

HUMBOLDT STATE UNIVERSITY INFORMATION TECHNOLOGY PLAN

March 3, 2000

A glossary is attached at the end of this document starting on page 38.

EXECUTIVE SUMMARY

As part of the campuswide strategic planning effort during 1995/96 and 1996/97, Humboldt State University developed an Information Technology Position Paper which was adopted as part of the campus Strategic Plan in 1997. The Information Technology Position Paper consisted of three major sections:

- ☞ *Using Information Technology to Support and Enhance Learning*
- ☞ *Using Information Technology to Support and Enhance Student Services*
- ☞ *Developing and Maintaining a Technology Plan*

Much of what was envisioned in the Information Technology Position Paper has been accomplished. Humboldt State University needs to build on its successes and momentum to continue moving forward. See detail under **Humboldt State University Strategic Context** on page 3.

Humboldt State University is a part of the 23-campus California State University. Much of its information technology activities are channeled by the need to conform to the CSU's Information Technology Strategy (ITS) and the systemwide initiatives that implement that strategy. Two of these initiatives require special note.

- ☞ *Technology Infrastructure Initiative (TII).* The Technology Infrastructure Initiative is a two-fold initiative to provide all the campuses in the CSU with the basic technology necessary for success in the 21st Century.
- ☞ *Collaborative Management System (CMS) Project.* The California State University has selected PeopleSoft as its provider for an integrated administrative software suite.

Additionally, Humboldt is piloting another initiative for the CSU.

- ☞ *Year Round Operations (YRO).* Humboldt will add an asymmetrical summer semester during 2000.

See detail under **California State University Planning Context** on page 4.

In addition to participating in these major CSU initiatives, Humboldt State University has other needs unique to its own environment, instructional programs, and business processes that must be addressed outside the ITS. Needs have been assessed in the areas of

- ☞ *Administrative Applications*
- ☞ *Major Library Applications*
- ☞ *Document Management*
- ☞ *Communications-enabled Applications*
- ☞ *Data Access*
- ☞ *User Support*
- ☞ *Interdisciplinary Computing Laboratory Support*
- ☞ *Departmental Computing Laboratory Support*
- ☞ *Other Specific Unit Planning*

See detail under **Needs Assessment** on page 7. To address these needs, Humboldt State University's information technology plan is built around four major service themes: ensuring information competency; supporting the instructional program; providing technology tools to faculty, staff, and students; and working within the California State University.

Theme: Provide for a comprehensive information competency program.

Needs Assessment: Humboldt State University takes pride in being a technology-intensive environment. In order to ensure that its investments in technology generate the benefits expected, the users of that technology must be knowledgeable. However, students, faculty, and staff arrive on campus with widely varying levels of computer, information, and networking knowledge and skills.

Vision/Goal: *All students, faculty, and staff at Humboldt State University will possess an appropriate level of information competency.*

Objectives:

- (1) Implement an information competency program for students.
- (2) Provide development opportunities for faculty.
- (3) Formalize training programs for staff.
- (4) Develop a technology currency program for information technology staff.

Theme: Support the instructional program.

Needs Assessment: Humboldt State University must ensure that the necessary information technology infrastructure is in place to support instruction. It is close to its target of one computer available on campus for each ten students, but all of these computers are not at current technology levels, there are restrictions on who can use what equipment and when, and the support available for maintaining these resources is uneven across the campus.

Vision/Goal: *Students and faculty will have access to both interdisciplinary and discipline-specific computing resources to support their instructional and research computing needs.*

Objectives:

- (1) Leverage existing computing resources to expand access.
- (2) Improve courseware development capabilities and courseware support services.
- (3) Ensure access to modern library facilities.
- (4) Design a "classroom of the future" and implement appropriate technology for use in the classrooms.
- (5) Enhance ability to support research computing.

Theme: Provide technology tools to faculty, staff, and students.

Needs Assessment: Technology is not just a fact-of-life, it is the "survival" tool of the current age. Unless effective technology services are available, Humboldt State University's students, faculty, and staff cannot be successful.

Vision/Goal: *All students, faculty, and staff at Humboldt State University will have access to the information technology tools and services each needs to be successful in his or her academic and professional pursuits.*

Objectives:

- (1) Be an aggressive implementor of the *Assured Student Access to Computing and the Network Initiative*.
- (2) Provide a rich set of classroom management tools for faculty use.
- (3) Automate, or improve automation of, business processes where appropriate.

- (4) Provide enhanced support for institutional research.
- (5) Improve general communications capabilities of the campus.
- (6) Improve communications capabilities for "remote" sites.
- (7) Improve technology support services across the campus.

Theme:	Work within the California State University.
Needs Assessment:	Humboldt State University is part of the California State University. It needs to be an active participant in CSU initiatives in order to take advantage of this relationship while ensuring local needs are met.
Vision/Goal:	<i>Humboldt State University will be an active participant in implementing the California State University's Integrated Technology Strategy.</i>
Objectives:	<ul style="list-style-type: none"> (1) Participate in the Technology Infrastructure Initiative. (2) Participate in the Collaborative Management Systems Initiative. (3) Pursue grants from within the California State University. (4) Continue to support local applications systems until replaced by CSU systems.

This information given in the Executive Summary is expanded in the tables given in ***Technology Themes*** beginning on page 17 to show example Activities for each Objective.

Humboldt State University will work within the overall project management direction provided by the Chancellor's Office for the implementation of the Technology Infrastructure Initiative and the Collaborative Management System Project. It will use a Continuous Process Improvement approach to address its needs that fall outside of the CSU's Integrated Technology Strategy. See detail under ***Implementation*** beginning on page 24.

During Fall 1999, copies of two draft versions of this document were posted to the Web with printed copies made available in the Vice Presidents' offices, Deans' offices, Library, Academic Senate office, and Associated Students government office. A final draft version similarly was distributed early during Spring 2000. All members of the University community were invited to submit comments through their respective representatives on the Standing Committee for Information Technology (SCIT), and the Chair of SCIT scheduled meetings with groups of each constituency.

HUMBOLDT STATE UNIVERSITY STRATEGIC CONTEXT

As part of the campuswide strategic planning effort during 1995/96 and 1996/97, Humboldt State University developed an Information Technology Position Paper which was adopted as part of the campus Strategic Plan in 1997. The Information Technology Position Paper consisted of three major sections.

Using Information Technology to Support and Enhance Learning

Humboldt State University began its first steps toward developing a current University technology plan in July 1995 when it submitted its *Implementation Plan for Assured Student Access* to the California State University Chancellor's Office. The *Assured Student Access Initiative* calls for each student to assure him or herself of 24 hour access to a computer and the network by the Year 2000. As a CSU pilot campus, Humboldt committed itself to moving purposefully toward the integration of technology mediated instruction within the curriculum. Information technology is to be used to enhance teaching and learning and not to supplant the humanistic qualities of the campus' community of scholars and

learners. HSU provided its final report on the pilot project to the Chancellor's Office in June 1998. A copy is available on the Web at <http://www.humboldt.edu/~cats/reports/asai/>. The report contains a copy of the Information Technology Position Paper.

The program has been a success. During the Fall 1998 and Spring 1999 HOP ("Humboldt Orientation Program") sessions, new students reported that 72% of them owned a microcomputer with a modem, 16% had made arrangements to have access to a microcomputer (e.g., living with a student who owned one), and only 12% would arrive on campus with no access. Given that there are over 600 microcomputers available on campus for a student body of approximately 7,400, all students are able to have access to a computer and the network almost all of the time.

Using Information Technology to Support and Enhance Student Services

Humboldt State University has implemented a number of on-demand student services through self-service mechanisms. Financial Aid status reports and grades are available by telephone via the interactive voice response system. Grades, transcripts, and current schedules are available on the Web, and Fall 1999 registration was Web-based for the first time.

HSU also has implemented an *ad hoc* Continuous Process Improvement (CPI) program to roll new services out to the user base. This has included class management tools such as electronic grade books, class support tools such as course list servers, the roll-out of personal productivity tools such as MeetingMaker, campus communications improvements such as the Bulk E-mail service, and Web-based forms for service requests.

Developing and Maintaining a Technology Plan

Humboldt's Information Technology Position Paper called for the development and maintenance of a three-year technology plan with annual updates. The first task was to establish a group with responsibility for information technology planning. Accordingly, as part of the general review of the University Resource Planning and Budget Committee (URPBC) and its standing committees, the Standing Committee on Computing Activities was replaced during Spring 1997 by the Standing Committee on Information Technology (SCIT) with expanded planning responsibilities across the breadth of information technology topics. A mission and membership statement is available on the Web at <http://www.humboldt.edu/~cats/reports/scit/>. The second task was performing a major needs assessment during 1996/97 and 1997/98, which resulted in the identification of the themes, goals, objectives, and activities included in this document and described in more detail below. The third step was having a campus-wide review of the themes, goals, objectives, and activities and developing this document during 1998/99. The fourth step is finalizing this document during 1999/2000. SCIT will make its recommendation on the adoption of this plan to the URPBC, and the URPBC will make a recommendation to the University's Executive Committee.

Much of what was envisioned in the 1997 Information Technology Position Paper has been accomplished. Humboldt State University needs to build on its successes and momentum to continue moving forward.

CALIFORNIA STATE UNIVERSITY PLANNING CONTEXT

Humboldt State University is a part of the 23-campus California State University. Much of its information technology activities are channeled by the need to conform to the CSU's Information Technology Strategy (ITS) and the systemwide initiatives that implement that strategy. Two of these initiatives require special note.

- ***Technology Infrastructure Initiative (TII)***

The Technology Infrastructure Initiative is a two-fold initiative to provide all the campuses in the CSU with the basic technology necessary for success in the 21st Century. It includes a complete build-out of a state-of-the-art communications system; deployment of sufficient desk-top computing systems to ensure the professional and academic needs of the students, faculty, and staff are met; and the user support services to ensure success. The CSU has allocated \$117 million in bond funds from the proceeds of Proposition 1A to support the build-out, with another \$50 million to come from a second bond issue. Another \$77 million over three years will need to be redirected from current CSU and campus expenditures. The desk-top goals will be met by leveraging the purchasing power of the CSU to improve pricing for microcomputers and generating new revenues from programs that become feasible with the new infrastructure in place. The CSU has entered into contracts with Microsoft to provide its most popular software to all students, faculty, and staff; with CBT to provide training modules in the use of information technology; and hardware providers for special pricing on IBM, HP, Compaq, and Dell equipment. Further, it is conducting pilot testing of Microsoft eXchange to serve as a Universal Messaging System (UMS) to ensure seamless communications throughout the system. The CSU also is developing a plan for systemwide Operations and Support Services which could alleviate some of the need for user support services on the campus.

In January 1997 Humboldt State University submitted two documents to the Chancellor's Office, subsequently approved, that represent major portions of its information technology plan: the *Telecommunications Infrastructure Master Plan (TIMP)*, which identifies construction and equipment needs to build out HSU's facilities in conformance with the California State University's Telecommunications Infrastructure Planning (TIP) Guidelines; and the *Basic Access to Hardware/Software, Training, and Support (BATS) Plan*, which describes HSU's plans for the deployment and support of information technology, other than that associated with mainframe administrative, instructional, and library applications, to support the CSU Integrated Technology Strategy (ITS). Because of the tremendous cost of building a fully TIP-compliant infrastructure, the CSU required all institutions to scale their TIMPs back to a *Baseline Telecommunications Infrastructure (BTI) Plan*. In addition to identifying HSU's plans for the deployment of workstations, interactive voice systems, improved telephony services, other technologies, on-going support for desktop hardware and software, and faculty, staff, and student development, the BATS Plan includes a plan for the deployment of technologies to support HSU's implementation of the *Assured Student Access Initiative*. Annual reports on progress toward implementing the BATS Plan are submitted to the Chancellor's Office each September.

