technologists from the various HelpDesks and college technologists are aware of university policy. Currently, MnSCU is drafting a policy for “computer and information technology resources acceptable use.” Once this policy is drafted, it will be necessary to evaluate campus policy and determine its level of alignment with MnSCU policy. (See 5.2 Policies & Use.) Beyond these nuts and bolts points, it is essential to apprise the campus community of SCSU's institutional responsibility to comply with legal standards for hardware and software use.

Goals

In the next five years, SCSU should

- continue to evaluate and articulate the recommended standards to all campus users
- identify the majority of users' needs and determine the most cost effective approach to
 - purchasing and replacing/upgrading software on a regular cycle
 - aligning technical support based on software choices
 - determining if users have appropriate technology (see 5.9.1)
- evaluate software support and upgrades in common computer use areas, such as open computer labs (see 5.10) and electronic classrooms (see 5.4.2)

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- maintain practical diversity within the computing environment on campus with an understanding that all software cannot reasonably be supported.
- continuously monitor software to assure legal compliance with SCSU and MnSCU policy, which should be regularly disseminated to the campus community.

Specific Actions and Timeline

A committee will be established to evaluate software on campus. This committee should be constituted from the Microcomputer Standards Committee and any additional users currently underserved by this group.

- The committee will follow the standard timeline (see 5.0) for carrying out and reporting on specific actions.
- The committee will evaluate the campus standards for software currently in place.
- The committee will determine the most effective method of evaluating software use and needs (both general and discipline specific) and should recommend a replacement cycle. Some possible approaches might include Computer Store records, business office records, or departmental surveys.
- The cycle of software evaluation should continue on a biannual basis, alternating with a biannual comprehensive evaluation of hardware (see 5.9.1).

Resources

As with other components in this plan, making any firm estimates about the costs associated with implementing the articulated goals is difficult. Personnel will need to be assigned to or be part of the committee to assist with data collection. The role of the committee and administrative decision makers will be to determine the most effective use of resources to meet the greatest number of users' needs. The concept of *total cost of ownership* should be investigated and used, if appropriate, in evaluating technology needs.

Evaluation

- Has the committee employed the campus standards for software in developing recommendations?
- Has the committee effectively evaluated user software needs and made appropriate recommendations?
- Has the committee addressed the acceptable use policy on campus and relative to MnSCU policy and communicated these policies to the campus community?
- Have administrative decision makers acted upon the committee's recommendations so that user needs have been met when possible?
- Has the committee provided a final evaluation of its work in 2008 with recommendations for the next technology planning cycle?

5.10 Computer Labs

Background

This portion of the Technology Master Plan considers the variety of computer labs across campus. SCSU needs to address evaluation of support, equipment and software, staffing, and coordination and training in these labs. Additionally, operational and support responsibility vary from one type of computer lab to the next. This section defines and addresses these issues.

A number of different types of computer labs exist across campus. These range from areas open to all students, mixed labs (used for closed and open purposes), curriculum labs, specific departmental labs, multipurpose/multi-user labs, etc.

- **Computers in open labs** are loaded with a bundle of core software to meet general student user needs. LR&TS technologists support these workstations. Staffing of these labs is by part-time student workers. LR&TS technologists train student workers, and additional real-time support comes from GAs and faculty.
- **Mixed labs (open and closed)** may also be supported by college, multi-departmental, or departmental funds and personnel. In some cases, special software has been loaded for specific users.
- **Closed labs, curriculum labs, and departmental labs** are supported by college, multi-departmental, or departmental funds. In some cases, these labs require technical support and/or liaisons with technologists within LR&TS.
- **The Miller Center**, as a multipurpose/multi-user mixed lab, has mixed support and funding, including assistance from GAs and faculty.

The general continuity of operation for computer labs needs to be addressed in the following areas:

- hiring of student workers
- initial and on-going training of student workers
- supervision of student workers
- updates of software provided through university site licenses
- software management, i.e., the imaging process and other new technologies
- software and hardware availability for specialized instruction
- compliance with university hardware and software standards by all users and support staff
- technology competency of students as related to faculty expectations

Some of these items are more fully addressed in other parts of this plan (5.4, 5.9.2, 5.16, 5.17).

Goals

Over the next five years, the university will

- continue to consult with the Student Technology Fee Committee on monetary support for labs
- identify concerns common to all labs and those limited by type of lab

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- provide to personnel (faculty, technologists, and student workers) supporting all types of labs appropriate initial training and additional training as required by their duties (see 5.17)
- evaluate support provided to labs and develop for these facilities a clearly defined support structure that includes determination of LR&TS technologists and colleges and/or departments' levels of responsibility
- continue to provide quality access for all users in open computer labs
 - appropriate technical support will be available (see 5.16.1 and 5.17)
 - hardware and software will remain current based on an appropriate replace/upgrade cycle (see 5.9)
 - users should have a mechanism for addressing inappropriate materials or behaviors in campus labs
- regularly inform the campus community of the technology available at each location and what level of support users for these facilities at these locations
- collect information during the five years of this plan to determine what roles these computer labs play in teaching and learning on campus (see 5.4.2 and 5.4.4)

Specific Actions and Timeline

A committee will be established to evaluate computer labs on campus. This committee should include members of the Student Technology Fee committee and should regularly consult with that committee.

- The committee will follow the standard timeline (see 5.0) for carrying out and reporting on specific actions.
- The committee will evaluate open, mixed, and discipline-specific computer labs in the context of the goals.
- The committee should consider the concerns listed in the background as part of its evaluation process.
- The number and complexity of the issues related to student labs may lead the committee to develop a time-sensitive prioritization. Some issues may need to be addressed in a short timeframe, while others may be addressed at some later date in this planning cycle.

Resources

Resources to support closed computer labs should be well defined in order to provide consistent and reliable service in these areas. Specific support should be tied to particular cost-centers or all computer labs, and all stakeholders should be aware of their obligation to support all types of computer labs.

Evaluation

- Has the committee continued to consult with the Student Technology Fee Committee?
- Has the committee identified and resolved common concerns for all labs and particular issues for mixed and discipline-specific computer labs?
- Has initial training for personnel (faculty, technologists, and student workers) been provided? Has additional training required by personnel duties been offered? And has training been effective and timely?

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- Has the committee evaluated support provided to labs and developed for these facilities a clearly defined support structure? Have support issues associated with mixed and discipline-specific computer labs been resolved?
- Have open computer labs continued to provide adequate and robust support to users, including technical support as well as current hardware and software that is in legal compliance?
- Is the campus community regularly informed about the technology available at each location as well as the level of support users at these facilities can expect?
- Has the committee determined what roles these computer labs play in teaching and learning on campus?
- Have the committee's recommendations been reasonably implemented?

5.11 Mobile Computing Overview

Background

Mobile computing has multiple meanings for a variety of users. To some, *mobile computing* may be as simple as a laptop; to others, it may mean a full range of connectivity that includes a laptop with wireless connections, a hot-synchronized PDA (wired or wireless), along with an Internet-capable cell phone. Wireless appears to be a new realm of technology gaining broad acceptance. In fact, wireless network communication has developed into an inexpensive commodity technology within many homes, airports, communities, and campuses.

Mobile computing integration at SCSU should include evaluation of a wide range of technologies while recognizing standards need to be developed, security addressed, and legal compliance and enforcement authority clearly understood. As with any major shift in technology, the total cost of ownership must be taken into account. Additionally, as the university moves to a heavier reliance on wireless, we will need to assess the value of this technology in assisting SCSU to carry out its core teaching mission.

A number of specific concerns about mobile computing have been identified, but additional issues may be uncovered during the course of the five-year technology plan. The following represent currently identified concerns:

- security on a wireless network
- total cost of hardware and software (TCO)
- proactive replacement/upgrade cycle
- integration of wired and wireless networks
- training across all stakeholders
- alignment of this technology with program needs and SCSU mission
- dissemination of information regarding utility of this technology to campus community
- pace of integration and adoption of mobile technology

Goals

Over the next five years, the university will

- conduct a comprehensive evaluation of the opportunities mobile computing can offer users at SCSU
- develop a comprehensive and practical implementation plan for mobile computing technology
- consider the total cost of ownership concept when planning mobile computing implementation
- ensure that the fundamental aspects of mobile computing implementation are fully addressed to provide robust service to users
- evaluate mobile computing technology relative to teaching and learning at SCSU (see 5.4.4)

Specific actions, timelines, resources, and evaluation are defined in the following sections: 5.11.1 and 5.11.2.

5.11.1 Wireless

Background

Significant advances have occurred in wireless technology in recent years. Wireless technology is becoming more widely used as many concerns have been addressed. In fact, a number of institutions have used the availability of this technology in recruitment. The mobile anytime-anywhere application provided by wireless technology offers many attractive features.

A wireless working group in LR&TS — Information Technology Services (ITS) — has considerable experience relative to advantages, disadvantages, concerns, and costs of implementing this technology across campus. This working group has developed specific installation plans and cost estimates. Currently, wireless networks (standard 802.11b) are being installed in select campus locations. Wireless local area networks (LANs) are planned for a number of buildings over the next several years. The SCSU Facilities Master Plan should be updated to consider wireless, and in implementing wireless in new buildings and in renovations, we should coordinate with this plan.

A principle concern with any wireless technology is security. ITS has examined various options and developed policy and procedure that address security concerns. The wireless network envisioned will be available to any user with a valid HuskyNet ID and password. In addition to assuring the overall security of this campus-wide network, SCSU will need to determine how non-ITS wireless LANs will integrate with this system to prevent the emergence of “rogue” wireless systems that create security issues. It is essential that all campus wireless be channeled through a central unit to assure the security of the entire campus-wide system.

ITS will continue to actively research the viability of wireless networks to determine the extent of installation. The pace of change in technology requires an analysis of the consequences of technology implementation but also the consequences for SCSU of *not* adopting wireless technology. In other words, not installing wireless may have a significant downside: what might these costs and other downsides be? A principle aspect of the move to a greater level of wireless relates to what extent the wired and wireless networks will interact and what level of support is required by both systems.

Goals

Over the next five years, the university will

- evaluate use of currently installed wireless LANs
- determine the anticipated scope of use by Residence Halls and SCSU
- continue to examine and address concerns about
 - security
 - integration with non-ITS LAN systems
 - support for LANs and wired systems
- evaluate the cost/benefit of wireless LANs and wired networks
- recommend wireless LANs to be implemented

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- develop training/education to provide information to the campus community about wireless LANs

Specific Actions and Timeline

A committee will be created that includes members of the ITS wireless working group.

- The committee will follow the standard timeline (see 5.0) for carrying out and reporting on specific actions.
- The committee will evaluate the current and planned expansion of wireless networks on campus as related to the other goals stated for this section.
- Based on this evaluation, the committee will recommend how to proceed with further installation of wireless networks.
- The implementation of wireless networks should be coordinated with facilities management relative to planned remodeling/refurbishing of buildings on campus.
- During the 2007/2008 academic year, the committee will produce a final report on wireless networks and a planning document for the next five-year plan. These will be submitted to TLTR by February 1, 2008, for review.

Resources

The overall cost to outfit residential halls and apartments with wireless networking is currently estimated at \$125,784.00. Similarly, the cost to install wireless equipment in all remaining university building is estimated at \$106,444.90. For a total campus wireless solution, the cost would be approximately \$232,229.90 in 2003 dollars. The cost of technologists, training, and education will need to be factored into the resource costs.

