CALIFORNIA STATE UNIVERSITY

SAN BERNARDINO

TECHNOLOGY STRATEGIC PLAN

CSUSB will become known as a regional comprehensive university with highly effective, state-of-the-art technologies to facilitate the University's vision for achieving and sustaining academic leadership and excellence in teaching, learning, and scholarship; to empower people of the region by facilitating the understanding and effective use of technology through partnerships and other community support activities.

CSUSB Vision for Technology
Drafted September 28, 2001

Draft 08/15/2002

State of California

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MEMORANDUM

Date: August 15, 2002

To: Dr. Albert K. Karnig
President, CSUSB

From: William Aguilar
Vice President

Subject: Draft Technology Strategic Plan, 2002/03 - 2004/05

I am pleased to submit to you the ***Draft*** *CSUSB Technology Strategic Plan, 2002/03 - 2004/05*. This document completes a process commenced about eighteen months ago with the initial 2000/01 Technology Strategic Planning Committee, and subsequently the 2001/02 Technology Advisory Council.

The *CSUSB Technology Strategic Plan* is the most comprehensive plan developed to-date for the progression of information technology throughout our campus. It is far from being "finished," however, because this plan requires on-going assessment by the campus community as technology continues to evolve and campus priorities change over time. This document represents a tool to be used by people for its effective utilization, implementation, and management. As such, I would like to recommend the continuation of the Technology Advisory Council (TAC) as a permanent governing entity that will oversee the implementation of this plan, continuously assess its progress over the course of time, and make course direction changes as appropriate.

I would like to express my gratitude to Dr. Fred Jandt, Professor of Communications Studies, who has done a superb job in facilitating the entire process of developing and preparing the *CSUSB Technology Strategic Plan*. His leadership with the faculty, staff, administrators, and students involved in the process made the development of this plan possible. Almost 100 individuals were involved in collecting and analyzing data, reviewing existing and emerging technologies, and developing and writing the plan. Dr. Jandt's contributions were pivotal in keeping the TAC on course and on schedule. I would like also to express my gratitude to each of the individuals involved in this process. I appreciate the time and attention that so many people put into the creation of this comprehensive strategic plan.

I look forward to sharing the *CSUSB Technology Strategic Plan* at the various administrative retreats planned for this summer. It is available in hard-copy from my office, and it has been placed on the TAC web site at: http://irt.csusb.edu/tac. In addition, I plan to host a number of open forums for the campus community to disseminate the plan campus-wide. It will be show-cased at the CSUSB Technology Forum planned for October 24, 2002, and at other appropriate venues throughout the academic year.

vlk

cc: Dr. Fred Jandt, Facilitator, TAC

NOTE

This print version of the California State University, San Bernardino Technology Strategic Plan is a summary discussion document. The complete strategic plan with accompanying supporting documents can be found at http://irt.csusb.edu/tac.

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EXECUTIVE SUMMARY

The Technology Strategic Planning Committee (TSPC) was established in Fall 2000 to advise the President on strategic directions for technology in support of the University's mission. As a result of the committee's recommendation, the Technology Advisory Council (TAC) was formed a year later that would continue the work of the TSPC by recommending technology directions and policies for CSUSB and serving as a conduit for keeping the campus current on information technology issues.

Due to its broad scope of responsibilities, TAC put together an executive committee to develop the groundwork for the Council. The Executive Committee was also tasked with reviewing the work of five subcommittees: Baseline Access Training & Support, Distributed Learning, Teaching and Learning, University Information Systems and Community. The subcommittees would conduct research, analyze data from surveys and open forums and draft findings for submission to the executive committee.

At its initial meeting, TAC formulated a vision statement, mission statement and guiding principles for technology. The focus of these three documents was on defining the role of technology in achieving excellence in teaching, learning and scholarships. Additionally, the TAC membership believed technology, when used effectively, would help the university achieve greater productivity and better prepare our students for their future challenges.

Concurrent with the finalization of the vision and mission statements, TAC reviewed information from student surveys that were conducted in 1999, Fall 2000 and Fall 2001. New questionnaires were developed in November and December 2001 that concentrated on faculty use of technology resources and student access. Some of the key results of the survey included:

a. 56% of students use computer labs; 74% of the students supported funding for labs rather than assisting student purchase of laptops.
b. 53% of faculty use computer labs for instruction.
c. Majority of students (97%) have access to a personal computer; 83% had an Internet connection at home; however, 69% never checked their CSUSB e-mail.
d. 43% of faculty use smart classrooms for every class session; 96% found Media Services responsive to their needs. 95% of students claimed technology increased their learning in class.
e. 42% of students were not aware of training classes on campus and an additional 29% never use the classes.

Following analysis of the survey results, TAC drafted a list of general recommendations. Among the recommendations, TAC stressed that faculty, staff and students should have equal access to technologies. Campus technology infrastructure should maintain parity with other institutions of higher learning and that information systems be integrated with adequate security and disaster recovery measures. Most important, TAC recommended that faculty, staff and students develop technology competency and information literacy skills and that teachers should use technology to enhance teaching and learning.

Each of the subcommittees also prepared "immediate action steps" that could be addressed over the next two years. As with the general recommendations, emphasis was placed on access to technology, maintenance and upgrade of equipment, training, assessment of services/outcomes, and enhancement of teaching.

For the immediate future, TAC will be closely monitoring the progress of these recommendations. In order to achieve the successes envisioned by TAC, the campus must join together in committing to the expanding importance of technology.

INTRODUCTION

Educational institutions are always in the midst of transition and change. "To transform" has the meaning of changing from one nature or character to another. At one time, education was a single teacher talking with students in an olive grove. Centuries later, education was housed in grand buildings which rivaled cathedrals. While the infrastructure changed, the basic mission remained unchanged. Centuries later in the United States, public universities became more inclusive of the communities they served. This transformation was not only physical but also had significant social and economic ramifications. Today's transformation is not one of physical architecture; it is one of information technology and media. Information that was communicated orally and in print is now being communicated in invisible electromagnetic bits. In that form, information can be manipulated and shared in ways that were not possible in the past.

The next transformation is from the current world of computerization to a completely digital world. In the past the computer was used for independent functions such as accounting, inventory, student records, and payroll. Today's convergence of data systems, telephone systems, and video into one integrated transmission infrastructure will transform the university once again and much more than the transformation from cathedrals of learning to sprawling inclusive campuses ever did. Students, faculty, and staff will have access to more information and to each other at any time from any location. The implications for learning, collegiality, and administration are significant and far reaching.

In Fall, 2000, President Karnig established a Technology Strategy Planning Committee (TSPC) in response to the CSUSB Strategic Plan. The TSPC consisted for faculty from each of the five academic colleges and staff from each of the five divisions. After meeting with nationally known technology strategic planning consultant, the TSPC set about its work to develop a mission statement and goals and objectives that would carry the campus well into the 21st century. It became apparent that while the TSPC was diverse with regard to its representation campus wide, much more faculty and staff involvement was needed to develop a comprehensive strategic plan that would steer the campus into the new and emerging digital future.

As a result, the TSPC developed an interim strategic plan that consisted of five short-term goals with objectives for the 2001-2002 academic year. The most critical goal was to establish a comprehensive communications system as it relates to technology so that the campus community is directly participating in and consistently informed about computer related technology activities. The TSPC believed that participation by the campus community was crucial to the development of a plan that would continue to live, grow, and have a direct impact on the students, faculty, and staff of the university. As such, the number one recommendation made by the TSPC was for the President to establish a Technology Advisory Council by Fall quarter, 2001, consisting of faculty, staff, and administrators from across the campus that would make recommendations to the President regarding strategic technology directions and policies for CSUSB and that would be a conduit for keeping the campus community involved in information technology issues.

