DOCUMENT RESUME

ED 471 650 JC 030 094

TITLE	The Implementation of the California Community Colleges Telecommunications and Technology Infrastructure Program, 2000-2001.
INSTITUTION	California Community Colleges, Sacramento. Office of the Chancellor.
PUB DATE	2001-11-01
NOTE	88p.
PUB TYPE	Reports - Descriptive (141)
EDRS PRICE	EDRS Price MF01/PC04 Plus Postage.
DESCRIPTORS	Business; College Faculty; College Libraries; Community Colleges; Computers; *Information Networks; *Information Technology; Interactive Television; Internet; Job Skills; Outcomes of Education; *Technology; *Telecommunications; Teleconferencing; Two Year College Students; Two Year Colleges
IDENTIFIERS	*California Community Colleges

ABSTRACT

This is the sixth report on the status and progress of the Telecommunications and Technology Infrastructure Program (TTIP), submitted by the California Community Colleges. In California, familiarity with and use of computers is fundamental to economic success. California is home to many of the major companies involved in creating the future of the information age, and therefore, California's community college students can no longer be expected to function without a baseline of networks, hardware, and software similar to what they will confront in the workplace. The California Community Colleges Technology II Strategic Plan 2000-2005 (Tech II Plan), approved by the Board of Governors on September 11, 2000, provides the broad template of strategies for improving and strengthening technology throughout the California Community College system. Tidal Wave II, the expected increased enrollment of 500,000 college students by 2005, will necessitate that community colleges become more effective in their use of facilities and resources. The TTIP system-wide focus has been in five major areas: (1) data connection to the 4Cnet backbone for all colleges; (2) video conferencing capabilities at each college and district site; (3) satellite downlink capability; (4) Community Colleges Conferencing Network; and (5) library automation and electronic information resources. (Author/NB)

Report to the Legislative Analyst and the Department of Finance on

The Implementation of the California Community Colleges Telecommunications and Technology Infrastructure Program

2001 - 2002

November 1, 2002

A Report by the
Chancellor's Office
California Community Colleges

Sacramento, California

Report to the
Legislative Analyst and the Department of Finance on

The Implementation of the California Community Colleges Telecommunications and Technology Infrastructure Program
2001 - 2002

Report Prepared by

Charles Mawson
Community College Program Assistant II
Technology, Research and Information Services Division
Chancellor's Office, California Community Colleges
1102 Q Street
Sacramento, CA 95814-6511

Submitted as a Requirement of the
2001 - 2002 State Budget Act

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

Mission Statement

The mission of the Telecommunications & Technology Program is to provide quality leadership by defining systemwide telecommunication policy and standards to the Colleges and by supporting their delivery of data, satellite, video, and voice communications.

EXECUTIVE SUMMARY

Introduction

This report has been developed and is being submitted as the California Community Colleges (CCC) Annual Report on the status and progress of the Telecommunications and Technology Infrastructure Program (TTIP) for 2001-02. Senate Bill No.739, Chapter 106, Budget Act of 2001-02 requires the Chancellor's Office prepare a report on the status, any changes and or additional needs to the TTIP Program:

"The Chancellor shall submit an annual report to the Legislative Analyst, the budget and fiscal committees of the Legislature, and Department of Finance no later than November 1, 2002, identifying any changes to standards developed pursuant to the control provisions of this program in the Budget Act of 1997 (Ch. 282, Stats.1997), the status of the implementation of the telecommunication and technology infrastructure program to date and any additional needs, including the reasons therefore."

The California Community Colleges (CCC) is submitting its sixth report on the status and progress of the Telecommunications and Technology Infrastructure Program (TTIP). The funds from the TTIP program have provided the CCC System with a framework that has furthered the CCC commitment to effective use of technology in education. The TTIP funds have assisted faculty and staff to enhance the student's exposure to and experiences with ever-increasing technology skills required by the California economy. We believe our program is in alignment with comments made by Governor Davis on signing SB 192, "Computers are important tools for learning in California schools. These funds will help improve student access to technology and prepare students for careers in the 21st century."

The TTIP program was created by Budget Act language in Fiscal Year 1996-97. This report addresses the progress of TTIP, which is now referred to as Technology I, and future plans for the use of technology in the CCC system referred herein as the Technology II Plan (TECH II). Specifically, the report describes the successful linking of the CCC system with multiple communication services including a dynamic network with the California University System.

This report discusses the second phase of infusing technology throughout the system: the implementation of the Technology II Strategic Plan. The Technology II Plan was developed beginning in 1998, a two year effort, in collaboration with the Telecommunications and Technology Advisory Committee (TTAC), a cross-section of the system advisory committees. The Technology II Plan addresses the long-range plan for using technology in improving faculty teaching skills, improving staff efficiency, and increasing student access and success. The California Community Colleges Board of Governors approved the Technology II Plan in September 2000.

Changing student, parent and business expectations to meet the needs of an increasingly competitive marketplace, are driving the development and expansion of educational technology in all aspects of higher education. Even dockworkers now use computers to update inventories in real-time.

Furthermore, off-campus education continues to grow, particularly online learning programs, as the CCC system responds to the needs of California students, businesses, industry, and government, serving them by venues other than traditional campus sites. We now serve over 120,000 distance education students.

California is expecting a significant increase in demand for postsecondary education. The newest population estimates of incoming college students predicts 500,000 new students entering the California Community Colleges by the year 2005 (Source: *California Community Colleges Technology II Strategic Plan, 2000-2005*). A combination of high birth rates, longer life spans, and high levels of immigration from other states and countries have fueled the growth in the state's population over the past four decades. Added to this equation has been a growing demand by business, students and working adults for courses and programs to upgrade, re-train, or otherwise enhance their work related skills. Higher education is already feeling the impact of this tremendous growth as some campus facilities have gone over capacity and many strain to meet the increased demand. In 2001-02, the CCC System had 40,579 un-funded FTES.