Evaluation

- Has the committee evaluated use of currently installed wireless LANs?
- Has the committee determined the anticipated scope of use by Residence Halls and SCSU?
- Has the committee examined and addressed security concerns?
- Has the committee evaluated the integration of wireless and wired technology?
- Has the committee examined and addressed issues relating to support for LANs and wired systems?
- Has the committee evaluated costs and benefits of wireless LANs and wired networks?
- Have the committee's recommendations regarding wireless LANs been implemented?
- Has the committee developed and regularly evaluated training/education to provide information to the campus community about wireless LANs?
- Has the committee completed a final evaluation of wireless technology in 2007/2008 and produced a report?
- Has the committee developed a new planning document for the next planning cycle based on the activities during the 2003-2008 technology plan?

5.11.2 Mobile Devices

Background

The increased availability of wireless LAN provides a more extensive platform for the use of a variety of mobile devices. These devices range from wireless laptops, to handheld computers, to IP phones, to handheld PDAs, to Internet-enabled cellular phones, and to new products in development. The cost of acquiring this technology in some cases is significantly less than a wired workstation. The exception is laptop computers, which generally cost more than workstations.

As with many emerging technologies, early adopters acquire and implement technology in the absence of campus-wide support structures. This can frequently lead to incompatibilities and/or an expectation of support that may not be practical. As with desktop hardware and software (see 5.9), establishing standards and making those standards widely available to the campus community for comment and adoption will be essential. SCSU must widely disseminate to the campus community the types of systems and applications that will be available and supported.

One of the questions to be addressed is whether mobile devices provide new opportunities for faculty, staff, and students in a wide range of applications. The installation of wireless and mobile devices must benefit SCSU's core teaching and scholarly mission. The goal would be to acquire hardware, software, training, and support that reasonably fit SCSU's teaching and research mission and provide the necessary infrastructure.

On a practical level, SCSU has begun to provide electronic options, e.g., WebCT and HuskyNet, for many classroom functions. Using wireless and mobile devices seems a likely next step in bringing content directly to students. This information would be directly accessible during the student's learning process. One primary purpose of this section of the technology plan is to explore the use and effectiveness of mobile devices, e.g., PDAs, as learning tools. Possibilities include examining the utility and feasibility of students' sharing notes and/or assignments and of facilitating collaborative learning. Other primary purposes include examining faculty and staff uses of mobile devices and the devices' effectiveness in addressing faculty and staff needs.

Goals

Over the next five years, SCSU will

- evaluate the use of a range of mobile devices relative to
 - student learning (see 5.4.4)
 - staff needs
 - faculty needs
- determine the most effective uses of mobile devices based on this evaluation
- establish the types of mobile devices that SCSU will support and standards for these devices

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- establish support for mobile devices as well as training and education of users
- disseminate to the campus community information about mobile device uses

Specific Actions and Timeline

A committee will be created that focuses on mobile devices.

- The committee will follow the standard timeline (see 5.0) for carrying out and reporting on specific actions.
- The committee will
 - evaluate current mobile devices using such methods as on-line surveys, coordination through various technologists in LR&TS as well as college and administrative technologists, and/or focus groups of interested students, staff, and faculty
 - develop standards for supported mobile devices
 - develop a strategy to effectively implement and integrate supported mobile device acquisition, support, and training
 - identify methods to determine use and effectiveness as related to goals
 - act as a technology resource for TLTR and the campus community
 - report findings to TLTR

Resources

Resource allocation, money, and personnel, will depend on the speed and level of implementation of mobile devices. The costs will be coupled with implementation of wireless LAN and other compatible technology at the local level.

Evaluation

- Has the committee evaluated utility of mobile devices?
- Has the committee developed standards for supported mobile devices?
- Has the committee developed a strategy to effectively implement and integrate supported mobile device acquisition, support, and training (including the total cost of ownership)?
- Has the committee identified methods to determine use and effectiveness as related to goals? And have these methods been used?
- Has the committee acted as a technology resource for TLTR and the campus community?
- Has the university provided the recommended support for proposed implementation of mobile devices?
- Has the committee completed a final report?
- Has the committee developed recommendations for the next technology planning cycle?

5.12 Campus Card Services

Background

The current Campus Card system has been in place since 1999. This transaction system records and manages campus services, including vending, residence hall laundry, building door access, parking lot access, point-of-sale transactions, events access, computer lab printing, photocopying, and enrollment/employment verification. The system manages the use of Campus Cash debit account funds, with a current fund balance exceeding \$225,000 in cardholder accounts.

While use of Campus Card and associated accounts and services continues to grow, other card systems are being used for individual or departmental purposes on campus. This situation has arisen because of the relatively high costs of Campus Card installations, the lack of need for an associated account system for some applications, and lack of knowledge about possible benefits. An analysis of the costs and benefits associated with consolidation of these services would be useful. The infrastructure is currently in place to allow for increased services (door access, sale locations) in most buildings on campus.

Goals

In the next five years, use of the Campus Card will continue to evolve. SCSU must respond to this changing environment by

- stabilizing the budget by increasing revenues to match expenditures and carrying a positive fund balance from fiscal year to fiscal year
- surveying all categories of users on campus to determine what, if any, other card-based systems are currently in use, and what additional services Campus Card might provide to meet their needs
- reviewing the costs and benefits of consolidating other card applications into the Campus Card, taking into account the cost savings associated with standardization
- increasing the availability of Campus Card services based on the survey results and the cost/benefit analysis
- developing redundancy within the system to minimize downtime
- continuing to incorporate new technologies, such as wireless card readers, to make use of Campus Card more ubiquitous.

Specific Actions and Timeline

By October 1, 2003, a Campus Card committee will be established that includes representatives from the Campus Card office, from other current Campus Card users (LR&TS, CIS-AdC, Athletics, Recreational Sports, the Business Office, Food Service), and faculty, staff, and students to help provide input and support in implementing the technology plan. The committee will adhere to the following schedule rather than the standard timeline for carrying out and reporting on specific actions:

- Survey all categories of users on campus to determine card/account systems in use and the demand for additional services, with findings presented to TLTR no later than February 1, 2004.

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- As part of the next RFP for campus food service contracts, which begins in summer of 2004, require use of the Campus Cash account so a single debit account is used on campus.
- Based on the survey findings, by April 1, 2004, provide an overall plan for the addition of Campus Card access points and services, which might include residence hall room access (much like hotel room card systems), additional campus vending locations, etc. Include with each the resources needed for implementation.
- Annually, as resources allow, add service point locations and new services to the Campus Card system in accordance with the plan, and report progress on these to TLTR and other affected campus users.

Resources

SCSU should focus on budget stability for the next two fiscal years, which will lead to greater predictability for budget forecasts/planning. In addition, we should provide sufficient staffing and related support to properly manage the campus card system, especially as additional services and service points are added. Finally, we should provide resources needed to develop systems redundancy to minimize any downtime of services.

Evaluation

- Have Campus Card revenues from holdings and transaction fees increased to match expenditures so that a positive fund balance is carried forward from fiscal year to fiscal year?
- Have card/account users on campus been surveyed to determine what additional services Campus Card might provide to meet their needs?
- Have the costs and benefits of consolidating services been analyzed?
- Are Campus Card services more widely available?
- Has system redundancy been developed to minimize system downtime?
- Have additional technologies, such as wireless card readers, been incorporated into the Campus Card system to make its use more ubiquitous?
- Has the committee submitted a final report in Spring 2008?
- Has the committee made recommendations for the next cycle of technology planning?

5.13 HuskyNet

Background

HuskyNet, short for Husky Network, debuted in the fall of 2001 as a one-stop technology resource for students, staff, and faculty at SCSU. HuskyNet is intended to be a dynamic virtual collection of technology services, many of which are accessible through a common username and password, and includes services such as e-mail, personal file and Web space, and course-related services.

The HuskyNet Working Group has addressed and resolved many of the early difficulties in implementing HuskyNet services. To further make HuskyNet an integral part of the technology picture for students, staff, and faculty, SCSU will need to coordinate and market the capabilities this system provides. Work must continue to address issues and proactively manage current and future HuskyNet services.

Goals

In the next five years, we should

- evaluate current HuskyNet usage
- incorporate the findings of the HuskyNet Working Group into future planning
- develop procedures to ensure factual and consistent documentation for the HuskyNet system
- investigate additional services that could be offered through HuskyNet
- establish a common scheme for logging into local and remote applications (investigate single sign in)
- ensure training at all levels — technologists, faculty, staff, and students — to prevent future difficulties
- provide regular workshops that address current and future services

Specific Actions and Timeline

A committee comprised of the HuskyNet Working group will address the goals in this section. The committee will begin by reevaluating its membership to make sure that it remains inclusive.

- The committee will follow the standard timeline (see 5.0) for carrying out and reporting on specific actions necessary to accomplish the goals for HuskyNet in this part of the technology plan.
- The committee should draw heavily on the previous work of the HuskyNet Working Group for an understanding of the current situation and potential future use of HuskyNet as a one-stop technology resource for SCSU.
- The committee will gain insight regarding pitfalls and potential of HuskyNet by various means: surveys, focus groups, open meetings, etc.

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Evaluation

- Has the committee evaluated HuskyNet usage?
- Has the committee incorporated the findings of the HuskyNet Working Group into its analysis and future planning?
- Has the committee developed recommendations to make HuskyNet the one-stop technology resource initially envisioned?
- Has the committee established a common scheme for logging into local and remote applications?
- Has the committee provide recommendations related to cross-campus training of all stakeholders?
- Has the committee provided regular workshops to address current and future HuskyNet services?
- Has the committee submitted a final report during academic year 2007/2008?
- Has the committee developed recommendations for the next technology planning cycle?

5.14 File Services

Background

The proliferation of information technology hardware and software applications has, in turn, driven the need for additional data storage. Increasingly, opportunities to create digital files and databases, both traditional and multimedia, call for expanded and appropriate storage technologies to be planned for and implemented on a timely basis. The availability and delivery of this storage component is often referred to as *file services*.

File services are needed for a variety of purposes on campus.

- The primary file service need for students is in support of academic learning.
- For faculty, file services are required to support research and instruction.
- For staff, file services support administrative and student service functions.
- File services also provide for collaboration and sharing of files within departments and for cross-functional or work group collaboration.

SCSU currently has a stable and high-speed network on campus, and files are stored on a centralized file services platform and accessed as needed. The central platform is managed, secured, upgraded, recovered, and in general, provides a level of file services not available using other models. We are in the midst of moving away from departmental file servers toward a more centralized file services model. Experience has shown that departmental and decentralized servers are sometimes poorly maintained, and security has not always matched MnSCU standards. Files saved to a local hard drive of a typical desktop computer are at significant risk if local hard drive files are not backed up.

Goals

Over the next five years, file services at SCSU will continue to meet the instructional, learning, and service needs of faculty, students, and staff. Specifically, file services will

- provide reliable and secure access to files and databases
- offer easy, ubiquitous file access — local and remote access, anytime and anywhere
- provide storage capacity adequate to support individuals, departments, and work groups
- continue to evolve the central file services model to meet new and expanding data storage needs and technologies
- study the needs for e-portfolios (5.4.1, 5.4.4) and determine how they fit in with file services in general
- develop recommendations for file services in step with the budget planning cycle

Specific Actions and Timeline

A committee will be established to address file service needs on campus. The committee should include technologists and users of file services across the university.

- The committee will follow the standard timeline (see 5.0) for carrying out and reporting on specific actions necessary to accomplish the goals for file services.
- The committee will evaluate the need for file services, recommend or develop appropriate policies and procedures for allocating storage to individuals, departments, and work groups.

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- The committee will recommend storage upgrade strategies and project capacity requirements.
- The committee will inform the campus and facilitate training for the campus community regarding file service opportunities and requirements.
- During the 2007/2008 academic year, the committee will produce a final report on file services, and a planning document for the next five-year plan. These will be submitted to TLTR by February 1, 2008, for review.