Humboldt State University, also using proceeds from the Proposition 1A bond sales, will implement a campus-wide Utility Project to upgrade its electrical, steam, security, alarm, and other communications-based infrastructure, with bid solicitation documents being released to potential contractors during Fall 1999. The Utility Project will entail significant trenching of the campus. Implementation of the BTI Plan will be coordinated as closely with that of the Utility Project as possible to ensure the absolute minimum amount of disruption to the campus.

HSU will continue to improve its existing telecommunications infrastructure while waiting for TII to initiate services. It is keeping the operating system on its Ericsson MD 100 PBX (Private Branch eXchange) telephone switch current and has completed full implementation of the Octel Voice Mail System (VMS). This has allowed campus offices to implement Automatic Attendant and other new services over the past year. Additional capabilities, such as telephone voice forms, are being explored for applicability to HSU's business processes. Further, the Residence Halls has completed implementing a "port per pillow" to bring high-speed data networking services to on-campus residents. As part of that project, C&TS has implemented "fire wall" technology to protect the campus wide area network (WAN) from abuse both from the Residence Halls and external users that access the WAN.

The BATS Plan identifies how Humboldt will implement its support programs for desk-top technology and projects a five-year expenditure plan for accomplishing those goals. Availability of funding is the

critical element for success — the expertise and commitment are in place. With existing funding, Humboldt is able to refresh its inter-disciplinary computing labs on a four to five-year cycle. It is hoped that TII will produce sufficient revenue to allow a refresh cycle of three years. Humboldt also must depend on TII funding to support refresh of its discipline-specific labs, which currently are equipped with “hand-me-downs” from the inter-disciplinary labs or through one-time re-allocations from within the Colleges, and the faculty workstation program. Over the last several years, the Colleges and the University as a whole have re-allocated significant funds to acquire current technology workstations for faculty, but on-going funds have not been identified. If TII funding does not materialize, the campus will need to reassess the goals and schedules included in the BATS Plan.

Although the basic elements and long-term goals of an instructional computing support plan are included in the BATS Plan, actual implementation of services is dependent on short-term activities. For example, early in 1997/98, the Faculty Courseware Development Center (FCDC) rolled out its first fully digital, interactive Web-based video to support classroom instruction. In the future, priorities for these short-term activities and recommendations on the use of new technologies will be made by the Faculty Advisory Committee (FAC) to the Center for the Support of Instructional Technology (CSIT). During 1997/98, the FAC/CSIT developed a mission statement for itself and adopted a set of guidelines for the use of the FCDC. A copy of each of these statements is included in the final report on the *Assured Student Access Initiative* available on the Web at <http://www.humboldt.edu/~cats/reports/asai/>. The FAC/CSIT intends to address a number of issues that relate to technology-mediated instruction, including intellectual property, copyright, faculty compensation, faculty development, and priorities across the breadth of instructional technology at HSU: academic computing, courseware development, and instructional media services. The Information Technology Consultants (ITCs) Council advises Academic Computing on its support activities such as making recommendations for what standard software should be supported in the campus’ interdisciplinary computer laboratories.

- ***Collaborative Management System (CMS) Project***

The goal of the CSU’s ITS is “To provide the best possible environment for the education of CSU students” through the accomplishment of four outcomes:

- Personal Productivity
- Excellence in Learning and Teaching
- Quality of Student Experience
- Administrative Productivity and Quality

These outcomes will be realized both through establishing the technology prerequisites via the Technology Infrastructure Initiative and through a series of projects to implement services on top of that technology. One of the most important of these projects is the Collaborative Management System (CMS) Project to bring common business tools to all the campuses and a high-level of student services to support the administrative needs of the students (admissions, registration, degree audit, etc.). An integrated suite of software will be implemented across the CSU as part of this project. The focus of the project is enhanced student services – technology is only the tool, the human context is what is valued most.

The CSU has selected PeopleSoft as its provider for an integrated administrative software suite. The CSU envisions all campuses, and all operating units within the campuses including eventually Foundations and auxiliary enterprises, using the software and sharing computing resources, either through regional services centers operated by several of the campuses or out-sourced, to reduce update and operational costs, provide improved administrative support to the campuses, and bring consistency to reporting to the Chancellor’s Office.

Humboldt State University currently supports the SCT Banner Student Information System (SIS) and Financial Aid System (BFA) in-house. It provides systems administration and operational support for the IA Financial Records System in-house but receives primary applications maintenance support from the

Chancellor's Office. Human Resource support comes from the state's Controller's Office. Housing and Alumni each support separate systems, as does the Foundation. HSU has completed a readiness assessment of its General Fund-supported offices (not auxiliaries or the Foundation) and identified itself as a "Wave Two" institution which will convert to the new software right after the "leading edge" Wave One campuses. HSU has formed a Steering Committee to begin studying implementation issues and distribute information to the campus community. Process mapping groups began documenting current business practices and identifying existing data for conversion purposes during Fall 1999.

In addition to the two CSU ITS initiatives, Humboldt State University also is participating as a pilot site for year round operations for semester-based universities.

- ***Year Round Operations (YRO)***

Originally, YRO was an HSU initiative. The goals are to make better use of the University's infrastructure by accommodating enrollment growth during the Summer, decrease time-to-degree, and offer special programs during the Summer which are not available during Fall and Spring. For example, different field experiences are available in the forests, range lands, and oceans during Summer than are available during the rest of the year. All of the CSU's semester-based schools are now gathering data for a CSU-wide initiative in year round operations. However, because Humboldt already was implementing its program, it will pilot for the CSU by offering an asymmetrical (ten week) semester during Summer 2000 generating an anticipated 500 FTES.

Although not an "information technology" project, YRO will have significant impact on HSU's information technology operations and support. For example, there will be an extra schedule build, room assignment, registration, financial aid, and grades cycle each year. Further, Summer is when information technology support personnel normally perform major projects, such as refurbishment of all audio/visual equipment; computer laboratory cleaning, repair, and upgrade; and major software implementations. If Summer semester grows to support comparable numbers of students as do the regular semesters, Computing & Telecommunications Services will need to add staff as well as create three or four additional computing laboratories so that existing laboratories can be taken out of service while classes are in session.

NEEDS ASSESSMENT

As mentioned above, HSU has developed two primary information technology plans for implementing the underlying technologies necessary for the success of the ITS.

- *Baseline Telecommunications Infrastructure (BTI) Plan.* The BTI plan was submitted to and approved by the Chancellor's Office in January 1997. It is HSU's plan for network infrastructure implementation and support.
- *Basic Access to Hardware/Software, Training, and Support (BATS) Plan.* The BATS plan was submitted to and approved by the Chancellor's Office in January 1997. It is HSU's plan for providing desktop hardware and software and user support.

These plans address many of HSU's basic information technology needs. However, Humboldt State University has other needs unique to its own environment, instructional programs, and business processes that must be addressed outside the ITS.

In October 1996 the Director of C&TS met with each Vice President to establish a planning approach. The primary assumption was that HSU would obtain the basic desktop hardware and software and networking capability to support its information technology needs through the initiatives being sponsored through the CSU's Integrated Technology Strategy. The primary question was, given that the basic infrastructure would be in place at some time, how could HSU best use it. Each Vice President appointed a small group of staff to work with C&TS to

answer this question. C&TS met with these three groups, as well as with major user offices such as Enrollment Management and the President's Office, during Spring 1997 and issued a report of user needs to the Standing Committee on Information Technology (SCIT) in May 1997. Through the Summer and early Fall 1997, C&TS held a second round of meetings with the groups to ensure the accuracy and completeness of the information provided in the report to SCIT. Meetings also commenced within C&TS to classify user needs into topic areas, propose possible solutions, and identify potential pilot projects and participants.

Two general conclusions from that needs assessment were obvious: there are a number of processes on the campus which can be made more efficient and effective using information technology; and existing user support is insufficient to service the information technology already in place. The initial interviews with the focus groups resulted in an extensive list of needs and desires. During the second round of interviews, this list was consolidated into a shorter list of categories. An interim status report with proposals to establish a Continuous Process Improvement (CPI) program and a central computing account was submitted to the Standing Committee on Information Technology in April 1998 and circulated widely on campus for review. The result is that a number of pilot projects have been identified, some are underway, and some have been completed and new services rolled-out. The goal now is to keep this momentum going by ensuring that a series of reviews is held each year with representatives from each Vice President's office and selected major end-user units to assess the status of services being provided and the opportunities for new pilots. The needs identified, and actions that commenced, are described below.

Administrative Applications

A richer suite of administrative software was one of the needs identified by the user focus groups. Specific needs which were high on the list for all focus groups were automated purchasing systems and a personnel system, even if it does not include the payroll module. A general need that was identified was for integrated software to ensure consistency in databases. For example, addresses are not consistent across existing databases maintained by different groups on the campus.

The CMS project will address the needs identified. However, it will require five to six years to implement fully the PeopleSoft software. HSU must depend on, and enhance, its SCT Banner Student Information and Financial Aid packages in the meantime. Planning is underway with end-user offices to implement additional SCT and third-party modules, already or soon to be licensed by Humboldt, to improve operations.

- Enrollment Management. The demographics of the State of California are changing and HSU's sources of prospective students also are changing. Humboldt needs better enrollment management tools to ensure that it can identify and recruit those students for whom the HSU experience will be the right experience.
- Pre-requisite Checking. As the mix of incoming students changes from weighted on the side of first-time freshman to transfer students, improved transfer evaluation and equivalency tools are necessary. Pre-requisite checking also is required for effective Web registration.
- Degree Audit/Advising. As Humboldt State University attempts to shorten students' time-to-degree, it is necessary to implement effective degree audit and advising tools. The University also is facing increasing tracking and reporting requirements for the Chancellor's Office in the area of remediation and from the NCAA because HSU now offers athletic scholarships. These processes are complex and time-consuming. Any error in tracking can become a major liability to the University. HSU has licensed the SCT Banner Web for Faculty and Advisors module. This will give faculty and advisors the same level of Web access to student records as students already have with the Web for Students module. HSU also will license the DARS degree audit system during Spring 2000. DARS has a fully supported Banner interface, is being implemented by the other Banner schools in the CSU, and the CMS project either will support the DARS interface to PeopleSoft or provide a conversion to the PeopleSoft degree audit module.

- Graduate Student Tracking. This process currently is not automated. Because of the complexity of the process, students will be better served if their progress can be tracked and automatic triggers implemented to ensure compliance with all requirements. Some capability is being built into Mentor, the CSU on-line admissions applications system developed by XAP, but several commercial products provide enhanced services, such as automatic verification of GRE test scores.

One of the major categories of need identified by the focus groups was improved electronic access that would support self-service business processes. The campus is implementing two technologies to address this need. The first is the BriteVoice Interactive Voice Response (IVR) System. It currently handles well over 1,000 telephone calls per week (with a high around 1,800) for the Financial Aid Office. It was used for grade reporting for the first time during Fall 1997. Implementations to support additional functions in Enrollment Management and the Fiscal Affairs Office are proceeding according to plan. The second technology is the SCT Student Web package, which allows students to access their own student records (to obtain a class schedule, print an unofficial transcript, change an address) and register on-line for classes via a secured client over the Web. General student access was implemented on the Web package during Fall 1998, and Web registration became the primary form of registration during Fall 1999. Financial Aid records became available on the Web in early Spring 2000. Web for Faculty and Advisors will be implemented by the end of Spring 2000. Credit card payment of fees will be implemented over the Web during Summer 2000.

