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Northeastern State University Five Year Strategic Technology Plan 2001-2005

INTRODUCTION

The ever increasing complexity of the environment in which the University functions demands enhanced communication and efficiency. The advantageous use of technology provides the vehicle to expand the University's leadership role in Oklahoma higher education.

This report outlines the mission of academic and administrative computing during the next five years. The goals are broadly stated and policy-oriented. Specific implementation measures should be developed as a separate process and may constitute the future work of the academic and administrative technology committees. The two committees will strive to understand and anticipate the needs of the University community and make recommendations to the University Technology Council.

Ultimately, the achievement of these goals will enhance the academic experience, support administrative needs, improve communication, and increase productivity throughout all areas of the University and at each of its campuses.

The principal topics of concern addressed in this plan are not presented in priority order. Each is very important and a timely implementation will benefit the University and its constituents.

The University Technology Council has indicated that the University's Five-Year Strategic Technology Plan is not static and it must be reviewed on a regular basis.

TOPIC: DISTANCE LEARNING

Definition

In order to accommodate the needs of students in remote locations, Northeastern State University provides distance learning via interactive classrooms/labs and online courses. Video conferencing is used for administrative as well as academic purposes.

Problem

The number of distance education sections offered by NSU has increased significantly in recent semesters; two in fall 1997, 23 in spring 1998, 58 in fall 1998, and 43 in spring 1999. Problems have arisen related to technical training, support, and facilities. General concerns over academic/administrative needs should be resolved.

Several technical problems have been identified and need to be resolved. Examples follow:

1. Loss of Transmission, Poor Light/Sound Quality.
2. NSUM camera needs zooming capability.
3. Student microphones do not work well.
4. One-Net is unforgiving in cutting the class off.
5. Inadequate supplies of batteries and markers in each classroom.
6. Instructor's camera should be mounted under the instructor's monitor.
(see Progress July 2000)

Consequences of Inaction

The quality and integrity of academic programs could suffer and the students progress may be hindered if the methods of delivery for these classes are not constantly reviewed and updated. Underutilization of this technology by the administrative component will not provide the potential resource savings available.

Recommendations

1. Studies Needed
 - a. How well are the needs of students and pedagogy being met?
 - b. How well are students actually learning through distance education?
 - c. Study the extent to which NSU should be involved with distance education. Should the University be offering just individual classes or entire programs via distance education?
 - d. Are the most appropriate classes being offered via distance education?
 - e. What are we really trying to do with distance education?
 - f. Assess amount of and reasons for reported student resistance to distance learning courses.
 - g. Assess University need for full-time coordinator of distance learning and a well-staffed facility for instructional design. (see Progress July 2000)
 - h. Assess the optimum number and location of distance education sites.

2. Clarification of Institutional and College Goals and Policies for Distance Education
 - a. Faculty loads and release time to prepare for Interactive Television (ITV) classes. It is recognized that a policy concerning add-pay has been established, but questions related to faculty load and release time need to be resolved.
 - b. Training in instructional methods and technical assistance for professors teaching distance education classes. It is recommended consideration be given to summer school training for faculty. (see Progress July 2000)
 - c. Help with developing aids for distance learning classes.
 - d. Improve coordination and security during testing at remote sites.
 - e. Improve both electronic and physical access to Library materials. (see Progress March 2001)
 - f. Special library needs (equipment, software and development) for distance teaching/information assistance on the Internet/WWW. (see Progress July 2000)
 - g. Staffing and schedule coordination among and within all colleges. Other responsibilities should be considered when scheduling and staffing distance education classes.
 - h. Facilitate use of other options (Internet/WWW) in addition to ITV.
3. Focused evaluation is needed from students and faculty who are involved with distance education. Evaluations should be sent to students who drop distance education classes early in the semester because their reasons for dropping may be relevant.
4. Plans need to be developed to effectively utilize new and better equipment. (see Progress July 2000 & March 2001)
5. New sending and receiving facilities will be needed. (see Progress July 2000 and March 2001)
6. Develop plans for increased administrative utilization of this technology.

Status as of July 2000

Progress:

Six technical problems were identified as needing resolution. There are no current trouble reports involving loss of transmission, poor lighting, sound quality, or student microphones. The cameras at NSUM were always capable of zooming. A request has been sent to the Office of Distance Learning for clarification as to which Distance Education classrooms require the camera to be moved and the specific location within the classroom.

A recommendation has been forwarded to the University Technology Council to convert from full motion video to H.323 for Distance Education videoconferencing over LANs and the Internet.

A Coordinator of Academic Technology and Distance Learning was named in fiscal year 2000. An instructional services unit has existed in excess of fifteen years.

Levels of technical support to be provided by Computing and Telecommunications (C&T) to Distance Education classes at Tahlequah and NSUM and web based students have been agreed upon and provided, in writing, to the Office of Distance Learning.

The software used for the NSU mail server was upgraded to allow users with valid NSU user IDs, but located outside the firewall (web based students), to remotely change their NT password. Arrangements are being made to allow these same users access to electronic library resources.

A licensing agreement with Blackboard.com, for web-based courses, was arranged by the Office of Distance Learning. A fairly robust IBM Netfinity server has been purchased and installed by Computing and Telecommunications to accommodate the Blackboard.com software.

PA 220 is scheduled to be equipped with an H.323 Team Station for the fall semester 2000.

The following “Studies Needed” item (g.), “Assess University need for full-time coordinator of distance learning and a well-staffed faculty for instructional design,” has been partially achieved with the appointment of a distance learning director.

Area of Concern:

It would appear that none of the studies or plans referred to in item one through six of the recommendation section have been conducted. As some of those studies are to look at whether or not distance learning is even appropriate for the University, they should be resolved, prior to additional investment in the technology.

Recommendation:

Responsibility for conducting the studies and the planning called for in this section should be assigned to the appropriate organization(s), possibly by the University Technology Council or by a joint meeting of the Academic and Administrative Technology Committees. Any organization(s) assigned responsibility should be required to submit written progress reports to the Chair of each committee at scheduled intervals.

1. Studies Needed

The studies listed below should be regarded as very high priority in this section:

- a. “How well are the needs of students and pedagogy being met?”
- b. “How well are students actually learning through distance education?”
- d. “Are the most appropriate classes being offered via distance education?”

New - There should be an analysis of the cost effectiveness for various modalities of distance learning service.

2. Clarification of Institutional and College Goals and Policies

The items listed below should be regarded as very high priority in this section:

- b. “Training in instructional methods and technological assistance for professors teaching distance education classes.” (see Progress March 2001)

Note: Progress has been made in this area by naming a Coordinator of Distance Education.

Recommendation: Additional technical assistance beyond the current level is needed for professors. Particularly, a student worker trained in the technical aspects of using the equipment should be made available to faculty as requested during class time. Full-time technical assistance will continue to be available on an on-call basis. Distance Education faculty members must avail themselves of training to use the necessary equipment.

e. "Improve both electronic and physical access to Library materials."

h. "Facilitate use of other options (Internet/WWW) in addition to ITV."

This should be expanded to reference video conferencing and web-based instruction.

i. Establish a workable system for test distribution/collection and for proctoring at remote sites.

j. Provide for the support of remote access to information resources and distance education as required by the North Central Association in its GIR #18. This recommendation addresses the installation of a user authentication solution for remote access (i.e. outside the NSU intra net) to information databases by members of the NSU community. Parameters are as follows: user ID's and passwords be assigned and handled as for other systems; solution should not be vendor specific. (see Progress March 2001)

Status as of March 2001

Progress:

Levels of technical support provided by C&T have been expanded to cover 20 hours a day, seven days a week, except major holidays. This support can be requested by telephone or e-mail.

Arrangements have been completed to allow users with a valid NSU NT userid access to electronic library resources. This was accomplished by C&T personnel installing a proxy server and downloading and configuring Apache web server software. Instructions on how to configure browsers can be found at:

<http://library.nsuok.edu/Resources/Indexes/proxy.html>

Library services to NSU distance education students have been expanded and may be accessed at <http://library.nsuok.edu/Internet/distance.html>

PA 220 was equipped with a H.323 Team Station as scheduled.

The recommendation that was forwarded to the University Technology Council to convert from full motion video to H.323 for Distance Education videoconferencing over LANs and the Internet was approved. The conversion will occur immediately following Spring semester 2001. The conversion is expected to include all five classrooms that currently utilize Grass Valley Codecs for full motion video.