With the intensity of this new wave, institutions of higher learning have had to become more effective in their use of facilities and resources. The California Community Colleges have long fostered the use of technology to improve teaching and learning. Classroom presentation technology, using video and other media, has been a standard function of the community college campuses for some time. Distance Education has been a part of the outreach programs of the community colleges for decades. High Tech Centers were established at colleges beginning in the mid-1980s. By the mid-1990's, however, a more systematic and strategic approach utilizing a basket of communication and teaching services was needed to meet the emerging technological environment in higher education.

Technology is changing the world—including many aspects of education. The Internet and other information and communications technologies are changing the way people work, learn, communicate and conduct business. These technologies are shaping the economy and society in the same way that the steam engine and electricity defined the Industrial Age. A digital world is becoming increasingly the norm, and students who are not taught how to live and work in this world are increasingly being left out. The use of educational technology for distance education provides access to higher education to all citizens, and higher education must continually upgrade its infrastructure and business practices to take advantage of the speed and benefits of digital technology.

The TTIP systemwide focus has been in four major areas:

1. **Data connection to the 4CNet backbone for all of our colleges**

   The focus of this project is to connect all CCCs and CSUs via the 4CNet backbone connection. There is an annual on-going cost that guarantees CCCs with a high data throughput T-1 connection 24 hours a day, seven days a week. We are now planning to upgrade the connections to DS-3.

2. **Video conferencing capabilities at each college and district site**

   The focus of the video conferencing project is to facilitate real-time interactions for participants in instruction and administrative staff meetings within a single college or district and/or between colleges in the CCC or CSU Systems. Video conferencing allows two-way video and two-way audio between point to point and among multiple sites (multi-point). This technology allows participants to meet without traveling and therefore, reduces travel cost and improves the productivity of employees by not losing time to travel. The use of video conferencing in the classroom offers the best comparison to the traditional classroom between remote sites. Colleges can bring together students from different locations and conduct classes that otherwise might not be available.

   The Chancellor's Office is working in conjunction with the 4CNet staff to move video conferencing from its current T-1 backbone to a video over Internet protocol (CalVIP Project) on the upgraded DS-3 connections so data and video can be accessed over the same backbone and thus utilize the available bandwidth more efficiently.

3. **Satellite downlink capability (CCCSAT)**

   The focus of this program was to bring satellite downlink capability (analog and digital) to each college and district office. This capability enables systemwide

meetings and training programs to be shown simultaneously at each college and district office lessening the need to travel and enabling all administrators, faculty, staff, and students to participate. Additionally this program enables campuses the ability to offer programs from other campuses so students don't have to travel to complete their education. This project is now fully operational and is offering classroom programming and administrative meetings both asynchronously and synchronously to all of the CCCs.

With its connection to Dish Network, CCCSAT is also able to deliver classes to student homes and outlying facilities that are not connected to colleges or 4CNet.

4. **Community Colleges Conferencing Network (CCCCONFER)**

   The focus of this program is to bring Internet conferencing capabilities to each college and district office. This capability enables systemwide meetings and training programs to be shown simultaneously at each college and district office lessening the need to travel and enabling all administrators, faculty, staff, and students to participate from their classrooms, offices, homes or hotels if traveling.

   When fully implemented in late 2002, this program will be the only fully ADA electronically compliant higher education conferencing system in existence.

5. **Library Automation and Electronic Information Resources.**

   The focus of this program was to upgrade the technology available in college libraries thereby enabling them to share library resources.

The *California Community Colleges Technology II Strategic Plan 2000-2005,* approved by the Board of Governors on September 11, 2000, provides the broad template of strategies for improving and strengthening technology throughout the California Community College system. The Board of Governors recognizes that the *Tech II Plan* will guide a complex undertaking to be implemented in a changing environment. The *Tech II Plan* addresses critical technology challenges facing the California Community Colleges. The following are some of these challenges:

Technology in California—In California, even more than in the rest of the United States, familiarity with and use of computers is fundamental to economic success. As noted above, California is a technology state, serving as the birthplace of many of the discoveries leading to the information age, and home to many of the major companies involved in creating this new future. Therefore, California Community College students can no longer be expected to function without a baseline of networks, hardware and software similar to what they will confront every day in the workplace.

Tidal Wave II—The California Community Colleges Board of Governors, in *California Community Colleges 2005: A Strategic Response for Enabling Community Colleges to Make a Defining Difference in the Social and Economic Success of California in the 21st Century,* July 1998, reported that most of the increased enrollment demand for higher education in the 21st century will be served by the community colleges. The report also states that "...the colleges will expand appropriate use of technology in providing support services, performing administrative functions, and in delivering instruction to achieve optimum use in existing physical plant and in best meeting the learning needs of students."

Explosive Use of the Internet—Ability to use the Internet is becoming a required career skill, as a means of communication and an expanded source of information.

Digital Divide—Data from multiple sources make it clear: the Digital Age is having a disproportionate effect on access to information and jobs within minority and economically disadvantaged populations, and the distance across the divide is increasing. In addition to other issues that face these populations, they experience a significant lack of access to technology. The CCCs must not only provide these students with access to technology, but also ensure that they are able to use technology effectively so that they can adapt to the fast pace of change in the Digital Age.