Major Library Applications

The Library's information technology plan was written around its functions, taking into account the CSU's ITS. In particular, CSU will place an increasing emphasis upon inter-campus resource sharing, document delivery, electronic access to information resources, and information competence. The CSU has provided some funding to initiate the Unified Information Access System (UIAS), an ITS initiative to build a pseudo union catalog for the CSU libraries, but it has not funded the workstations required for use of the system. Libraries are faced with a sea change. More and more multimedia materials replace or augment traditional print materials and there is greater reliance upon the Internet, requiring libraries to provide new forms and levels of patron support, including training, while not relieving them of any of their traditional support functions. In addition, these new resources are to be delivered remotely to distant desktops. The University Library has prepared a technology plan that identifies the resources required to meet these new challenges. The plan points the Library toward the delivery of virtual services and resources, independent of location, and it also offers a vision of the Library as a technologically outfitted place, a repository of knowledge, a home for research and study, and a place for exploration and personal and group development. It identifies the technology resources, much of it built around the concept of an "Information Commons," necessary for the Library to continue successfully to meet the changing needs of its user community. In February 1998, the Standing Committee on Information Technology (SCIT) endorsed the priorities the Library has identified. The University Resource Planning and Budget Committee (URPBC) accepted the report of the SCIT during April 1998. The highest priority items identified the need to keep the Library's automation system up-to-date (the GEAC system being used at that time was designed for terminal access, its Web interface was only an overlay on an old design, and it was not Y2K compliant) and to acquire the patron workstations necessary for accessing the expanding body of electronic storage. The plan also prioritized needs for specialized equipment (such as geographic information system and multimedia authoring workstations) needed to keep the Library current with the service needs of its patrons. The Library is progressing with implementation of the plan, with the first step of replacing its GEAC system with an Endeavor Voyager library automation system, a conversion completed during Fall 1999.

Document Management

Like most large organizations, HSU is awash in a sea of paper. All focus groups identified a need to use information technology to assist in the management of paperwork as a high priority.

- Document Imaging and Workflow. The Admissions & Records Office within Enrollment Management has implemented a limited imaging system to reduce its paper storage, but is no longer imaging student files. The University has thousands of hard-copy transcripts for which currently there is no accessible alternative. The Financial Aid Office also needs to reduce its paper storage and further could benefit from workflow management software. A number of other offices on campus also could benefit from an imaging system. A disciplinary action might involve the University Police Department, the Office of the Vice President for Student Affairs, Housing, and others. Currently, each must have a complete paper file for a disciplinary case with which all are dealing. It can be difficult to determine if each file is complete and up-to-date. An imaging system, with appropriate security, would allow all involved offices to look at a single, on-line folder that contained all the documentation. Imaging systems have applicability whenever multiple offices must look at the same document because each has access to the same information, physical copies do not need to be made and protected, and documents cannot be lost inside an image database — the database management system ensures that the document can be located using standard query search tools.

The best value from an imaging system is realized when the imaging/workflow capabilities are integrated fully with the underlying applications software. Currently, the underlying applications software is the SCT Banner Series. The campus will be replacing that software with the PeopleSoft software. A review of imaging options will be examined as part of the implementation planning for CMS.

- Web-based Image Databases. Imaging systems are expensive, and the University may find that it is not cost/beneficial to implement one. Further, a campus-wide imaging solution may not be the most effective as different offices may need different levels of functionality and access to different sets of documents. An in-house system of limited capabilities could be implemented on the Web for specific purposes. For example, Executive Memoranda could be scanned and stored on the Web server. Properly indexed, the Web search engines would find the latest version of each memorandum, and the memorandum would contain links back to previous versions. No special client software would be required, just a browser on the user's workstation. A similar implementation could be designed for Chancellor's Office Executive Orders. The expertise is available on campus to implement this service, and a pilot project will be initiated if a commercial imaging solution is not viable.

The days of the "paperless office" still are far in the future, but Humboldt State University can make a start in reducing its paper management problems.

Communications-enabled Applications

Less than four years ago, authorization for electronic mail accounts was restricted, the campus was transmitting less than 100,000 e-mails per month, and no one had an on-campus Web page. Today, every faculty member and student and most staff members have an e-mail and Web account, and the campus is transmitting more than 1,000,000 e-mails per month. C&TS will pilot a Web-based mail agent during Spring 2000. New forms of classroom communication and management have resulted and there has been a revolution in the development and deployment of course materials. Many members of the focus groups identified business process problems that can be addressed using communications-enabled applications.

- Information Dissemination. One of the most vexing problems on the campus is distributing information. With over 1,100 employees and 7,400 students, Humboldt State University must use a myriad of information distribution methods. Campus-wide mailing still is the most successful in reaching the broadest population. However, recent measures show that over 84% of faculty and 92% of students have activated their e-mail accounts. In response, C&TS has developed a "bulk e-mailer" which can send a 150 word message to all faculty, staff, students, or combinations of these groups as long as the message is "official University business." A URL can

be attached to the message to allow the recipient to obtain more information on the Web. Each time a bulk e-mail is sent campus-wide instead of via a mass mailing, thousands of sheets of paper are saved. Some in the community have classified some of these messages as junk mail ("official University business" is difficult to define), so C&TS has implemented the bulk e-mail service in such a way as to address this complaint: bulk e-mails show a subject line so the recipient can decide if she/he wishes to read the message; news and announcements are bundled into a single e-mail sent out once per week; and C&TS distributes software "filters" that allow the recipient to block all bulk e-mail. More forms of electronic information dissemination need to be explored. C&TS currently is working on finer granularity in bulk e-mail target groups, for example, targeting a particular major, minor, department, students on probations, etc.

- Electronic Forms. Numerous repetitive forms are used in the course of the University's business; forms which, if on-line, would be easier to complete and which could be transmitted more quickly than via campus mail. Some of those which were mentioned by almost all focus group members were purchase requests and purchase orders; time reporting sheets, particularly for student employees; and work orders. A number of organizations on campus have developed forms in Word, WordPerfect, or Excel for these functions, but this approach typically allows the user only to download the form to his/her microcomputer, complete it, print it, and mail it. Multiple copies of the form must be developed because everyone does not use the same office software suites, and the form can appear different if printed from a Wintel micro than if printed from a Macintosh micro. Users also often modify the forms after they download them. C&TS already had been creating Web-based forms for requests for a number of its services (disk quota increase, new list server), but these were all for one-step approval processes and there were no requirements for a confirmed electronic signature. Two pilot projects are underway:

- 1) C&TS is working with Graphics & Distribution Services to build a forms library. The library consists of two parts. The first consists of Web forms much like those developed by C&TS for itself. The second consists of downloadable templates in appropriate Microsoft applications for those forms that are too complex to lend themselves to easy implementation as Web forms.
- 2) C&TS is working with Plant Operations to develop on-line work orders containing electronic signatures. In the initial part of the pilot, the sender's e-mail address and time/date stamp are used as the signature, but C&TS now has tested successfully a signature server and actual facsimile signatures can be inserted into the on-line form. The facsimile signatures will be protected by password to ensure security.

Eventually, C&TS sees a need for a forms server that would store, under appropriate security safeguards, many of the forms used on campus. For example, a student would call up his/her hours-worked reporting form from the server. The form already would have the student's name and other repetitively reported information recorded on the form, and all the student would have to do is enter the hours worked. Pay would be calculated automatically, and the completed form mailed electronically to the student's supervisor for approval. Such a records system could be extended to support any intermittent hourly employee.

- Secure E-mail. Electronic mail is not used in all the circumstances in which it would be convenient or effective to do so because it cannot be considered a secure form of communications. For example, information on disciplinary cases cannot be exchanged by investigators and personnel information cannot be exchanged by search committee members because e-mail can be intercepted and modified without the sender or recipient recognizing that the message has been read by unauthorized individuals. C&TS will do a pilot with the University Police Department and the Office of Student Affairs (OSA) to test encryption options for e-mail.

Secure communications would allow HSU to implement such process improvements as on-line evaluation forms and standardized HSU memo forms that could be used for official communications such as generating rosters in an electronic format and specific, official communications to individual students.

- *Scheduling and Calendaring Services.* There was great interest in establishing a campus-wide scheduling and calendaring system. C&TS obtained a campus-wide license for MeetingMaker through the CSU and the product now is in common use on some parts of the campus, although it is not designed specifically as a full-fledged scheduling and calendaring system. More training needs to be available if this tool is to come into general usage. C&TS also is reviewing other potential packages, especially those that are Web-based such as are provided by Netscape, to eliminate the need for client software. The Technology Infrastructure Initiative includes a proposal for a Universal Messaging System (UMS) which may obviate the need for an HSU solution.
- *On-line Polling.* A number of campuses hold student elections via e-mail. The College of Arts, Humanities, and Social Sciences has expressed an interest in a pilot project for College elections and polls to be conducted via e-mail. During Fall 1998, responsibility for processing teacher evaluations was passed to C&TS. C&TS has been piloting on-line evaluations using WebCT. With this experience, pilots will be developed to test on-line polling using WebCT and, possibly, BlackBoard.

C&TS has adjusted the position descriptions of a number of existing staff members to serve as the core of a technology development services group to support these types of new service initiatives.



Data Access

Humboldt State University captures a large volume of data in the course of its business processes. It also generates large amounts of printed output that must be separated and distributed. Many of the participants in the focus groups identified the need for improved data query and reporting capability and more efficient distribution of reports as priority items.

- *Expanded Access to Administrative Systems.* One of the complaints heard during the focus group sessions was that those who needed only limited update access to administrative systems often were denied permission because the security system did not provide the level of discrimination necessary to restrict them only to their limited set of authorized functions. One example at that time was that administrative holds only could be placed on a student's registration by the administrative office sending a memorandum requesting the hold to Enrollment Management. Removing the hold required another memorandum. Since the time the focus groups met last, the versions of Oracle and Banner software used on campus have been updated, finer discrimination of access rights is possible, and the particular problem cited as an example has been solved. C&TS has worked with user offices to better define their access needs with the goal of continuing to expand access.
- *Data Query.* A variety of data query tools are used on campus. The Fiscal Affairs Office and Budget Office have used BRIO for some time for accessing financial and inventory records. BRIO is easy to use and can be used to access data stored under a number of different database management systems. It supports views of the data, defined in terms of the particular user's needs for access, that restrict access to only that data the user is authorized to access. C&TS has been working with a number of users to develop BRIO reports to meet their data access needs and now is supporting BRIO as the campus standard. BRIO will work with the new PeopleSoft software because PeopleSoft is built on the Oracle relational database management system.
- *Print Previews.* C&TS has been working with a number of offices to spool their printed output for on-line review prior to actual print. Often, reports can be viewed on-line and there is no

need to print them at all. Other times, only a small section of a larger report needs to be printed. Implementation of a regular print preview service should reduce paper consumption significantly and speed turn-around in getting information to those who need it.