Plans call for one additional H.323 classroom in the new Mike Synar Center at NSUM and 2 new H.323 classrooms at the new campus of NSUBA. Extensive research has been completed to ensure that the H.323 equipment chosen for the converted and new classrooms is state of the art.

Area of Concern:

The Academic Technology Committee placed very high priority on the implementation of several studies:

- Assess University need for full-time coordinator of distance learning and a appropriately staffed faculty for instructional design.
- Analyze the cost effectiveness for various modalities of distance learning service.
- Assess how well the needs of students and pedagogy are met.
- Assess how well students are actually learning through distance education.
- Evaluate whether the most appropriate classes are being offered via distance education.

TOPIC: SOFTWARE, SITE LICENSES, COPYRIGHTS

Definition

The field of education has changed tremendously with the advent of computerized instruction and use of the computer in almost every discipline. Software improvements are being made at an astonishing rate. A dedicated effort must be made to ensure that we are able to provide the best tools available for students, faculty and staff.

Problem

NSU students, faculty and staff are at a disadvantage because a wide range of software is not readily available to them.

Consequences of Inaction

Students will not receive instruction on industry standard software. Faculty and staff will continue to be unable to utilize industry material that is provided by publishers and vendors or easily share information and files with colleagues.

Recommendations

1. Establishment of a permanent Instructional Software Request Fund through the Office of Academic Affairs. This fund will allow similar software needs to have site licenses purchased as well as provide faculty an opportunity to purchase discipline-specific software.
2. Software on the NSUNet should be current with the software that is available across campus. Currently, WordPerfect 5.1 is on the NSUNet and WordPerfect 8 is on individual machines; Quattro Pro 4 is on the Net and Quattro Pro 8 is on individual machines. The NSUNet should distribute equally the most current software to all campus computers and should be compatible with the faculty computers. (see Progress July 2000)
3. The campus software standard needs to be reviewed a minimum of every two years by the Technology Committees. The software chosen should be made available through the NSUNet to all campus computers. The standard needs to be announced to the entire campus. (see Progress March 2001)
4. Faculty chosen classroom software should be available in sufficient labs for students to have ready access to the software. Software that is used in multiple disciplines should be supported in all labs available for student use. (see Progress March 2001)
5. Additional full-time, software technical support personnel.
6. Need additional software training for faculty on each campus. (see Progress March 2001)
7. Increase graphic and multimedia software as needed through site licenses.
8. Improve software available in laboratories and classrooms through NSUNet. (see Progress July 2000)

9. The library system needs to be updated to VIRTUA.
10. More timely acquisitions and coordination of upgrades of site licenses.
(see Progress March 2001)
11. Develop a software collection catalog of software available on this campus.
(see Progress July 2000)
12. Distribute to all faculty current copyright and licensing laws regarding software.
13. Establish a MacIntosh lab in the NET Building capable of editing print, audio and video.

Status as of July 2000

Progress:

Software on NSUNet is current with software that is available across campus. This was accomplished by retiring the oldest PCs and upgrading all networked PCs to Windows NT. Prior to that, many PCs on campus were not capable of running the most current version of software available.

All PCs that are connected to the network have had Comprehensive Client Manager (CCM) by On Technology installed. This software will provide greatly enhanced efficiencies in the installation, maintenance, and management of PCs. CCM was used to upgrade all users to Corel 9, Windows NT, and Netscape 4.7. All are campus standards. As new versions become available and are deemed appropriate for the University, CCM will be used to remotely upgrade.

There is a web gateway to the library on-line catalog.

Data Processing and Telecommunications Inventory Forms are reviewed and updated every year for the Office of State Finance/Systems Planning Group. This information provides a comprehensive list of software available at the University and the content are posted on NETNotes.

Area of Concern:

There is always a fair amount of pressure to upgrade to the next version or different type of software or hardware. Microsoft Office 2000 and Windows 2000 are prime examples. To upgrade to Windows 2000, Microsoft recommends that a PC be, minimally, a Pentium I 133 Mhz, 64 MB of RAM, and a 2 GB hard drive and at least 650 MB of free space. Additional free space would be required for a network install. A solid estimate would be 197 PCs at NSU would not meet this minimum requirement and would have to be replaced. 178 PCs would meet the 133 Mhz requirement, but would require RAM and hard drive upgrades. Depending on model type, replacement PCs could cost \$1,700 per PC. The hardware upgrade would average about \$628 per PC. A site license for the Operating System (OS) would be about \$45,000. Another \$50,000 would be required to upgrade NT servers. Therefore, not counting labor, training, or disruption, bringing every networked PC to the minimum standard required for Windows 2000 would cost approximately \$541,684. A more reasonable model for a Windows 2000 PC would be a Pentium II 233 Mhz, 128 MB of RAM and a 4 GB hard drive. This would involve upgrading or replacing an additional 515 PCs and would substantially increase the cost.

Recommendation:

Campus software standards should be reviewed in the immediate future by a joint committee of the Academic and Administrative Technology Committees. The review shall include cost benefit analyses. The subsequent funding and assignment of implementation should be a part of the committee's recommendation. University supported labs will contain the University standard software. Consideration should be given to the Academic Technology Committee's recommendation that some software such as Microsoft Office be considered for support as campus standard software.

Of the 13 recommendations identified above, the following items listed below should be regarded as very high priority in this section:

1. "Establishment of a permanent Instructional Software Fund through the Office of Academic Affairs." This includes a means to support adequately academic software at the discipline level needs to be developed and implemented.
3. "The campus software standard needs to be reviewed a minimum of every two years by the Technology Committees."
13. Establish a MacIntosh presence in NET Building labs capable of editing print, audio, and video.

Status as of March 2001

Progress:

All networked PCs at all campuses were recently upgraded to the most current, sufficiently tested, version of campus standard software. The software versions installed included:

- Microsoft Windows NT Service Pack 6.a
- Corel 2000 Service Pack 3
- Adobe Acrobat Reader 3.0.1
- Norton Antivirus 5.0
- Netscape Navigator 4.72
- PrefMod 2.0
- CCM Client
- Remote Host 32
- Java Development Kit 1.1.5
- Minisoft 4.42
- WinZip 6.3

Additional upgrades will be done on an as needed basis.

All requests for software installations in computer labs, made by lab managers to the Microcomputing Services Center (MSC), have been honored. It should be noted that many lab PCs, particularly those in the NET building, have very limited space available on the hard drive for additional installations. As a result, it may not be possible to fulfill all future requests, until this technical problem is resolved.

Instructional Services has offered 77 classes, attended by 234 employees, in campus standard software in the last calendar year. They have also made multiple offers to accommodate any special needs that any group may have.

All site licenses acquired through Computing and Telecommunications are current. They are, and always have been, routinely renewed at the beginning of each fiscal year.

Area of Concern:

- Establish a permanent instructional software budget line administered by the Vice President for Academic Affairs. This budget would be used to purchase major software and/or site licenses for software needed by various colleges, by individual programs, or by the entire academic community.
- Some software, such as MS Office Suite, should be considered for site licensing, in addition to the current campus standard. System wide availability of MS Office is recommended by many units on campus and is requested by students.

TOPIC: EMPLOYEE SKILLS DEVELOPMENT - TRAINING

Definition

Many jobs at NSU require the use of personal computers and the campus network (NSUnet) as a part of daily business. New employees often need basic PC skills and NSUnet training. Others could benefit from an ongoing program of more advanced training in a variety of subjects.

Problem

Northeastern has made a significant investment in computing and networking technology. The value received from the investment is directly related to the ability of employees to use the tools effectively. Many employees do not have adequate skills, or are oriented to environments that are different from that which exists at NSU. With proper training, employee productivity and services provided to students can be improved.

Consequence of Inaction

We face declining enrollments and competition from many sources. To continue to receive marginal benefits from our investment in human and technical resources weakens our competitive position. Activities that make heavy use of technology are most vulnerable.

Recommendations

1. Require all new faculty and staff members to complete a technology training program within the first month of their employment.
2. Establish minimum competency levels for all NSU employees and require proof of such competency. Those failing to meet the minimum levels would be required to complete additional training.
3. Develop a University technology training committee with representation from the faculty, administration, non-Computing and Telecommunications staff, and Computing and Telecommunications staff members. This committee could monitor the training programs and help keep NSU employees aware of training opportunities.
4. Provide the technology training programs to all NSU remote-site employees.
5. Expand the volume of computing resource books and materials available for employee use. Develop an institutional policy for "checking out" these resources, which is well publicized and easily understood. One individual should be designated to coordinate, implement and oversee this program. (see Progress March 2001)

Status as of July 2000

Progress:

Computing & Telecommunications offered 81 classes on Windows NT, Netscape, and Corel 2000. Fifty-five classes were cancelled due to lack of attending employees. Of the 26 classes held, there were 16 faculty attendees and 119 staff attendees for a total of 135 (8/30/99-5/9/00).