President Karnig established the Technology Advisory Council (TAC), consisting of over 30 faculty and staff representing virtually all segments of the university community (Appendix A). At a kick-off workshop conducted September 27-28, 2001, the President provided the welcoming address and charged the TAC with continuing the work begun by the TSPC in 2000-01 by developing a more comprehensive Technology Strategic Plan for the campus. Mr. Ramon Harris, a nationally recognized technology strategic planning expert, conducted the activities for the two-day workshop. He presented the framework for the process which included the identification of seven components that would eventually comprise the Technology Strategic Plan (Appendix B). The TAC reviewed the existing Vision and Beliefs statements, interim strategic plan for 2001-02, and the campus wide major technology initiatives. New vision, mission, and guiding principles statements were adopted in draft form, and strategic directions were established. Six subcommittees were established (Appendix C) and charged with carrying out the process outlined by Mr. Harris.

Over the next six months, the subcommittees conducted much work in preparation for the new Technology Strategic Plan. Additional individuals were added based on need, and eventually more than 50 people were involved in the process. A number of surveys were conducted with faculty and students, a website was developed and regularly updated, and the campus was invited to review the website to watch and respond to the ongoing efforts of the TAC. A list of definitions and terminology was developed to put the plan into its proper context (Appendix D). Sub-committee reports are located in Appendices E, F, G, H, I, and J.

Additionally, on January 11, 2002, members of TAC attended a half-day seminar conducted by Dr. Ilene Rockman, manager of the CSU Information Competence Initiative, and in April 2002, several TAC members attended the CSU Academic Technology Planning Conference held in San Jose. And Professor Tapie Rohm's Spring INFO 646 class conducted additional surveys that were made available to the council (Appendix K).

Transformation can be a process that is imposed. It can also be an evolutionary process that proceeds so slowly that the changes are not immediately evident. Transformation can also be planned and guided by intelligent and caring involvement. TAC has studied the current use of information technology and its impact on CSUSB. TAC proposes that the California State University, San Bernardino community can distinguish itself in its monitoring and planning for the inevitable changes transformation into a digital university will entail. TAC desires to see innovative uses of technology become a competitive advantage for the future at CSUSB.

TAC Membership

William Aguilar	John Craig	Stacy Magedanz	Michael Ross
Carolyn Aldana	Paul Done	Don McKenzie	Rowena Santiago
Del Anderson	Cynthia Flores	Jim Monaghan	Joe Scarcella
Hamid Azhand	Lorraine Frost	Lydia Ortega	Bill Shum
Jacques Benzakein	Fred Jandt	Owen Owens	Bill Takehara
Rob Carlson	Les Kong	Ron Pendleton	Javier Torner
John Conley	Vanessa Kragenbrink	Johnnie Ann Ralph	Peter Wilson
Kimberley Cousins	Lee Lyons	Tapie Rohm	

HISTORICAL BACKGROUND OF TECHNOLOGY AT CSUSB

It was a decade ago that President Anthony Evans established the division of Information Resources & Technology. The creation of this Division stemmed from the growing importance and dependency on technology university-wide, a continuously increasing commitment of fiscal resources to technology, a need for organizational structure to better respond to a myriad of crises, opportunities pertinent to technology, and a desire to bring together those information technology-related departments. Initially, those included the John M. Pfau Library, Computer Center, Telecommunications, and Academic Computing and Media Services.

During that initial year the major technological issue facing the campus was the selection and implementation of e-mail. Questions such as who should have access, hours of operation, staffing, passwords, etc. were of eminent concern. Computer labs existed conceptually – the room was makeshift and used monitors that frequently malfunctioned. The universal complaints voiced most frequently were related to the computer lab; there was no staffing and the hours of operation were consistently inconsistent.

Telecommunications primarily consisted of phone service. Data connections existed, but not to every office, nor every building. Two-way compressed video did not exist. Instead, one-way video and two-way audio was implemented using intermittent microwave communications between CSUSB and Palm Desert. On many occasions signals could not reach the destination site because palm trees impeded the signals.

Media Services consisted primarily of delivering overhead projectors to classrooms (over 14,000 deliveries annually) along with public address installations university-wide. Students preparing for teacher certification would demonstrate their media expertise by threading 16 mm film projectors and "burning" overhead transparencies. Words such as "key-stoning,"used to convey overhead projection distortion, and the "revelation method" of selectively revealing the information projected onto the screen, were all in vogue.

Many of the tools we take for granted today did not exist. Wireless, voice over IP, fiber optics, two-way audio and video, computer-based instruction, multi-casting, calendar scheduling, photographic software, digital cameras, instructional software (WebCT, Blackboard), laptop or notebook computers, discipline specific computer labs (except for computer science and information decision sciences), Powerpoint presentations, cell phones, touch tone registration, web-based registration and grades, on-line journals, online indices and abstracts, and much, much more were not available.

In the past ten years information technology has imbued virtually every segment of our university. Many of our operations are founded on technological principles. Today every division/college has it own technological staff, and every employee has his or her own computer workstation and in some instances more than one. Assistance in the development of course instructional materials is readily available. The John M. Pfau Library subscribes to over 16,000 journals on line, and over one million "hits" are made to the Library's home page monthly. The

number and sophistication of IT staff university-wide continues to expand and become increasingly complex. In short, "We're not in Kansas anymore, Dorothy."

Along with new technologies, capabilities, and capacities come new concerns and increasingly intrusive problems. Our technology has spawned new disciplines and positions, and has re-shaped much of our world. Information security today is an international phenomena. We are cognizant that the security of our information systems is as important as the security of our buildings and staff.

We have had many milestones during the last decade, but the reality is that we've only just begun this technological sojourn. In this beginning of the 21st Century, technology advances faster than we can implement. And as "new" technologies continue to emerge, we must carefully and thoughtfully consider what will bring the most value to the university. We've come a long way in the last ten years, but perhaps the single most important lesson we've learned is to recognize that even the longest of journeys begins with an initial step.

TECHNOLOGY IN THE CAMPUS MISSION AND GOALS

The current mission and goal statements for the campus were approved in 1993. Technology is specifically mentioned once: "Additionally, innovative uses will be made of technology to serve its many student populations throughout the Inland Empire." The current campus strategic plan was developed in 1998-99 by the Strategic Planning Council and chaired by Provost Louis Fernandez. It is included as Attachment L, and can be found on the CSUSB web site at www.csusb.edu/president/strategicplan.html. This plan outlines three goals for the campus:

1. Become a learning community that excels in creating, applying and exchanging knowledge.

2. Ensure a welcoming and safe intellectual social and physical environment that engages campus members in the life of the university.

3. Adopt a long-term strategy for university engagement in community partnerships.

One objective for the second goal addressed technology directly: "Utilize technologies to improve teaching, learning, communication and administration." Three strategies were developed for this objective.

1. Provide access and training for university students and personnel to utilize electronic communications.

2. Improve programs and services provided via distance learning.

3. Implement a five-year comprehensive university-wide information and technology plan.

From another perspective, however, technology is assumed and thus has become embedded in every aspect of the campus mission and goals statements and strategic plan. To achieve the first goal of becoming a learning community that excels in creating, applying and exchanging knowledge the campus now utilizes the office of Academic Computing and Media for integrating technology into learning, the Teaching Resource Center for faculty development, smart classrooms for course delivery, and the library for information literacy programs.

To achieve the second goal of ensuring a welcoming and safe intellectual social and physical environment that engages campus members in the life of the university, the campus now provides on-line registration, grades, and graduation checks, student e-mail accounts, open computer labs with help desks, and wireless dorms.

To achieve the third goal of adopting a long-term strategy for university engagement in community partnerships, the campus has established partnerships with the San Bernardino County schools and has a history of developing distance learning opportunities at off-campus sites.

While these two documents do not seem fully address the impact technology has had on the campus fulfilling its mission, it is clear that, in practice, technology has become embedded in every aspect of the university's functioning.

VISION, MISSION, AND GUIDING PRINCIPLES FOR TECHNOLOGY

At a kick-off workshop conducted September 27-28, 2001, Mr. Ramon Harris, a nationally recognized technology strategic planning expert, presented a framework for planning. The TAC reviewed the existing Vision and Beliefs statements and developed new vision, mission, and guiding principles statements. These have been revisited by the TAC Steering Committee and are presented below.