Resources

Resources for file services include costs for purchasing online storage platforms and for human resources to manage and support these platforms. Files service needs (both capacity and format) must be continually monitored and planned to stay current with technological advances and university requirements.

Evaluation

- Is access to centralized file services reliable and secure?
- Are file services available anytime and anywhere?
- Is storage capacity adequate to meet the needs of individuals, departments, and work groups?
- Is the centralized file service model evolving to meet the needs of the campus community?
- Has the committee studied the needs for e-portfolios (5.4.1, 5.4.4) and determined how they fit in with file services in general?
- Has the committee developed recommendations for file services in step with the budget planning cycle?
- Has the committee submitted a final report in Spring 2008?
- Has the committee made recommendations for the next cycle of technology planning?

5.15 Decision Support Systems

Background

The members of the campus community at SCSU are continually challenged to make high quality decisions in an environment of limited resources. The need for current, accurate, timely, and properly interpreted information is an on-going requirement to make well-informed decisions on day-to-day issues and to move the university forward in strategic and visionary ways. For this document, the term *Decision Support Systems* is used to describe the type of information systems that are specifically designed to provide information for decision and policy making at all levels. This information may be used by

- federal agencies
- state agencies
- local community entities
- SCSU administration
- colleges
- departments
- individuals, including faculty, staff, and students
- other campus stakeholders

From the technology support side, it appears that the university has significant data residing in the university database, in one or more data warehouses supported in the Chancellor's Office, and in other less coordinated local databases. The data is, in general, readily accessible and understandable.

Some issues that should be addressed are identifying

- the point of contact where data resides
- the point of contact for data definition
- the technology tools for data manipulation
- the channels of information delivery

Across similar universities, SCSU is probably not much different than most with respect to information delivery. The challenge here is to do better, to formalize and recognize that information is critical to the long-term strategic success of SCSU, to train staff and decision makers in the data and tools that are available, and to be a leader in delivering information systems that successfully speak to the information needs of this University.

Goals

In the next five years, SCSU will make significant progress in the retrieval and delivery of information to support decision making and policy making at SCSU. The goals are to

- use to SCSU's best advantage any existing data and acquire additional data as needed
- identify and acquire the proper software tools to process the data into information
- identify, acquire, and use the proper channels for the delivery of information
- train technologists, end-users, and the entire campus in the proper use of data, tools, and information

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- make the availability and delivery of timely information a normal part of doing business at this university

Specific Actions and Timeline

During Fall 2003, charge the Special Assistant to the Provost for Institutional Studies and the Director of the Center for Information Systems to co-chair a committee (including faculty, staff, administration, and student representatives) to

- identify each significant source of data stored about SCSU
- identify meaningful characteristics regarding each data store (i.e., common name of the data store, data in the data store, who controls the data, the software tools to access the data, the currency of the data)
- make this information widely available

The committee will adhere to the following schedule rather than the standard timeline for carrying out and reporting on specific actions:

- During Spring 2004, the committee will begin a process of identifying and prioritizing critical success factors with respect to information needs. That is, factors regarding information that are critical for success in the delivery and use of information at SCSU.
- As critical success factors are identified, the committee will attempt to find the proper mix of technology, training, and other resources to ensure that the critical success factors are supported and are deliverable.
- The committee will stay informed of developments in commercial off-the-shelf software products designed to support these goals and bring forward recommendations regarding purchases or options for SCSU and for MnSCU system-wide use.

Resources

The initial set of resources is primarily related to staff time to compile and inventory existing data and information sources. Undoubtedly, the goal to support the university with a higher level of service quality will call for funds to purchase hardware, software licenses, training, and possibly data. The resource needs will only be known as the initiative moves forward. The committee will be responsible for identifying the costs and benefits for any recommendations put forth.

Evaluation

- Is SCSU using to its best advantage the available data sets and acquiring external data as needed?
- Is SCSU using the proper software tools to process data?
- Are the proper channels being used to deliver information?
- Has training been provided to properly use the data, the tools, and the resulting information?
- Is the availability and delivery of timely information viewed as a normal part of doing business at SCSU?
- Has the committee submitted a final report in Spring 2008?
- Has the committee made recommendations for the next cycle of technology planning?

5.16 Technology Support Overview

Background

The multiple avenues of technical support available on campus need to be coordinated from two standpoints

1. Users need a clear understanding of where to obtain assistance for specific problems.
2. Technical support staff must communicate among the various technical support units.

Relevant to both users and technical staff are continuous training and support.

Users may obtain assistance from a variety of service centers, including the Reference Desk, the Miller Center HelpDesk, the CIS-AdC HelpDesk, and MnSCU HelpDesk, college/administrative technicians, and the Web. As a result, users may not know where the most appropriate assistance might be found. From the perspective of technical support staff (technologists), training is based upon position descriptions, yet in some cases, users approach technicians with specific needs outside the technologist's realm of training or experience. Also, the expansion of technical support is often a response to technology expansion. When technologies become available to meet existing needs or when technologies are needed to meet new needs, the support for these technologies should not be an afterthought. Even so, when planning for technology support *does* accompany the acquisition of new technology, it isn't always clear how mature the technology is and what level of support may be required to maintain it. Problems associated with the type, level, and availability of support are confounded by the sheer magnitude of new technologies and pace of adoption.

An example of new on-campus technology is the advent of the new HuskyNet Web page, which offers email connectivity to the Help/Reference Desks along with other LR&TS and Administrative Computer support centers. As these services are developed, SCSU must coordinate effort regarding what services are provided and by whom, must educate user about services, and must provide continuous training for technical staff. The role of a technologist in one instance may be to provide service to the whole university; in another case, that role may be to provide support for a single department. However, the current structure of training, hiring, and location of technologists needs to be examined to determine if we can improve it to provide a more coordinated and interconnected support system across the university infrastructure.

Goals

To ensure a coordinated and interconnected support system across the university,

- all technology users must have up-to-date knowledge of the various support centers on campus.
- technologists must have a basic understanding of the nature of technical support across campus.
- SCSU must provide technologists with continuous training.
- appropriate technology should be acquired to support and enhance the technology service centers.
- an appropriate level of technical support should be available.
- technology support should be aligned with the acquisition of new technology.

The specific actions and timelines, resources, and evaluation that will enable us to achieve these goals are mapped out in sections 5.16.1, 5.16.2, and 5.17.

5.16.1 Technology Support — HelpDesks

Background

Coordination and support for the various HelpDesks on campus need to be evaluated so that SCSU can ensure sufficient staff and resources to provide optimum effectiveness for the various HelpDesks on campus.

Five HelpDesks on campus and one off campus provide services to various users. Most users are familiar with the Miller Center HelpDesk, which provides campus-wide software and hardware support. The Reference Desk (also in the Miller Center) helps users locate and acquire information and answers numerous technology related questions. The Open Computer Lab HelpDesk on Miller Center second floor (commonly referred to as MC 201), assists students and faculty working in the open lab — and those in adjoining computer classrooms — with software and hardware in those spaces. The ResNet HelpDesk provides student support services relative to Internet connections.

Service Area	Hours per wk	Staffed by	Audience
MC HelpDesk	77	Staff and students	Students, faculty, staff, and community members
Reference Desk	76	Faculty	Students, faculty, staff, and community members
ResNet	69	Students	Students in the residence halls
Miller Center Computer Lab Desk	93	Students and Faculty/GA roving	Students, faculty, and staff
CIS-AdC HelpDesk	43	Staff	Administrative and student service staff

Additionally, the Center for Information Systems, also known as administrative computer services (CIS-AdC), provides a HelpDesk and two full time technologists to support administrative and student service areas of the campus. Finally, an ISRS/MnSCU HelpDesk, representing a system-wide resource, is available off campus and funded by the Chancellor's office. In other words, the various HelpDesks fulfill specific service needs, and the interactions among these units facilitate coordination — enabling staff to resolve user problems, answer questions, and identify reoccurring concerns that can lead to development of services and training to address user needs.

The operations of these various HelpDesks should be evaluated. Evaluation should include (but may not be limited to) scope of service provided by each HelpDesk, delivery of services, service hours, staffing resources, staff training, user satisfaction, communication within each HelpDesk unit, communication among HelpDesk units, and communication to users of services available. (See 5.7 Communication about Technology.)

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Goals

- Evaluate the operations of each HelpDesk
- Determine optimum staffing and operations for each HelpDesk, including
 - scope of services provided
 - service hours
 - use of student workers
 - training for all employees
 - coordination among HelpDesks
 - interaction among campus technologists
 - delivery of support
 - technology upgrades
 - new technology applications to enhance support
- Allocate resources to accomplish optimum staffing and operations for each HelpDesk
- Evaluate current user satisfaction procedures and update or refine if necessary
- Establish continuous quality assurance procedures for technologist training and user satisfaction

Specific Actions and Timeline

TLTR will establish a committee to evaluate HelpDesks across campus. This committee will be composed of staff from the HelpDesks and various users.

- The committee will follow the standard timeline (see 5.0) for carrying out and reporting on specific actions.
- The committee will determine the “current” state of training, support and barriers to delivery of services and report their findings in a work plan to TLTR, the Dean of LR&TS, and the Director of CIS-AdC. Multiple approaches to information collection are recommended: some examples are open forums for HelpDesk staff, users and both; focus groups with staff, users and both; online surveys of staff and users’ needs and problems.
- After consultation with TLTR on the committee work plan, the Dean of LR&TS and the Director of CIS-AdC will establish unit priorities and a timeline for implementing them. These might include hiring, continuous technologist training, HelpDesk coordination, acquisition of new technology for newly hired and current technologists, or other strategies that will allow the various HelpDesks to continue providing excellent service.
- As needed, the Dean of LR&TS and the Director of CIS-AdC will report progress on the work plan to TLTR and re-evaluate. On an annual basis, the Dean of LR&TS and the Director of CIS-AdC will review progress with the Provost and determine resources necessary for the next academic year.
- During 2007/2008, the committee will submit a final report and recommendation for the next cycle of technology based on the standard timeline.

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Resources

The cost to implement coordinated training, support, and a service evaluation plan will need to be determined by HelpDesk staff with input from users. At this time, it would be unwise to provide specific resource needs, either in personnel or supplies/equipment, until an analysis of needs has been completed.

Below are the current personnel costs as a guide for that component of requested resources.

Per staff costs in 2002/2003 dollars (which should be adjusted for inflation):

Full-time position	\$52,000
Annual staff training – annualized (est.)	\$4,000

Evaluation

- Has the committee developed an evaluation process and used it to make recommendation?
- Have administrative personnel read and responded to the committee's recommendations and facilitated implementation?
- Has training, coordination and user satisfaction improved over the past five years?
- Has the process outlined by the Master Plan been effective in accomplishing improvements in technology support? If not, what recommendation would committee and/or Administrative personnel make for the next Master plan?
- Has the committee submitted a final report to TLTR in the spring of 2008?

5.16.2 Technical Support – Colleges, Administrative and Student Service Units

Background

The current nature of technical support on campus needs to be defined so that SCSU can plan and develop a coordinated technical support infrastructure for SCSU within the next five years. This planning must address how to ensure responsive, comprehensive, up-to-date, and discipline-sensitive technical support for various units across campus. Planning also must take into consideration compliance with appropriate use standards.

Technologists provide valuable services to students, faculty, staff, and administration. Specifically, they work directly with users on particular projects and problems and are generally assigned to college or administrative units. This structure ensures that technologists develop a greater understanding of the technology environment of the people they support. Additionally, each college/administrative unit technologist spends part of the week (approximately 3-4 hours) at the Miller Center HelpDesk. This contact with university-wide support staff provides a wider perspective of technology advances and challenges across campus and enables these individuals to facilitate a high level of communications about current and evolving technology across campus. Finally, technologists provide leadership and coordination to ensure that various users' technology needs are met.