Positive progress has been made in providing appropriate training for faculty and staff. The greatest need is to identify who would most profit from the training and to provide a process to assure that those individuals obtain appropriate instruction.

Area of Concern:

No progress appears to have been made on the six recommended items.

Recommendation:

Responsibility for establishing competency levels, a technology training program, a technology training committee, and the institutional policy called for in this section should be assigned to the appropriate organization(s), possibly by the University Technology Council or by a joint meeting of the Academic and Administrative Technology Committees. Any organization(s) assigned responsibility should be required to submit written progress reports to the Chair of each committee at scheduled intervals.

Reassess items needing improvement:

1. "Require all new faculty and staff members to complete a technology training program within the first month of their employment."
2. "Establish minimum competency levels for all NSU employees and require proof of such competency. Those failing to meet the minimum levels would be required to complete additional training."

Note: These recommendations are not currently operational and may be impractical as stated. Accordingly, the following recommendations are presented in place of the existing statement in two.

- Those individuals who lack the minimum levels of competency should be strongly urged to take the training.
- Adjunct faculty and graduate assistants should have this training as an optional benefit.
- Technical training should be available the first of each academic year, and considered at other times as needed for new employees. (see Progress March 2001)
- The Office of Personnel, working with a University technology training committee (see three below) should organize and administer the process of identifying those needing such training.

The following items are of very high priority:

3. “Develop a University technology training committee with representation from the faculty, administration, non-Computing and Telecommunications staff, and Computing and Telecommunications staff members. This committee could monitor the training programs and help keep NSU employees aware of training opportunities.”

Note: The establishment of such a committee, appointed by the University Technology Council, would provide a vehicle to address most of the matters relating to technology training.

5. “Expand the library’s holdings of computing resource books and materials available for employee use.” (see Progress March 2001)

New recommendation of very high priority:

- NETNOTES is a great service, but information such as available computing resource materials could be added. A valuable resource for faculty would be a listing of all software available as well as the location of the software if it is of limited access. (see Progress March 2001)

Status as of March 2001

Progress:

Computing & Telecommunications offered 77 classes on campus standard software. Thirty-four classes were cancelled due to lack of attending employees. Of the 43 classes held, there were 10 faculty attendees and 224 staff attendees for a total of 234.

The library has acquired 183 titles on computers or computing information technology. More are on order. Faculty and staff may request the addition of titles to the collection. Everyone with a valid ID may check out books and software from the library and request Inter-library loans. One may also receive an OK-share card to borrow from other participating academic libraries.

All software titles, owned by the University and valued over \$500, are listed on [NetNotes](#) and are accessible by all faculty, staff, and students.

Recommendation:

Create a Center for Excellence in Teaching

- In order to ensure that the investment in the already established infrastructure for the use of technology is creatively and effectively used, it is recommended that a Center for Excellence in Teaching be established with the identification of mission, personnel, and budget. This unit would pull together all the elements that are important in supporting effective teaching: the use of technology in course development, artistic aspect of course design, effective use of design elements, considerations for learning styles, development of interactive teaching modules, training, assessment of effectiveness, etc. Personnel and expertise for such a unit already exist at the University, but the appropriate individuals need to be brought together into a cohesive and coordinated unit. The creative and effective use of technology would be one of the major elements, although not the only one, in the mission of this unit.
- Many faculty are unable to attend training opportunities because of conflicts with their teaching schedules. Continued coordination with faculty teaching schedules is needed.

TOPIC: TECHNICAL SUPPORT AND MAINTENANCE

Definition

Northeastern depends heavily on technology to function on a day-to-day basis. When individual computers, servers, or entire networks are down, productivity slows or ceases. Timely technical support and maintenance are imperative so employees can perform their jobs.

Problem

Employee job productivity and service to our students are being reduced, at times, due to technological constraints. Several factors which contribute to this are as follow:

1. Staff size of technical support group in comparison to the demand.
(see Progress July 2000 & March 2001)
2. Servers not working for extended periods of time. (see Progress July 2000)
3. Miscommunication and/or lack of understanding about manufacturer versus institutional maintenance plans. (see Progress July 2000)
4. Lengthy delays without hardware while waiting for service or replacement equipment.
(see Progress July 2000)

Consequence of Inaction

A diminished productivity by employees which creates poor morale and animosity. A snowball effect occurs as one person's inability to complete a task keeps several others from doing the same. We also face the issue of lowering our quality of service to our students during a time of declining enrollment.

Recommendations

1. Evaluate the size of the technical support and maintenance staff in relation to the demand and make adjustments where necessary. (see Progress July 2000 & March 2001)
2. Establish a University committee of technical support and maintenance with representation from the faculty, administration, non-Computing and Telecommunications staff, and Computing and Telecommunications staff members. This committee could adopt University standards for service hours, turn-around time, maintenance, and communication of said standards.
(see Progress July 2000 & March 2001)
3. Provide technical training for NSU employees and educate them on preventative maintenance techniques. Train and empower technically sound individuals in each building, college, or campus who could assist their colleagues in solving some of their technical problems. Provide financial incentives and recognition for these individuals.

Status as of July 2000

Progress:

Although attracting and retaining competent technical support and programming personnel is difficult, Computing and Telecommunications is currently staffed at a level fairly close to appropriate for their assigned responsibilities, except for Programmer/Analyst. Additional responsibilities, such as campus-wide support for an additional office suite or lap top computers, could change that.

Only two Novell servers remain on the network (Admin and Tape Backup). Users now log into a redundant NT domain and, as a result, "Servers not working for extended periods of time." has been eliminated as a problem.

NSU has become a Self-Maintainer of IBM warranty products. As a result, from the users perspective, manufacturer and institutional warranties are handled in the same manner.

A work order system, called Tracker, was developed by Computing & Telecommunications and implemented in the Microcomputing Services Center (MSC). Tracker and better use of loaner equipment allowed more efficient management of work order flow and a substantial reduction in repair delays. Particular attention is paid to eliminating long delays and recurring problems.

A customer satisfaction survey is being developed by the MSC, with the assistance of an Assistant Professor in the College of Business and Industry. This survey will be part of an on-going effort to measure customer satisfaction on multiple levels. The results of the survey will be publicly available on NETNotes.

The Help Desk, the University's single point of contact for technical assistance excluding distance education, is normally staffed from 7:45 a.m. to 5:15 p.m., on Monday through Friday. During all other hours, except for 2:00 a.m. to 6:00 a.m. every day, the Help Desk phone is forwarded to the Student Technical Consultant responsible for covering the NET labs. Calls to the Help Desk from 2:00 a.m. to 6:00 a.m. will go to voice mail and be answered the following business day. Normal business hours for full time staff members are 8:00 a.m. to 5:00 p.m.. Emergency technical support is available 24 hours of the day, on a call out basis.

Area of Concern:

Customer satisfaction should be a strong barometer of the success or failure of a customer service organization. Although 100% customer satisfaction may not be attainable, it is and will remain the goal. (see Progress March 2001)

Reassess items needing improvement:

There are current problems which need to be resolved relating to tracking PC's from purchase to delivery. A new inventory/tracking system needs to be established in order to verify accuracy of all records (inventory, maintenance charges, etc.).

Recommendation:

It is also the recommendation of this committee that the University adopt an IBM laptop standard. This would allow laptops to be supported in the same manner as PCs; with warranty and campus maintenance being handled by Computing & Telecommunications.

Status as of March 2001**Progress:**

To a large extent, staffing shortfalls in the Programmer/Analyst area have been corrected.

An ongoing customer satisfaction survey is being conducted and the results are posted on NETNotes and updated weekly. The results are being carefully reviewed to identify weaknesses and develop any necessary corrective actions, but the results are generally positive.

In addition to the regular Help Desk support listed in last year's progress, users may now get e-mail technical support 20 hours a day, 7 days a week, except major holidays by e-mailing their request to webhelp@nsuok.edu. This increase in hours of service has satisfied the needs expressed in Recommendation #2 above.