Increased demand for the integration of technology in teaching—The GartnerGroup research shows that the lack of readily available user assistance and support is a primary barrier to the successful adoption of new technology and new technology-enabled methods. Faculty requires increasing assistance in finding the appropriate technology tools to achieve the desired outcomes, learning to use the tools that are selected, and then teaching those tools to students. Further, training in the use of the tools must not be limited just to an initial tutorial, but must also include ongoing assistance. Faculty member increasingly must be able to focus on course content that requires familiarity with technology.

Sustainability of technology infrastructure—Sustainability, that is, keeping the technology current, is a major challenge facing higher education institutions in the 21st century. Obsolete technology, which is common in colleges, is costly to support and does not represent the type of environment that students will encounter in the workplace. Students come to our colleges from technologically sophisticated high schools where the ratio of computers to students is one-to-five and find that the best we can offer is a ratio of one-to-twenty and are often out-of-date, or they come to us from businesses that require knowledge of the latest equipment and software. There is a challenge of ensuring that the underlying technologies are sound and compatible with future technology directions.

Technology support and staffing—Infrastructure means more than just computers, routers and wiring. Institutions must plan for the support of their technical environments or the result will be networks and computers that fail and faculty, students, and staff who do not know how to use them even when the equipment is working. Since most of our schools operate from early morning to late at night six or more days a week, a sound infrastructure plan must include permanent, qualified support staff on a full-time basis.

Need for adequate levels of intra-campus and inter-campus connectivity—The California Community Colleges and the California State University (CSU) systems have worked collaboratively to develop and maintain the six-year-old statewide network called 4CNet. This network links the CSUs and the CCCs together into one data/video statewide network. However, the need for access continues to grow exponentially, especially as it relates to Internet access. Many CCC sites have reached bandwidth utilization levels that block full usage by students and others through 4CNet. The individual colleges need to be able to expand their technology infrastructure to take advantage of the systemwide backbone.

Additionally collaboration needs are pushing us in the direction of a K-20 technology infrastructure as shown by the CENIC project for sharing data and the California Video Over Internet Protocol (CalVIP) project for video conferencing.

Accessibility for persons with disabilities—In 1998, the Office for Civil Rights of the United States Department of Education (OCR) completed a systemwide review of accessibility for blind and visually impaired students in the California Community Colleges. The OCR directed that in order to satisfy the requirements of the Americans with Disabilities Act, community colleges must ensure that adaptive equipment and software are not confined to High Tech Centers at the colleges. They must be available for use by students with disabilities throughout the campus (in libraries, computer labs, offices, learning centers, and job placement offices). Moreover, OCR requires that newly acquired or developed hardware and software be designed to be accessible for students with disabilities. Critical information conveyed by graphic elements, such as drawings, must be available in an alternative text-based form that is usable by blind and visually impaired students. Audio information must be captioned for the deaf and screen layouts must be designed so students with learning disabilities can use them.

New equipment must be purchased, and existing computers and software upgraded to meet this requirement.

Program History

Technology I: 1996–2000

The California Community Colleges Technology I Strategic Plan was developed as a result of a grant funded by the U.S. Department of Commerce. This strategic study identified the need for a statewide telecommunications and technology system to effectively carry out the mission of the California Community Colleges; which is to advance California economic growth and global competitiveness and contribute to continuous work force improvement. The continuation and expansion of TTIP or Technology I was critical to the community colleges meeting the educational needs of California's population.

The statewide telecommunications and technology system was first funded by the State in the 1996-1997 Budget Act and called the Technology and Telecommunications Infrastructure Program (TTIP). This funding has provided the California Community Colleges with a telecommunications and technology infrastructure that provides the networks and resources that are beginning to meet the needs of faculty, students and staff.

Technology II: 2000–2005

In the fall of 1998, the Chancellor's Office began development of the *Technology II Strategic Plan for 2000-2005*. The goal was a systemwide technology plan that would build on the Technology I Plan and encourage expanded uses of technology and continue to support the mission of the California Community Colleges. *Tech II 2000-2005* has fostered long-range strategic plans at colleges for using technology in teaching and learning, increasing student access, improving student support services, and achieving better efficiencies and effectiveness in administrative support.

The Board of Governors adopted the Technology II Strategic Plan as policy at its September 2000 meeting. The *Plan* has been disseminated throughout the system. Workshops were held in person and via videoconferencing to educate the system about the plan and in particular the concept of the total cost of maintaining one's technology effort. An Implementation Guideline Manual and an on-line baseline standards implementation planning tool was developed for to benchmark the colleges against the minimum standards in the plan, to prioritize the categories and to allocate available TTIP funding. The previous TTIP optional areas, Local Area Network, Wide Area Network Projects, Planning and local application development have been merged into the baseline standards categories which covers a broader range of technical options.

The goals for the system's *Technology II Strategic Plan* are clear...Student Access and Student Success.

Student Access— Promote student access to the California Community Colleges including access to instruction and student support services.

Students are able to progress into and through the college experience more readily with the assistance of information technology. Students utilize technology for on-line access to college admissions, support services, faculty, classes, and libraries, in a manner that is fully accessible for all students, including students with disabilities. Emerging technologies and learning practices extend and expand opportunities to meet the educational needs of un-served and underserved populations. Faculty is better able to integrate technology into instruction thus providing alternate educational access to students through distance learning.

Student Success— Promote students' success in their educational and career goals.

Students, faculty, staff and administration are able to utilize state-of-the-art technology to facilitate their communication in classrooms, labs, libraries, learning resource centers, offices, and the workplace and/or the home. Necessary up-to-date adaptive equipment and software needs to be widely available throughout the college. Faculty uses technology creatively to improve the quality of instruction. State-of-the-art technology empowers students by permitting greater access to information thereby increasing the variety of learning options. Faculty needs to be supported by qualified technical staff and training to assist them in promoting student success. Proficiency with state-of-the-art technology prepares students for future careers, and gives workers the ability to advance in existing careers.