Vision Statement

CSUSB will become known as a regional comprehensive university with highly effective, state-of-the-art* technologies to facilitate the University's vision for achieving and sustaining academic leadership and excellence in teaching, learning, and scholarship; to empower people of the region by facilitating the understanding and effective use of technology through partnerships and other community support activities.

* state-of-the-art = best standard practice

Mission Statement

The CSUSB mission for technology is to provide a robust, secure, and reliable application of technology in support of the educational [or strategic or institutional] goals and objectives of the University by offering a flexible learning environment through efficient, effective, and timely access to information and services.

CSUSB's Guiding Principles for Technology

1. Technology, although not a comprehensive means unto itself, can assist the institution as it moves forward toward achieving its mission.

2. The effective use of technology enhances teaching and learning.

3. Technology is most beneficial when utilized in an informed and skillful manner.

4. Individuals can benefit from learning to use technology.

5. Opportunities should be provided to educate individuals to utilize technology effectively.

6. Technology can allow individuals to achieve greater productivity.

7. Technology increases the sphere of influence of the university.

8. Campus fiscal and personnel support of technology is essential to its success. Need for continuous upgrades and enhancements must be supported.

9. Technology competency and information literacy are critical components in preparing individuals for lifelong learning.

10. In the application of technology, the university must be vigilant in balancing the needs of society and individual rights.

11. Technology should enhance collaboration among members of the university and should enhance partnerships in its service area.

ENVIRONMENTAL SURVEYS

During the year, the TAC reviewed existing data and conducted new questionnaire and focus group studies to learn more about student and faculty attitudes about technology in instruction. The existing data consulted include:

1. The 1999 CSU Technology Survey available online at http://ir.csusb.edu/1999techsurvey.html.

2. Fall 2000 Registration Touch-Tone Survey

3. Fall 2001 Registration Touch-Tone Survey

4. Preliminary Winter 2002 Registration Touch-Tone Survey.

New questionnaire and focus group studies include:

1. In November 2001, faculty who have taught in Smart Classrooms were surveyed. An e-mail was sent directing them to an online questionnaire. The complete results of this survey are available online at http://irt.csusb.edu/tac/surveys.

2. In November 2001, faculty identified as technology innovators were interviewed in a focus group. A summary of their comments are available online at: http://irt.csusb.edu/tac/surveys.

3. In December 2001, in cooperation with BATS, TAC conducted an online survey of faculty technology resources. The complete results of this survey are available online at: http://irt.csusb.edu/tac/surveys

4. In December 2001, in cooperation with BATS, TAC sent a blast e-mail to all student e-mail addresses inviting them to reply to an online survey. The complete results of this survey are available online at: http://irt.csusb.edu/tac/surveys

5. Professor Tapie Rohm's Spring 2002 INFO 646 class conducted additional surveys that were made available to the council.

    a. Survey of Student Services. The compete report is located on line at http://irt.csusb.edu/tac/surveys.
    b. Non-IT Department Survey. The compete report is located on line at http://irt.csusb.edu/tac/surveys.
    c. Faculty Survey. The compete report is located on line at http://irt.csusb.edu/tac/surveys.
    d. Department Chair Survey. The compete report is located on line at http://irt.csusb.edu/tac/surveys.
    e. Hardware Inventory. The compete report is located on line at http://irt.csusb.edu/tac/surveys.

Highlights of these surveys are summarized below.

Computer Labs

In the BATS faculty survey, half (53%) indicated they used computer labs for instruction. Forty-four of responding faculty reported using discipline specific labs and 54 reported using open labs and ACM open labs. If a discipline specific lab was used, it was either because it had specialized software or that it was in proximity to classrooms or offices. Faculty also felt that labs need to be open more hours and need more technical support and student assistant support. The Fall

2001 Registration Touch-Tone survey showed that of 3589 responses, 56% of students use computer labs. In the BATS survey of 909 students, approximately one-third stated that they used the computer labs on campus--most typically because they are convenient to use when on campus. They reported easier access to open labs on campus compared to discipline specific labs. Students in the Natural Sciences, Business & Public Administration, and Social & Behavior Sciences were more likely to used labs on campus. In the preliminary Winter 2002 Registration

Touch-Tone survey, 74% felt that university funding should go to labs rather than assisting students purchase of laptops.

Student Access

The Fall 2001 Registration Touch-Tone survey put student computer ownership at 87%. The BATS survey of 909 students had 30 of 909 students reporting not owning a computer. The 1999 CSU survey showed that students used computers most frequently at work, followed by at home, and then on campus. The Fall 2001 Registration Touch-Tone survey showed 83% of 3,633 students had Internet access at home. The BATS student survey showed 673 having modem Internet access off campus and 265 having high speed access off campus. Students report that approximately two-thirds to three-fourths of their computer use is for class or academic purposes. The Fall 2001 Registration Touch-Tone survey showed that 75% of 3,629 students checked their e-mail at least once a week. However their e-mail is not likely to be their campus address. Fifty-two percent of student e-mail addresses on SIS+ are "@csusb.edu." In the Registration Touch-Tone survey, 69% of 2,930 students indicated they never checked their CSUSB e-mail address. Faculty innovators would like every student to have a laptop and saw the future as wireless when bandwidth technology can support it. The BATS student survey found that 29% of students already own a laptop and 35% indicated it was somewhat or very likely they would purchase a laptop if there were wireless connections on campus. However, the survey data suggests that students seem to feel that it is more critical to have access from home than from anywhere on campus.

Faculty Resources

In the BATS faculty survey, faculty indicated that they had better access to software, hardware, and training on campus than off campus. Nineteen percent of the respondents had no computer,

or a desktop or laptop was inadequate for their needs. The majority had ISP/dial-up service to campus. A smaller number had campus modem pool dial-up, or DSL or cable modem access. In each case approximately half felt the service was adequate.

Curriculum

Faculty innovators noted the need for computer competency and information literacy requirements in general education and/or in existing general education classes.

Delivery of Instruction

Of the faculty using Smart Classrooms who responded, 43% reported using the technology provided in the Smart Classrooms in every class session. An additional 21% reported using it at least once per week. In order of frequency, the faculty reported using video most frequently followed by the computer workstation, Power Point, Internet access, and CD/DVD. While 96% found Media Services responsive to needs, some problems were identified: only 64% found the equipment easily accessible in the room, only 43% felt there are enough Smart Classrooms, and only 18% reported receiving training on the equipment. Faculty innovators emphasized that there are not sufficient Smart Classrooms on campus. The Preliminary Winter 2002 Registration Touch-Tone Survey asked for comparison of face-to-face and on-line instruction. Forty-five percent of students responding preferred all face-to-face or mostly face-to-face instruction, 31% preferred an equal time, and 24% preferred all online courses. In the BATS student survey, 95% of students responding indicated that technology in the classroom either somewhat or greatly increased their learning in class.

Training

Students reported not being aware or not using training on campus: 42% didn't know training was available on campus and an additional 29% never used it. Faculty innovators felt that TRC programs and other support programs and staff are not addressing the needs of the intermediate and advanced faculty users. Professor Rohm's class survey of faculty found support for IT and a need for additional training.

Faculty Support

Faculty innovators pointed out that the range of computer competency varies widely among the faculty. Any unidimensional program cannot be successful. They believe that innovators are more likely to be tenured faculty as the existing RPT process does not provide incentives for using technology.

Student Services

Most of the respondents in the Student Services survey use information technology but only for basic tasks such as word processing and spread sheets. Only a few respondents use IT for more

elaborate uses that can help them enhance efficiency and to improve decision making. Many of the Student Services respondents stated that they had no unmet information technology needs. This suggests that the respondents did not know of ways IT could be used.

Suggestions from Environmental Surveys

Several suggestions can be made from this data:

1. Student computer labs continue to be an important resource for students. There is the suggestion, however, that their use is as much or more for convenience than for discipline specific use.

2. While a significant portion of students do not own a computer (approximately 13%), the student body is largely wired independent of the campus.

3. Complete faculty baseline computerization may not yet have been reached perhaps because some faculty computers have reached replacement age.

4. Student computer competence and information literacy need be addressed in the campus curriculum.

5. Smart Classrooms have been actively used by faculty and are strongly appreciated by students. Smart Classrooms should remain a priority on campus.