TOPIC: PERSONAL COMPUTER REPLACEMENT PROGRAM

Definition

Personal computers for use in campus labs and offices are being purchased at a rate of about 400 each year. Many of the new systems are used to expand the overall number of computers on campus while roughly 200 replace aging or obsolete systems. As the total number of systems on campus increases, future funding will need to be increased to replace obsolete personal computers.

Problem

Many new software products require minimum hardware performance capabilities in order to operate. The minimum requirement continues to escalate and obsolete personal computers are one result.

Consequence of Inaction

Without an aggressive upgrade program the productivity of many users would eventually decline as their personal computer could no longer communicate with central computing systems and new PCs, nor run new or innovative software for task automation. Additionally, a wide range of old and new PCs would require many versions of operating systems and application software and would increase support and maintenance costs.

Recommendations

Hardware

1. Three-year Replacement Cycle for all University PC's and related hardware. (see Progress July 2000 & March 2001)
2. Each faculty member should have a state of the art, fully equipped PC which includes a minimum of CD ROM, modem or network connection, sound, high-capacity storage device, and printer. Laptops should be available where appropriate and necessary. (see Progress July 2000 & March 2001)
3. Revisit campus standard policies regarding operating systems. (see Progress July 2000)
4. Access to a computer or docking stations for every student in all classrooms.
5. Provide UNIX to the Library and for teaching in Science (see Progress July 2000)
6. Up-to-date computers (both IBM and MAC) in the Library (ADA compliant)
7. Department or College access to networked laser or large-format printer, read/write CD ROM, scanning and imaging equipment, graphic design and printing capability.

Maintenance

1. Maintenance support by e-mail. (see Progress July 2000)
2. Additional full-time maintenance support staff. (see Progress July 2000 & March 2001)
3. Loaners or rapid off-the-shelf replacement of standard parts which fail frequently. (see Progress July 2000)
4. Clarification of support for satellite campuses. (see Progress July 2000 & March 2001)
5. Extended hours of service. (see Progress March 2001)
6. Effective warranty and maintenance program. (see Progress March 2001)
7. Full-time computer support person, employed by Computing and Telecommunications, resident in each college.

Status as of July 2000

Progress:

Hardware:

One hundred seventy-three new PCs were purchased in fiscal year 2000.

Each new PC ordered exceeds the recommendation of this section.

Windows NT has been adopted as the campus standard operating system and installed on virtually every networked PC. The idea of migrating to Windows 2000 is explored in the, “**SOFTWARE, SITE LICENSES, COPYRIGHTS**”, section of this document.

The recommendation to provide UNIX to the Library and for teaching in science has been accomplished.

Maintenance:

Maintenance support for web based students is available at webhelp@nsuok.edu. On-campus, non-web based students should telephone the Help Desk.

A fairly complete set of off-the-shelf replacement parts, including, monitors, hard drives, keyboards, memory and other frequently failed parts continues to be maintained on campus. IBM is committed to a one day turn around on warranty replacement parts.

A full time Computing & Telecommunications employee is located on the NSU-M campus to handle their technical support and maintenance needs. A Student Technical Consultant is sent to NSU-Tulsa once a week. Additional support is dispatched to either campus, on an as-needed basis.

Area of Concern:

The University owns over 1,900 computers. Of those, it is estimated that at least 100 are scheduled for surplus, but have not yet been picked up. PCs would have to be replaced at a pace of about 615 per year to stay on the three year replacement cycle. Of the 1,847 PCs in inventory, after deducting 100, 173 are less than one year old (9.4%), 320 are between one year and two years (17.3%), 343 are between two years and three years (18.6%), 488 are between three years and four years (26.4%), and 523 are over four years old (28.3%). This assumes that the 100 due to surplus are all in the over 4 years old category. In order to get on a three year replacement pace, 1,011 PCs (54.7%) will need to be replaced. Estimating a cost of \$1,700 per PC, the current expenditure for PC replacement at the recommended pace would be \$1,718,700 and an ongoing annual cost of \$1,133,900 based on 2000 PC's.

Recommendation:

Hardware

The following items currently listed need to be placed in very high priority:

1. “**Three-year** replacement cycle for all University PC’s and related hardware.”
(see Progress July 2000 & March 2001)

Note: Within the financial constraints of the institution a commitment to a total replacement cycle of three years should be the goal of the University.

3. of Multimedia Classrooms– to be moved to this section with revised text as follows:

As faculty computers are upgraded, consideration should be given to increasing the number of laptop computers which could be used in classrooms, home, and off-campus teaching sites, as well as faculty offices.

Reassess item needing improvement:

6. “Up-to-date computers (both IBM and MAC) in the Library (ADA compliant).”

Note: This recommendation should be rephrased and expanded thus:

State of the art computers and peripherals (both IBM and MAC) in the Library and in academic units. Adaptive assistive devices be available for ADA compliance.

Status as of March 2001

Progress:

Hardware:

Two hundred and fifty-four replacement PCs have been purchased by the University to date (03/20/01) in fiscal year 2001. Each new PC ordered exceeds the recommendation of this section.

Maintenance:

The NSU-BA personnel committee has recommended that one Coordinator, two Network Technicians, and seven Student Technical Consultants to handle the technical support and maintenance needs of that campus.

The Help Desk, the University's single point of contact for technical assistance excluding distance education, at NSU is normally staffed from 7:45 a.m. to 5:15 p.m., on Monday through Friday. During all other hours, except for 2:00 a.m. to 6:00 a.m. every day, the Help Desk phone is forwarded to the Student Technical Consultant responsible for covering the NET labs. Calls to the Help Desk from 2:00 a.m. to 6:00 a.m. will go to voice mail and be answered the following business day. Normal business hours for full time staff members are 8:00 a.m. to 5:00 p.m.. Emergency technical support is available 24 hours of the day, on a call out basis.

All PCs are now purchased with a three year warranty.

Area of Concern:

The rate at which replacement PCs are being purchased is dropping, not accelerating. As of this writing NSU has 1,925 PCs listed in inventory. Of them, 1,215 (62.7% - up 8% over last year) are more than three years old.

Computer and peripherals upgrades need to continue in a regular cycle.

- For most applications the continuation of a three year cycle is a recommended goal for the University.
- Upgrade of some computers, and for some applications, may be temporarily postponed with a memory upgrade, thus allowing more upgrades for "power applications and users."
- Consider level of use: some applications may need more powerful computers, or the purchase of brands other than IBM.
- Make it an option to purchase laptop computers, instead of desktop PC's, for faculty teaching at multiple sites and for those using classrooms which lack appropriate equipment
- Coordinate upgrades of faculty computers with those in classrooms and labs. Some classrooms may need resident computers, some may be served by faculty using laptops. Arrive at a practical and cost effective mix and keep the installation/upgrades of classrooms and labs as close to the capabilities of faculty computers as possible.

TOPIC: MULTIMEDIA CLASSROOMS

Definition

Classrooms equipped with multimedia technology are an essential component of current teaching methodology. Instructors are using computer/projection equipment, digital audio and video, and Internet webpages as integral components of their classroom presentations. Thus, classrooms must be equipped with the necessary multimedia hardware and wired for Internet and Intranet connections. There are a limited number of rooms in the NET Building and Seminary Hall (2) currently equipped for multimedia presentations. In addition, several colleges have invested in mobile multimedia equipment for classroom use.

Problem

The current multimedia rooms are booked solid during all prime time class hours and most non-prime time slots. The mobile units are in high demand and booked several weeks in advance. While there is increased interest among the faculty in utilizing multimedia approaches in their teaching, many are unwilling to commit the large time investment necessary to develop multimedia-enhanced courses without the assurance that there will be appropriately equipped classrooms available on a continuing basis.

Consequence of Inaction

Current multimedia classrooms will be over booked and there will be insufficient mobile multimedia units to meet the increased demand. Faculty who have developed multimedia classes will be frustrated and other faculty will be hesitant to devote time to developing multimedia classes. In addition, many new faculty applicants have had access to multimedia equipped classrooms in their graduate institution and may be reluctant to consider teaching here without it.