TTIP Program Annual Accomplishments

The following is a summary of the work accomplished each year of the program as funded by the legislature.

1996–1997: The 1996-97 State Budget Act contained $9,300,000 for allocation to community college districts. $6,700,000 was allocated directly to districts for:

1. Data and video connectivity to the 4CNet backbone including:

   - Acquisition and installation of equipment,
   - Lease of communication lines, software and other costs associated with connecting to the network,
   - Video conference connectivity, transport, and maintenance.

   Six statewide standards and guidelines were developed through the committee process and reaffirmed through Consultation. The standards and guidelines were:

   - 4CNet,
   - Library Automation and Electronic Resources Network,
   - Video Conferencing Network,
   - Satellite Network,
   - Local Telecommunications Planning, and
   - Technology Training.

   An agreement was entered into with the CSUNet system to form a new system, 4CNet, connecting our colleges with the CSU colleges. All CCCs were required to connect to the 4CNet at the T-1 level to receive funding.

   Minimum standards for a statewide community college video conferencing network were adopted. In May 1997, a common equipment standard was selected, and the process begun to install equipment at 128 college and district office sites.

   Minimum information technology standards on automation and connectivity for its college library and learning resources programs were adopted. The standards were not required in the 1996-97 program-year.

2. Digital and analog satellite systems and components.

   Satellite downlink standards and guidelines were developed for analog and digital transmissions. This allowed each CCC expanded delivery of instruction, data, video,

and other related services. The CCC satellite broadcast center was funded in 1998-99 through a competitive grant.

8. Competitively bid pilot project RFA/RFPs were funded with the remaining $2,600,000. These were in the area of Local Telecommunications Planning, and Technology Training.

1997–1998: The 1997-98 State Budget Act contained $18.0 million for expenditure on the Telecommunications and Technology Infrastructure Program. The Budget Act provided that $13,865,000 be allocated to college for the following required purposes:

1. Data and video Connectivity to the 4CNet backbone including the acquisition and installation of equipment, lease of communication lines, software and other costs associated with connecting to the network, including video conference connectivity, transport, and maintenance.

   The final T-1 circuits connecting the colleges to 4CNet were installed in December 1997, and the majority of sites have connected their Local Area Network to their 4CNet router as well.

   Stage one of a two-stage process to implement a systemwide video conferencing network was started with interim use of ISDN to connect colleges and allow them to use the video conferencing technology. Starting in 1998-99 stage two will be to move from ISDN to a dedicated T-1 backbone on 4CNet.

2. Library technology planning and development including library automation, library connections to college local area networks; library technology plans and connections to external databases.

   First year of a three-year program to implement standards devised in 1996-97 to upgrade technology in the CCC Library and Learning Resources Programs.

3. Digital and analog satellite systems and components not funded in fiscal year 1996-97.

   The MPEG II digital standard was adopted by both the CCC and CSU systems, enabling programs to be shared across segmental lines.

4. Training in technology for faculty and staff.

   First year to implement faculty and staff technology training standards.

5. Development and expansion of local area networks both within and between buildings;

6. Development of districtwide area networks for interconnecting multiple campuses and off campus centers within the district;

7. Implementation of local technology applications intended to improve student learning and other services.

9. Competitively bid systemwide and pilot project RFA/RFPs were funded with the remaining $4,135,000. These were in the area of Local Telecommunications Planning, and Technology Training.

1998–1999: The 1998-99 State Budget Act contained $28 million for expenditure on the TTIP. The Budget Act provided that $21,600,000 would be allocated to colleges for the following required purposes:

1. Data and video Connectivity to the 4CNet backbone including the acquisition and installation of equipment, lease of communication lines, software and other costs associated with connecting to the network, including video conference connectivity, transport, and maintenance

   Stage two of video conferencing was designed to use the 4CNet backbone to carry video conferencing signals between the colleges. It expanded the capability of the 4CNet by carrying both data and video traffic over the backbone of the network. This reduced long distance cost on video conference calls between colleges and insured a level of reliability between sites.

   In early March 1999, the Butte-Glenn Community College District, in conjunction with the California Community Colleges Chancellor's Office, issued its Video Pilot Report entitled "4CNet Backbone Upgrade Project Video Pilot Study and Report" (http://video.4c.net/video_report) The study supported the migration of videoconferencing services onto the 4CNet network.

2. Library technology planning and development including library automation, library connections to college local area networks; library technology plans and connections to external databases
3. Digital and analog satellite systems and components not funded in fiscal year 1997-98.
4. Training in technology for faculty and staff
5. Development and expansion of local area networks both within and between buildings
6. Development of district wide area networks for interconnecting multiple campuses and off - campus centers within the district; and
7. Implementation of local technology applications intended to improve student learning and other services.

10. Competitively bid systemwide and pilot project RFA/RFPs were funded with the remaining $6,400,000. These were in the area of Local Telecommunications Planning, and Technology Training. The digital satellite broadcast center RFA was awarded to Palomar College in May 1999.

1999–2000: The 1999-2000 State Budget Act contained $28 million for expenditure on the TTIP. The Budget Act provided that $21,600,000 be allocated to colleges for the following required purposes:

1. Data and video Connectivity to the 4CNet backbone including the acquisition and installation of equipment, lease of communication lines, software and other costs associated with connecting to the network, including video conference connectivity, transport, and maintenance

   The project to move all college video systems to the 4CNet backbone was completed. Some colleges choose to retain ISDN capability also because of classes held in local high schools and other locations.