- *Department Secretary's Guide*. C&TS intends to work with the department secretaries to identify those types of data queries and reports they need most often. Query libraries, consisting of BRIO routines, then will be developed that meet the query needs. In combination with the print preview service, most secretaries' repetitive processing needs probably can be met. A user's guide will be developed to serve as a desktop reference for secretaries in using these new tools and services. The Vice President's Office in Academic Affairs already has done considerable work developing a Web site with many regularly used forms on it.

More ubiquitous data access requires greater emphasis on data security. As part of responding to a general requirement from the Chancellor's Office for security monitoring, HSU has created the position of Information Security Coordinator to assist in developing, documenting, and tracking security practices on the campus. The ISC will play a major role in articulating the security requirements that must be built into these new services.



User Support

Humboldt State University operates a decentralized user support services structure. C&TS provides limited campus-wide support; direct desktop support to the President's Office, Office of Development & Administrative Services, Office of Student Affairs, and the administrative units in the Office of Academic Affairs; Help Desk services for students and limited Help Desk services for faculty and College staff. Additionally, each College Dean's office has its own information technology consultants (ITCs) to provide varying levels of support to the faculty and staff within that College, and several other units also have ITCs or other staff that provide support. While a decentralized support structure means the ITCs develop necessary knowledge about the specifics of their units' business and curricular needs, more coordination and some centralization would result in better utilization of the limited personnel resources available to HSU.

- *ITC Coordination*. The BATS Plan included a proposal to create an Information Technology Resource Center (ITRC) in C&TS to coordinate the provision of user support services to faculty and staff and provide user support services to students. C&TS has reassigned personnel to create the ITRC, and it and the Office of Student Affairs (OSA) performed a pilot to test mechanisms for coordination. OSA sets the priorities for projects by its information technology consultant (ITC) but the ITRC assists with technical review and provides back-up services. For example, if the OSA ITC cannot answer the telephone, the call rolls over to the ITRC Help Desk number. The ITRC has developed a program, TRAX, which logs user support requests, tracks to whom the problem was assigned, and records the resolution. OSA is using TRAX in its current form for its own internal tracking. The ITRC also worked with the College of Natural Resources & Sciences (CNRS) to modify TRAX to meet CNRS' needs. The modified version is used jointly by the ITRC and CNRS, with the goal of being able to deploy one unified problem reporting system across the campus. With the initiation of limited central Help Desk services for faculty and staff during Spring 1999, it is critical that problem hand-off and tracking are well done. The ITRC is staffed to provide only first level consulting to faculty and staff. If the problem cannot be addressed quickly or if resolution requires a site visit, the faculty or staff member is referred to his or her traditional support service provider.
- *Training Coordination*. A number of different units provide training workshops, sometimes in competition with each other. The ITRC has established a Web site which lists all training workshops reported to it. The ITRC is working on a software solution that will allow each training provider to update the list without having to submit a request to the ITRC. It is felt this will make it more likely that a complete and accurate list will be available to the campus community. The ITRC also is working to provide improved access to the CBT training modules

that were acquired through the CSU's Chancellor's Office. The Faculty Courseware Development Center is working with the Faculty Development Coordinator to provide a Web site that will list all faculty development opportunities. The site will be active, sending out electronic notices of upcoming events to all those who wish them.

- o Local Area Network (LAN) Support. A lot of functions provided by various ITCs are duplicative and might be provided better centrally, thereby allowing the ITCs to concentrate more of their efforts toward direct end-user support. C&TS is studying the feasibility of establishing an "NT Farm" in its main computer room where it would perform systems administration duties for whichever administrative units desired the support. Having the units located centrally would allow for simpler administration, updating, maintenance, disaster recovery, and data back-up. Some other capabilities also might be possible, such as centralized license management for desktop software on the campus and more automated distribution of desktop software. C&TS will distribute software available through the CSU/Microsoft enterprise license agreement to the desktop via the network to simplify installation.

As part of the Technology Infrastructure Initiative, the California State University has awarded a contract to a consulting firm to develop operations and support strategies for the new infrastructure. The report is due during Spring 2000 and will include recommendations on systemwide provision of triage, hardware and software tracking, Help Desk software, and network operations support. Humboldt will need to adapt its delivery methods for services to meld with those implemented under the TII.

 **Interdisciplinary Computing Laboratory Support**

Humboldt State University's students passed a Student Technology Fee of \$36/semester in Spring 1995. The Board of Trustees did not approve the implementation of the fee, but the Chancellor's Office has provided "in lieu of" funding ever since. These funds have come as direct "in lieu of," as Baseline Hardware/Software, Training and Support (BATS) dollars supplemented with "in lieu of," and Information Technology dollars supplemented with "in lieu of." Essentially, HSU has received the greater of whatever the other CSU campuses received or \$72/year per the previous Fall's headcount.

Source	1995/96	1996/97	1997/98	1998/99	1999/2000
"In Lieu of"	521,464	534,744	440,081		343,900
BATS Permanent				122,992	122,992
BATS One Time			113,383	442,800	
Lottery			113,383		
Information Tech One Time					74,800
Total	521,464	534,744	666,847	565,792	541,692

Although the Chancellor has used many different sources to fund the program, Humboldt has treated these funds as though they actually were generated by a student technology fee because the "floor" amount of funding has been based on the Student Technology Fee amount. Accordingly, in 1995/96, the Provost formed the Student Technology Fee Committee to make recommendations for their expenditure consistent with the wording of the student initiative from the Spring 1995 election. The Committee, chaired by a student, was comprised of three students appointed by the Associated Students and two faculty members appointed by the Academic Senate. Staff support was provided by the Director of Computing & Telecommunications Services (C&TS), the Manager of Academic Computing (part of C&TS), and the General Manager of the Associated Students Business Office.

The Committee developed a request for proposals and received responses from across the campus. The Committee used two strict tests of appropriateness of applying the funds to projects matching the intent of the referendum. First, the project had to provide computing capability. Projects that used computers to some other end than providing general computing access were not considered. Second, projects were ranked highest that resulted in the most open access to the most students (i.e., benefitted the general student population, not just a restricted segment of that population). The Committee completed its task with a report to the Provost in May 1996. The Committee recommended that some specific projects be undertaken at the end of 1995/96 and in 1996/97 and recommended that, in general, the “student technology fee” funds be spent as follows:

- The computers and software in the interdisciplinary computing laboratories and open student computing laboratories should be refreshed as often as possible with the available funds. Particular emphasis should be given to ensuring that the largest of the open student labs has the latest hardware and software available (open student labs at HSU are those in which classes or other activities never are scheduled — the facilities are reserved solely for out-of-class student use).
- The emphasis should be on ensuring the availability of the labs during class time and evening hours, not on putting significant resources into 24-hour operation because the demand for round-the-clock operation appeared low.
- The best way to ensure the availability of microcomputers is to keep all the hardware and software in the labs running. Some of the funds should be set aside for support personnel and spare parts. Fully configured and tested spares should be available.
- Older computers should be distributed to financially eligible students rather than being surplus. Student employees could refurbish these computers.

The Provost approved these recommendations and the program has been run consistent with them ever since. There also is a fifth approved use for the funds: when Molly Broad announced she would add the entire amount to HSU’s base budget, she directed that some of it be used to support HSU’s courseware development efforts.

These funds are the only funds available for upgrading the labs managed by Academic Computing. The labs generally are replaced in rotation based on age from last upgrade. This rotation, and lab status as of the start of 2000, is as follows:

FH 202	(upgraded over Summer 1999 but needs electrical and air conditioning upgrade)
SH 118	
GH 115	
GH 218	(open access student lab with extended hours during peak demand periods)
SciA 364	
SH 1	(open access student labs — replaced over Summer 1999 rather than upgrading
Lib 310	GH 218 due to cost considerations)
NHW 244	(CS Lab—pilot for Academic Computing departmental lab support, see below)
Lib 121	(Information Competency Lab)
HGH 105	
HGH 229	(upgrade in process, construction delayed during Summer 1999)
JH 212	(upgraded over Summer 1999 but needs to be brought into ADA compliance over Summer 2000)
SH 119	(upgraded over Winter Break 1999 but needs to be brought into ADA compliance over Summer 2000)
UAX 123	(open access student lab to be brought on line during Spring 2000)

This rotation is modified in response to specific problems in specific labs or because equipment may be upgraded, rather than replaced, in a particular lab and its life extended beyond original expectations. Further, Academic Computing tries to keep one of the pair of SH 118 and SH 119 at current hardware levels to ensure there is a lab where the latest discipline-specific software can be run and similarly for the pair of FH 202 and JH 212 and for the pair of SH 1/Lib 310 and GH 218.

The specific approach used to replace a lab is to form a design team consisting of the Manager of Academic Computing, the AC lab manager assigned to the particular lab, a selection of the primary faculty who teach in the lab, and the College ITCs that install discipline-specific software in that lab. Design issues include room lay-out, disabled access considerations, and hardware and network requirements. In an ideal scenario, design is done in the Fall, specifications and bids are done in the Spring, and installation is done during the Summer. Because the scenario is rarely ideal, the lab usually is not scheduled for classes the following Fall so it can be wrung out. Usually some faculty are willing to move their classes into a new lab in the middle of a semester after it has been rebuilt in order to test it. In order for faculty who teach in these labs to keep up with current lab status and participate in discussions on lab activities and plans, a list server has been established for each lab. Subscription information can be found on the Academic Computing home page at <http://www.humbolt.edu/~ac>. Further, Academic Computing will begin surveying the faculty users of its labs each semester using a survey instrument that will be developed in collaboration with FAC/CSIT.

Departmental Computing Laboratory Support

During Spring 1999, the three academic deans and the Director of C&TS agreed to move toward more shared responsibility for those discipline-specific computer laboratories that provide campus-wide service. Without trying to be too specific about the definition of a "campus-wide support laboratory," it was agreed that the Writing Center, Language Laboratory, Spatial Analysis Laboratory, Quantitative Sciences Laboratory, UNIX Laboratory, and Computer Sciences Laboratory fit into this category. During Fall 1999, C&TS, through Academic Computing, will provide paper and toner for these labs. C&TS also agreed to provide paper and toner for the public access printers in the Library and established a second Student Help Desk at the Information Competency Laboratory in Library 121 to complement the Student Help Desk in the Open Student Access Laboratory in Gist Hall 218. A listing of discipline-specific labs along with information about each can be found on the Academic Computing home page at <http://www.humbolt.edu/~ac>.

The next step is establishing a committee of Computing & Telecommunications Services' personnel and the college information technology consultants (ITCs) to explore further opportunities for sharing. The committee will examine whether Academic Computing, based on availability of funding, can provide student lab monitors to open and close some of the departmental labs, clear printer jams, and provide other support services; whether it is practical for student employees to assist with installing and maintaining discipline specific software in the interdisciplinary labs; establish some support standards for instructional technology and technology-mediated instruction; and ensure there is a two-way dialog between faculty and the staff that support them. The Committee will be established under and be advisory to the Faculty Advisory Committee for the Center for the Support of Instructional Technology.

Other Specific Unit Planning

University Foundation and University Center each operate its own business and human resource information systems completely independent of the central systems on campus. A number of other organizational units also prepare their own information technology plans but coordinate that planning with campus plans in areas where they impact each other. For example, some units operate separate systems but exchange data with the central systems: the Student Health patient records system exchanges address information with the campus student information system; and Housing & Dining operates its own housing module but does its cashiering through the central campus systems. Other units on campus operate systems that interface with external service providers as well as using central

campus systems. In these cases, planning must be coordinated closely to ensure appropriate telecommunications infrastructure is in place to service both types of need.