Recommendations

1. Equip each college with at least one additional multimedia-capable classroom within three years. The design of each classroom should have direct and extensive input by faculty who will use the facility. The classroom should have as a minimum the following equipment:
State-of-the-art, networked microcomputer (with sound, CD-ROM, and zip drive)
 - a. Document camera
 - b. Ceiling-mounted RGB projector and large screen
 - c. Window coverings to adequately darken the room
 - d. Capability to show video tapes (preferably stand-alone or, otherwise, via "Synergy")
 - e. Software for presentations.
 - f. Discipline-specific software as needed by the college
(see Progress July 2000)
2. Provide additional technical and instructional design support. (see Progress July 2000)
3. As faculty computers are upgraded, consideration should be given to replace a limited number with laptop computers which could be used in classrooms, home, and off-campus teaching sites, as well as faculty offices. (see Progress July 2000)

4. Over five-year period, continue to provide additional multimedia-capable classrooms as outlined in recommendation #1 until the demand is met in each college
5. Provide a network connection at each classroom desk.
6. Provide mobile multimedia units to meet faculty demand within each college.
7. Network connection in all classrooms and laboratories. (see Progress July 2000)

Status as of July 2000

Progress:

Two new multimedia classrooms were included in the Optometry Annex addition. The equipment exceeds the recommendations in this document.

Unlimited technical assistance and design support is and will continue to be provided by Computing and Telecommunications (C&T) anytime it is requested.

A limited number of laptop computers have been purchased.

Network connections have been provided in all classrooms and laboratories.

Area of Concern:

There does not appear to be a systemic plan for adding an additional multimedia-capable classroom to each college within the next three years, additional multimedia-capable classrooms as outlined in recommendation one until the demand is met in each college within the next five years, or provide a network connection at each classroom desk.

Recommendation:

C&T develop a plan that includes cost and an implementation guidelines for recommendations one, four, and five and submit it for approval to the University Technology Council. (see Progress March 2001)

The following item currently listed needs to be placed in very high priority:

1. The current recommendation needs to be replaced with following text.

Equip each college with at least one additional multimedia-capable classroom within three years. The design of each classroom should have direct and extensive input by faculty who will use the facility. The equipping of multimedia labs will be according to a “state of the art” networked facility, with much of the latest available technology including a projection system. These labs may include specialized equipment to support specific courses and will serve both as classrooms, and for the purpose of special presentations. The equipment upgrades of these labs will be in accordance with NSU policy. An annual assessment will ensure the incorporation of the appropriate current

technologies. Recommended equipment purchases for the labs will be based on the needs of the academic unit, and will be made by the academic unit.

3. The current recommendation needs to be moved to “Topic: Personal Computer Replacement Program,” revised, and placed in highest priority.

5. The current recommendation needs to be replaced with following text.

Provide a network connection at each desk in classrooms to be designated.

7. The current recommendation needs to be replaced with following text.

Complete the process of Network connections in all classrooms and laboratories.

Status as of March 2001

Progress:

The plan referred to in last years recommendation is currently being developed and should be ready for submission to the University Technology Council before the end of April. It is estimated that each classroom equipped with multimedia equipment will cost about \$20,000, depending on specific requirements.

In the process of upgrading classroom equipment, provide more classrooms with multimedia capabilities, with the minimum equipment being a resident projector.

TOPIC: CAMPUS COMPUTER LABS

Definition

Evaluate the current campus computer labs and investigate meeting the needs for additional facilities, multimedia technology, discipline-specific software, printing, and peripherals. Investigate methods for improving existing labs.

Problem

Recent years have seen a dramatic improvement in the number and quality of teaching and student computer labs. Generally well-equipped, networked labs are available in the NET, Practical Arts, Science, and Education buildings; although demand for these facilities outpaces availability. Smaller, more specialized (and less well-equipped) labs are also available in Seminary Hall (writing lab), Optometry, and Science (physics and chemistry). The Library, rather than a traditional lab, has a limited number of computers for student use in various locations throughout its facility. There remains, however, many unmet needs particularly in Arts and Letters, the Library, and Social and Behavioral Sciences which are almost completely unserved with computing labs designed for their specific requirements. Limited , discipline-specific software, inadequate printing capabilities, and the lack of specialized peripherals are major deficiencies in the current system.

Consequence of Inaction

NSU students will be at a disadvantage when faced with competition from other higher education institutions who are able to provide quality computer labs. Faculty are unwilling to commit to the large time investment necessary to develop multimedia-enhanced courses without the assurance that an appropriately equipped classroom will be available for their class on a continuing basis.

Recommendations

1. Within three years, each academic college, and the Library, should have at least one computer lab that could be used as a teaching lab and double as a general-access lab when not scheduled for classes. Within five years, each college should have at least one general-use student lab in addition to its teaching lab. The design of each classroom should have direct and extensive input by faculty who will use the facility. Each lab should be equipped with the following:
 - a. 30 (minimum) state-of-the-art, networked microcomputers that are multimedia-capable (sound and CD-ROM) (see Progress July 2000)
 - b. Discipline-specific peripherals and software as needed by each college (see Progress July 2000)
 - c. Networked laser printer
 - d. Scanner
 - e. An instructor's console with state-of-the-art microcomputer and built-in monitor (see Progress July 2000)
 - f. Document camera
 - g. "Link System" for simultaneous instructor-control of all computers
 - h. Ceiling-mounted RGB projector and large screen (see Progress July 2000)
 - i. Window coverings to adequately darken the room

- j. Campus standard software (see Progress July 2000)
 - k. NT 4.0 or latest version workstation software to maintain standardized configurations in each lab (see Progress July 2000)
2. Computers in these Labs should be upgraded every **two** years. (see Progress July 2000)
 3. Labs need to be staffed from 7:30am to 11:00pm by at least a well-trained student assistant and should be supervised by a full-time technician (one supervisor per every two or three labs) who has been trained in both the hardware and software specific to the facility.
 4. Provide additional teaching and/or student computer labs in colleges where demand has not been adequately met. (see Progress July 2000)
 5. Equip the instructor's computer in each teaching lab with zip drives so materials can be readily transported between faculty offices and labs (or alternatively provide network file servers with large amounts of disk space for each faculty member). (see Progress July 2000)

Status as of July 2000

Progress:

All PC's were replaced with new IBM 300 GL PCs, operating at 450 Mhz with 96 MB of RAM and 6.4 GB hard drives in Practical Arts 128.

The RAM in the remaining PCs in the Practical Arts labs were upgraded. PCs in room 126 now have 80 MB, room 129 have 96 MB, and room B8 have 64 MB.

The RAM in all NET lab PCs has been upgraded from 32 MB to 64 MB.

All labs that are connected to the network have been converted to an NT Operating system and upgraded to the latest version of campus standard software.

All labs that are connected to the network have had Comprehensive Client Manager (CCM) by On Technology installed. This software will provide greatly enhanced efficiencies in the installation, maintenance, and management of labs.

Two new, "state of the art," teaching labs have been installed in the Optometry Annex. Room 114 has 42 seats and room 113 has 29 seats. Equipment includes a lectern, video document stand, instructor's PC, projector, DVD player, VCR, CD/cassette player, video scaler, control interface, matrix switcher, audio system, and both labs interconnected for audio and video with the Optometry auditorium.

A 20-work station library instruction facility was installed in Library 105.

A 30-seat testing lab is being installed in Library 118A.

Funding has been requested to replace all PCs in the NET labs.

500 MB of network file space is available for each faculty member for file transfer or storage. This space is redundant, fault tolerant, and backed up.

Area of Concern:

There is no systemic plan for the replacement of PCs in existing labs at two year intervals, the addition of new labs, or the expansion of technical support staffing.

Recommendation:

Without a plan, it is improbable that each academic college and the library will have at least one computer lab that could be used as a teaching lab and double as a general access lab within three years and separate labs for each function within five years of the writing of this document. Although no time line was given for it, it does not appear that any progress has been made in the area of increased staffing of the labs.

Responsibility for planning, funding, and implementing these recommendations should be assigned to the appropriate organization(s), possibly by the University Technology Council or by a joint meeting of the Academic and Administrative Technology Committees. Any organization(s) assigned responsibility should be required to submit written progress reports to the Chair of each committee at scheduled intervals.

The following item currently listed needs to be placed in very high priority:

1. The current recommendation needs to be replaced with following text.

Within three years, each academic college, and the Library, should have at least one computer lab that could be used as a teaching lab and double as a general-access lab when not scheduled for classes. Within five years, each college should have at least one general-use student lab in addition to its teaching lab. The design of each classroom should have direct and extensive input by faculty who will use the facility.

The equipping of such labs will be according to a “state of the art” networked facility, with much of the latest available technology including a projection system. These labs may include specialized equipment to support specific courses and will serve both as classrooms, and for the purpose of special presentations. The equipment upgrades of these labs will be in accordance with NSU policy. An annual assessment will ensure the incorporation of the appropriate current technologies. Recommended equipment purchases for the labs will be based on the needs of the academic unit, and will be made by the academic unit.