2. Library technology planning and development including library automation, library connections to college local area networks; library technology plans and connections to external databases
3. Digital and analog satellite systems and components not funded in fiscal year 1997-98
4. Training in technology for faculty and staff
5. Development and expansion of local area networks both within and between buildings
6. Development of district wide area networks for interconnecting multiple campuses and off - campus centers within the district; and
7. Implementation of local technology applications intended to improve student learning and other services.
8. Competitively bid systemwide and pilot project RFA/RFPs were funded with the remaining $6,400,000. These were in the area of Local Telecommunications Planning, and Technology Training. CCCSAT started building the systemwide satellite broadcast center in March 2000.

2000–2001: The 2000-2001 State Budget Act contained $44.3 million for expenditure on the TTIP. The Budget Act provided that $31,600,000 be allocated to colleges for the following purposes:

6. Data and video Connectivity to the 4CNet backbone including the acquisition and installation of equipment, lease of communication lines, software and other costs associated with connecting to the network, including video conference connectivity, transport, and maintenance

   Data bandwidth utilization starts to max out at many colleges. Now that video costs were fixed on the 4CNet backbone, utilization has increased.

7. Library technology planning and development including library automation, library connections to college local area networks; library technology plans and connections to external databases
8. Digital and analog satellite systems and components that were funded in fiscal year 1996-97
9. Development of technology plans on how each campus to implement the Technology II Strategic Plan;
10. Development and expansion of campus local area networks both within and between buildings; development of district wide area networks for interconnecting multiple campuses and off-campus centers within the district; implementation of local technology applications that are intended to improve student learning and other services
11. Training in technology for faculty and staff
12. Competitively bid systemwide and pilot project RFA/RFPs were funded with the remaining $12,700,000. These were in the area of Local Telecommunications Planning, and Technology Training. CCCSAT was operational in December 2000. The Internet conferencing project (CCCCONFER) was awarded Palomar College in January 2001.

2001–2002: The 2001-2002 State Budget Act contained $44.3 million for expenditure on the TTIP. The Budget Act provided that $31,600,000 be allocated to colleges for the following purposes:

1. Data and video Connectivity to the 4CNet backbone including the acquisition and installation of equipment, lease of communication lines, software and other costs associated with connecting to the network, including video conference connectivity, transport, and maintenance
2. Library technology planning and development including library automation, library connections to college local area networks; library technology plans and connections to external databases
3. Digital and analog satellite systems and components that were funded in fiscal year 1996-97
4. Development and expansion of campus local area networks both within and between buildings; development of district wide area networks for interconnecting multiple campuses and off-campus centers within the district; implementation of local technology applications that are intended to improve student learning and other services.
5. Training in technology for faculty and staff
6. Competitively bid systemwide and pilot project RFA/RFPs were funded with the remaining $12,700,000. These were in the area of Local Telecommunications Planning, and Technology Training.

Next Steps – 2002-2003 (Moving to DS-3 and H.323)

- Many colleges have gone beyond their current data T-1 capacity and have multiple T-1s; so it is time that we increase bandwidth to a DS-3 level. To save funds, colleges will initially be connected at 10 Mbs out of a possible 44.736 Mbs)
- Convert existing video tp video over IP
- Educational institutions (both inside and out of California) have already begun using H.323 technology for video.
- H.323 is quickly becoming the new standard for video conferencing.
- Room equipment and individual units are significantly less expensive then the old H.320 equipment.
- Vendor support for H.320 is dwindling and getting increasingly expensive.
- With the CENIC Optical Network Initiative (ONI) project creating a common network backbone for education in California, there is a need for current Video Conferencing systems to be converted to H.323 as fixed bandwidth ATM will no longer be supported on the ONI backbone. For more information on ONI please see http://www.cenic.org/ONI.html/
- With the DCP network project, there is a need to establish support for video conferencing with the K-12 Community.

With colleges going to DS-3 data connectivity to 4CNet, video conferencing will be switching to a Video over Internet Protocol (VOIP) H.323 over the same data network, and the separate video T-1 network will be phased out over the next several years. Since the PictureTel Venue 2000, Model 50 cannot be converted to H.323; it will be necessary for colleges to replace these units with H.323 compatible video conferencing equipment to work over the data network.

Appendix A

Technology Model Application Pilot Projects (TMAPP) and Telecommunications Systemwide Projects (TSP)

Starting with the 1996-97 fiscal years, the Chancellor's Office has funded four systemwide Technology Special Projects (TSP) for a total of $13.2 million, and 48 Telecommunications Model Application Projects (TMAPP) for a total of $25.335 million. All projects were selected through the competitive grant process.

The TMAPP projects have contributed to further the development and implementation of the Telecommunications and Technology Infrastructure Program. They demonstrate a process for (1) development; (2) implementation; (3) evaluation; and (4) refinement of the plan in a continuous improvement cycle.

TMAPP projects offer computing and electronic information resources and services to students, faculty, administrators, and staff. Model projects test applications, which can then be utilized on 4CNet systemwide, which will provide access to existing and ever expanding databases of machine-readable electronic information in the state. See Appendix C for further discussion of current TSP grants.

Since 1996, TMAPP funding has been focused in three major categories:

1. Instructional Support
2. Student Support, and
3. Administrative Support

There are currently four TSP grants, which are projects that provide regional coordination for technical assistance and planning, cooperative purchase agreements, satellite uplink, and faculty and staff development.

- Technology Center (Butte College)
- @ONE Project (De Anza College)
- Satellite Project (CCCSAT) (Palomar College)
- e-Conferencing Project (CCCCONFER) (Palomar College)

The projects have completed activities related to infrastructure, applications, and human resources training and development. Projects were funded for one to two years, with possible continuation of funding of some projects up to five years in accordance with Board of Governors *Standing Orders*.