A good example of this last type of situation is the need for Public Safety to use both campus information systems as well as integrate with external law enforcement agencies. Public Safety has a number of workstations that must access campus databases, such as the student records database and its own in-house law enforcement database, and also must access external systems. This sometimes requires dual communications pathways because law enforcement systems all are not accessible over the Internet; some are accessible only via private networks. Public Safety currently is working on a project to fully integrate its usage of the California Law Enforcement Telecommunications System (CLETS) with Humboldt County. Normally, communications to CLETS flows from HSU to the County to Sacramento. However, an alternate direct path from HSU to Sacramento has been implemented and, when necessary, HSU can communicate directly to CLETS and the County can access CLETS through HSU. Public Safety also must implement a new workstation-based "911" system in partnership with the Department of Justice, and this 911 system also must operate in conjunction with the 911 capabilities of the campus Ericsson telephone switch. The workstations accessing the in-house law enforcement database also must access the County Law Enforcement Warrant System. Campus and County emergency notification systems and procedures must be integrated as well. All of this involves a great deal of cooperation between the technical support personnel of the campus and Public Safety. As is typical of such an environment, mandates to enhance services in partnership with these external agencies can come with no attached funding but with implementation deadlines, making the need to coordinate even more important. This makes it even more incumbent on central computing and communications staff to be flexible in working with specific University operating units even if their specific information technology requirements are not a part of the campus' overall information technology plan.

TECHNOLOGY THEMES

Information technology is an area of such rapid change (a "Web year," which is the period between the introduction of a new technology on the World Wide Web and its replacement by a newer technology, now is estimated as ninety days) that long-range plans can be used effectively only for identifying themes and setting goals. The real need is for short-term planning that identifies specific activities that will allow the University to meet its objectives, fulfill its goals, and ensure that it receives value for its investments in information technology. The technology themes identified below were developed by the Standing Committee on Information Technology during 1998/99 and posted on the Web for campus review and comments.

The information used to identify the themes was gathered through numerous sources on the campus in addition to the focus groups appointed by each Vice President for the needs assessment described in the previous section. The full planning structure used by the University consists of

- *Faculty Advisory Committee/Center for the Support of Instructional Technology.* The FAC/CSIT is responsible for making recommendations on issues affecting faculty and technology-mediated instruction. It works with the Faculty Development Committee to identify opportunities for faculty. It also provides advice to and review of Instructional Media Services, which consists of Media Production, Media Distribution, and the Faculty Courseware Development Center and advice to and review of Academic Computing.
- *Information Technology Consultants Council.* The ITC Council shares information among all the information technology support personnel on the campus and provides recommendations to Academic Computing on the support and operation of the Information Competency, open student access, and interdisciplinary computing laboratories on campus, recommendations to the Information Technology Resource Center on the provision of end-user support services, and recommendations to Telecommunications & Network Support on data communications issues. All ITCs on the campus, as well as those performing similar duties at least part of their time, are invited to the Council meetings.

- Standing Committee on Information Technology. SCIT has primary responsibility for developing technology plans for the campus, recommending priorities, and formulating funding requests to the University Resource Planning and Budget Committee. At least once each semester, SCIT representatives are expected to meet with their constituent groups to gather feedback on the then current list of themes, goals, objectives, and activities. All campus constituent groups have appointed representatives on SCIT.
- Ad Hoc Task Forces. Special task forces are formed to deal with specific problems. For example, during 1998/99, a task force was formed to develop the campus contingency plan for dealing with any disruptions which might result from the Y2K bug.

Everyone on campus has had a contact point for providing input into the planning activities. Additionally, during Fall 1999, copies of two draft versions of this document were posted to the Web with printed copies made available in the Vice Presidents' Offices, Deans' Offices, Library, Academic Senate office, and Associated Students government office and a final draft copy posted and distributed in early Spring 2000. All members of the University community were invited to submit comments through their respective SCIT representatives and the Chair of SCIT scheduled meetings with groups of each constituency

The activities listed for each objective in the charts on the following pages are samples only. They help define the scope of the objectives. Actual activities will be developed by the planning and implementation group for each objective.

Theme: Provide for a comprehensive information competency program. Humboldt State University takes pride in being a technology-intensive environment. In order to ensure that its investments in technology generate the benefits expected, the users of that technology must be knowledgeable. However, students, faculty, and staff arrive on campus with widely varying levels of computer, information, and networking knowledge and skills.

Vision/Goal: All students, faculty, and staff at Humboldt State University will possess an appropriate level of information competency.	
Implement an information competency program for students.	<ul style="list-style-type: none"> • Starting from previous University Curriculum Committee (UCC) work on defining information competency expectations for students and working through the faculty, Library, Humboldt Orientation Program (HOP), and others, develop orientation and training programs for students. • Expand and enhance workshops offered by the Library. • Use statistics gathered by the Student Help Desk to guide development of new training options. • Expand Help Desk Web page and link to the CBT training modules. • Define “functional” information competency for each major and ensure students have achieved it before graduation.
Provide development opportunities for faculty.	<ul style="list-style-type: none"> • Develop an orientation program for new faculty. • Survey faculty as to development needs and design workshops to address requests. • Develop “recommended” list of CBT training modules for use by faculty at HSU. • Expand one-on-one tutoring sessions through the Faculty Courseware Development Center. • Expand the number of technology fairs, technology showcases (particularly of HSU faculty-produced products), and seminars available for faculty. • Pilot two new development programs for faculty: one specific to certain College needs in Professional Studies; and one in three general 20-hour modules for fundamentals, multimedia, and Web applications.
Formalize training programs for staff.	<ul style="list-style-type: none"> • Develop an orientation program for new staff. • Develop basic training programs for standard office software suites. • Develop training programs for each major administrative application package. • Develop “recommended” list of CBT training modules for use by staff.
Develop a technology currency program for information technology staff.	<ul style="list-style-type: none"> • Survey all information technology staff to determine each’s skill set needs. • Implement a development program to bring each staff member to the appropriate level of skills and maintain them. The program may include use of the CBT modules, bringing trainers onto campus, sending staff to training, or developing training in-house. • Develop training/apprenticeship programs for student employees by work area.

Theme: Support the instructional program. Humboldt State University must ensure that the necessary information technology infrastructure is in place to support instruction. It is close to its target of one computer available on campus for each ten students, but all of these computers are not at current technology levels, there are restrictions on who can use what equipment and when, and the support available for maintaining these resources is uneven across the campus.

Vision/Goal: Students and faculty will have access to both interdisciplinary and discipline-specific computing resources to support their instructional and research computing needs.	
Leverage existing computing resources to expand access.	<ul style="list-style-type: none"> • Develop resource-sharing agreements covering campus student computing laboratories to allow broader access to and campus-wide support of existing laboratories. • Assess the mix of interdisciplinary and discipline-specific computing laboratories and determine if the mix is appropriate or if adjustments should be made. • Expand the available hours of operation for all computing laboratories. • Ensure there is a common set of software tools available on all campus microcomputers. • Develop a method for directing students to laboratories with open seats. • Determine how many computing laboratories HSU needs and where they will be located. • Provide ports in the laboratories for students to connect their portables to the network.
Improve courseware development capabilities and courseware support services.	<ul style="list-style-type: none"> • Develop resource-sharing agreements covering existing courseware development and multi-media laboratories to allow broader access to and campus-wide support of existing laboratories. • Develop a consultative structure for determining what hardware and software should be acquired, where it should be located, and how it should be supported in order to minimize unnecessary duplication. • Address impediments that limit faculty use of technology mediated instruction, including workload issues, copyright, intellectual property, compensation, etc. • Enhance coordination between Instructional Media Services and Academic Computing to ensure campus laboratories contain all software needed to execute courseware. • Develop support mechanisms for distance learning, both to serve the distance learner and to reduce seat-time for HSU's on-campus students, including ensuring software is available to students for their personal computers to run locally developed courseware. • Pilot Open University teacher credentialing programs for rural areas. • Perform market research to identify community distance learning needs and match to HSU strengths. • Provide technology leadership and enter into collaborative efforts with community colleges and K-12 school districts.

<p>Ensure access to modern library facilities.</p>	<ul style="list-style-type: none"> • Maintain technology currency in library information systems. • Expand the availability of electronic resources, including locally maintained electronic resources. • Ensure that the Library's systems are accessible from all public campus computing resources.
<p>Design a "classroom of the future" and implement appropriate technology for use in classrooms.</p>	<ul style="list-style-type: none"> • Assess the readiness of classrooms to accept technology (networking, electrical, security, etc.) • Assess the effectiveness of technologies being used in classrooms today and maintain an assessment of new technologies as they develop. • Migrate classrooms to the most effective technologies and keep them current with the best available, affordable technologies.
<p>Enhance ability to support research computing.</p>	<ul style="list-style-type: none"> • Ensure adequate capacity to meet most faculty mainframe computing needs on-campus, including pooling central server resources when necessary. • Expand the availability of Computing & Telecommunications professionals to support faculty research activities (e.g., providing database design expertise). • Assist faculty in obtaining agreements to use off-campus computing resources when necessary, especially through Internet II. • Assess HSU's subscriptions to Speciality Centers, both within the CSU and without, and adjust subscriptions as appropriate.

Theme: Provide technology tools to faculty, staff, and students. Technology is not just a fact-of-life, it is the “survival” tool of the current age. Unless effective technology services are available, Humboldt State University’s students, faculty, and staff cannot be successful.

Vision/Goal: All students, faculty, and staff at Humboldt State University will have access to the information technology tools and services each needs to be successful in his or her academic and professional pursuits.	
Be an aggressive implementor of the <i>Assured Student Access to Computing and the Network Initiative</i> .	<ul style="list-style-type: none"> • Actively promote student ownership of personal computers. • Implement purchase and lease/purchase plans for students to obtain computing hardware and software, including a financial aid program for those in need. • Provide loaner microcomputers for Residence Hall students with financial need. • Negotiate software licenses such that all necessary software is available across all campus computing laboratories, either site licenses or key-server licenses. • Make instructional software accessible to home computers via thin-client software servers. • Improve the ergonomics of courseware to make it more accessible to disabled students.
Provide a rich set of classroom management tools for faculty use	<ul style="list-style-type: none"> • Enhance existing services such as electronic grade books. • Provide improved on-line testing capabilities. • Obtain user-friendly development tools for faculty use. • Redesign the processing of teacher evaluations, including providing an on-line option, to allow mid-semester evaluations.
Automate, or improve automation of, business processes where appropriate.	<ul style="list-style-type: none"> • Establish an in-house consulting service for business process reengineering. • Continue developing online forms for the transmittal of information between offices (e.g., student time reports, work orders, purchase requests, time reporting, etc.), including implementing electronic signatures. • Implement an electronic document management service. • Develop custom programming where appropriate.
Provide enhanced support for institutional research.	<ul style="list-style-type: none"> • Offer BRIO training courses. • Create data “views” as appropriate. • Redesign the processing of surveys, including providing an on-line option.