2. The current recommendation needs to be replaced with following text (with altered text highlighted).

Computers in these labs should be upgraded every **three** years.

New recommendations of very high priority:

In the NET building, rooms 207 and 307 there are fundamental technical problems which must be corrected. These are as follows:

- Students cannot see instructors, and instructors cannot see students. In addition, students cannot clearly see the screen. Because of this situation, it is recommended that new tower computer units be mounted below the tables and monitors either be recessed or mounted under the desk using transparent surfaces.
- It is currently impossible to control and monitor what is on the computer screen. Accordingly, it is recommended that a system be installed that will allow instructors to control activity on student computers.
- It is recommended that speakers' podiums be installed, which are equipped with monitors and controls.

We understand that efforts are underway to establish a means whereby the original configuration of computers in the labs can readily be restored. We consider it a high priority that this technique be fully implemented.

Status as of March 2001

Recommendation:

A statistical compilation of the usage of all computer teaching/lab facilities (including C&T labs) is needed. A one month compilation in Fall 2001 could tabulate the use of each facility for teaching class hours and person hours for general open student use. Tabulation of printer usage is also suggested. It is suggested that a committee be appointed by the Vice President for Academic Affairs to design and conduct this survey.

In conjunction with the statistical survey, a user satisfaction survey should also be administered. The committee suggested above could perform this task.

Planning of new labs or updating of current labs at all campus sites need to involve faculty who are experienced users of these facilities.

TOPIC: INFORMATION ACCESS AND PUBLIC PRINTING

Definition

Evaluate the current information access and public printing needs for student use and the general public.

Problem

The lack of a University-wide policy regarding public printing is clearly a recognized problem on campus. The policies for public printing should be uniform across campus.

Consequence of Inaction

This problem is immediate, growing, and a deterrent to providing responsive services to the needs of our students and the general public.

Recommendations

1. A task force representative of various constituencies of the University be appointed to develop policy recommendations for public printing.
2. Issues concerning public printing be addressed as part of the plan as follow:
 - a. Define the user population for public printing: students, the general public, etc.
 - b. Identify where printing is to be made available: dorms, library, University Center, computer labs, etc.
 - c. Establish the financial process for supporting public printing: fully subsidized, partially subsidized, fully borne by the users, etc.
 - d. Establish the budgetary process for the funding and management of public printing.
 - e. Identify the equipment and software for the printing process as well as for the associated financial transactions.
 - f. Identify the method for administering public printing: Centralized, partly centralized, administered by the unit close to the users of printing.
 - g. Identify staffing needs for the administration of public printing.

Special notes regarding the library:

As a part of its mission to both the NSU community and to the general public, the Library provides access to all library resources, be it print or electronic, free of charge to the user. However, as an added value service, the Library currently provides copying capability for the print collection at a charge to the user. In order to be fair to both the users of print and electronic materials, the same financial arrangements must be made for printing and copying. Otherwise, those users who need print materials may be penalized.

The Library also has obligations to the general public. Because of this situation, the mechanism for print charges should not be NSU specific, i.e. another method besides NSU I.D. card should be made available.

Status as of July 2000

Recommendation:

The following item currently listed needs to be placed in very high priority:

Responsibility for establishing the task force to develop the institutional policy called for in this section should be assigned to the appropriate organization(s), possibly by the University Technology Council or by a joint meeting of the Academic and Administrative Technology Committees. The task force should initially consider the evaluation and testing completed by C&T. Any organization(s) assigned responsibility should be required to submit written progress reports to the Chair of each committee at scheduled intervals.

New recommendations of very high priority:

- While it is recognized that students need capability of printing items, a system must be established to control costs for the University. Possibly students could be allocated a printing quota, and charged for each page over their personal limit.

TOPIC: DOCUMENT IMAGING

Definition

Document Imaging is storing and retrieving electronic pictures of paper documents in a computer system similar to the way documents are manually stored in filing cabinets. There are two methods for adding documents to an imaging system. The first method is scanning, which makes a digital copy of the document and places it on magnetic disk, much like a copy machine copies a document onto paper. The second method is the COLD process which takes a computer report and rather than sending the report to a printer it is filed in the Imaging System. After the images have been stored, authorized individuals have the ability to access these pictures through the use of the imaging software via the campus network.

Problem

As the University grows and becomes more complex, the volume of document filing and retrieval will also grow and become more complex. Technology has provided a more efficient means of filing and storing paper documents. Northeastern State University has a computer network which will allow the technology to be accessible to all authorized users without regard to their physical location. This will be like having a filing cabinet that is accessible from anywhere on campus, at any time, to any person who has the proper authorization.

Consequence of Inaction

If the imaging project is not accomplished, documents will continue to be printed, filed, retrieved and archived as we currently do and the University will continue to get farther behind in technological processes.

Recommendations

The Document Imaging concept should be expanded to include all appropriate campus units. The project has begun in the Office of Admissions & Records and Office of Business Affairs (OBA) where three areas within the office have committed to image documents. These three areas are Payroll/Personnel, Accounts Receivable/Collections and Accounts Payable/Purchasing. It is a goal of this project to allow all persons with needs to view documents in these areas access to do so. This process will allow authorized personnel the capability to view invoices, purchase orders, purchasing bid documents, accounts receivable documents or personnel records.

Status as of July 2000

Progress:

Use of the system has been expanded to include the Perkins Loan area of OBA and other areas within OBA have expanded their use of the system. Personnel with a demonstrated need have been given access to the system. Difficulties have been encountered by the vendor (Critical Technology), in converting from the present system to Acorde, the upgraded version. Expanded use of the system by other departments has been put on hold until Acorde is available.

Area of Concern:

Because the upgraded system is not yet fully functional, the system's benefits cannot be expanded to other departments.

Recommendation:

The implementation of the new version should be completed and expansion plans pursued in any department where it is cost justified.

Status as of March 2001**Progress:**

Technical problems are still being experienced by the vendor (Critical Technology) in converting the present system. As of this writing (3/29/01), the vendor is on the Tahlequah campus and believes the technical problems may be resolved as soon as tomorrow.

TOPIC: IDENTIFICATION SYSTEM

Definition

We use social security numbers to identify each student and employee at NSU. This identification number is used for all University transactions including meal cards, receipts, class schedules, even mailing labels.

Problem

By using social security numbers on every University transaction, the numbers could become accessible to outside parties. Confidential information can be accessed by obtaining a social security number.

Consequences of Inaction

Continued use of the Social Security Number could result in a breach of confidentiality. Confidential information may inadvertently be released to a third party by Northeastern.

Recommendations

The committee recommends providing an alternative Personal Identification Number (PIN) for use by students and employees. The new PIN will be used in all possible transactions and use of the Social Security Number will be eliminated. It is recognized that Social Security Numbers will remain an integral part of student and employee records.

Status as of July 2000

Progress:

A PIN is now assigned to every student. By default, it is the student's birth date in a MMDDYY format. A student can change this PIN at Admissions and Records, the Microcomputing Services Center, or any of the various kiosks located across campus. It is strongly recommended that the student change the PIN from the default value.

Recommendation:

The replacement of the social security number as an identifier available to unauthorized personnel will be resolved as a part of the implementation of Comprehensive Integrated Software

The following item currently listed needs to be placed in very high priority:

“The Committee recommends providing an alternative Personal Identification Number (PIN) for use by students and employees.” (See Strategic Technology Plan for remainder of text).

TOPIC: CAMPUS WEB SERVER

Definition

Two Internet accessible web servers are in use at NSU. They are the official NSU server and another intended for faculty and student use. Information that is of general interest to the campus community but not appropriate for Internet distribution should be available on an internal (intranet) web server. The operation and use of these web servers should be governed by clearly defined and published policies.

Problem

The original web server policy established an approval process for information posted on the official NSU page; however, many individuals and organizations have posted materials on a second server. The second server was intended to be used by academics for course related web pages, materials and communications. Policy regarding the use of the web servers is unclear. Original policy precluded individual student or employee pages. The academic server is used for both at this time. The academic server is outside the firewall, which requires that all information pass through the firewall when accessed from on-campus. Over 70% of the current traffic originates on-campus. Neither server would be suitable for an Intranet web page due to their locations outside the firewall.