Currently, full-time college technicians are assigned in the Colleges of Business (COB), Education (COE), and Fine Arts/Humanities (COFAH). A half-time technologist is assigned in the College of Social Sciences (COSS), and the College of Science and Engineering (COSE) does not have a college technologist although some departments within COSE have technologists. Some departments in the COSE have little if any technical support other than the HelpDesk. This lack of technical support has led to a number of problems, particularly for COSE computer labs. The anticipated expanded demand for Geographical Information Systems (GIS) software across campus may require increased technical support, and it's likely that the current level of support in some colleges with full-time technologists is still insufficient. In addition to these needs within the colleges, Student Life and Development has requested full-time technical support. Other administrative units might benefit from more locally assigned technical support too. Although additional staffing may seem costly, additional technical support strategically placed can actually reduce downtime and save money.

An additional area of concern is legal use of software and hardware. Technologists have varying levels of understanding and training in the areas of quality assurance and compliance with copyright and appropriate use policies. Since the institution is held to legal standards, technologists must be trained to maintain standards of *appropriate use* of technology across campus and in their assigned units.

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Goals

The following goals provide a framework for evaluating the needs and efficacy of assigning technologists to colleges and administrative units. Annual review is part of the process, but a final evaluation will be completed in five years.

- A campus-wide audit of technology support needs will identify college, administrative, and student service units that are under-supported and review the collaborative reporting model.
- Each of the five colleges will have sufficient full-time technical support person to meet user needs based on the technology audit.
- Based upon the audit, the Provost will identify and assign appropriate funding for hiring technologists and supporting current and newly hired positions (including salary, equipment, other resources, and ongoing training of staff).

Specific Actions and Timeline

By the end of September 2003, the Provost will establish a committee that includes representatives of all stakeholders, including the Dean of LR&TS and Director of CIS-AdC, to evaluate the technology support needs in college, administrative, and student service units. The committee will adhere to the following schedule rather than the standard timeline for carrying out and reporting on specific actions:

- Based upon the audit, the Dean of LR&TS and the Director of CIS-AdC will establish unit priorities and a timeline for hiring new technologists. They will also evaluate and establish a framework to ensure timely and adequate training of current and newly hired technologists.
- By March 15, 2004, the Dean of LR&TS and the Director of CIS-AdC will report to the TLTR, who will review the report and offer implementation suggestions.
- After review by the TLTR, the Dean of LR&TS and the Director of CIS-AdC will forward recommendations to the Provost by April 15, 2004.
- In consultation with the Dean of LR&TS and affected college deans and/or appropriate supervisors in administrative units, the Provost will assign appropriate funding for hiring and training as well as adequate resources for current and newly hired technologists.
- By August 15, 2004, the first position(s) will be filled and individuals trained. Additional positions will be filled based on funding to ensure newly hired technologists are on duty by August 15th of each subsequent year.
- The process of filling the identified positions should be completed by August 15, 2007.
- During the 2007/2008 academic year, the committee will conduct a follow-up audit of technology support to assess the model of college/administrative technologist. By March 15, 2008, the committee will provide a report to the Dean of LR&TS, the Director of CIS-AdC, other college deans, and supervisors of administrative units employing technologists.
- By April 15, 2008, the deans and supervisors will evaluate the report and submit a final report to the Provost with future recommendations for technology support.

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Resources

The process outlined above will allow the university to determine the number of technologists needed to provide effective technology support to all units. The costs listed below are per position for salary, benefits, equipment, and training. Additional staff training will be an ongoing cost and will be scaled based on the number of positions.

Per staff costs in 2002/2003 dollars (which should be adjusted for inflation):

Full-time position	\$52,000
Annual training of current/new staff – annualized	4,000

Evaluation

- Has the initial audit been completed and the results and recommendations forwarded to TLTR, the Dean of LR&TS, the Director of CIS-AdC, and the Provost?
- Has the Provost assigned appropriate funding for hiring, training, and equipping current and newly hired technologists?
- Have the recommended technologists been hired and trained?
- Has the follow-up audit of technology support been completed, including assessment of the model of college/administrative technologists? Have recommendations regarding technology support been made based upon this audit and forwarded to the Provost?

5.16.3 Technology Support – Infrastructure and Back Office

Background

Significant support of technology takes place in areas with less visibility than HelpDesks, computer labs, and frontline support staff. These services support infrastructure, development of information systems, and support of the back office technologies. The quality and availability of these support services, so critical to maintaining the technology leadership position that exists at SCSU, are the underpinnings of campus instructional and administrative areas.

A review of technology support positions at SCSU will show that technologies for the delivery of instruction and student services are supported by a variety of highly skilled and dedicated staff members:

Instructional systems support. Specialists in this area are charged with supporting electronic classrooms (both computer and multimedia technologies), T.V. studios, instructional management systems (primarily WebCT), and video conferencing.

Infrastructure and network services support. Specialists in this area are charged with network cabling, connectivity, design, troubleshooting and support, access points, and planned redundancy.

Server administration support. Specialists in this area are charged with information systems analysis, design, system implementation, and the maintenance of server systems. Servers are the main computer platforms for providing services such as e-mail, file space, backups, Web content, application distribution, instructional information systems, and database support. Centralized authentication and its integration are also key element areas of responsibility.

Web applications and Web content support. Specialists in this area are charged with developing standards and style guides for Web content, developing applications that deliver instructional or student services via the Web, and maintaining the overall SCSU Web presence.

Non-computer technology support. Specialists in this area are charged with supporting related information technologies, such as cable TV, scoreboards, satellite connectivity, and general telephone support and coordination.

In all these areas, the proper levels of support must be available, timely and appropriate training must be scheduled for support staff and end users (see 5.17), staff must be cross-trained to provide backup support, and collaboration and communication must take place across these diverse groups. This collaboration should include a shared common vision and formal planning for the future.

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Goals

Over the next five years, the university will review, coordinate, evaluate, and realign as needed technology services provided by the infrastructure and back office support groups.

- SCSU will institute active collaboration and communication among these groups and between these groups and other technology groups. Collaboration on campus-wide initiatives and support issues will be the rule.
- Directors and supervisors will be held accountable for enabling collaboration, common goal setting, and regular and on-going communication.
- Technologists in these groups are very specialized in their specific area. This specialization calls for focused training on a timely basis, cross-training to provide adequate backup coverage, and renewed efforts to recruit and retain skilled employees.
- The ad hoc campus-wide technology support staff meeting will be formalized.
- The level of resources directed at support areas will be reviewed periodically, reallocated where appropriate, and additional resources secured where needed.

Specific Actions and Timeline

The following schedule will be adhered to rather than the standard timeline for carrying out and reporting on specific actions:

- Annually by early June, the directors or supervisors of the infrastructure and back office service areas will meet to share information and seek common goals for the following Fiscal Year. This will be a formal arrangement with written goals and agreements on timeframe and collaboration. The results will be shared with the director's or supervisor's immediate supervisor.
- Beginning Fall Semester 2003, and each fall after that, the directors or supervisors of the infrastructure and back office service areas will meet with the specific objective of identifying collaboration opportunities. This collaboration may be directed within a group or across groups.
- Beginning Fall Semester 2003, the campus-wide technology support staff meeting will be formalized to
 - identify a person to schedule, arrange, and facilitate the meeting
 - establish a periodic meeting schedule
 - establish a mandatory attendance policy for technologists.
- Training for these technologists will be consistent with the training plan identified in section 5.17.
- Annually, the Dean of LR&TS and the Director of CIS-AdC will review service support staffing levels and develop recommendations for reallocation or additional resources.

Resources

Several of the support areas listed here are expected to grow during the five years of this plan. As the SCSU Web presence grows, additional resources will be required to support that growth. Electronic classroom support, instructional management systems support, video conferencing, more server based services, and general technology growth call for additional resources, both human and direct expenditures for tools and training.

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While undefined at this time, the expectation is that additional resources will be required and that additional resources will be allocated in step with the recommendations in the action items above.

Evaluation

- Is there active and improved collaboration and communication between infrastructure and back office technology groups so that a common vision and plan is clearly understood by each group member?
- Are the supervisors enabling broad communication and common goal setting?
- Are these technologists being trained in their specialized areas?
- Is the work force cross-trained?
- Has the ad hoc campus-wide technology support staff meeting been formalized?
- Are employees with specialized skills being recruited and retained?
- Are resource levels for support areas being reviewed periodically and resources being reallocated or additional resources secured where needed?
- Has the committee submitted a final report to TLTR in the spring of 2008?
- Has the committee, in the spring of 2008, forwarded recommendations for the next cycle of technology planning?

5.17 Technology Training

Background

Those at a university need to understand computer and information technology since technology solutions are frequently called upon to increase productivity and reduce costs and since technology has become an important means of teaching and learning. Several sections of this technology plan (5.4.2, 5.9.1, 5.9.2, 5.16.1, and 5.16.2, 5.16.3) refer to technology training. This section attempts to identify the current training environment on campus, where successes have occurred, and where improvement should be directed over the next five years of the plan.

Technology training is necessary for three categories of university users: technologists, employees in general (faculty, staff, and student workers), and the general student population. It's important to remember that learning about technology takes place in a variety of ways — from reading a manual, to taking a course or a workshop, to consulting with a friend. Also training might occur in groups or individually, online or in person.

Technologists. Training for technologists typically must be done in off-campus environments since training for the level of expertise we demand from these people is not available locally. A very small sum of money is currently available for training of technologists. It is essential to consider training as a part of the cost of technology ownership and, specifically, a part that pays for itself in less downtime and higher productivity. As part of training, there is an ongoing need for books and manuals.

Employees (Faculty, Staff, and Student Workers). Currently at SCSU, faculty and staff may take advantage of training offered by CIS-AdC and LR&TS. They also may elect to learn from colleagues or students, from on- or off-campus course, from online tutorials, etc.

Student workers provide additional challenges because of their temporary employment, the sheer quantity of student employees, and their varying levels of expertise. A training program that provides academic credit and/or possibly a certificate in some aspect of software and/or hardware competence might be initiated.

General Student Population. Student technology training is currently delivered through courses in some programs, as parts of various courses in many disciplines, through student training workshops, or by consultants in the various open and closed labs on campus. Training of the general student population has evoked several proposals that might prove worth investigating.

- Providing a more visible technology-training program for the general student population should be evaluated.
- Students could be evaluated for technology competency, similar to the Math Placement test, and participate in a “Technology Skills Center” to provide current computer literacy skills. (See 5.4.)

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- Alternatively, technology and information systems training could be offered in a workshop format, and students could register voluntarily for general and/or specific training based on need and interest.
- This workshop format could be expanded to provide training for individuals in the community on a fee basis or as an outreach program.

The following list includes questions about training that have already been raised by various campus stakeholders. In some cases, the concerns are about a particular kind of training; in other cases, the concerns are about training for a specific group. In general, technology training needs to be a higher priority than it is currently. In short, training should not be an afterthought.

- Is training appropriately geared to those being trained?
- Does training include legal compliance and an understanding of SCSU/MnSCU acceptable use policy?
- How effective is training for each group?
- Does training keep pace with technology needs, that is, match applications and purposes?
- Is funding for training adequate to meet training needs?
- Is the availability of training compatible with when people are available (i.e., scheduling issues)?
- Does training of student workers
 - allow them to assist users satisfactorily?
 - provide them with an appropriate level of job satisfaction so workers are retained?

The committee is charged with a fuller evaluation of these and other technology and information system training questions and concerns.