<p>Improve general communications capabilities of the campus.</p>	<ul style="list-style-type: none"> • Develop a broader range of automated list-subscriber generators (e.g., by department, by college, by major/minor, etc.). • Implement a “portable” (Web-based) e-mail agent. • Implement news readers and other group discussion technologies as appropriate. • Develop a sustainable funding approach for network support. • Establish a consultative service for maximizing the utility of the telephone and voice mail systems, including call coverage, automatic call directory, voice forms, FAX redirect, etc.
<p>Improve communications capabilities for “remote” sites.</p>	<ul style="list-style-type: none"> • Improve telephone services for the Residence Halls. • Provide ISP and wireless services for on-campus locations not connected to the backbone. • Provide off-campus ISP services. • Improve communications services to off-campus locations (e.g., Marine Laboratory, First Street Gallery, etc.). • Implement improved network security for both voice and data.
<p>Improve technology support services across the campus.</p>	<ul style="list-style-type: none"> • Develop a coordinative structure for providing end-user technical support, including cross-unit backup of personnel. • Expand the availability of Information Technology Resource Center consultants. • Implement remote desktop support tools. • Provide a consultive service for units developing disaster recovery plans and implement a campus-wide backup plan. • Complete mitigation of potential Y2K problems and maintain the contingency plan.

Theme: Work within the California State University. Humboldt State University is a part of the California State University. It needs to be an active participant in CSU initiatives in order to take advantage of this relationship while ensuring local needs are met.

Vision/Goal: Humboldt State University will be an active participant in implementing the California State University's Integrated Technology Strategy.	
Participate in the Technology Infrastructure Initiative.	<ul style="list-style-type: none"> • Hire a project coordinator/network technician, Spring 2000. • Revise preliminary plans during 1999/00. • Complete working drawings during 2000/01. • Complete construction of the <i>Baseline Telecommunications Infrastructure</i> during 2001/02. • Extend backbone services, most likely via wireless technologies, to temporary buildings. • Interface HSU operations and support services to CSU operations and support services, as appropriate. • Take a leadership role in implementing new revenue programs to fund the infrastructure, including obtaining and keeping desktop systems current and providing support services — i.e., provide the incremental funding to implement the enhancements included in HSU's technology plan.
Participate in the Collaborative Management System Project.	<ul style="list-style-type: none"> • Update the readiness assessment on an on-going basis. • Begin process mapping for Human Resources, Fall 1999. • Hire a project manager, Spring 2000. • Implement PeopleSoft applications as a "Wave Two" campus: <ul style="list-style-type: none"> ◦ Human Resources, 12/2000 - 08/2002. ◦ Financial Information, 03/2001 - 05/2004. ◦ Student Information and Financial Aid, 02/2001 - 03/2006 • Interface HSU local systems to PeopleSoft.
Pursue grants from within the California State University.	<ul style="list-style-type: none"> • Establish a response structure to allow HSU to compete more effectively for grants made available as part of the implementation effort for the CSU/ITS. • Participate more actively in systemwide bodies in order to improve HSU's competitive position for CSU grants and increase HSU's influence over CSU planning.
Continue to support local applications systems until replaced by CSU systems.	<ul style="list-style-type: none"> • Modify existing systems to support Year Round Operations. • Implement a student recruitment/enrollment management module(s) for undergraduate and graduate programs. • Implement a degree audit/student advising module (DARS). • Implement Banner Web for Faculty and Advisors. • Expand the availability of student services via the Web. • Expand the availability of student services via interactive voice response. • Provide faculty and staff access to Banner via the Web and/or applications forms.

IMPLEMENTATION

Humboldt State University develops its information technology plans within frameworks created by the CSU. Because the CSU Integrated Technology Strategy initiatives channel much of the campus' implementation activities, the campus technology implementation plan must operate around the periphery of that Strategy.

Collaborative Management System

The Collaborative Management System (CMS) Project is a CSU-wide project to replace all of the CSU's and its campuses' mission-critical administrative software. The overall project is directed from the Chancellor's Office. The point of contact for the project on the HSU campus is the Vice President for Development & Administrative Services.

A CSU-wide committee selected PeopleSoft during 1998/99 to provide an integrated suite of human resources, financial, and student administration applications software. Implementation of the major PeopleSoft modules will be accomplished in "waves" of a manageable number of campuses. HSU has chosen to be in the second wave. The project schedule is determined by a project team working out of the Chancellor's Office, is very preliminary, and is subject to significant change considering that the project involves coordination across the Chancellor's Office and 23 universities. The preliminary schedule for second-wave universities is as follows:

- Human Resources — Administer Workforce, Base Benefits, Recruiting, Time & Labor/Leave Accruals, Campus Community, Tenure Tracking/Flex Services, General Ledger, Budgets & Encumbrances, Health, Labor, Leave of Absence, Web Client/Workflow
 - 04/06/99 CSU Baseline development begins
 - 08/04/99 CSU Baseline function prototype
 - 03/31/00 CSU Baseline design complete
 - 07/10/00 CSU Baseline system deployed
 - 12/08/00 Second Wave project begins
 - 08/13/02 Second Wave moves to production

- Finance Phase 1 — General Ledger, Purchasing, Accounts Payable
 - 09/06/99 CSU Baseline development begins
 - 03/20/00 CSU Baseline function prototype
 - 06/30/00 CSU Baseline design complete
 - 07/25/00 CSU Baseline system deployed
 - 03/09/01 Second Wave project begins
 - 07/24/02 Second Wave moves to production

- Finance Phase 2 — Accounts Receivable, Billing, Projects, Asset Management, Budget Preparation
 - 06/01/01 CSU Baseline development begins
 - 09/13/01 CSU Baseline function prototype
 - 07/08/02 CSU Baseline design complete
 - 07/31/02 CSU Baseline system deployed
 - 03/17/03 Second Wave project begins
 - 05/10/04 Second Wave moves to production

- Student Administration Phase 1 — Campus Community, Academic Structure, Admissions
 - 06/28/99 CSU Baseline development begins
 - 10/01/99 CSU Baseline function prototype
 - 06/02/00 CSU Baseline design complete
 - 01/08/01 CSU Baseline system deployed
 - 02/09/01 Second Wave project begins
 - 12/04/02 Second Wave moves to production

- Student Administration Phase 2 — Student Records, Financial Aid, Student Financials
 - 10/04/99 CSU Baseline development begins
 - 09/01/00 CSU Baseline function prototype
 - 10/06/00 CSU Baseline design complete
 - 05/07/01 CSU Baseline system deployed
 - 11/30/01 Second Wave project begins
 - 12/24/03 Second Wave moves to production

- Student Administration Phase 3 — Academic Advisement
 - 12/02/02 CSU Baseline development begins
 - 09/01/03 CSU Baseline function prototype
 - 09/01/03 CSU Baseline design complete
 - 12/09/03 CSU Baseline system deployed
 - 05/11/04 Second Wave project begins
 - 03/06/06 Second Wave moves to production

At this time, Auxiliaries and Advancement are outside the scope of the CMS Project.

All campuses in the CSU are expected to participate in the development of the CSU Baseline. Because project planning still is at a preliminary stage, it is difficult to estimate HSU's costs for implementation. The Chancellor's Office has provided preliminary estimates of costs for small, medium, and large-sized universities in the CSU, with the preliminary estimate for a medium-sized university such as HSU as follows:

Preliminary Estimate	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	Total
Baseline Development Support	50,000	500,000	300,000	200,000	100,000			1,150,000
Campus Impl. Staffing & Backfill	100,000	500,000	750,000	850,000	750,000	400,000	300,000	3,650,000
Consulting	50,000	400,000	800,000	1,000,000	750,000	500,000	200,000	3,700,000
Training (Units & Travel)	200,000	300,000	250,000	150,000	100,000	25,000		1,025,000
Infrastructure	25,000	75,000	150,000	100,000	50,000	50,000	25,000	475,000
Total Campus Support	425,000	1,775,000	2,250,000	2,300,000	1,750,000	975,000	525,000	10,000,000

This cost estimate was generated without regard to whether a campus is in the first wave or second. As a second-wave university, HSU can expect its costs to be somewhat lower, particularly as the need for

outside consulting services will decrease after the primary functionality design is completed by the first-wave universities.

HSU will begin its implementation efforts during Fall 1999. It has convened a CMS Coordinating Team to begin the preliminary planning, and the Team has completed a readiness assessment of major administrative units on the campus. A “process mapper” has been hired and is working with the most directly impacted administrative units (primarily Human Resources) to map HSU’s current business processes and identify its existing data. This information will be used to ensure that all of HSU’s needs are addressed in the CSU Baseline design and all files are identified for conversion. Although it is likely that HSU will need to develop some subsidiary programs to address its unique needs and interface them to the CSU Baseline, every reasonable effort will be made to minimize such custom programming. A full-time project manager (new temporary position) is expected to be on-board for Spring 2000.

The CMS Project will reduce the cost and time to implement and maintain the software needed by the campuses to update and integrate their administrative systems and is expected to provide the following benefits:

- Students, faculty, staff, and management will all have increased access to information that is more accurate, timely, and reliable. This includes student records, employee information, and financial and budget data. The development of self-service information environments for students, faculty, and staff will be enhanced.
- All major administrative systems will be linked together, so data will be entered at the source only once and inconsistent data can be eliminated. Duplicative systems and processes also can be eliminated.
- More efficient processes will help the campus deal with ever-increasing workloads, alleviating the need to add staff and increase administrative costs.
- Electronic completion and transmission of documents will reduce paper flow and the time it takes to complete transactions. For example, it should help departments complete the recruitment and hiring process in a more timely manner.
- HSU will have a more flexible and straightforward payroll system — one that is geared to the needs of the University rather than the needs of the State Controller’s Office.
- It will be easier to generate and report data required by the Chancellor’s Office. When changes to reporting requirements occur, they can be addressed at the systemwide level rather than campus-by-campus.
- One element of the HSU strategic plan is to “use technology to improve business processes and student services.” The CMS Project will help provide the capability to deliver the technology-based services that many departments are requesting.

A more complete description of the project is given at the project Web site, <http://cms.calstate.edu>.

Technology Infrastructure Initiative

The Technology Infrastructure Initiative (TII) is a CSU-wide project to build out the technology infrastructure (essentially networks) of the CSU and its campuses. The overall project is directed from the Chancellor’s Office. The point of contact for the project on the HSU campus is the Executive Dean. The schedule for HSU is as follows:

1999/00	Preliminary Plans (P)
2000/01	Working Drawings (W)
2001/02	Construction (C) and equipment (e)

The "PWC" implementation will be managed as a standard capital outlay project with contracting and management being the responsibility of the campus. HSU's portion of the cost is estimated at \$9,609,000 (non-inflated) to pay for pathways, spaces, and intrabuilding media. Funding will come from the proceeds of the bond sale authorized by Proposition 1A. Over and above the capital outlay expenditures, it is estimated that Humboldt will need to spend \$350,000 from its Special Repairs funds for asbestos abatement.

The "e" implementation will be managed as a systemwide project with contracting and management being the responsibility of the Commission for Technology Infrastructure (CTI). HSU's portion of the cost is estimated at \$2,873,000 to pay for interbuilding media and network electronics. Funding will come from the Support Budget, including redirection of current expenditures for network electronics, income from new revenue programs being initiated by the CTI, reallocations, and possibly new allocations from the CSU.