Consequence of Inaction

As class related material is added to the academic server during the next few years it will generate increasing and unnecessary traffic through the firewall. This traffic will compete with applications that require “outside” services and eventually degrade response-times through the firewall. Internal communications and the exchange of information will be limited to the methods currently in use.

Recommendations

1. A review of existing web server policies and procedures. The purpose of both the academic and official NSU server should be reviewed. A single comprehensive set of guidelines should be established and published regarding the use of NSU supported web servers.
2. A new Intranet server should be installed. The Internet server(s) should be used to publish information of general interest to the campus community and course related materials. Individual departments would be responsible for using a basic format and creating and maintaining the material they wish to make available. Policies and guidelines for the material could be less restrictive than those for the official NSU page.
3. The need for additional internal servers to support course related materials should be addressed annually.

Status as of July 2000

Progress:

A licensing agreement with Blackboard.com, for web-based courses, was arranged by the Office of Distance Learning. A fairly robust IBM Netfinity server has been purchased and installed by Computing and Telecommunications to accommodate the Blackboard.com software.

The academic web server has been moved inside the firewall.

An IntelliStation, dual processor, P400 has been installed and currently houses NETNotes, NCA web pages, and United Parcel Service (UPS) tracking system.

Area of Concern:

A review of existing web server policies and procedures has not been conducted and a comprehensive set of guidelines has not been established and published, regarding the use of NSU supported web servers.

Recommendation:

The existing World Wide Web committee should conduct a review of existing web server policies and procedures and establish and publish a single comprehensive set of guidelines, regarding the use of NSU supported web servers. The results should be submitted to the University Technology Council for approval.

TOPIC: SECURITY SYSTEMS

Definition

A coordinated approach to electronic access, video surveillance and other types of security systems for campus facilities is needed. Systems designed to work with typical magnetic strip based campus card systems are available from multiple sources. New security devices installed on campus should be evaluated to ensure compatibility with a centrally monitored, campus-wide system.

Problem

Protection for the campus community and University resources is an ongoing concern. Several different products from multiple vendors are in use on campus today. There are compatibility problems with central monitoring hardware and software, and with existing cabling systems.

Consequence of Inaction

Continuation of an uncoordinated approach to campus security and a campus-wide card system will result in additional expenditures for incompatible hardware and software. If central monitoring and management is desired, many of the security systems will need to be replaced.

Recommendations

1. Form a University-wide committee to develop the standards and procedures for security systems, hardware, and software.
2. The Campus Card system should be considered when evaluating security systems (see Campus Card proposal).
3. Employment of personnel with the appropriate license to install, monitor, and/or maintain security systems.

Status as of July 2000

Progress:

A committee of academic and administrative staff from the NSU and NSUM campuses was formed to evaluate current practices. Existing systems were inventoried and current practices, policies, and procedures were evaluated. The recommendations of that committee were published in a document titled, "Campus Security Systems Current Status and Recommendations May 1999".

Area of Concern:

Most of the recommendations of that committee have not been implemented, including the formation of a permanent committee and employment of personnel licensed to install, monitor and/or maintain security systems.

Recommendation:

Accept the Campus Security System recommendations and continue to implement in the most effective manner possible.

TOPIC: CAMPUS CARD

Definition

Evaluate the current Diebold ID system and investigate alternative systems. A committee will be appointed to provide a written report to the Administrative Technology Committee that adequately describes the advantages and disadvantages of changing systems.

Problem

Currently the University has a Student ID system that has worked well for the last 11 years, but during this time numerous companies have entered into the University ID market. These companies claim to have better systems for less money.

Consequence of Inaction

If we do not seriously look at the alternatives, we may not be providing the best possible services for the best price.

Recommendations

Tremendous technological advances have occurred in University ID systems over the last several years. Currently we have a system that provides the following functions: on-campus student meal plans, off-campus student meal plans, ACCESS, entry to the Fitness Center, bookstore charges, line of credit, IDPO tracking, conferences, ITESM book accounts, student voting, entry to athletic events, faculty/staff campus charges. Although over the last 11 years the current system has received numerous enhancements and has served the University well, a serious organized review of this process is needed.

Status as of July 2000

Progress:

A committee, including both academic and administrative personnel, has been created to evaluate the current Diebold ID system. This committee was utilized to respond to immediate concerns that resulted in the replacement of the ID production system to allow production of ID's at satellite locations and the upgrade of the existing Diebold Series 5 to the Diebold Gen6. The upgrade to the Gen6 is considered to be a stop-gap measure, providing the leeway to allow for a more thorough investigation of the campus card market.

Area of Concern:

Progress toward a comprehensive look at the current campus card market stopped while peripheral and temporary systems were implemented.

Recommendation:

The campus card committee should be reconvened, with the focus being the determination of advantages and disadvantages of changing systems and the production of a written report.

TOPIC: TIME & ATTENDANCE SYSTEM

Definition

An automated time and attendance system allows hourly and non-exempt employees to clock-in and out from various work locations.

Problem

The current system has multiple problems which the Computing Center and the Office of Business Affairs cannot support. In addition, the system does not meet the needs of user departments. For example, there are problems associated with dates, employee status, and time periods. Also, once time sheets are printed from the PC based system the time documents must be manually entered three times: into the payroll system, leave system, and a spreadsheet.

Consequences of Inaction

An inordinate amount of time will continue to be spent maintaining an ineffective system. Departments may revert to the old method of manual time sheets and departments that are not utilizing the time system cannot be persuaded to adopt a system with known problems.

Recommendations

1. A time and attendance system be obtained and loaded on the University network to allow employees to clock in and out at PC workstations or time keypads.
2. The system should allow supervisors to easily run time sheets and reports of hours and variances and produce a time batch that will be loaded directly into the payroll system.

Status as of July 2000

Progress:

None

Area of Concern:

The current system is a DOS-based system that uses an antiquated method of data handling. Data is consistently lost when PCs malfunction or power fails. The system currently requires a dedicated PC which must remain active at all times. The clock/calendar must be reset on a weekly basis. If this is not done, all time entries made prior to correction must be manually repaired.

It is also not flexible enough to keep abreast of changes required by the Office of State Finance. As reporting requirements change, more and more manual effort will be required until the system provides no benefit. Because of the nature of the current software and hardware, no additional enhancements can be made.

Recommendation:

Item three and four should be added to the original recommendation:

3. This system should be flexible enough to allow hours to be charged not only to a department but also to a specific task within that department for project planning and tracking.
4. The system should be able to interface with campus security systems and to mainframe systems to provide emergency tracking of employees and class attendance for students.

As a stop-gap measure, a commercially available software package should be implemented in all departments. An effort should be made to select a package that will interface with Buzzeo, but that should not be a requirement. It is not intended to electronically interface with legacy systems.

TOPIC: ALUMNI E-MAIL FOR LIFE

Definition

Electronic mail has evolved into a primary means of communication worldwide. As a communication vehicle, e-mail has several advantages over other options, like postal services. E-mail is virtually instantaneous; it is inexpensive; and it simplifies the receivers' task in responding. NSU's need to communicate on a regular basis with its growing number of alumni. NSU should provide alumni and students with unique, permanent, portable e-mail addresses.

Problem

Currently, NSU does not provide portable e-mail addresses to and alumni. Additionally, NSU does not have e-mail addresses on a significant number of alumni.

Purpose

Providing alumni with unique e-mail addresses that would accompany them for life could establish a permanent link between NSU and former students, and enable timely, efficient and practical communication.

Benefits

NSU would be able to more effectively and efficiently communicate with its alumni. Communication-related expenses, like postage and long-distance service, could be reduced. NSU could quickly and efficiently notify selected alumni of events and news that were significant to them. For example, alumni in a certain geographic area could be informed about the Redmen playing nearby athletic playoff games scheduled with very short time frames.

Recommendations

C&T, with assistance from the Office of Development, should develop a plan that includes projected costs and implementation guidelines for assigning alumni and retired employees a new NSU e-mail address that they will retain for life. This plan should then be submitted for approval to the University Technology Council.

Cost/Resources

It is estimated that this effort could be accomplished for a one time cost of \$4,000 per 10,000 users and two months to implement. Additional, consistent expenditures can be expected in approximately five years.

TOPIC: COMPREHENSIVE INTEGRATED SOFTWARE

Definition

NSU's departments operate both independently and interdependently. The current competitive market requires periodic review, implementation and enhancement of software to increase operational efficiency and to meet future needs or requirements.