6. Students, staff, and faculty training needs are not being fully met.

7. The campus "Procedures and Criteria for Performance Review and Periodic Evaluation" document should be reviewed for any barriers to faculty using technology in instruction.

GENERAL RECOMMENDATIONS

Based on its study, the TAC makes the following general recommendations to provide strategic guidelines for technology at CSUSB:

1. The campus will continue to develop digital information and replace paper distribution. The campus will continue to maximize the benefits of collaborative decision-making and student services that technology makes possible.

2. Faculty, staff, and students shall have equal opportunities to access and use technologies. CSUSB has a diverse student population with varying needs. Each technology decision needs to address these issues of diversity. This may range from adaptive technologies to time and geographical restrictions, to socio-economic and cultural contexts.

3. The campus technology infrastructure will maintain parity (at minimum) with like institutions. CSUSB will monitor like institutions and maintain parity (at minimum) in IT equipment and personnel.

4. All university information systems will be integrated and maintained with reasonable system security, redundancy, and disaster recovery measures.

5. All university information systems will recognize individual privacy rights.

6. Students, faculty, and staff will be provided with opportunities to develop technology competency and information literacy skills. Technology has become a part of every aspect of the university's mission. Every member of the university community must meet standards of locating, evaluating, organizing, and communicating information for problem-solving. This requires that policy-makers, administrators and staff be technologically literate and support exemplary adoption of academic technologies; that all faculty are able to use appropriate educational technology; and that students and faculty learn to become critical users of information technology.

7. Reports from the American Council on Education, the CEO Forum on Education and Technology, the Milken Exchange on Education Technology, the National Commission on Mathematics and Science Teaching for the 21st Century, and the National Council for Accreditation of Teacher Education all identify the need to address teacher preparation for effective use of technology in education. As the major provider of the region's teachers, CSUSB must commit itself to preparing teachers to use technology for effective teaching and learning. Programs such as the “Preparing Tomorrow’s Teachers to Use Technology” are an important first step.

8. The University will strive to distinguish itself in its monitoring and evaluation of the effectiveness of technology in teaching and learning in all colleges on campus. Many organizations including the President's Committee of Advisors on Science and Technology, the U.S. Department of Education, the National Science Foundation, the

National Research Council, foundations and research institutes have called for an ongoing research and evaluation program on technology applications for teaching and learning.

9. CSUSB will strive to meet student needs through the availability of complete courses and/or degree programs delivered through distance learning formats. Remote students will have access to student services that are comparable to those afforded to on-campus students.

10. CSUSB will continue to address information technology issues through wide-based campus involvement. Several campus-wide committees have involvement with technology: In the Faculty Senate, the Information Resources and Technology Committee, also known as the Academic Computing and Media Committee, has operated as an advisory committee to the director of Academic Computing and Media. The BATS (Baseline Access Training and Support) Committee was established in 1998-99 by the Provost and the Vice President for Information Resources & Technology, and makes annual budget allocation recommendations. And, finally, the TAC and its predecessor, the Technology Strategic Planning Committee (TSPC), have operated in longer term planning.

IMMEDIATE ACTION STEPS

Each of the subcommittees met independently over a period of seven months. Each subcommittee reviewed data and discussed its own area, and made recommendations of immediate action steps that could be undertaken over the next two-year period. These recommendations are reproduced below.

BATS

1. Smart Classrooms: Develop a timeline for determining number of remaining classrooms that need to be made "smart", ongoing assessment of usage in those rooms, and augmentation to current technology (such as wireless antennas), in addition to establishing a cycle and budget for upgrading the equipment to keep the classrooms as current as necessary.

2. Expand the role of the BATS to: a) better reflect its role in facilitating access to technology for teaching and learning; and b) recommend technology directions for the campus, particularly as they impact teaching and learning.

3. Bring forward a student technology fee referendum to guarantee a steady source of funding for technology for teaching and learning.

4. Assess in-progress "new technology" initiatives and recommend areas for expansion to support teaching and learning while optimizing access with moderate cost.

5. Continue to evaluate and pilot test strategies to maximize access to Smart Classrooms, computer labs, and new technologies.

6. Devise a strategy to monitor student lab use (possible ways: software installed on lab computers, or surveys required of labs planning to request future upgrade funds).

7. Continue to pursue campus input into student technology issues, while providing both easy-to-use resources (access) and awareness of (communication) technology tools.

Infrastructure

1. Plan for on-going replacement and support for infrastructure and licensing agreements.

   Telecommunications and Network Services, Academic Computing and Media Services and Data Center Services need to develop a complete inventory of all infrastructure components. Using the inventory as a basis, there is a need to develop a replacement/upgrade cycle, determine annual maintenance/licensing costs. Once all of the above is accomplished an estimated annual budget needs to be developed along with any know source of funds.

2. Plan for optimal staffing level for technical staff to support IT in all units on campus.

   This element is probably best accomplished with a consulting firm who has experience in IT staffing. An inventory will need to be made of all current IT positions, their job responsibilities, and their current skill sets. A separate analysis will have to be accomplished on the IT staffing needs of the university to obtain a gap analysis.

3. Plan for a converged telecommunications infrastructure.

   A converged telecommunications infrastructure is inevitable where voice, video and data communications will take place over the same network as opposed to the current model of separate wiring and switching for each of the elements. This will require planning, study, preparation and training to insure the convergence is accomplished with as little or no degradation in service and features. A joint plan by TNS and ACM needs to be developed to insure this is accomplished.

4. Seek out and implement tools and infrastructure that support collaboration.

   The first step will be to define just what kind of collaboration is to take place. This would be an academic and administrative exercise as there are two or more different needs. Once collaboration is defined an appropriate group such as BATS should do exploratory work as to the software that is available to meet the needs.

5. Make the electronic borders between classroom, student housing, home and roaming invisible.

   This element will take planning and exploration as the technology is not sufficiently complete to accomplish this task.

6. Thin-client technologies

   This would be a good project for BATS to explore to determine if it is a direction that the university wants to go and if so what is the best technology to support our mission.

7. Develop a Telecommunications Master Plan

   With the number of new building projects projected over the next ten years, this becomes important so that new growth in telecommunications will not create additional, unexpected burdens regarding personnel, equipment, and other similar items.

University Information Systems

1. Coordinate oversight, and plan for development and implementation of a seamless university information system.

2. Expand training opportunities for all university technical staff.

3. Continue building digital library.

Teaching and Learning

1. Expand training opportunities to include regular and periodic training for students, staff, faculty, and administrators.

2. Encourage removal of disincentives and putting in place incentives to encourage and reward faculty and staff in the use of technology for teaching, research, and service. This would include encouraging the Faculty Senate review of the current Criteria for Performance Review to specifically address the concerns of faculty using technology in instruction.

3. Fund faculty research projects which are designed to assess the effectiveness of various uses of technology in instruction.

4. Implement or reinforce information literacy programs in the general education program.

5. Encourage that technology skills and technology integration be part of faculty, staff, and administrators' professional development plans (annual or as per unit's evaluation time period), and be evaluated and rewarded accordingly.

Distance Learning

1. Develop business and academic accountability model plan for distance learning programs.

2. Insure that distance learning students have appropriate access to student services.

3. Insure valid assessment procedures for class outcomes.

4. Insure valid assessment procedures for program outcomes.

5. Expand course and program availability for students.

Community

1. Establish an advisory committee to assess needs and identify opportunities for technological collaborations.

2. Cooperatively establish and offer an information competency tutoring program for area high schools and community colleges.

3. Establish a study committee to recommend policies for establishing collaborative partnerships.

BUDGET IMPLICATIONS

Paul Strassmann, former corporate information technology officer at General Foods, Kraft, Xerox, and the U.S. Department of Defense and an author of books and articles on the effectiveness of information technologies, points out that in the absence of a rigorous discipline for measuring the effects of IT, organizations invest in IT primarily because "everyone else does." Universities' investments in technology have increased marketedly as well. Strassmann correlated IT spending with actual economic outcomes in the for-profit sector and found no correlation. He concludes that basic operating competence is a minimum expectation and that, in the for-profit sector, profitability is found in market positioning and competitive moves.