There also are on-campus project costs which require an infusion of new funding. Three critical TII cost items need to be addressed:

- Project Coordination. The current Telecommunications staff has all the projects it can handle. At the same time, demands for technical support for TII, both from on-campus and off, are increasing. As the project moves through developing the working drawings during 2000/01 and constructing and equipping during 2001/02, C&TS will need to assign someone essentially full-time to project coordination and being the technical "clerk of the works." This "network specialist" position would be at the Network Analyst/Career level and would be a temporary position that existed for the life of the project. Annual salary costs would be \$50,000, benefits costs would be \$13,750, and combined operating expenses would be \$10,000.
- Travel. Significant travel is being required for campus participation in the TII, including travel for the Commission on Technology Infrastructure and for various technical panels that are setting architectural and security standards. The amount of this travel can be expected to increase as the project progresses systemwide. Annual cost is estimated at \$12,000.
- Support for Temporary Buildings. The systemwide funding for the build-out will provide little, if any, support for HSU's temporary buildings. For this reason, the campus has emphasized the need for a wireless backbone in the design for Humboldt in addition to the fiber backbone which is part of the CSU baseline specification for the TII. Wireless will provide the campus with a lower-cost alternative for extending the benefits of the TII to what amounts to 25% of the total space on this campus. These temporary buildings already are severely underserved, if they are served at all, on the current network. It is possible for Telecommunications and Network Support to begin providing wireless connections to these buildings now while ensuring complete compatibility with the future TII. If the campus does not start now, it will have to start after the construction phase of the TII three years from now, and the occupants of these buildings will have lost another three years of service. Installing a properly designed wireless plant also opens up a number of other service possibilities, including walk phones across campus, mobile computing and would facilitate reporting and response in emergency response situations.

In summary, new funding required for campus expenses to support the TII are as follows:

	<u>1999/00</u>	<u>2000/01</u>	<u>2001/02</u>	<u>2002/03</u>
Temporary Staff		\$ 50,000	\$ 50,000	\$ 25,000
Benefits		13,750	13,750	6,875
Services & Supplies	\$ 5,000	10,000	10,000	5,000
Travel	<u>12,000</u>	<u>12,000</u>	<u>12,000</u>	<u>6,000</u>
	\$ 17,000	\$ 85,750	\$ 85,750	\$ 42,875

These numbers do not include an on-going allocation for wireless connections for temporary buildings. It is possible to spend responsibly very large amounts of money on wireless services, but it would be better to start small and expand as the campus experience and skill level with wireless increases. Therefore, an additional allocation of \$35,000 during 2000/01 would be sufficient to start.

An integral part of the TII is on-going support for the infrastructure, in terms of its maintenance and refresh, and for its users, in terms of Help Desk services, training, and development. HSU has spent several years expanding its operations and support services and will need to integrate its services with those provided by the CSU through the initiative as appropriate.

Different applications of technology should not be competing with each other. Implementations can and should leverage each other's investment but need to be focused on the needs of the user base to be served. "Administrative computing" requests should be considered in the context of other administrative processing needs and each justified in terms of meeting a mandate or paying for itself through direct cost savings, cost avoidance, or revenue generation. "Academic computing" requests should be considered in the context of the overall academic program and each justified in terms of improved academic outcomes and the quality of the institution's graduates. "Major library applications" requests can be considered in the context of other library productivity initiatives (an "administrative computing" approach) or by their ability to provide improved access to knowledge (an "academic computing" approach) and each justified accordingly. Leverage comes from identifying the underlying infrastructure needs and the training and support necessary to support the infrastructure for all the application areas. This has been the goal of the TII — to identify those leverages and build and support the infrastructure and its users across all of these applications areas in order to implement the vision of the ITS:

All students, faculty, and staff will have anywhere, anytime electronic access to information resources in support of the teaching-learning mission of the University.

A more complete description of the project is given in the document *ITS/TII Status & Directions* (October 1998) available at all the normal document filing offices on campus and on the Web at <http://its.calstate.edu>. TII progress reports also are available at the Web site. Progress reports on the Operations and Support Services subproject of the TII can be found at <http://osreview.calstate.edu>.

 **Year Round Operations**

Implementing YRO will result in some significant costs for Computing & Telecommunications Services, with the majority of those costs incurred by Academic Computing. The major impacts will be the need to hire student employees during the Summer to open, close, and monitor computing laboratories and to deliver and operate audio/visual equipment; hire staff to supervise the students and perform additional maintenance functions; and purchase more spare parts because the equipment will be used more heavily. Projected costs for a 500 FTES pilot during Summer 2000 and a 750 FTES continuation during Summer 2001 for C&TS are as follows:

	FY99/2000 ->	<- FY2000/01 ->		<- FY2001/02
	Summer 2000		Summer 2001	
	To 6/30	After 6/30	To 6/30	After 6/30
Salary Expenses				
Staff Salaries	\$18,224	\$18,224	\$26,554	\$26,554
Staff Benefits	4,009	4,009	5,842	5,842
<i>Total Staff Cost</i>	\$22,233	\$22,233	\$32,396	\$32,396
Non-salary Expenses				
OE	\$ 2,875	\$ 2,875	\$ 4,013	\$ 4,013
Equipment	8,850	8,850	12,775	12,775
Motor Vehicle Ops	200	200	250	250
Temporary Help	11,402	20,072	15,116	23,786
<i>Total Non-salary</i>	\$23,327	\$31,997	\$32,154	\$40,824
Total Projected Costs	\$45,560	\$54,230	\$64,550	\$73,220

Continuous Process Improvement Program

Setting a long-term set of technology priorities on the campus is almost impossible in an environment of rapid technological change and systemwide initiatives. Instead, short-term planning and the identification of projects need to be performed on an on-going basis by the campus technology planning and coordinating committees. In order to create the adaptive planning and implementation environment needed at HSU, the April 1998 status report to the Standing Committee on Information Technology contained two recommendations: establish a Continuous Process Improvement (CPI) program and a central computing account:

- o Continuous Process Improvement Program. A Continuous Process Improvement program is a structured program where the focus is placed on short-term projects which advance themes identified in an organization's strategic business plan. CPI programs can be characterized by small group planning, design and testing by pilot project, and rapid application development with quick product roll-out, typically three to six months.

HSU has long had an *ad hoc* CPI program. A good example is the SISJOB program. In response to faculty requests for easier ways to use electronic data to support the classroom environment, Computing & Telecommunications Services (C&TS) developed a program that allows faculty members to request class lists that may be downloaded into Excel spreadsheets to build a grade book. An early version of this program also produced a listing of the electronic mail addresses of all the students in a section so that the instructor could cut-and-paste the list into an e-mail alias for communicating with the students. As soon as C&TS implemented list servers (another CPI example), SISJOB was modified to generate a closed list for the class with all e-mail addresses automatically registered. Two weeks after the end of semester, the closed list is removed from the system automatically. C&TS recognized the need for a service (simplified e-mail to support classroom discussion) from requests for support from faculty, identified a small group of faculty who were leading-edge users of technology with which to work, did a quick design and test, and rolled-out a new service in just a couple of months.

What has been new over the past two years is an attempt to bring structure to this *ad hoc* CPI program and formalize it without restricting the dynamics that allow for the creativity necessary to make it a success.

- Central Computing Account. It is important to identify what is being spent on University-wide central computing resources. These have been identified as central processor needs (Digital Equipment Corporation Alpha computers and NT/servers providing campus-wide services), Banner support (student and financial aid software), Oracle (database management system), BRIO (query tool), and IVR (telephone interface). The costs for these resources historically were funded by a mix of using offices, support offices, and from University contingency and year-end funds. Even though the lease/purchase payments for the central computers were completed during AY 1998/99, there still is an on-going need to provide funds for CPU, memory, disk, and tape upgrades and disaster recovery back-up coverage services. Because the use of these resources has expanded beyond a limited set of offices to all parts of the University, C&TS provided a report to the University Resource Planning and Budget Committee in April 1998 showing a payment history for these resources and a projection of future costs. The campus subsequently established a central computing account to track these campuswide hardware and software expenses.

With these two recommendations implemented, Humboldt has the structure in place to implement the local components of its technology plan. The implementation approach needs to be adaptive and flexible in order to be responsive to changes from the Chancellor's Office and the evolutions and revolutions in technology. Given that the basic infrastructure will be deployed via the CSU Technology Infrastructure Initiative, the really interesting question is "Once in place, how can this technology best be used?" The answer is not a destination, it is a journey. In both the areas of applying instructional technology to support the curriculum and in using technology to improve day-to-day operations, change is far too fast-paced to make it practical to develop plans that identify more than themes and pilot projects that are used for proofs-of-concept. It is critical to build a structure that allows for flexibility, quick approval, and rapid development and implementation. It must be possible for users and support staff to be able to try and fail (on a reasonably small scale) rather than to be locked into a cycle of major analysis, debate, and budget negotiation that can stifle creativity.

The CSU's Integrated Technology Strategy (ITS) used this approach in its start-up phases. Baseline requirements were identified in terms of where the organization was and where it needed to be: the traditional approach. But most actual initiatives — proofs-of-concept — are creative, low cost, and of quick turnaround. HSU has taken this approach for technology mediated instruction and for its Continuous Process Improvement (CPI) program. Not every pilot will be successful, and every new service tested will not necessarily become part of the service offerings of the campus. However, at very low cost, and using only time available from working around other duties, the campus has embarked on a program to make the best use of the information technology it has.

This approach has been successful. During 1998/99, University Computing Services

- implemented Web Registration with tremendous success and acceptance;
- tested for and mitigated Y2K problems found in mission-critical applications;
- designed and implemented a work request and progress tracking system for major administrative users;
- fully implemented University-wide Help Desk services, with the Student Help Desk surpassing 350 customer contacts in a single day for the first time;
- developed procedures for assisting technical support staff across the campus;
- rolled-out numerous new products, such as the MeetingMaker scheduling system, CBT on-line training modules, and Microsoft licensing program;
- successfully transferred responsibility for processing faculty evaluations from Student Affairs to C&TS and expanded evaluation services to the departments;

- expanded support to both campus units and local law enforcement agencies investigating computer crimes;
- doubled the available central processing power for administrative applications, electronic mail, and Web service; and
- reorganized into services groups providing active outreach to the user base.

During 1998/99, Telecommunications and Network Support

- tested for and mitigated Y2K problems found in campus communications systems;
- provided critical support to Physical Services in planning the Utility Infrastructure Project;
- continued making good progress in finalizing the preliminary plans for the Telecommunications Infrastructure Project;
- developed options and plans that will result in the Marine Center finally receiving the types of communications support it needs;
- assisted in the planning and implementation of the Residence Halls network;
- ensured the availability of appropriate communications facilities in the new Fish and Wildlife Building;
- designed and began implementing a “fire wall” architecture to protect the campus from outside electronic attack; and
- placed new emphasis on active outreach to help users maximize the benefits of the technology, for example, the Automatic Call Directory project.

During 1998/99, Academic Computing

- completed a major hardware and operating system upgrade across almost all the computing laboratories to allow them to run the latest software;
- developed new back-up and restore functions which greatly reduce laboratory down-time;
- designed and built the Information Competency Laboratory in the Library;
- designed and built the Teacher Preparation Computing Laboratory in Harry Griffith 105 with a layout typical of laboratories being implemented in K-12 schools;
- planned and began the purchasing for upgrading the computing laboratories in Jenkins Hall 212, Library 310, Siemens Hall 1 and 119, and Founders Hall 202; and
- provided an enhanced level of support to departmental technical support personnel across the campus, particularly with laboratory design, and began the planning and negotiating for providing some support services for the departmental laboratories.

During 1998/99, Instructional Media Services

- moved fully into the digital age with the addition of the digital video editing system;
- continued producing some of the most innovative courseware in the California State University, for example, *Out on a Wing* for Dick Stull; and showcasing HSU’s capabilities at seminars and meetings around the CSU;
- greatly expanded support for distance learning and video conferencing using new technologies;
- equipped more HSU classrooms with multimedia delivery capability;
- delivered tech fairs and additional training opportunities to the faculty, staff, and students;
- became more involved in community service, including participating in the County Tech Fair and providing support for the Sund memorial service; and
- put Humboldt State University’s graduation live on the Internet for the whole world to see.