Problem

Federal and state laws, regulatory agencies and changing business needs require constant modification to the computer software being used to provide services. The current software is very complex and difficult to change and does not always adequately support certain business, service and reporting functions.

Consequence of Inaction

If the software remains static, future business decisions could be based upon what the software can accommodate rather than what is best for the University.

Recommendations

By replacing or enhancing existing software, NSU will be able to better provide a full range of student, employee, alumni and business services. Enhanced software will provide new methods of accessing information, including the World Wide Web, new reporting capabilities, and new services, allowing NSU to respond to the rapidly changing environment.

TOPIC: DEGREE AUDIT

Definition

An automated degree audit system would provide users with the information needed to identify requirements of a degree program and to formulate a plan for meeting them. In addition, the system should provide transfer course articulation information. It has been identified as one of the highest short term priorities by the Programming Priority Committee and remains the highest yet to be addressed.

Problem

This service is currently provided through a limited and disjointed manual process. Students may receive inaccurate and/or untimely information that affects enrollment, graduation and financial assistance.

Consequence of Inaction

Significant human resources will continue to be spent maintaining a limited process which produces a less than satisfactory product.

Recommendation

Multiple software packages that perform this function are available on the open market. The market is well established and the products are in use at many universities. A Request For Proposal should be developed by C&T, with input from users.

TOPIC: UPGRADE OF FINANCIAL AID MANAGEMENT SYSTEM

Definition

NSU's financial aid management system supports the processing of over 11, 000 financial aid applications each academic year. Efficient and timely processing of financial aid and scholarships plays a significant role in NSU's ability to attract and recruit new freshman and transfer students. The availability of financial aid also allows current students to remain continuously enrolled and attain their goals of graduating with a degree from NSU.

Problem

NSU's current financial aid management system was originally developed in the early 1980's. Over the years, numerous enhancements to the system have been made to keep NSU in compliance with changes in the federal financial aid delivery system, changes in regulations, and to support internal changes in the way NSU delivers financial aid available to its students. Sweeping technological changes have occurred within the financial aid delivery industry, especially since the advent of the internet, and NSU's financial aid management system has not evolved in a way to keep up with the technological advancements which are becoming standards within the industry.

Consequences of Inaction

All of the players involved in the delivery of aid to students have implemented internet processes to improve efficiency in the delivery of financial aid to students. Many of these processes now require interaction and sharing of data between vendor internet software, the NSU financial aid management system, and the student. Changes in student expectations, how quickly students receive information, and how readily students can access services have created demands that challenge the abilities of the current NSU financial aid management system. The system must be enhanced to keep pace with the technological advances that have become common place for delivering aid to students.

Recommendations

Staff from Student Financial Services, Business Affairs, and Computing and Telecommunications should immediately begin work to examine current financial aid business processes and develop a list of priorities for upgrading the NSU financial aid management system.

TOPIC: HUMAN RESOURCES

Definition

A complete human resource package is sought that includes, but is not limited to, complete payroll, personnel demographics, position control, etc.

Problem

The current system is comprised of multiple, manually compiled databases, with limited reporting and interaction. The system is not flexible and has reached capacity on the benefit / deduction fields.

Consequence of Inaction

A considerable amount of duplication of effort and error reconciliation will continue between Budgeting, Payroll, Personnel, Accounts Payable, Academic Affairs and other departments.

Recommendation

Multiple software packages that perform this function are available on the open market. The market is well established and the products are in use at many universities. A Request For Proposal should be developed by C&T, with input from users.

TOPIC: INFORMATION DELIVERY

Definition

NSU needs to be able to provide information from various systems to employees, students, various state agencies, vendors, and many others. Information delivery allows dissemination of University approved information. Enhanced software will provide new methods of accessing information and reporting capabilities, including the World Wide Web, allowing NSU to respond to the rapidly changing environment.

Problem

Business Intelligence (BI) is defined by Techencyclopedia as, “Any information that pertains to the history, current status or future projections of an organization” and BI software as software that, “. . . should enable users to obtain "all" the information they desire from their organization's numerous databases. BI software should allow you to derive the transactions and summaries you need without having to know the sources (which databases, which servers, etc.).” This BI software should be able to pull information from multiple sources, such as databases, operational systems, and flat files; structure that information into on-demand or scheduled reports; and allow the user to view or print the report, or send it to a report server where it can be accessed by an Internet browser.

Federal and state laws, regulatory agencies and changing business needs require constant modification to the standard reports. The current reports are very complex and difficult to change and do not always adequately support certain business, service and reporting functions. The University is currently using third generation report writing tools which are limited in that they do not easily cross database boundaries. Report modifications are time consuming and require programmer assistance.

Consequence of Inaction

Without better ad hoc reporting tools, future business decisions could be based upon incomplete or inadequate information.

Recommendations

Computing & Telecommunications should review the existing and planned software products of leading BI companies and narrow the list of products to several that are compatible with existing equipment. These products should then be reviewed by a committee comprised of representatives from, at least, Computing & Telecommunications, Office of Vice President for Academic Affairs, Business Affairs, Budgets, and Enrollment Management, and forward a final recommendation to the University Technology Council. Although the cost may vary greatly, depending on the solution selected, it is anticipated to be in the range of \$50,000 to \$100,000.

TOPIC: INTERNET ACCESS OF UNIVERSITY RESOURCES

Definition

Customers of the University should be provided with access to University resources via the Internet with a web enabled browser. Services would include, but not be limited to: enrollment, grades, schedule adjustment, financial aid status, student accounts, demographic data and payment by credit card.

Problem

Access to some University resources is limited to the normal business day or through the EXCELS telephone information system. Internet access would allow unassisted, 24 hour access to an expanded array of information and services.

Consequence of Inaction

We face increasing competition, from many sources, for enrollment. Continued investment in human and technical resources strengthens our competitive position. This is especially true of those resources that make it easier to conduct business with NSU.

Recommendation

A committee should be formed to analyze and develop a plan of action and implementation. The Associate Director of Computing and Telecommunications and the Dean of Enrollment Management should assemble this committee composed of appropriate personnel.

APPENDIX

TOPIC: YEAR 2000/SOFTWARE CONVERSIONS

Definition

In many computer programs currently in use at NSU, the calendar year is represented with two digits, i.e. 98. Many of these programs make mathematical calculations using the current year and the calendar year stored in student, employee, and financial records.

Problem

Where Y2K compliant software has not been implemented, systems need to be reviewed for necessary modifications. The majority of all NSU systems have been updated and tested, but many peripheral systems are still at risk.

Consequence of Inaction

If corrections are not made, some of the software used in the day-to-day business of the University may produce unreliable results and/or cease to function.

Recommendations

All computer programs should be analyzed to determine if they perform comparisons or mathematical calculations that will be affected by the year 2000. Modifications should be made to programs as required to produce correct results. Software should be tested using a separate computer system and setting the computer clock forward to the year 2000. After testing, the software should be incorporated back into the production environment.

Conclusion:

All software was modified and tested on a separate machine, then placed into a production environment. All problems encountered were minor in nature and have since been corrected.

TOPIC: CAMPUS E-MAIL

Definition

Electronic mail has evolved into a primary means of communication world-wide. About 30,000 messages are sent and received by the NSU community each day using three different e-mail systems. While each system processes mail differently, Netscape, the University's current browser of choice, provides most standard e-mail features required by campus users. As older computers are phased out, Netscape, or the University's preferred browser, should be adopted as the single e-mail system.

Problem

The choice of e-mail systems is confusing to many users, especially new students and employees. A few use Elm on Cherokee, some use Pegasus on Novell and many use Netscape. E-mail must be checked in two places or mail must be forwarded from one system to another so all mail appears in one in-box. Three times the personnel and hardware are required to support the current e-mail infrastructure than would be required to provide comparable services using a single e-mail system.

Consequence of Inaction

Continued user confusion, inefficiency and dilution of technical support.

Recommendations

As the remaining personal computers based upon the Intel 80286 and 80386 CPUs are phased out, all campus personal computers will support the Netscape browser and messenger software. Most systems in use at NSU already support Netscape. The committee recommends that after the phase-out, the University only support the University's preferred browser as the standard e-mail system. The committee also recommends that on an ongoing basis the most current version of the browser software be utilized.

Conclusion:

All 80286 and 80386 CPUs have been phased out of desktop applications.

Elm on Cherokee and Pegasus on Novell have been retired and all users have been migrated to Netscape.

All users were upgraded to Netscape 4.5 with the NT conversion and will soon be upgraded to Netscape 4.72.