Goals

In the next five years, SCSU should

- evaluate current campus training models and methods for all groups
- determine strengths and pitfalls in current training models and methods
- establish procedures to ensure that
 - all those needing/requesting training have access to appropriate training
 - training is evaluated for effectiveness
 - the necessary funding for training is available
- consider ways to make training an understandable component in the total cost of ownership of technology
- document the cost/benefit of providing timely and appropriate training

Specific actions/timeline

A committee and appropriate sub-committees will be established to address technology training on campus. The committee will draw expertise from the various technologists and faculty members across campus who are involved in technology and information system training as well as from interested stakeholders.

- The committee will follow the standard timeline (see 5.0) for carrying out and reporting on specific actions.

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- Although the standard timeline (below) should be followed, because of the breadth of issues associated with technology training, it may be necessary to determine in the 2003/2004 work plan a set of priority concerns. This work plan should establish a set of priorities for the current year and a framework for subsequent years of the technology plan.
- The highest priority issues should be addressed in 2003/2004 and others examined in subsequent years of this five-year plan.
- The committee will evaluate current data available relative to priority issues and determine what additional information is necessary to prepare a report to TLTR by February 15, 2004.
- Data collection, analysis, and submission of findings will follow the standard timeline during subsequent technology plan years.
- During 2007/2008, the committee will submit a final report and recommendations for the next cycle of technology planning based on the standard timeline.

Resources

Resources to provide training are essential to provide robust infrastructural support to technology and information systems. The level of training support is difficult to target because the current level of technology training funding is not tied to software application/hardware use. Advances in software and hardware will drive future training, but current needs are only partially understood. At the very least, substantial monetary and human resources will be needed to sustain a robust support scaffolding. The level of these costs will need to be determined, mindful of cost/benefit analysis relative to the total cost of ownership. In short, the more technologists and student workers know about what they are supposed to support, the more likely valid support will be available so that technology will be more effectively maintained and productivity will be enhanced.

Evaluation

- Has the committee evaluated the current array of technology training models and methods on campus, determined their strengths and weakness, and produced recommendations regarding them?
- Has the committee established procedures to ensure that users have access to appropriate training, including training relative to new and evolving technology?
- Has the committee annually evaluated the training to ensure user needs are met?
- Has the committee addressed coordination of technology training to provide structure for funding?
- Has the committee established procedures to ensure that necessary funding for training is available (including consideration of the concept of the total cost of ownership)?
- Has the committee submitted a final report in Spring 2008?
- Has the committee made recommendations for the next cycle of technology planning?

5.18 Network Connectivity

Background

Campus-wide network connectivity was established in 1993 with the move to a centralized fiber infrastructure. Prior to 1993, the network was based on a de-centralized, ad-hoc structure. A charge back system was put in place to purchase network equipment and wire. Over the past ten years, the campus community has become increasingly reliant on the high level of intra- and inter-network connections provided by the wired campus network. In fact, for many, network connections are as important as phone connections.

Wireless connectivity (see 5.11.1) will play an increasingly important role in the future installation and support of the wired network. The relationship between these two forms of campus connections will need to be carefully evaluated now and when planning future implementation.

The advent of centralized network connections has expanded utilization by a wide variety of users. ResNet has been, and continues to be, a recruiting point for new students. As discussed in 5.11.1, a wired and/or wireless network comes with expectations. Users expect any network to provide maximum uptime/reliability, security, speed, and availability. These parameters define the quality of a network and represent selling points for SCSU.

A number of critical issues need to be addressed. Increased network capacity has led to increased usage without a concomitant increase in available bandwidth (see 5.19). Currently, the network is not redundant and would not be prepared for systems failure. This concern should be considered in the context of wired and wireless networks. Remote access also needs to be evaluated. On-going advances in network connectivity should be investigated in a timely manner. In general, with an increasing reliance on intra- and inter-network connections to handle day-to-day matters, from the business office, to advising, to delivery of classroom materials, it is essential to support, maintain, and expand network capacity to ensure robust interaction.

Goals

In the next five years, SCSU will

- evaluate the campus network's stability, reliability, and capacity
- establish baseline standards for the network
- develop an ongoing funding model that supports intra- and inter-networks to provide enhanced service quality and network redundancy
- evaluate the cost/benefit of wired and wireless networks
- determine the ratio or proportion of services provide by wired and wireless networks
- determine campus community network needs for providing student and learning services
- reexamine funding and plan for the next technology planning cycle
- investigate on-going advances in network connectivity to better support the needs of students, faculty, and staff

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Timeline

Staff from LR&TS, along with other members of the campus community, will form a committee to evaluate network strengths and concerns. During the 2003/2004 academic year, the committee will survey existing data (LR&TS has completed a study to provide wireless service campus wide) on network capacity and make suggestions to TLTR on resources necessary to provide a robust network environment on campus. As always, the committee should address resources — money and human capital, training, replacement cycle, access, legal compliance, usage, and costs/benefits relative to its recommendations. The committee will follow the standard timeline (see 5.0) for carrying out and reporting on specific actions.

Resources

Determining network budgeting continues to be complex. Networking equipment costs continue to decline, but features and software available continue to increase. Unlike computers slated for replacement on a three-year cycle, network equipment often must be replaced more rapidly to facilitate time/place features. The committee's recommendations will need to include total cost of ownership projections.

Evaluation

- Has an evaluation of network service quality been completed and standards established?
- Has a funding model been developed to ensure a robust campus network?
- Has a cost/benefit analysis been completed regarding maintaining and/or deploying wired and wireless networks?
- Have the campus community's network needs been addressed?
- Have additional network features and functionality been investigated and matched to the needs of students, faculty, and staff?
- Has the funding structure been evaluated and recommendations made for the next technology planning cycle?
- Has the committee submitted a final report in Spring 2008?
- Has the committee developed recommendations for the next technology planning cycle?

5.19 Bandwidth

Background

The Internet connects us to the world. This network operates based on equipment, wire, software, support, and a myriad of other tangibles (see 5.11.1 and 5.18). Reliability is frequently associated with the above, but speed is primarily based on bandwidth – the size and capacity of the network to move information between St. Cloud and the Twin Cities and allow us to reach the rest of the world. As discussed in 5.18, network availability has led to increased use, which in turn has led to higher demand for bandwidth. In other words, with success come problems.

Internet2 (a non-commercial connection among government, research, education, and selected corporate entities) is currently available. Internet2 enables the movement of large data sets and real-time video and provides many other opportunities. Greater access to Internet2 would considerably increase these opportunities. This and other emerging technologies may significantly enhance educational opportunities at SCSU. To accomplish these possibilities, additional bandwidth will need to be available. In essence, bandwidth is the raw material that makes effective transfer of information possible.

LR&TS has completed a detailed evaluation of current bandwidth availability, usage, and projected need. Also, SCSU has conducted a peer review on this topic. In the last two years, SCSU and MnSCU have negotiated additional bandwidth. In addition, recently Residential Life money has been used to purchase bandwidth for ResNet. Even with all this, by all measures, current bandwidth is not adequate.

In the current unstable funding environment, multiple avenues of bandwidth acquisition will need to be investigated:

- SCSU purchasing bandwidth on its own
- SCSU and MnSCU both purchasing bandwidth – developing an understanding of what MnSCU currently or potentially could contribute/guarantee
- mixed usage/purchase with Residential Life money
- and/or an additional fee structure to provide Internet access for individuals, departments, or other units, similar to a line charge for having a phone.

Goals

In the next five years, SCSU will

- estimate future bandwidth usage
- estimate necessary bandwidth need based on practical considerations
- evaluate mechanisms to provide additional bandwidth to meet expected need
- proactively factor bandwidth needs of newer and emerging technologies that may mature in the next five years into expected bandwidth
- develop criteria for prioritizing demand on bandwidth
- ultimately, provide adequate bandwidth to meet the needs of SCSU educational and research missions during the period of this five year plan

Specific Actions and Timeline

The immediate need for bandwidth may require the accelerated acquisition of additional bandwidth for the fall 2003. The Information Technology Services (ITS) working group within LR&TS has completed a comprehensive analysis of the current situation. It would seem reasonable for this group to put forth a recommendation to TLTR before May 1, 2003, for bandwidth need for 2003/2004. The Dean of LR&TS could take the evaluated recommendations to the Provost for implementation in summer 2003.

Having addressed the immediate need for bandwidth, TLTR will constitute a committee in fall 2003 to evaluate SCSU's current and future needs for bandwidth. This committee should rely on the technologists in ITS as members and consultants to carry out their mandate. The timeline illustrated in 5.0 will be used to provide recommendations beyond this next academic year.

The committee will need to evaluate current usage, future need, support, training, infrastructure components, new and emerging technologies, and a model to provide appropriate and reliable bandwidth to the widest possible user set.

Resources

Resources currently available for bandwidth must be supplemented with additional resources to provide adequate connectivity to meet the campus community's needs. The quantity of resources remains to be determined, based on the findings of the committee.

Developing a mechanism to prioritize resource acquisition is essential. We must have a way to understand the interrelatedness of technology. Acquiring technology without appreciating the scope of that decision means we gather hardware and software and the associated ancillaries in a vacuum. We must be able to determine that by adding bandwidth, x, y, and z will be possible. Acquiring x, y, and z will be of no value without additional bandwidth. This is only one example of the complex interplay between multiple competing technology components. With ever expanding possibilities, one of the greatest challenges in technology planning is trying to determine what is important at the base of the technology and then what is possible given that base. In fact, it is not just about the base but how big the base must be to accomplish the organization's mission.

Evaluation

- Have essential bandwidth needs been evaluated based on projected applications?
- Have mechanisms to provide additional bandwidth been recommended?
- Has action on recommendations resulted in adequate bandwidth availability for a majority of the campus community?
- Have newer and emerging technologies been evaluated for bandwidth requirements?
- Have criteria for prioritizing demand on bandwidth been developed?
- Has increasing availability of bandwidth during the period of this technology plan provided for the majority of the needs to meet SCSU educational and research missions?
- Have the recommendations of the peer review been considered?
- Has the committee submitted a final report to TLTR in the spring of 2008?

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- Has the committee, in the spring of 2008, forwarded recommendations for the next cycle of technology planning?

5.20 Communication Technologies Overview

Background

SCSU is recognized as a leader in the deployment and use of technology to enable and support communication channels for its faculty, staff, students, and other stakeholders. Some of these communication technologies can be classified as electronic mail (e-mail), telephone and voice services, Web-based services, and personal productivity and collaboration services such as calendaring. Additional communication technologies are addressed in other sections of this technology plan.

These communication technologies provide options for communication and collaboration. For instance, the user can decide how, where, and when the communication takes place, and these technologies work equally well for two people or for a group of people. In addition, many of these technologies are converging. That is, personal productivity tools are often integrated with e-mail (Outlook/Exchange), voice mail and e-mail may soon be delivered in the same interface (Unified Messaging in Outlook), and all these features are available anywhere via the Web.

These communication technologies require that the underlying hardware, software, data, and connectivity be purchased, maintained, upgraded, and supported. Also, support staff and users must be trained in the proper use of the technologies. Planning and resource allocation are required to deal with rapidly changing technologies.

From an organization cultural perspective, these technologies must be deployed at the level that the organization members expect; new rules of etiquette and interpersonal communication must be developed (most often informally); the deployment must be distributed fairly to avoid have/have not cells of technology; and the cost/benefit balance must be correct for the organization and these technologies.

As SCSU moves forward in the use of these technologies (and technologies not yet available), planning, discussion, value versus cost, impact on individuals, and the needs and expectations of our students and the broader community, must be continually assessed and reevaluated. The proper mix of communication technologies for this university will happen only with vision, allocation of resources, and input from the campus community.