Carrying Strassmann's logic to technology budgeting in higher education, two directions are suggested:

1. The University must maintain parity with comparable institutions as a baseline. This funding should be sustained and predictable.

2. Funds beyond parity should be spent in ways which distinguish or draw attention to the University as an education leader.

Using these suggestions as criteria, an analysis of current technology budgeting shows that maintaining parity will not be possible without additional funds.

There is a national trend for student technology fees. A student fee for instructional technology would directly benefit students by providing better access to technology, improving the university's electronic network, and expanding the use of technology in classrooms. Access to technology is increasingly important to attracting top students and faculty.

ONGOING ASSESSMENT

Several campus-wide committees have involvement with technology: In the Faculty Senate, the Information Resources and Technology Committee, also known as the Academic Computing and Media Committee, has operated as an advisory committee to the director of Academic Computing and Media. The stated duties of this committee are formulating, recommending, and reviewing policies concerning:

1. Information storage, access, retrieval, connectivity and transmission;

2. Improvements concurrent with technological growth;

3. Development and expansion of computer usage among students, faculty and staff;

4. Establishment of training modes for faculty to improve their professional growth in this area; and

5. Allocation of funds for computer related services and audio-visual collection and services.

The committee is also charged with approving or disapprove requests for faculty or faculty-supervised deployment or use of wireless networks.

The BATS (Baseline Access Training and Support) Committee was established in 1998-99 by the Provost and the Vice President for IRT, and makes annual budget allocation recommendations. BATS has made recommendations on equipment purchase for faculty and lab use, on the establishment of Smart Classrooms, servers, etc.

Finally, the TAC and its predecessor Technology Strategic Planning Committee have operated in longer term planning.

Base on its experience this past year, TAC recommends the following committee structure for ongoing planning and assessment of technology use:

1. The continuation of BATS with its present representation and duties

2. A reevaluation of the need for the Faculty Senate IRT committee as an advisory committee for the director of Academic Computing and Media.

3. The appointment of a new TAC to continue as an advisory group to the Vice President for Information Resources & Technology and to continue working to complete the Immediate Action Steps identified in this report.

4. The appointment of a new staff TAC to encourage sharing among campus technicians and work with the new TAC.

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Appendix A
Technology Advisory Council Membership (2001/02)

William Aguilar
Chair, Technology Advisory Council
Vice President, Information Resources & Technology

Carolyn Aldana (Rodriquez)
Associate Professor, College of Social & Behavioral Sciences

Del Anderson (Back Up Representative)
Budget Office

Hamid Azhand (Back Up Representative)
Capital Planning, Design, & Construction

Jacques Benzakein
College of Extended Learning

Rob Carlson
Dean, College of Natural Sciences

John Conley
Dean, Social & Behavioral Sciences

Kimberley Cousins
Chair, BATS Committee

John Craig
Associate Dean, College of Natural Sciences
Professor, Chemistry

Paul Done
University Advancement

Cynthia Flores (Back Up Representative)
Associate Dean, CVC

Lorraine Frost
Director, Administrative Computing Services

Fred Jandt
Strategic Planning Facilitator
Professor, Communication Studies

Les Kong
Department Head, Public Services, Pfau Library
Professor, College of Arts & Letters

Vanessa Kragenbrink
Assistant to TAC Chair and Facilitator
Executive Assistant to the Vice President for IRT

Lee Lyons
Professor, Theatre Arts

Stacy Magedanz
Reference Librarian

Don McKenzie
Director, Telecommunications and Network Services

Jim Monaghan
Office of Distributed Learning

Lydia Ortega
Student Affairs

Owen Owens (Back up Representative)
Telecommunications and Network Services

Ron Pendleton
Professor, College of Education

Johnnie Ann Ralph
University Librarian

Tapie Rohm
Professor, College of Business & Public Administration

Michael Ross
Director, Academic Computing & Media

Rowena Santiago
Provost's Office Representative
Director, Teaching Resource Center
Professor, College of Education

Joe Scarcella
Associate Professor, College of Education

Bill Shum
Director, Capital Planning, Design & Development

Bill Takehara
Budget Office, Administration & Finance Division

Javier Torner
Information Security Officer

Peter Wilson
Dean, Coachella Valley Campus

Appendix B:
Framework for Technology Strategic Planning

(attached)

Appendix C
TAC Sub Committees

Distributed Learning
Jim Monaghan, Chair
Rob Carlson, Co-Chair
Stacy Magedanz
Cynthia Flores
Mike Ross
Carolyn Aldana

University Information Systems
Lorraine Frost, Co-Chair
Jacques Benzakein, Co-Chair
Bill Takehara
John Craig
Lydia Ortega

Teaching & Learning
Ron Pendleton, Co-Chair
Rowena Santiago, Co-Chair
Les Kong
Joe Scarcella

Infrastructure
Don McKenzie, Co-Chair
Tapie Rohm, Co-Chair
Paul Done
Javier Torner
Bill Shum
Lee Lyons

BATS/User Services
Kimberley Cousins, Chair
Jim Monaghan, Vice-Chair
Don McKenzie
Michael Ross
Michelle Behne
Kurt Collins
Khalil Daneshvar
Paul Done
Nicholas Erickson
Rosa Gonzales
Jeff Hicks
Ian Jacobs
Conrad Shayo
Bill Takehara
Joe Scarcella

Community
Johnnie Ann Ralph, Co-Chair
Peter Wilson, Co-Chair
John Conley

TAC Chair
William Aguilar, Vice President for IRT

TAC Facilitator
Fred Jandt, Professor
Communications Studies

TAC Assistant
Vanessa Kragenbrink, Executive
Assistant to the Vice President for IRT

Each Sub-Committee will conduct its own ***Needs Assessment***, to include ***Funding Needs***. Also, each Sub-Committee will make recommendations for ***Policies and Procedures*** that may be appropriate for their respective topics.

Appendix D
Definitions and Terminology

The following terms have been identified and defined by the Technology Strategic Planning Committee to facilitate communication among the campus and to establish a context for this Technology Strategic Plan.

Communications Technology: The transmission of data (voice and/or image and/or text) from one computer to another, or from one device to another example, modems, cables, and ports are all communications devices. Communications software refers to programs that make it possible to transmit data.

Distance Learning: A type of education where students work on their own at home or at the office and communicate with faculty and other students via e-mail, electronic forums, video-conferencing and other forms of computer-based communication. Allows for learning to take place from distant locations. Teleconferencing and telecourses are examples.

Distributed Learning: Same as distance learning; however, at CSUSB we prefer to use the "distributed learning" term as it seems more holistic or all encompassing.

Electronics: A part of technology that deals with the movement of electrons through different materials such as conductors, insulators, semiconductors, and superconductors.

Electronic Communication: Those methods of communication where the channel uses electronic energy.

Information: All ideas, facts, and imaginative works of the mind which have been communicated, recorded, published and/or distributed formally or informally in any format. Also, one of the seven resources used by technological systems. Data are raw facts and figures; information is data that has been processed (recorded, classified, calculated, stored and/or retrieved). Knowledge is gained when different kinds of information are compared and conclusions are drawn.

Information Competency: Two definitions are cited by the CSU Work Group on Information Competence, "the ability to find, evaluate, use, and communicate information in all of its various formats;" and "the fusing or the integration of library literacy, computer literacy, media literacy, technological literacy, ethics, critical thinking, and communication skills."

Information Technology: (IT for short and pronounced as separate letters) The broad subject concerned with all aspects of managing and processing information, especially within a large organization or company. Encompasses hardware, software, maintenance and training.

Infrastructure: The underlying foundation or basic framework required for telecommunications and/or information technology.

Knowledge: The fact or condition of possessing within mental grasp through instruction, study, research, or experience one or more truths, facts, principles, or other objects of perception.