2001-02 Telecommunications Model Application Pilot Projects (TMAPP)

1. CCCApply – System-wide Online Admission Application

The CCC System-wide Online Admission Application was released for production in August 2001 for 10 pilot colleges. It currently has 30% of the California Community Colleges subscribed to it. A fund to award mini-grants to colleges to cover installation and one year of operation is continuing to attract additional subscribers. Direct marketing techniques are being added to the promotional efforts this year to supplement email announcements and presentations at conferences and association meetings.

In October this year, the first annual update to CCCApply was put into production, one year after roll-out of the system. Included were improvements to residency qualification, demographic reporting, data integrity checking, and final 100% OCR compliance. Testing was done first by the member colleges of the Steering Committee and then

opened to all subscribing colleges. The changes were validated by the Chancellor's office and High Technology Center, proving the concept of ongoing support and cooperation among agencies to ensure quality and compliance with residency, privacy and civil rights (OCR), accessibility (ADA) and State MIS reporting requirements.

While the 2002 annual update was being tested, requests for changes for 2003 were evaluated, including requirements from the Chancellor's office in response to AB540. This update is being prepared for release by April 2003. The annual update is being shifted up by half a year to enable the new application to be ready for Fall admission rather than Spring, and to better serve the CCC's. Because of the short timeline for the 2003 update, enhancements originally proposed for Phase II of CCCApply will begin to be addressed in the 2004 cycle (starting January 2003)

As it enters its second year, the update and validation processes for CCCApply are stabilized and the Steering Committee is well founded. The transition of fund management and project direction and associated processes from the Chancellor's Office to the Technology Center is about complete. Attention is being turned to updating project information on the website, which has been unchanged since going "live", and to creating an online support center for subscribers to learn about the system and to suggest and monitor changes to it.

2. System-wide Electronic Transcript Exchange

The goal of this project is to facilitate electronic transcript exchange for the CCC's. The most key components for success are a standard data definition for CCC transcripts, and a transmission method based on new standard technology, including XML. A comprehensive data definition for a standard CCC transcript was finalized with input from the CCC's, UC, CSU, AICCU, and CSIS (high school technology center). A search for a vendor to pilot the transcript transmission process within available project funding yielded a contract with the not-for-profit firm of IMM.

IMM built modules in Java and XML to transmit and display data per the new data standard. The prototype modules were tested at El Camino College, who produced 4 sample transcript files. IMM provided a system description and flow-chart and recommendations for further development. Some of the outstanding development issues include transmission security, data retention and accessibility, implementation procedures and support, and display-and-print capabilities. In regard to security issues, CREN has stated interest and willingness to assist the project by providing digital certificates from its bank of certificates.

The pilot development represents the secondary alternative explored in the original feasibility study, a distributed transmission model without data retention. The primary recommendation was a centralized model with persistent user accounts and data, similar to CCCApply. The issue of data retention and user accounts remains to be resolved. The pilot also represents an open-source development, which is relatively rare and new to the administrative systems and the CCCs, and requires assessment of factors for success, such as ongoing development and support and actual costs of ownership.

Additional Information is available at http://www.cccedi.com/main.asp

3. Digital Signatures (Authentication)

Digital Signature technology represents a means for conducting electronic transactions between students, faculty and staff within and between community colleges and other institutions and organizations. Digital Signature is part of a comprehensive, robust approach to information technology security called Public Key Infrastructure (PKI). Security and authentication are key elements as the community colleges move into on-line e-commerce, e-education transactions. By making this a systemwide initiative, the colleges will save time and money by not reinventing these policies and procedures at each district and duplicating efforts.

The project continued its work with Educause and the University of California in the development of policies and procedures. In addition, the project is implemented a pilot with two colleges, a two-college district and the Chancellor's Office to test a grant submission using document management and digital signature.

4. Data Warehousing Project

The CCC Data Warehousing Project is a cooperative effort between Cabrillo College and the Chancellor's Office to provide a systemwide access point to the Chancellor's Office MIS (COMIS) data system. Cabrillo College hosts a copy of the COMIS system and makes it accessible to college researchers and MIS personnel through the use of remote access and Internet sources. Outputs from this system include a certain number of canned reports (delivered over the web) and also the ability to run ad-hoc queries against statewide data by local college personnel.

Telecommunications Systemwide Projects (TSP)

1. CCC Systemwide Technology Center

The primary function of the CCC Systemwide technology Center is coordination between the California Community Colleges and the California State University System. The CCC systemwide Technology Center supports data/video networking and is a focal point for technology issues for the system. The CCC and California State University (CSU) systems have continued to work together in a combined administrative team to coordinate activities that involve the development and maintenance of the statewide network, 4CNet, and other intersegmental activities related to the program. This project continues these efforts working with the Chancellor's Office as the 4CNet Network migrates to the next level as envisioned with the Optical Network Initiative as proposed by the Corporation for Educational Network Initiatives for California (CENIC).

All 128 sites continued their connection to the 4CNet data network with two new sites added during the 2001-02 timeframe. Campuses continue to experience high levels of blockage on a regular basis. The goal is to not have sites have peak usage greater than 75%. There is the continued need for more bandwidth. This will lead ultimately to DS3 (T-3) level access for many if not most of the CCC colleges and/or districts. This is the same pattern that CSU campuses experienced in their evolution on CSUnet and 4CNet. Staff continues to monitor and plan for migrating the colleges/districts to DS-3 (T-3) connections. Additional bandwidth expansion efforts to add DS3s to 39 colleges and/or districts during the Fall of 2002 are in the implementation planning stage. This project will become involved with this phase in May/June timeframe and work with 4CNet and the Chancellor's Office on Phase II and III in 2002-03.