During 1998/99, C&TS as a unit

- implemented significant expansions in HSU’s security capabilities to keep it ahead of the various hackers, spammers, and other miscreants that have attacked the campus’ systems over the last year;

- developed a Disaster Recovery Plan which is probably the most effective in the CSU and implemented a Rapid Response Team approach to resolving problems in mission-critical systems; and
- developed a contingency plan for responding to any service outages caused by Y2K problems.

C&TS, of course, is not the only unit on campus which implements technology projects. Of particular note, during 1998/99

- the Library began implementation of the Endeavor Voyager library automation system to replace the existing GEAC system and was able to cut-over to the new public access catalog, circulation, and acquisitions modules during Fall 1999;
- the three colleges have been using instructional equipment funding, some BATS funding, and reallocations to increase the number of and decrease the refresh cycle of faculty workstations. Also
 - the College of Natural Resources and Sciences upgraded the Spatial Analysis Laboratory, Quantitative Sciences Laboratory, and UNIX Laboratory; and
 - the College of Arts, Humanities, and Social Sciences upgraded the Multimedia Laboratory and the Writing Center and began implementing a Foreign Languages Laboratory; and
- the Residence Halls has completed the wiring for ResNet, which includes a data "port per pillow" and all new telephone wiring, and is working with Telecommunications and Network Support on shared-responsibility agreements that will allow full implementation of networking services for the residents and examining options for providing telephone services.

As extensive as the existing consultation structure is, it has not been sufficient to keep everyone in the campus community fully informed as Humboldt State University moves forward in accomplishing the objectives identified under each theme in this information technology plan. During Spring 2000, the Information Technology Consultants Council will be restructured. The ITC Council is an affinity group with no formal mission statement or assigned responsibilities. Its primary role has been for those who wish to attend keeping each other informed of what is happening in their areas and sharing solutions to common problems. During Spring 2000, two formally constituted groups will be formed:

1. The Instructional Technology Advisory Group (ITAG) will be chaired by the Manager of Academic Computing, staffed by the Coordinator for the Information Technology Resource Center, and consist of one information technology consultant from each of the Colleges and Library and a technical representative from Instructional Media Services. The ITAG will provide technical consulting in instructional technology issues to the Faculty Advisory Committee for the Center for the Support of Instructional Technology. This group will have primary responsibility for identifying and proposing solutions for meeting the instructional technology support needs of faculty.
2. The Information Technology Consultants Council will develop a charter and membership statement for approval by the Standing Committee on Information Technology. Essentially, the ITC Council will be responsible for making recommendations to SCIT on campus technology standards and general support requirements for the users of Humboldt's computing and communications resources. The membership will elect a chair annually who will act as liaison to SCIT.

In addition, several list servers will be established during Spring 2000:

- Academic Computing List Servers. As described earlier in this document, list servers will be established for each Academic Computing laboratory to allow faculty and technical support staff to discuss issues and plan upgrades.

- CPI List Servers. List servers will be established for each Continuous Improvement Process project which will include communications calling for participation in planning and pilot projects as well as issuing progress reports. Reports will be archived on Web pages. Notification of major events will be distributed across campus via Bulk E-mail.
- Master List Server. A list server will be established that sends notices of the creation of new list servers. A master index of list servers will be maintained on a Web page.

It is hoped that along with the establishment of the Instructional Technology Advisory Goup and the restructuring of the Information Technology Consultants Council, the campus community will be better informed and have greater opportunities to participate.

Priorities

Campus priorities are constrained by the need to adhere to CSU-wide schedules for the implementation of Integrated Technology Strategy initiatives, specifically the Technology Infrastructure Initiative and the Collaborative Management System Project. The schedules, as currently issued by the Chancellor's Office for TII and CMS, are given earlier in this document. Further, the schedule for Year Round Operations also is fixed – this initiative will be implemented during Summer 2000. The priorities that the campus can set are those for the projects identified as part of the Continuous Process Improvement program. Implementing these projects is subject to two constraints:

- Funding. As part of its basic nature, a CPI program does not need to include a budget component, although many organizations do allocate an "innovation fund" to support their CPI efforts. Not having such a fund at HSU limits the pace of the CPI program, but it also ensures that staff will make every effort to develop new services which require a minimum of on-going support. For example, when electronic mail and Web accounts were made available for all students and faculty and most staff, automated activation procedures were developed to minimize the amount of staff time required to create accounts and maintain passwords.

New funding, in the form of an innovation fund, is not requested at this time — only the continuation of previous funding levels for those resources which HSU will continue to need to support into the future. This continuation will allow growth in capacity of central computing resources necessary to implement and sustain many of the CPI projects. Separate specific requests will be made to the URPBC, Executive Committee, or other appropriate office for funding to implement projects which the University approves but which cannot be implemented within this funding base. For example, implementing an imaging system, should one prove of sufficient value to the campus, will require a supplemental allocation of funds.

- Staffing. All of the Computing & Telecommunications Services staff members have responsibilities which consume the majority of their time. However, some of the workload is somewhat cyclic. For example, the systems analysts will be very busy during a period in which update patches must be applied to HSU's administrative software and somewhat less busy during other times. It is during those "other" times when staff can work on Continuous Process Improvement projects. However, the right staff member with the right skill set must be available in order to move a particular project forward. Although C&TS uses cross-training to ensure the availability of back-up for critical skills, the staff members are not interchangeable.

The primary tasks C&TS staff must accomplish as part of on-going business over the next two years are listed on the following page.

Given the above, it still is possible to set short-term goals for the implementation of CPI projects. Projects can be classed into two general groups:

- Administrative Projects. Administrative projects generally require the allocation of some new funding. Where dollar amounts are identified, funding already has been assured.

Completion	License Fees	Project
By Fall 2000	\$10,000	Web for Faculty and Advisors. Experience gained from implementing Web for Students should make this implementation straight-forward.
By Fall 2000	\$30,000	On-line credit-card fee payments. Provide students an option during Web registration to pay fees immediately via credit card or receive an e-mail billing.
By Fall 2000		Graduate applications processing. Develop a plan consistent with plans being developed for CMS interfaces.
By Fall 2001	\$25,000	DARS. Humboldt will be able to benefit from work already done, particularly in the area of lower division general education requirements, at other CSU campuses.
On-going		Electronic Forms. One of the issues that needs to be resolved is how much of these types of workflow automations will be built into CMS and how much HSU should develop on its own. There will not be sufficient resources to duplicate efforts. A task force will be formed during Spring 2000 to build on the work already done by the Vice President's Office in Academic Affairs.

- General Projects. No costs are identified for the following projects. Any expenses will be paid from existing funding.

Completion	Project
During Spring 2000	Create Instructional Technology Advisory Group.
During Spring 2000	Restructure Information Technology Consultants Council.
During Spring 2000	Establish new list servers. This includes the list servers for Academic Computing laboratories, the participants' list servers for the Continuous Process Improvement program, and the list serve of list servers.
By Summer 2000	Wireless. Develop a plan for providing wireless services on campus.
By Summer 2000	ISP. Develop a plan for providing ISP services to the campus community.

By Summer 2000	Residence Halls. Develop a plan of attack for providing telephone service to the Residence Halls.
By Summer 2000	Faculty Information Competency. Two initiatives: <ul style="list-style-type: none"> • Develop a course in instructional technology and mediated instruction for students in the Department of Education. • Working through the Faculty Development Committee, develop generalized 20-hour courses for HSU faculty in fundamentals, multimedia, and Web applications.
By Summer 2000	Staff Information Competency. Working through Human Resources, make available additional training opportunities for staff.
By Fall 2000	Student Information Competency. Starting from previous UCC work on defining information competency expectations for students and working through the faculty, Library, HOP, and others, develop orientation and training programs for students.
By Fall 2000	Web-mail. Offer a Web-based e-mail agent to the campus, either commercial or home-grown, consistent with HSU's account generation processes and supporting services comparable to Eudora.
By Fall 2000	Telecommunications and Network Charges. Complete a study and prepare a proposal to bring equity to the charging for and controllability to the costs for <ol style="list-style-type: none"> (1) Data network connect charges that account for the loading placed on the network and the amount of effort required to administer the connection; (2) Long distance calling; (3) Credit card usage; and (4) Operator-assisted dialing.
By Fall 2000	Enhanced Bulk E-mail. Offer enhancements to the Bulk E-mail system to allow greater granularity (e.g., sending a message to all faculty in a single College, all students in a particular major, all students with a GPA lower than x.xx, etc.).
By Fall 2000	Assured Student Access. Implement a microcomputer loaner program for Residence Hall students with financial need.

Humboldt State University is moving forward on all the objectives identified under its four major themes, but the pace of new product development under the Continuous Process Improvement Program can be expected to diminish over the next several years as an increasing proportion of staff time is assigned to the Collaborative Management System Project and the Technology Infrastructure Initiative.

The Standing Committee on Information Technology will review this plan annually and issue an update which shall consist of

- The previous year's accomplishments;
- Updates to the Themes/Goals/Objectives grids; and
- Priorities and schedules for the following twelve months.

Approved: Standing Committee on Information Technology, February 21, 2000

Approved: University Resource Planning and Budget Committee, with edits, March 3, 2000

Approved: University Executive Committee, March 16, 2000

📧 Please direct any questions or comments concerning this document to ✉

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Glossary

AC	Academic Computing
BATS	Basic Access to Hardware/Software, Training, and Support
BFA	Banner Financial Aid (system)
BRIO	a relational database query tool
BTI	Baseline Telecommunications Infrastructure (plan)
C&TS	Computing & Telecommunications Services
CBT	a company providing computer based training on CSU contract
CMS	Collaborative Management System
CNRS	College of Natural Resources and Sciences
CPI	Continuous Process Improvement
CSU	California State University
CSIT	Center for the Support of Instructional Technology
DARS	Degree Audit Records System
DHCP	Dynamic Host Configuration Protocol
FAC/CSIT	Faculty Advisory Committee for CSIT
FCDC	Faculty Courseware Development Center
FTES	Full Time Equivalent Students
GRE	Graduate Records Examination
HOP	Humboldt Orientation Program
HSU	Humboldt State University
HVAC	Heating, Ventilation, Air Conditioning
IMS	Instructional Media Services
ISC	Information Security Coordinator
ISP	Internet Service Provider
IVR	Interactive Voice Response (system)
ITAG	Instructional Technology Advisory Group

ITC	Information Technology Consultant
ITRC	Information Technology Resource Center
ITS	Integrated Technology Strategy (CSU)
LAN	Local Area Network
NCAA	National Collegiate Athletic Association
OSA	Office of Student Affairs
SCIT	Standing Committee on Information Technology
SIS	Student Information System
TII	Technology Infrastructure Initiative
TIMP	Telecommunications Infrastructure Master Plan
TIP	Telecommunications Infrastructure Planning (guidelines)
TNS	Telecommunications & Network Support
TRAX	a trouble-tracking system for Help Desk use
UCC	University Curriculum Committee
UCS	University Computing Services
UIAS	Unified Information Access System
UMS	Universal Messaging System
URL	Universal Record Locator
URPBC	University Resource Planning and Budget Committee
VMS	Voice Mail System
WAN	Wide Area Network
YRO	Year Round Operations