Technologically Literate: 1. Technological Literacy encompasses knowledge, ways of thinking and acting, and capabilities. The goal is to provide people with the tools to participate intelligently and thoughtfully in the world around them. The kinds of things a technologically literate person must know can vary from society to society and from era to era. 2. Able to understand the fundamental concepts of technology, and to make informed choices of which technology to use and the likely impacts of using it. 3. Able to understand technology and evaluate the effects of technology on people and the environment. Though a part of it, Technological Literacy should not be confused with computers and software or communications technology.

Technology: Technology, in its broadest sense, is the process by which humans modify nature to meet their needs and wants. It comprises the entire system of people and organizations,
knowledge, processes, and devices that go into creating and operating technological artifacts, as well as the artifacts themselves. It can be seen as a constantly evolving body of knowledge that deals with the technical way in which individuals change the world to meet human needs and wants; the practical application of scientific knowledge to process natural resources. Using critical thinking skills, resources, and devices people have invented to solve problems. Technology also includes all the infrastructure necessary for the design, manufacture, operation, and repair of technological artifacts, from corporate headquarters and engineering schools to manufacturing plants and maintenance facilities. Though a part of it, Technological Literacy should not be confused with computers and software or communications technology.

Telecommunicate: To share information electronically.

Telecommunications: The process of sending information over short or long distances by electronic means; refers to all types of data transmission from voice or video.

University Information System: A University Information System will be defined as any centrally managed and deployed application that supports the business or learning environment of the university. In addition, departmental systems that draw from a central repository of information and integrates departmental specific data that is ultimately used to conduct university business or support the learning environment may also be considered a University Information System. Those applications which are stand alone, may also be considered if the deployment of the system places the university at liability if the data or system is not sufficiently secured or managed.

Appendix E
BATS Sub Committee Report

Progress on TAC Mission
April 2002

Committee Roster

- Carolyn Aldana
- Kurt Collins
- Kimberley Cousins (chair)
- Khalil Daneshvar
- Paul Done
- Jeff Hicks
- Ian Jacobs
- Don McKenzie
- James Monaghan (vice or co-chair)
- Mike Ross
- Joe Scarcella
- Conrad Shayo
- William Takehara
- Student Representative: currently vacant

Background Information

The BATS (Baseline Access Training and Support) Committee was established out of the Chancellor's Office initiative for 24/7 access. In 1998-99, an Advisory Committee was established jointly by the Provost and the Vice President for IRT representing all segments of the University from recommendations made by Deans and Directors. BATS received yearly funding from the Chancellor's Office matched by the campus. BATS was not initially part of the TAC subcommittee structure. However, the BATS Committee has extensive experience with campus computing issues, and thus as an active, working committee should be an integral part in the development and implementation of a strategic plan for technology. In recent years the BATS committee has been involved in upgrading computers and servers in student labs, extending the "Smart Classroom" project across campus, setting campus standards for desktop hardware and software, all while managing the BATS budget. Based on this experience, and on the results of faculty and student surveys conducted this year, BATS has learned the following: Despite relatively large expenditures, access to computing to directly support the academic mission is still not adequate, and much of the original BATS purchased equipment is already obsolete. One particular problem is the large number of discipline specific computer labs that are open to limited students for limited hours. These labs do address certain needs, including access to specialty software, and proximity to classrooms and offices. Decreasing the number of labs will require (a) an effective method for monitoring lab uses and access statistics, (b) alternative models to address

specialty software access and training, and (c) consolidation of redundant and underutilized facilities for each building/geographical area.

A successful technology plan will also meet the following needs: First, the campus climate for change involves not only providing access to equipment, but also educating faculty, staff, students. Second, a perennial campus problem is inadequate technical support for technology (too few staff and/or too little staff training) in many areas. Third, students use campus computer labs primarily for convenience while on campus, followed by access to specialty software/hardware, and about half of them would bring or buy laptops, if campus resources/wireless networking were readily available. Fourth, the majority of students want campus technology dollars to go to supporting student labs, not to assist them in purchasing their own computers. Fifth, smart classrooms are widely popular with faculty and with students, and most students believe they learn more with the assistance of a "smart" facility. Sixth, successful technology initiatives include a well-designed and evaluated "pilot" phase.

Finally, the BATS budget is inadequate to meet even the needs for "baseline" technology for teaching and learning; thus alternate ways to facilitate access, and alternate revenue streams are needed. The BATS committee recommends looking at a student technology fee as one way to support computing technology for teaching and learning. Second, we recommend expanding opportunities for students to use their own computers (laptops) on campus, as well as from home. Third, we recommend reevaluating the computers in current labs to facilitate maximum usage while maintaining the needed access to specialty software and hardware and proximity to classrooms. As a first step toward addressing these areas, BATS has provided funds for, and will monitor two pilot projects: a Citrix application server, and a "mobile lab" project. We also encourage IRT to put as many wireless networks in as are feasible, and will work with other campus groups (IRT, ACM, TRC) to facilitate training and support of these technologies.

In the near future BATS sees the need to maintain some lab facilities in each building, but access to most specialty software campus wide (and at remote sites) through application servers. The smart classrooms should be maintained and upgraded or new smart classrooms added as necessary. Mobile labs augmented by student-supplied computers, often linked to application servers, will meet many of the during-class time instructional computer needs. A campus portal and universal VPN would provide seamless technology access on and off campus. BATS would play a part in this by recommending technology expenditures for teaching and learning, and assessing how well those technology dollars work.

Full report is located at http://irt.csusb.edu/tac/ under TAC Information, then under Sub Committees.

Appendix F
Infrastructure Sub Committee Report

Need summary paragraph.

Full report is located at http://irt.csusb.edu/tac/ under TAC Information, then under Sub Committees.

Appendix G
University Information Systems Sub Committee Report

The University Information Systems (UIS) subcommittee of the Technology Advisory Council (TAC) was formed to evaluate and recommend methods and strategic directions the university could pursue regarding effective access to information systems in support of their academic and professional needs, development of a funding plan to implement and maintain information systems, ensuring university information systems are secure, and designing effective training programs for students, faculty, and staff in the area of information systems.

The committee developed an inventory template to seek current data on existing information systems. To determine which systems would be considered, the committee further developed a definition of an information system:

> "A University Information System will be defined as a centrally managed and deployed application that supports the business or learning environment of the university; departmental systems that draw from a central repository of information which integrates departmental specific data that is ultimately used to conduct university business or support the learning environments; and stand alone systems that place the university at liability if the data or system is not sufficiently secured or managed."

By capturing the following data, the university would better understand if and how these systems were supporting the campus mission and goals. In addition, funding resources could be identified to strengthen areas of weakness. The type of information desired includes:

- Application supported
- Operating System
- Level of Security
- Status
- Hours of Availability
- Web Enabled capability
- Availability of Training
- Upgrades

The committee's next step is to gather this data.

The full report is located at http://irt.csusb.edu/tac/ under TAC Information, then under Sub Committees.

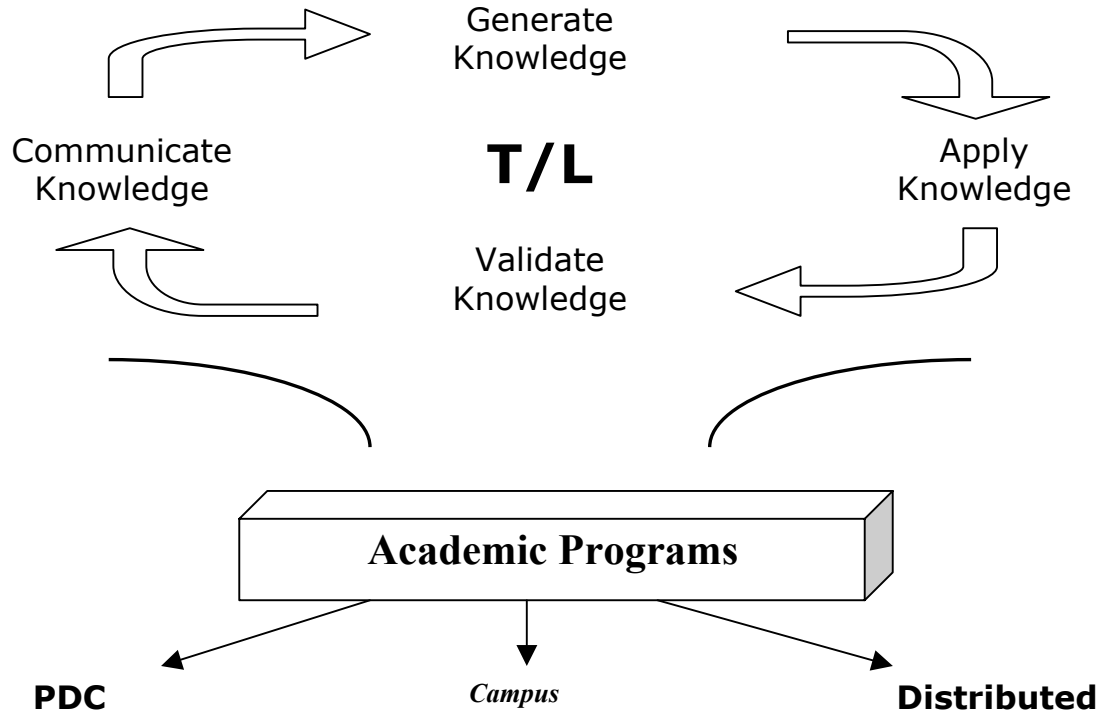
Appendix H
Teaching and Learning Sub Committee Report