Monthly coordination meetings using video conferencing continue to be held which allows the teams, although located in different ends of the state to continue to collaborate effectively. In addition, the combined administrative team has been holding informational video events quarterly which are available to all CCC Community College interested parties. They are held two or three times to accommodate the large number of CCC participants.

The next phase for videoconferencing is the migration to Video Over IP (VOIP). A Steering Committee has been formed and will meet in March 2002 and will be responsible for developing and guiding the process and establishing various task groups to deal with design, testing and implementation. This project will begin to work with this committee as VOIP migrates over the next 30 months. In addition the CCC will need to plan, fund and implement a migration plan moving from the H.320 (V.35) solution to an H.323 (IP) module during this timeframe. This project will assist in that initiative as well.

The Chancellor's Office is working with the Corporation for Education Network Initiatives in California (CENIC) represents the common interests of California's higher education academic and research communities in achieving high capacity, next generation Internet communications services.

In 2000, the Governor's Office and the Legislature funded the Digital California Project (DCP); a $31.6 million initiative designed to bring high performance advanced services network capacity to all of California's K-12 schools. The project is funded through the University of California. UC contracted with CENIC to coordinate the project.

The DCP project has strong implications for the California Community Colleges. The DCP network will make use of the CalRen2 Network (Internet2) and the 4CNet Network. This connection to 4CNet creates a critical need for CCC to be involved with this project. In addition, there exists a close relationship between K-12 and the California Community College System. So many of the applications that will run on the DCP Network, we believe, will involve these two segments and expand that relationship. The CCC is working actively with the DCP project as it evolves. CCC has membership on the DCP Policy Steering Committee, the Network Design Committee and the Application Coordination Committee. The CCC Systemwide Technology Center will assist with the CCC participation and representation related to these initiatives.

New technologies are constantly emerging and offering more cost effective, efficient alternatives to current technology. This project will assist the California Community Colleges Chancellor's Office, the Telecommunications and Technology Advisory Committee (TTAC) by leading research and development projects, conducting technical research and in general maintaining an "environmental scan" to determine technology trends and their impact on the achievement of systemwide goals.

Statewide Network Data Update

All 128 sites continued their connection to the 4CNet data network. Many sites have reached the maximum capacity of their initial single T-1 lines. Some campuses were experiencing from 90% to over 100% blockage on a regular basis. The goal is to have sites reach no more than 75% of maximum usage. Analysis was done in September 2000 to gauge usage and measure peak usage for each site. The average peak usage for 2000 was 101%. After additional backbone bandwidth was installed at colleges

exceeding the established thresholds, tests were duplicated in September 2001 with average peak at 72%. Though this represents progress in the right direction, 51 sites continue to peak over the 75% threshold.

As the colleges continue to take advantage of 4CNet data service, there is a growing trend for continued need for more bandwidth, leading ultimately to DS3 (T-3) level access for many. This is the same pattern that CSU campuses experienced in their evolution on CSUNet and 4CNet. Staff continues to monitor and plan for migrating the colleges/districts to DS-3 (T-3) connections.

The growth of the backbone is a critical element of continuing to meet the telecommunications and technology needs of the two systems. Increased use of Information Technology in the curriculum, student services and administration will drive a greater reliance on the Internet and the requirement to expand the size of the statewide backbone and backbone connections to community colleges.

Statewide Network Video Update

All of the colleges have installed a separate 4CNet T-1 line dedicated to Videoconferencing. Videoconference usage continues to increase. This is the second full school year in which the Community College video sites were all connected to 4CNet. The trend of video usage by the Community Colleges and the California State University systems has continued to increase.

The total number of video conferences scheduled (by both the Community Colleges and the CSU), and consequently set up by the 4CNet staff, increased from 3,076 last year to 4,142 this year. This increase of 1,099 Conferences over last year is an overall increase of 26.53%. While there were not significant increases or decreases in the number of conferences between individual Community Colleges or CSU Campuses, there was a significant increase in the number of conferences that the systems did together.

The two systems are increasingly collaborating in meetings. In the school year of 2000–2001 there were 554 Conferences conducted that included at least one Community College and CSU campus, in the school year of 01/02 there were 1967 (806 of these conferences were classroom instruction) conferences with at least one participant from each system. This is an increase of 71.84% in the conferences that included at least one participant from each College System.

The total number of conferences in the year Oct 00-01 was 554 and the year Oct 01-02 was 1967. This increase of 252 conferences represents a 71.84% increase in joint conferences between the CSU and the Community Colleges.

The total number of conferences from Oct 00-01 was 1146, while the total from Oct 01-02 was 2538. This increase of 1392 conferences that involve the Community College system either along with other Community College sites or between Community College and California State University sites. This is an overall usage increase of 54.85% in the use of video conferencing by the Community Colleges.

TIPS Newsletter (Part of TSP at Technology Center Grant)

The Telecommunications Infrastructure Program Systemwide (TIPS) newsletter, established through the Butte Technology Center Grant, is published each month. It continues to educate its audience of over 1,000 subscribers on the latest technology

news. The newsletter was first published in November 1998. All past issues are available on-line at http://www.tipsnews.org. Articles focus on how our colleges are implementing technology funded through TTIP allocations.

In 1999-2000, the CCC Chancellor's Office instituted a Technology Award Program. A special award was given and will continue to be given on an annual and award to the field for the best CCC provided article of the year. The second award was presented at the Chancellor's Annual Conference in April 2001.

Additionally the Systemwide Technology Center Act acts as the host site for Telecommunications Model Application Pilot Projects (TMAPP) as they move from pilot to production. Sample projects, which might be included, are digital signature, common application, electronic transcript, and data warehousing, etc.