Goals

Over the next five years, SCSU will continue to provide communication technologies that

- meet the communication needs and expectations of the campus community
- enable effective delivery of education and services
- position SCSU as a leader in communication and collaboration opportunities
- increase personal and group interaction and productivity.

The specific actions and timeline, resources, and evaluation that will enable the University to meet these goals are listed in sections 5.20.1, 5.20.2, 5.20.3, and 5.20.4.

5.20.1 E-mail

Background

Electronic mail (e-mail) is one of the critical communication channels used by faculty, staff, and students at SCSU. E-mail is extensively used in conducting the normal business of the university and is increasingly used in the collaboration and communication among the SCSU campus community. E-mail is also a major communication channel in conducting business transactions and maintaining business relationships with external entities.

In Fall 2000, SCSU undertook a major initiative to replace multiple campus e-mail platforms with a single campus-wide solution for faculty, staff, and students. A major undertaking in scope and extent, this initiative involved significant technical resources and affected every member of the campus community. E-mail is now available anytime and anywhere that a user has access to a Web browser. Today, SCSU has a robust and comprehensive e-mail environment.

The current generation of students is e-mail literate, and they expect e-mail services to be readily available at this university.

The campus community is continually developing acceptable standards of etiquette and appropriate use of e-mail. Although SCSU currently has an email policy for students, faculty, and staff (<http://huskynet.stcloudstate.edu/emailpol.asp>) and listserv guidelines for faculty and staff, issues needing further investigation and understanding include acceptable use of e-mail, definitions of what an official communication is, and e-mail spam.

Additional possible areas of expansion include

- bringing voice mail into the e-mail environment
- enhancing the exchange of data between the e-mail environment and the ISRS environment
- assigning e-mail accounts to prospective or newly admitted students
- enhancing email services for alumni
- and developing policies and procedures to protect users from unwanted e-mail.

Goals

Over the next five years, SCSU will

- consider developing e-mail as a broader, formal communication channel for official communications among SCSU and faculty, staff, and students
- expand the availability of e-mail accounts to reach the broadest possible student body
- investigate developing 'e-mail for life' for all SCSU students
- study and enhance data interfaces between the e-mail environment and Integrated Statewide Records System (ISRS)
- investigate the file space needs of various campus constituents and recommend adequate file space allocations for various user groups (see 5.14)
- ensure that the e-mail environment is consistent with and supportive of the IMS environment at SCSU

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- review existing policies and guidelines and develop additional policies and guidelines to ensure an e-mail environment that fits the cultural environment and the legal requirements at the university (see 5.2)
- provide timely and effective training to faculty, staff, and students — particularly those new to SCSU (see 5.17)
- control the negative aspects of e-mail to reduce or eliminate unsolicited e-mail (spam)
- ensure that remote access to e-mail is quick, robust, and feature rich
- provide unified messaging, the combining of voice mail into the e-mail environment (see 5.20.2).

Specific Actions and Timeline

A committee comprised of technologists from LR&TS and CIS-AdC that support e-mail systems as well as faculty, staff, and students users will be created to address issues concerning SCSU's e-mail environment.

- The committee will follow the standard timeline (see 5.0) for carrying out and reporting on specific actions.
- The committee will evaluate the current email environment on campus as related to the other goals stated for this section.
- Based on this evaluation, the committee will make recommendations to TLTR.
- During the 2007/2008 academic year, the committee will produce a final report on e-mail at SCSU and a planning document for the next five-year plan. These will be submitted to TLTR by February 1, 2008, for review.

Resources

Presently, the e-mail environment is stable and robust; however, the system must be monitored and evaluated on an annual basis to develop funding lead-time for anticipated upgrades. Major upgrades or conversion to a different platform would require major investments in hardware, software, and training of technologists and end users.

Additional funding will be required to expand the account base from just enrolled students to all admitted students, to provide “e-mail for life,” to support integrated voice messaging, and system replacement — when and if these events are scheduled to take place.

Evaluation

- Is SCSU's e-mail system used effectively to provide official communications at SCSU? Informal communications?
- Has SCSU expanded the availability of e-mail accounts to reach the broadest possible student body?
- Has the committee investigated developing “e-mail for life” for all SCSU students?
- Has the committee studied and enhanced data interfaces between the e-mail environment and ISRS?
- Has the committee investigated the file space needs of various campus constituents and recommended adequate file space allocations for various user groups?
- Has the committee ensured that the e-mail environment is consistent with and supportive of the IMS environment at SCSU?

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- Has the committee reviewed existing policies and guidelines and developed additional policies and guidelines to ensure an e-mail environment that fits the cultural environment and the legal requirements at the university?
- Does SCSU provide timely and effective training to faculty, staff, and students?
- Is the e-mail environment at SCSU robust, stable, secure, and highly available?
- Is the e-mail system managed to keep the negative impact on faculty, staff, and student to a minimum?
- Does SCSU provide unified messaging?
- Has the committee submitted a final report in Spring 2008?
- Has the committee made recommendations for the next cycle of technology planning?

5.20.2 Voice

Background

Telephone services at SCSU are a critical component in the normal day-to-day functioning of the university. The technology in use is mature and stable, and the campus community expects a certain availability of this service.

A mix of several vendors and/or state agencies provides the current configuration of telephone services. For example, conventional landline telephone service is provided by a state agency, which in turn contracts with one or more vendors. Another vendor provides long-distance service. Voice mail is provided by a state agency. A mix of local vendors provides cellular or wireless telephone service. The contract for most telephone service expires on June 30, 2003.

A telephone services committee is in place during Fiscal Year 2003 to assess campus needs with respect to this service, to negotiate with telephone service providers, to formalize a new contract for this service, and to implement this contract so that continuous telephone service is provided to the campus. The new telephone service is to be implemented at the start of Fiscal Year 2004. (For information regarding this initiative, see <http://www.stcloudstate.edu/telephoneservices/>.)

The opportunity to negotiate a new contract for basic telephone and voice mail service for the university is also an opportunity to seek additional telephone features and availability of service, plus an opportunity to seek cost savings with respect to this fundamental service for the university.

Goals

The overall goal concerning telephone and voice technologies is to provide an appropriate and robust voice services environment at SCSU, at a cost effective price. Therefore, SCSU will

- evaluate, purchase, and install a new telephone system
- evaluate an alternative to the state contract for long-distance service providers
- target a telephone for every classroom
- migrate from analog telephony to IP-based technology
- train technical staff to fully support the new telephone system
- provide education for managers and staff regarding the advantages of digital telephone systems and the application of these phones in a business environment
- provide unified messaging of voice-messages and e-mail

Specific Actions and Timeline

The telephone services committee has already been created to address issues concerning SCSU's telephone and voice technologies. The committee is currently in the process of planning for the conversion to a new telephone system, and the actions specified below will not follow the standard timeline.

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- Before the conversion to a new telephone system, during the conversion process, and after the installation of the new telephone system, the committee will keep the university administration and the general campus community informed of issues, plans, progress, and critical dates.
- By the start of Fiscal Year 2004, the committee will have a contract in place to continue telephone services for the university, to include:
 - an appropriate mix of technologies to provide a stable and reliable telephone platform while at the same time positioning the university to move forward with anticipated technology advances
 - basic telephone service to all faculty, staff, and residence hall students that is equal to or better than previous service
 - basic voice mail service for all faculty, staff, and resident hall students
 - additional features that address specific telephone needs as articulated by the campus community during the requirements-gathering phase of the above project.
- The committee will plan to provide training for the campus community to enable individuals to use the voice service options to the maximum extent possible. Training will be offered in step with the conversion to the new telephone system. Follow-up training will be provided as needed.
- After July 1, 2003, the committee will assist individuals and departments with adopting new technology-supported solutions offered by the new telephone system.
- During Fiscal Year 2004, the committee will develop a Request for Proposal (RFP) for long-distance services to secure the best possible pricing on long-distance services.
- The committee will develop a proposal and secure funding to equip every classroom with either an analog or IP telephone.
- During Fiscal Year 2006, the committee will determine if fiscal and operational criteria exist to justify SCSU assuming the maintenance function of the telephone system.
- During the 2007/2008 academic year, the committee will produce a final report on voice services at SCSU and a planning document for the next five-year plan. These will be submitted to TLTR by February 1, 2008, for review.

Resources

Significant financial and human resources will be required to transition to a new telephone system.

The change to a new system will be underwritten at the campus level. Existing telephone sets will continue to function under most conditions. Departments will need to allocate funds to upgrade telephone sets or add features as they desire.

If a new set of telephone numbers is required, there will be significant cost and inconvenience for the general campus community.

The human resources will be significant in re-training the campus community for the new telephone system. Initial support issues will be considerable. The successful telephone vendor or in-house training resources will facilitate training.

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Evaluation

- Is the telephone service contract in place to continue telephone service after Fiscal Year 2003?
- Has a long-distance provider been selected?
- Is a telephone present in every classroom?
- Have services migrated from analog to IP-based technology?
- Has technical staff been fully trained to support the new telephone system?
- Have individuals been trained to utilize the telephone system features?
- Are emergency telephone services understood and functional?
- Is the quality of service acceptable to the general campus?
- Does the system provide unified messaging of voice and email?
- Is the telephone system stable, available, and reliable?

5.20.3 Web

Background

Since 1994, SCSU has been a leader in the use of the Web as a communication channel for delivery of information and education. Early use of the Web was marked by rapid growth and exploration. The first policies governing official university Web pages (Web Guidelines) came into existence in 1996-97, being approved by the Faculty Senate and discussed as part of the Meet and Confer process. Delivery of information via the Web continues to grow, and this use is critical to the functioning of the university, affecting virtually every aspect of the campus. New Web-enabled applications, such as extensions to ISRS, provide many interactive possibilities. The role the Web plays in outreach and in shaping the view of SCSU beyond the university cannot be overstated.

In an effort to address a growing number of Web-related issues (including ADA compliance, usability, browser compatibility, branding, and maintenance/overhead), in Spring 2001, the creation of an SCSU Web Council was proposed to President's Council (and later approved), with the group charged with overseeing the development and use of the Web on campus. In August 2002, the new SCSU Web environment was launched with the goal of more efficiently managing the growing number of official SCSU Web sites.

Many issues still need to be addressed, including how to better-manage Web content, how best to incorporate third-party Web-based applications into official sites, and numerous factors related to use of Web-based Instructional Management Systems (see section 5.4.5).

Goals

In the next five years, use of the Web will continue to evolve. SCSU must respond to this changing environment by

- institutionalizing the SCSU Web Council, clearly establishing it as the body to govern use of the Web on campus for official pages. This process should include examining the composition and structure of Web Council, and establishing terms of membership.
- creating comprehensive policies for providers of content.
- creating processes for reviewing and updating Web policies and official pages so they remain relevant and useful to all users.
- investigating and implementing a content management system that provides a balance between control of sites and freedom for content providers.
- providing services that end-users expect, including e-commerce capabilities.
- coordinating with the MNSCU Web team to ensure interoperability and integration of Web-based applications.
- examining environmental options, include portal approaches and wireless access to the Web.

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Specific Actions and Timeline

The Web Council, which will be responsible for the goals of this section of the Technology Master Plan, will use the following schedule rather than the standard timeline:

- During Spring 2003 and Summer 2003, the Web Council will review content management systems and report back options to TLTR no later than October 15, 2003.
- Based on available resources and funding, SCSU will implement a content management system by August 20, 2004.
- By Fall 2003, an appointed, joint TLTR/Web Council subcommittee will begin a review of the Web Council composition and function and will suggest any revisions to TLTR, Faculty Senate, Academic Affairs Council, and President's Council, due no later than February 2, 2004.
- By the end of calendar year 2003, SCSU will finish moving all Web-related functions from Tigger and Condor, so the servers can be decommissioned.
- By February of 2004, the Web Council will establish review and enforcement mechanisms so that official SCSU Web sites are reviewed for content and usability at least twice per academic year.
- Beginning in Spring 2004, the Council will identify all processes and procedures needed to manage and best utilize resources for SCSU intra- and Internet sites.
- By the end of calendar 2004, the Council will develop and implement a comprehensive campus intranet plan, to more efficiently provide information needed by all categories of users on campus.
- On an ongoing basis, the Council will compile and review SCSU Web statistics, including uptime and page-views for specific departmental/administrative sites.