Effective use of technology for teaching and learning requires that the role of technology be aligned with the mission and goals of the university. CSUSB's mission is to "enhance the intellectual, cultural and personal development of its students … through the development of academic programs and services that assist people who use the campus to gain the skills and information that they need to improve their quality of life and to plan for productive futures." The mission statement specifically states the role of technology as follows: *Additionally, innovative uses will be made of technology to serve its many student populations throughout the Inland Empire.*

The campus' strategic goals further supports the above mission, particularly the goal of becoming a learning community that excels in creating, applying and exchanging knowledge and the goal of ensuring a welcoming and safe intellectual, social and physical environment that engages campus members in the life of the University. Technology, again, is specifically mentioned as a tool for achieving these goals: *Objective 2.5: Utilize technologies to improve teaching, learning, communication and administration.*

The diagram below summarizes the university's mission and goals, in terms of teaching and learning. It is characterized by the following:

- Teaching and learning involves generating, applying, validating and communicating knowledge
- Teaching and learning takes place primarily and mainly within academic programs
- Teaching and learning is delivered both on-campus and off-campus



To support the above mission and goals of the campus, technology will have the following role in teaching and learning:

a. Tool for knowledge generation, application, validation and communication
b. Tool for delivering and accessing academic programs and information resources
c. Tool towards the achievement of learning that
    i. is applied and relevant
    ii. becomes part of one's social construct
    iii. involves as many cognitive processes as possible, particularly high-order intellectual skills
d. Tool for teaching that is effective and innovative
e. Tool for building a distributed learning environment

To effectively support the above role of technology in teaching and learning, strategic planning that addresses the following areas is recommended:

- Acquisition of basic technology-related skills for teaching and learning by faculty and students. These skills include (a) technology-related skills that are vital to the learning process and the success of CSUSB graduates and (b) skills that are vital to teaching and will enhance instructional quality of lessons, courses, programs, including course management skills.

- Implementation of a technology infrastructure for teaching and learning that is efficient, effective, secure and sufficient in supporting individual and group interaction and activities in virtual or physical, on-campus and/or off-campus settings. This infrastructure will include software and hardware.

- Implementation of training and support that is systematic, continuing, collaborative, valued and rewarded, free, and delivered in various formats to meet time and space limitations of faculty and students.

- Adoption of measures that specifically address technology integration issues, particularly faculty issues (e.g., increasing involvement, RPT, incentives, policies, funding and time), campus issues (e.g., organizational structure that will support the role of technology and a culture that recognizes, appreciates, rewards technology integration in teaching and learning); as well as student issues.

- Assessment and evaluation measures for doing research studies on the impact of technology use on teaching and learning, conducting periodic surveys and needs assessment, as well as program evaluations.

- This report is located at http://irt.csusb.edu/tac/ under TAC Information, then under Sub Committees.

Appendix I
Distance Learning Sub Committee Report

Based upon recommendations from Dr. Tammy McGraw and Dr. John Ross of the Appalachia Regional Educational Laboratory, Inc. (AEL), we consider seven critical areas for the development of a distance learning strategy. These seven areas are: basic assumptions, needs assessment, content definition, instructional strategy, course development or acquisition, evaluation and instructional delivery (McGraw & Ross, 2000).

Basic Assumptions:

- **Distance learning is consistent with the university's mission statement and strategic plan**. CSUSB'S strategic plan objective 1.3 is to "meet academic degree and continuing education needs in the region." Recommended strategies include: offer off-campus degree and non-degree programs that meet the needs of site-bound students, construct a permanent Coachella Valley Campus in Palm Desert and, as funds are available, develop new degree programs that are consistent with needs in the University's service area. Objective 2.5 is "utilize technologies to improve teaching, learning, communication and administration." Recommended strategies include: provide access and training for university students and personnel to utilize electronic communications, improve programs and services provided via distance learning, and implement a five-year comprehensive university-wide information and technology plan.

- **Market analyses support implementation of distributed learning solutions.** Proceeding in the development of courses and programs will be based upon needs assessments that confirm the existence of a student demand.

- **The primary focus will be on development of programs.** Development of programs leading to degrees or certificates and delivered through distributed learning is likely to attract greater student interest than individual courses and/or modules.

- **We will continue to assist development of supplements to existing courses.** Portions of distributed learning courses can be used in courses available for on-campus students, thereby providing enhancement to the on-campus instructional program as well. Knowledge and applications acquired through the development and delivery of distributed courses / programs will enhance support and delivery options for on-campus courses.

- **We will secure necessary funding for distributed learning**. There will be costs associated with the development of courses, equipment for course delivery, and faculty support for distributed learning instruction. Particularly during initial development, these costs often are greater than the support required for the

development and delivery of traditional lecture or laboratory classes. Without funding to stimulate the development of content and delivery mechanisms, the student experience will be below acceptable standards.

- **Distributed learning classes will compare favorably to traditional classes in content and student experiences**. We will not accept inferior content or student experiences to the standard currently being demonstrated on campus. Content, type of class experience, faculty advising, library access, etc. are examples of the factors that must be judged to be equal or enhanced for campus approval to be provided.

- **Distributed learning programs will compare favorably to traditional programs and student experiences**. We will not accept inferior content or student experiences to the standard currently being demonstrated on campus. Content, type of program experiences, faculty advising, library access, etc. are examples of the factors that must be judged to be equal or enhanced for campus approval to be provided.

- **Distributed learning advising will compare favorably to traditional advising (course advising and advising in major).** Students will have access to class and program support through office hours during which real time discourse is undertaken. Students will be able to receive assistance and mentoring as if they were on campus.

- **Sufficient technology infrastructure will be available to support state of the art distributed learning instructional tools**. As faculty develop more sophisticated ways in which to teach students, technology will keep pace with the faculty and student demands. Support must represent both quality of presentation and quantity of student experiences.

- **Campus buy in, including academic buy-in, will occur**. Faculty developing distributed learning courses and programs need assurance from their colleagues that, if they develop comparable experiences, they will be supported in their requests for course and program approval according to existing standards of quality employed on the campus.

- **Students will have access to the necessary resources to engage in distributed learning (individual, private or public facilities).** Students are rapidly demonstrating personal ownership of computers and the campus has available laboratories to support students with consultation and available equipment. In the foreseeable future, it is projected that all students will have access to computers.

Needs assessment:

- **Develop learner profiles for our constituencies**. Data must be collected and analyzed to identify the characteristics of potential students (learner profiles regarding student constraints [site-bound, time-bound] and sources of pools of

students [regional, state, national, corporate, government]) and the types of programs (undergraduate, graduate, professional, non-credit, professional development). For each constituency, probable constraints need to be identified.

- **Continually evaluate the adequacy of the technology infrastructure to accommodate identified distributed learning needs**. Student feedback mechanics will be established that will allow CSUSB to monitor student satisfaction with the technology infrastructure. Appropriate personnel will be charged to monitor technology enhancements to keep CSUSB in the forefront of available technology to support distributed learning.

- **Continually evaluate the adequacy of our academic infrastructure to accommodate identified DL needs**. Regular surveying of potential students will be undertaken to assure that the available programs represent the needs of the students. Surveys of faculty satisfaction with the available support for developing, maintaining, and enhancing of course materials will be implemented. CSUSB will evaluate current support and recognition for faculty who develop and teach distributed learning courses.

- **Develop a business plan for delivery of DL classes and programs.** Before initiating program development, CSUSB will review the faculty plan for developing the course materials. Included would be factors such as demand for the program, adequate faculty resources to develop and maintain the program, comparison of the anticipated course/program experiences to contemporary on-campus experiences. The University must develop an overriding marketing plan for the courses/programs.

Content definition:

- **Teaching and learning goals** CSUSB, the Faculty Senate, and the interested departments and colleges must identify the program content and how well the programs correspond to the CSUSB Strategic Plan. Identifying macro and micro goals for distributed learning programs must precede commitments for development.

- **Distributed learning objectives and how well the objectives correspond to CSUSB teaching and learning goals** The teaching and learning goals for distributed learning programs must be compatible with the CSUSB Strategic Vision and goal subsets described by the Faculty Senate and/or academic departments.

- **Instruction evaluation**. Appropriate student and peer reviews of instruction need to be developed and implemented. Questions will be content and instruction-format appropriate for distributed learning. Frequency of the evaluations will correspond with the campus practices.

- **Program and/or course competencies** Course and program descriptions need to articulate the program and/or course competencies to result from the students' participation in the experiences. These competencies will be based upon the needs assessment and the perspective of the faculty developing the course / program.

Instructional strategy:

- **Timing and pacing of instruction.** In the future, students may be able to begin and end course experiences on demand. Currently, quarter constraints imposed by the CSU System are recognized. Students will be expected to begin and end the course experiences according to the published schedule of dates. If individual students are able to proceed faster than the class and the instructor can accommodate the different rates of learning, some students may finish the course early.

- **Activities and assessments.** Course and program activities need to be assessed to demonstrate the degree of student achievement. Activities will lead to achievement of the course objectives. Assessments will provide guidance to the faculty regarding the degree of student achievement and areas for curricular improvement.

- **Sequencing of activities.** Course and program activities need to be sequenced so that students have the prerequisite skills and knowledges for more advanced requirements. Proper sequencing within the course and over the program enhances the homogeneity of the students so that faculty might more effectively teach the class.

Course development or acquisition:

- **Scope of development and/or acquisition.** The primary focus will be the development of programs and/or certificates. For programs to be available, specific courses will have to be developed. These programs and/or courses will also provide modules or components that might be adopted in traditionally-formatted classes. Faculty will be encouraged to consider these modules as part of their normal class preparation.

- **Technical interface usability evaluation.** As faculty identify course content and pedagogical approach, the technical interface to accomplish the instructional goals must be reviewed for appropriateness. Technology will be as transparent as possible so that the technology does not increase the degree of difficulty for mastering the course and program material.

- **Delivery alternatives.** The delivery alternative will be identified by the faculty member and Instructional Technology prior to the development of the class. Different delivery alternatives might be used in programs. Examples of

alternatives might be videoconference, web-based, CD-format, printed materials, etc.

- **Media to be utilized.** The media utilized will be determined based upon the course requirements. There will be assurance that students will have access to the course material. Consideration will be given to support that might be provided for students that do not have the technology resources to interface with the course.

- **Interactivity to be implemented.** Course interactivity will replicate that normally experienced by the student in the course and/or program. No experience or opportunity will be denied a distributed learning student that is accorded to an on-campus student (note: some differences are anticipated if asynchronous instructional format is used.). Students must have regular access to the faculty and all resources required in the course (e.g., library).

- **Choice of course management system.** Faculty will select from the available course management systems the system that will best support their interactions with-students. The University will provide support for all management systems that it offers.

- **Intellectual property considerations**. Intellectual property will be protected under the guidelines of the CSUSB Intellectual Property policy. Ownership through copyright is assured for the person or persons who develop the course materials. Non-owners must secure the permission of the owner before copyrighted materials can be included. Purchase of course materials may or may not convey copyright ownership. When consultants are hired as contract labor to support the development of a course, the ownership of the item is retained by the agency purchasing the services.

- **Teaching load and other contractual considerations.** Teaching load for distributed learning classes will be assigned by the department chair responsible for the course. Assignments will be in accordance with the CSUSB Guidelines for Faculty Workload.

Course and Program Evaluation:

- **Course Feedback.** All course stakeholders (faculty, students, technology staff) will regularly evaluate individual classes. Questionnaires will be identified for each population. Suggestions for improvement will be widely distributed. Experimental ideas will be reviewed, with the results being widely disseminated.

- **Program Feedback.** All program stakeholders (faculty, students, technology staff) will regularly evaluate the program of coursework and experiences. Methods of data collection will be identified for each population. Suggestions for improvement will be widely distributed. Experimental ideas will be reviewed, with the results being widely disseminated.

Instructional delivery:

- **Coordinated administrative structure**. Delivery of courses and/or programs requires the cooperation of multiple components of the University, much like delivery of traditional, on-campus courses. To assure cooperation and collaboration, one office needs to assume responsibility for the development and delivery of distributed learning courses and programs. Items to be considered include student registration, development of courses, scheduling of classes, resource management, evaluative data collection, and marketing.

- **Faculty training**. Faculty will need support in converting their existing course experiences into a distributed learning format. That support will depend upon the individual faculty member. Faculty will be competent in the software that is required to deliver the class experiences. Faculty will be expected to be aware of different software capabilities, but not be expected to master the software required to convert the course content to a distributed learning format.
- **Support for online delivery**. Faculty and student support for online, video and "blended" learning modes is required. Interactions between faculty and students may be in real time with voice and video capability. Faculty may be able to assume control of the student's computer for correcting their work or solving a content problem. Instructional support personnel need to adhere to regular schedules for student contact. With enough courses and/or programs, provision of 24/7 support may be necessary to support students.

- **Technical infrastructure maintenance**. Infrastructure upgrades and preventive maintenance need to be scheduled to maintain a quality, supportive delivery system. Scheduled maintenance will be advertised and performed during periods that are least disruptive of the delivery service.

REFERENCES:

McGraw, T. M. & Ross, J. D. (2000). Distance-based and Distributed Learning: A Decision Tool for Education Leaders (AEL: Charleston, WV).

This report is located at http://irt.csusb.edu/tac/ under TAC Information, then under Sub Committees.

Appendix J
Community Learning Sub Committee Report

The University must recognize the need and adopt a long-term strategy for engagement in the implementation and maintenance of technology related partnerships with both public and private entities. A needs assessment should be conducted which would:

- Identify multiple and diverse supplemental funding sources and collaborations.
- Seek partnerships that leverage resources including in-kind materials and equipment.
- Facilitate the placement of interns through technological work experience programs . . . emphasize the "people transfer" principle.
- Create tiered, information competency/literacy tutorials and offer to local high schools and community colleges including pretest/post test evaluation and tracking students.

The University should develop mechanisms/methodologies to deliver timely, accurate and high quality electronic presentations via varied telecommunications mediums . . . television, streaming video, radio, etc.

The University and its partners should:

- Develop a university consultation process for the timely review of technologically related community partnerships prior to the commitment of resources.
- Representation should be from a broad spectrum of participants.
- Establish procedures/policies to the review/the solicitation of opportunities/resources for technologically related community partnerships.
- Assess annually partnerships . . . activities, budgets, etc.

Full report is located at http://irt.csusb.edu/tac/ under TAC Information, then under Sub Committees.

Appendix K
INFO 646 Class Reports

K-1 Survey of Student Services

K-2 Non-IT Departments

K-3 Faculty Survey

K-4 Department Chair Survey

K-5 Hardware Inventory

Appendix L
CSUSB Strategic Plan