Resources

A highly reliable infrastructure must be in place to support SCSU Web initiatives. Redundant systems, backup power, etc., must be acquired/developed to minimize down time.

The proper tools and training for Web management must be provided to personnel and all end-users.

As more applications become Web-based, additional personnel, such as Web developers, database coders, and graduate assistants, must exist to provide proper support.

Web-based information must be available to deliver information to all levels of decision-makers.

Web-based information must be widely accessible to all types of users, including via wireless connections by PDAs, Web-enhanced cell phones, etc.

Evaluation

- Has the Web Council composition been examined and adjusted to provide the proper level and type of oversight for the Web at SCSU?
- Has the Web Council created comprehensive policies for providers of content and marshaled those policies through the appropriate decision-making processes?
- Has the Web Council created processes for reviewing and updating Web policies and official pages so they remain relevant and useful to all users?
- Do all stakeholders have input into the decision-making process?
- Has SCSU implemented a content management system that provides a balance between control of sites and freedom for content providers?
- What is the level of uptime availability and redundancy of Web-based systems?
- Are the proper Web tools available to the developers to do their jobs?
- Has SCSU provided services that end-users expect, including e-commerce capabilities?
- Has the Web Council coordinate with the MNSCU Web team to ensure interoperability and integration of Web-based applications?
- Has the Web Council examined environmental options, include portal approaches and wireless access to the Web?
- Are sufficient personnel provided to properly support use of the Web at SCSU?
- Is Web-based information available to all types of devices/users?
- Has the Web Council completed a final report?
- Has the Web Council developed recommendations for the next technology planning cycle?

5.20.4 Calendar

Background

Using electronic calendars as personal productivity tools can significantly increase the quality of personal time management and the availability of collaboration opportunities on campus for some users.

Since 2001, SCSU has provided personal electronic calendaring for all faculty, staff, and students through the Exchange server. Prior to 1999, departments and offices started to go in different directions to address their intra-office scheduling needs or their need to schedule resources such as meeting rooms. These different solutions did not address the broader need for inter-office, campus-wide scheduling of employees and other campus resources.

During the 1999/2000 Academic Year, a review and pilot exercise compared the major platforms for personal productivity software. The analysis showed that Microsoft Exchange fit best with the culture, campus needs, and technical infrastructure on campus. As a result, in 2001, the full Exchange platform was implemented at SCSU. This implementation delivered multiple personal productivity tools to all faculty, staff, and students. An electronic calendar, available anywhere, anytime, is an important component of this software suite.

Currently, Exchange's calendaring feature is inconsistently used on campus, and assessment of user needs — including training and support as well as kinds of scheduling needs (i.e. personal, meeting, classroom, and resource scheduling) would be useful.

Goals

In the next five years, personal productivity tools will continue to mature and, perhaps, deliver additional functionality. SCSU must continue to provide quality calendaring and scheduling tools to the broader campus community and to evaluate users' needs as well as the tools' effectiveness. To do so, we must

- evaluate the utilization rate of HuskyNet calendaring
- evaluate current faculty, staff, and administrative usage and determine issues relating to calendaring (including training and support)
- analyze students' needs for calendaring
- raise the level of technical support for and understanding of the tool
- move calendaring into mainstream use by clarifying appropriate uses of the tool for different types of scheduling (meetings, classes, resources, etc.) and by promoting the anywhere/anytime availability of calendars

Specific Actions and Timeline

A committee, responsible for the goals of this section of the Technology Master Plan, will be formed and will use the following schedule rather than the standard timeline:

- During Fall Semester 2003, a committee will gather data about current calendar usage and user needs. In addition, the committee will develop a communication plan to clearly inform non-users of calendaring benefits and opportunities.

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- Annually, add calendaring as an agenda item to one of the campus-wide technical support staff meetings so that technical support staff and college technologists have the latest information on calendaring and can carry the information to their clients.
- During the 2003-2004 academic year, the Outlook/Exchange trainer(s) will add curriculum to address calendaring needs of faculty, staff, and administrators. This training will
 - include calendar sharing between work groups, synchronizing of calendars with other environments (such as PDAs), and other relevant leading-edge uses of calendaring information.
 - address other issues and needs uncovered during the committee's data collection.
- During the 2003-2004 academic year, the committee will organize and execute a project focused on student use of calendaring. This project will
 - assess opportunities for students to use electronic calendaring in their personal lives and academic work.
 - explore the possibility of students downloading their schedules from ISRS to their personal calendars, using the calendar to schedule and manage student classroom group projects, and other innovative calendar uses identified by students.
- By the start of the 2004-2005 academic year, the committee will develop an in-house certification program to ensure that student and staff technical support workers have specific knowledge regarding the calendar tool.

Resources

Resources include training, communication, and equipment.

- The training group must plan for on-going curricula regarding electronic calendars and must allocate training resources to that area. Current training resources are probably adequate, but the committee's research may uncover additional needs.
- University Communication resources will be used to help raise campus awareness of calendaring opportunities and related training opportunities.
- Hardware and software resources are currently included in the technology upgrade/replacement plan.

These resource needs will change over the five-year life of this plan and will be reviewed annually by the committee.

Evaluation

- Has the committee determined the current calendaring usage at SCSU?
- Has the committee evaluated user (faculty, staff, and administrative) needs and determined issues relating to calendaring (including training and support)?
- Has the committee raised the level of technical support and understanding of the tool?
- Has the committee moved calendaring into mainstream use by clarifying appropriate uses of the tool for different types of scheduling (meetings, classes, resources, etc.) and by promoting the anywhere/anytime availability of calendars?
- Has the committee analyzed students' calendaring needs?
- Has the committee completed a final report?
- Has the committee developed recommendations for the next technology planning cycle?

5.21 Digitization

Background

The increasing use of technology to locate and access appropriate information resources implies that those resources are either created in digital format or converted to digital format. Several areas of digitization that the university has explored could be better coordinated for improved access. These include

- media streaming (both audio and video)
- e-reserves (scanning articles, book chapters, documents, images, etc.)
- electronic records retention (transcripts and other student records)
- presentations (integration into PowerPoint, video presentations, Web presence, or Instructional Management Systems [WebCT] course materials).

In addition, the university could expand digitization to new areas to facilitate access:

- e-theses (proposal submitted to Graduate School)
- e-archive of faculty publications (“pre-prints” and limited distribution of scholarly articles)
- e-portfolios (MnSCU and other ongoing e-portfolio initiatives)
- digital archives (historic texts, diaries, papers, photographs, etc., in coordination with local/regional libraries, historical societies, and museums)

All of these areas are critically important as SCSU increases its use of, and dependence on, alternative delivery methods for instructional and research resources, especially via the World Wide Web.

Goals

In the next five years, the university should

- inventory existing digitization initiatives and evaluate their effectiveness in fulfilling the institutional mission
- address the digitization needs and expectations to support
 - curriculum
 - research
 - dissemination of research (global: theses; local: faculty publications)
 - access to fragile (archival) resources
 - long-term sustainability and persistence of university records
 - collaboration with regional libraries, archives, historical societies, museums and related organizations
- commit appropriate resources (hardware, software, staff) to fulfill existing and evolving digitization initiatives based on institutional priorities
- expand exploration of streaming technologies and their applications within the curriculum and other university arenas
- work within the framework and best practices set by the Minnesota Digital Library Coalition

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- ensure that the electronic records archives will authentically preserve and provide access to any kind of electronic record produced by or for SCSU, free from dependency on any specific hardware or software
- ensure that digital items are accessible and that digital materials available are communicated to the university community.

Specific Actions and Timeline

TLTR will establish a digitization committee comprised of the people from LR&TS (including the systems librarian, the university archivist, and appropriate technologists), from CIS, and other faculty, staff, and administrators to accomplish the goals. The committee may decide it needs to establish subcommittees to pursue the various goals. The committee(s) will follow the standard timeline (see 5.0) for carrying out and reporting on specific actions.

Resources

To accomplish the goals, considerable financial, technical, and personnel resources could be required. Personnel resources are potentially the most costly and most difficult to characterize. Because digitization is an evolving and improving field, vigilance and currency with best practices and with available technologies are paramount in planning and creating effective, useful programs that use digitization to serve the university's missions. Dedication of time from appropriately skilled staff will ensure what is prudent and possible with available resources. Because much of digitization involves conversion of existing media from one format to another to enhance service, it can be approached incrementally, providing that projects are given accurate priority and that resources become available. Relying only on current personnel doing the work in their available time will guarantee a slow transition and may put some of the goals in jeopardy.

Evaluation

- Has the university inventoried existing digitization initiatives and evaluated their effectiveness in fulfilling the institutional mission?
- Has the university addressed digitization needs and expectations to support curriculum, research, dissemination of research, access to fragile (archival) resources, long-term sustainability and persistence of university records, and collaboration with regional libraries, archives, historical societies, museums and related organizations?
- Has the university committed appropriate resources (hardware, software, staff) to fulfill existing and evolving digitization initiatives based on institutional priorities?
- Has the university expanded exploration of streaming technologies and their applications within the curriculum and other university arenas?
- Has the university consistently worked within the framework and best practices set by the Minnesota Digital Library Coalition?
- Has the university ensured that the electronic records archives will authentically preserve and provide access to any kind of electronic record produced by or for SCSU, free from dependency on any specific hardware or software?
- Has the university ensured that digital items are accessible and that digital materials available are communicated to the university community?
- Has the committee submitted a final report in Spring 2008?

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- Has the committee made recommendations for the next cycle of technology planning?

5.22 Disaster Recovery

Background

SCSU has procedures in place to provide backup and recovery of major data sets such as e-mail and files stored on major file servers. In addition, SCSU has detailed inventory records of technology components and campus locations for those components. These concepts form the basis for plans and procedures to recover from events that disrupt the normal flow of activity on campus. SCSU, however, does not have an up-to-date, full disaster recovery or business continuity plan that manages the risks associated with major disasters that potentially could have a significant negative impact on SCSU's long-term success.

SCSU has become increasingly dependent upon multiple technologies for day-to-day operations. The disruption of the normal functioning of these technologies, due to a disaster of any size, would have a profound impact on SCSU's mission. Disaster recovery plans and business continuity plans attempt to prepare for such a disruption of service, to put in place a strategy to deal with the disruption, to recover in a prioritized and well-planned manner, and to minimize the risks posed by such service disruption.

The scope of a disaster may be large or small and originate from a number of possibilities. A small disaster might consist of a fire or flood in a single workspace. A large disaster might consist of the physical loss of one or more buildings due to a storm, explosion, or terrorist attack. These are just examples of possible disasters. The uncertainty of future events makes planning for possible disasters a difficult and fuzzy exercise. However, this uncertainty does not diminish the necessity for such planning.

Disaster recovery planning usually takes the form of

- getting administration buy-in and developing broad campus support
- forming a team charged with developing the plan
- adopting a methodology for developing the plan
- using the methodology to develop the plan
- training the support staff in the use of the plan
- testing the plan to gain confidence in the plan
- updating the plan on a regular, fixed schedule
- using the plan in the event of a disaster

While such plans are often overlooked or pushed to the bottom of the priority lists, it is critical to have such a plan for the university.

Goals

The primary goal is to develop a comprehensive technology disaster recovery plan for SCSU that speaks to the orderly and planned continuing of the university's mission in the event of a disaster. The plan will

- identify and classify the technology components (hardware, software, data, networks, telecommunications, discipline-specific equipment, and facilities) that support SCSU's mission

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- identify the important business relationships that would be required to support disaster recovery
- establish a priority of recovery activities in the event of a disaster
- identify those people responsible for maintaining the plan
- identify those people responsible for responding to a disaster and the roles to be played
- follow generally accepted conventions and parameters associated with plans designed to continue business in the event of a disaster.

Specific Actions and Timeline

TLTR will establish a security committee comprised of people from LR&TS, CIS-AdC, and Facilities to develop a comprehensive technology disaster recovery plan for SCSU.

- The committee will follow the standard timeline (see 5.0) for carrying out and reporting on specific actions.
- The committee will be charged with accomplishing the goals of this section of the plan; detailed actions and timelines need to flow from the committee.
- During 2007/2008, the committee will submit a final report and recommendations for the next cycle of technology planning.

Resources

One-time costs estimated at \$5,000 will be required to arrange for the services of a professional disaster recovery consultant to provide initial structure and direction for this initiative. This cost includes selecting the methodology and the technology (software) to support the plan content.

Substantial time and effort will be invested in this initiative by those charged with planning, compiling, and maintaining the required information.

Costs may be associated with providing service-level agreements with vendors and/or other MnSCU institutions or State agencies to arrange for backup facilities, equipment, and network connectivity.

On-going costs will be needed to maintain the plan and to do the required testing of the plan to ensure viability of the plan over time.

Evaluation

- Is the disaster recovery plan in place, and has it been tested to assure that it can be utilized?
- Have important relationships and agreements been implemented to provide for facilities and technology component replacement in the event of a disaster?
- Have recovery priorities been identified and approved?
- Have individuals and roles been identified and assigned?
- Is the plan updated regularly and tested annually?
- Has the committee submitted a final report in Spring 2008?
- Has the committee made recommendations for the next cycle of technology planning?

5.23 Security

Background

SCSU has been a leader in introducing information technology to support the delivery of instruction and in the delivery of service to the campus. Along with the use of such technology is the need for security. Security as it relates to information technology is a multi-faceted issue.

Physical security is associated with locked doors to server rooms, controlled access to electronic classrooms, physically protecting desktop and laptop computers from theft, protecting sensitive equipment in labs and large projection screens from damage or vandalism, and restricting access to network infrastructure.

Data access security identifies who it is that owns certain data sets, who can access or use the data for legitimate business reasons, and the procedures and statutes that regulate the use of the data.

The concept of authentication is associated with security. Authentication speaks to how an individual is identified so that the individual may gain access to appropriate resources. It speaks to who is it that can get an account, how the account is maintained, how the password is constructed, and when it must be changed. Students, faculty, and staff are faced with using two possible identifiers to attempt authentication at SCSU: the SCSU ID and the HuskyNet ID. This can be confusing and can appear to be unnecessarily complicated.

Security within applications such as ISRS, WebCT, HuskyNet, and other third-party environments must be monitored for effectiveness, weaknesses must be reported, and version updates must be applied to ensure security and access control to critical applications.

Proper and timely backup of critical data file, anti-virus and anti-hacking initiatives, formal and written policies and procedures, and enforcement of such policies are additional security issues. There is also a need for a clear and consistent incident reporting process in response to technology-related complaints of activity originating from or otherwise involving SCSU technology resources.

The MnSCU Chancellor's Office currently has an Information Security Office, supported by a high level Information Security Steering Committee, which is coordinating a multi-year effort to develop a strong and clear security program for the central office and the campuses of the system. The MnSCU Office of Internal Auditing has also taken a heightened interest in security issues associated with information technology. SCSU, as a system campus, will be expected to be in step with these system-wide security measures, and SCSU will have additional issues as a large and complex university.

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Goals

Over the next five years, SCSU will review its security policies, procedures, guidelines, and training to ensure that the appropriate level of information technology security is in place and functioning at the appropriate level. This will include

- formalizing the information technology security roles and responsibilities at SCSU
- coordinating efforts with other technology-related policies, incident reporting, and response efforts
- maintaining active SCSU involvement in the Chancellor's Office security initiative
- upgrading security measures where necessary
- facilitating broad discussion across technology and management groups regarding security issues and solutions
- providing an information technology security environment that is viewed as a "best practice" with the correct balance between security and access
- engaging the broader campus community in the security discussion through communication and training.

Specific Actions and Timeline

A security committee, including technologists from LR&TS and CIS-AdC, will be formed and charged with dealing with the high-level security issues identified in this plan, with developing detailed actions items and acting on them. The committee will be expected to facilitate broad campus involvement, awareness, and training.

- The committee will follow the standard timeline (see 5.0) for carrying out and reporting on specific actions necessary to accomplish the goals for security in this part of the technology plan.
- During the 2007/2008 academic year, the committee will produce a final report on security and a planning document for the next five-year plan. These will be submitted to TLTR by February 1, 2008, for review.

Resources

Significant human resources will be required to understand current security issues, to upgrade the security environment where needed, and to bring the entire campus to a higher level of understanding and appreciation.

The amount and type of resources to reach the appropriate security level for this university will be defined through a formal risk assessment initiative, which will better determine the current state of information technology security at SCSU.

Evaluation

- Have information technology security roles and responsibilities been formalized?
- Have information technology security policies and security incident reporting been coordinated with other technology related policies, incident reporting and response efforts?
- Is SCSU viewed as an active player in the system-wide security initiative out of the Office of the Chancellor?
- Have security measures been implemented and/or upgraded where appropriate?

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- Has the awareness of security related issues been raised to a higher level across the technology support staff and management groups?
- Is the security program at SCSU current, robust, and of “best practice” quality?
- Is the broader campus community engaged in and do they understand security issues?
- Has the committee submitted a final report in Spring 2008?
- Has the committee made recommendations for the next cycle of technology planning?

5.24 Emerging Technologies

Background

Information technology is a rapidly changing field, with standards often not established until a specific market segment matures; even then multiple standards still exist (i.e. operating systems, streaming formats, etc.). For SCSU to efficiently leverage the introduction and use of emerging technologies for campus, it must develop a clear and systematic process to identify and investigate new technologies as they become available. A crucial part of this process is providing access for technologists and other early adopters on campus to preview new and emerging technologies. This process must allow for flexibility and rapid response to an ever-changing technological landscape. The process also must be accessible to various stakeholders and address their needs for a variety of technological applications. The process should allow individuals and groups access to appropriate resources as part of the annual technology planning process. With these resources, emerging technologies can be tested and then incorporated into the campus community as appropriate, thereby maximizing benefits to campus. Investing up front as technologies emerge will allow SCSU to better capture opportunities for applications as they arise.

However, research and development of emerging technologies on the SCSU campus typically has not been associated with systematic planning. More typically, it is dependent on available funding, often from grants and contracts. The Student Technology Fee Committee has acknowledged the importance of emerging technologies and, in FY 2002, dedicated \$35,000 annually toward investigating and making such new resources available to students.

Goals

In the next five years, use of information and associated technologies will continue to evolve. SCSU must respond to this changing environment by

- developing a comprehensive campus process to identify and investigate emerging technologies that takes into account all types of information technology users on campus
- communicating this process to campus users so they understand how it integrates with existing technology planning
- implementing the plan so that resources are dedicated in a systematic way for the investigation and testing of new technologies and so that information is provided to campus information technology users
- monitoring the process to ensure that it achieves the identified goals, integrates with ongoing campus technology planning, and provides information that is incorporated into the technology planning process, leading to implementation of new technologies as appropriate
- evaluating the results on an annual basis to determine the success of the process and then adjust future efforts accordingly.

Specific Actions and Timeline

A committee will be established to address emerging technologies. This committee should include representatives from TLTR, LR&TS, CIS-AdC, the Student Technology Fee Committee, faculty, administration, and staff.

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- The committee will follow the standard timeline (see 5.0) for carrying out and reporting on specific actions necessary to accomplish the goals relative to emerging technologies.
- The committee will evaluate appropriate emerging technologies; identify possible approaches to monitoring, researching, testing, and implementing new technologies; and determine the associated costs.
- The committee will inform the campus of its findings related to emerging technologies.
- The committee will advise how to implement recommendations.
- During the 2007/2008 academic year, the committee will produce a final report on emerging technology and a planning document for the next five-year plan. These will be submitted to TLTR by February 1, 2008, for review.

Resources

Resources from all information technology stakeholders need to be dedicated to the development of an emerging technologies process. Personnel time will need to be invested in this process. The development of an appropriate process to evaluate emerging technologies will define the proper tools for investigating and testing these technologies. Funding for this might come from a central pool to which all groups contribute or might be based on which user groups will potentially derive the greatest benefits from the technology implementation.

Ongoing investment of personnel must be made in evaluating and adjusting the process.

Evaluation

- Has a comprehensive campus process been developed to identify and investigate emerging technologies that takes into account all types of information technology users on campus?
- Has this process been communicated to campus users so they understand how the process integrates with existing technology planning?
- Has the plan been implemented so that resources are dedicated in a systematic way for the investigation and testing of new technologies for campus and so that information is provided to campus information technology users?
- Has the process been monitored to ensure that it achieves the identified goals, that it integrates with ongoing campus technology planning, and that it provides information that is incorporated into the technology planning process, leading to implementation of new technologies as appropriate?
- Has the process been evaluated to determine its success and to adjust future efforts?
- Has the committee submitted a final report in Spring 2008?
- Has the committee made recommendations for the next cycle of technology planning?

Glossary

<u>Term</u>	<u>Definition</u>
CIS-AdC	Center for Information Systems, also known as administrative computing services
COE	College of Education
COFAH	College of Fine Arts and Humanities
COSE	College of Science and Engineering
COSS	College of Social Sciences
CTUS	Computer and Technology User Services
Exchange	The brand name of the specific platform that provides e-mail, calendaring, and other related personal communication or personal productivity tools to the SCSU campus community.
GAs	Graduate assistants
GIS	Geographical Information System
IMS	See Instructional Management Software
Instructional Management Software	A software product or group of products (usually web-based) that work together to allow faculty to perform a variety of tasks, from publishing course material to tracking students' grades, in courses that are presented entirely or partially online.
Integrated Statewide Records System	The core information system for St. Cloud State University, developed and delivered from the Chancellor's Office, Information Technology Services.
IP	Internet Protocol
ISRS	See Integrated Statewide Records System
IT	Information Technology
ITS	Information Technology Services
KPIs	Key Performance Indicators

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<u>Term</u>	<u>Definition</u>
LAN	Local Area Network
LR&TS	Learning Resources and Technology Services
MnSAT	Minnesota Satellite and Technology – Public agency to support satellite time for all state agencies.
MnSCU	Minnesota State Colleges and Universities
Outlook	The software component on the desktop computer that supports electronic communication and collaboration. See Exchange.
PDA	Personal Data Assistant
ResNet	Residential Network – Ethernet in student residential halls
Resource 25	A software package, supplied to MnSCU institutions, designed to automate the scheduling of classrooms based on predefined parameters of classroom features and course requirements.
RFP	Request for Proposal
SAS	Statistical Analysis Software
SCSU	St. Cloud State University
SPSS	Statistical Program for Social Sciences (no longer used)
TCO	Total Cost of Ownership
Teaching, Learning, and Technology Roundtable	The campus-wide group looking at technology issues as they relate to teaching, learning, and service.
TLTR	See Teaching, Learning, and Technology Roundtable
TPR	Technology and Pedagogical Resources committee
WebCT	A specific, commercial IMS application used at SCSU