2. @ONE Project

The @ONE Project was established to assist California Community College faculty and staff in their efforts to enhance student learning and success through expanded uses of effective technology, by providing training, resources, and support. @ONE provides:

- A focus on teaching and learning strategies in the tutorials and training materials available to campuses.
- A support network for campus trainers and instructional designers.
- Annual Summer Institutes, "Technology for Teaching."
- @ONE website (http://one.evc.edu/) with useful database of training resources.
- Electronic newsletter, eNEWS.

3. Satellite - CCCSAT

Palomar College awarded a Request for Proposal and contracted with BitCentral, a California company, to build the satellite broadcast center in March 2000. The broadcast center was operational in September 2000, and after a break in testing period began delivering classes in January 2001.

Palomar has completed work on installing downlinks to all 128 sites so they can receive administrative and educational programs.

This project through a competitive process was granted a channel on the DISH Network, the Community College Network, better known as CCN, which brings quality educational courses to homes in California and the nation who have DISH Network access. http://www.ccn.org

Affiliate College Network (CAN) Programming Facts

128 sites within the CCC system operates 168 hours weekly and 24/7.

14,607 total programming hours from 12/15/00- 12/10/02 for the California Community Colleges system.

(Community College Network) CCN Programming Facts

Nationwide programming hours on DISH Network public interest channel, CCN-Community College Network is 168 hours weekly and 24/7.

12,969 total programming hours from 12/15/00- 12/10/02 for the California Community Colleges system.

4. e-Conferencing (CCCCONFER)

Palomar College was selected by a panel of readers from all the submissions to implement this audio/data collaboration project. Subsequently, Palomar established a project team and developed a Request for Proposal from the vendor community to competitively bid the initial years services. The RFP responses were due to be back October 29, 2001 with the vendor, HorizonLive, selected by December 2001. (www.cccconfer.org)

Palomar was notified in June 2001, by the Chancellor's Office Legal Counsel that all Chancellor's Office contracts and grants effective June 21, 2001, must contain a provision requiring the contractor or grantee to comply with the section 508 regulations. In addition, each district will be asked to certify that it complies with section 508 as a condition of receiving funds for 2001-02 under the Technology and Telecommunications Infrastructure Program (TTIP).

The program continues to work with HorizonLive to create the only Internet conferencing program in existence that is fully compliant with the requirements of Sec. 508. We hope this will serve as a national model for Sec. 508 compliance.

A staff person from the Chancellor's Office Telecomm team was loaned to Palomar for the first year of the project as project manager to speed up the implementation process. The project developed a series of training programs broadcast to participating colleges via the CCCSAT Project on effective meetings skills, including using technology more successfully. These were broadcast live in October 2001 and rebroadcast in November.

On Line Grants and Instructional Resource Clearinghouse (TMAPP):

The Online Grants and Instructional Resource Clearinghouse has been designed as a web-based center for materials, resources, processes and best practices in grants, projects and instruction. It is a central depository for official policies, procedures and guidelines, as well as a depository for grant and project related content. The current prototype offers direct deposit of materials, automated indexing, a single–screen search and retrieve process and tools for developing curriculum processes. The next phase will focus on adding grant and project related materials with the same indexing, search and retrieve processes and tools.

This project supports the utilization of a clearinghouse based upon coordination with the four California Community Colleges (CCC) Virtual University Regional Centers, the CCC Virtual University Professional Staff Development Center (PDC), the @ONE project and the Distance Learning Coordinating Network Project (DLCN). These projects would post all policies, procedures, courses, best practices and other grant and project activities into the Clearinghouse.

Appendix B

Advisory Committees

The Telecommunications and Technology staff are assisted in defining their work priorities by two committees TTAC and SAC.

1. **Telecommunications and Technology Advisory Committee (TTAC)**

   The Telecommunications and Technology Advisory Committee (TTAC) is a 19-member committee that represents the mix of CA Community Colleges Chancellor's Consultation Council and is responsible for providing advice to the Chancellor's Office and the Consultation Council on the deployment of technology in the California Community Colleges.

2. **Systemwide Architecture Committee (SAC)**

   Because of the complexity of technical issues being discussed by TTAC, the Systemwide Architecture Committee (SAC) was formed. This sub-committee to TTAC was established to provide technical expertise for planning the development and growth of the systemwide information technology infrastructure. With several systemwide projects in place, such as Satellite, 4CNet data and video and additional systemwide applications, there was a need to ensure that these technologies and applications work effectively and efficiently together. The SAC is looking at future technologies to ensure that the architecture and design will function in the current and future technological environment.

   The Systemwide Architecture Committee (SAC) was established to take advantage of the technical expertise that exists within the CCC system and therefore has the CCC Technology Center Project Director at Butte College chairing the committee and the Chief Information System Officers Association (CISOA) nominating members to the committee and a member representing the Academic Senate.

Telecommunications and Technology Advisory Committee

(TTAC Charter - Approved Version 7/1/01)

PURPOSE

The Telecommunications and Technology Advisory Committee (TTAC) advises the California Community Colleges Chancellor's Office on the continued development and deployment of telecommunications and educational technologies in the California Community Colleges. The Committee researches technology trends and recommends the direction for technology infrastructure initiatives within California Community College system.

AUTHORITY

1996-97 Budget language authorizes the Telecommunications Technical Advisory Committee. The Telecommunications and Technology Advisory Committee (TTAC) is a technology policy advisory committee established by the Chancellor of the California Community Colleges in 1998. Telecommunications and Technology Infrastructure Program (TTIP) was in its second year and the Chancellor felt a need for a committee to provide advice regarding the utilization of TTIP and future resources for technology. At that time, the Chancellor appointed members who had served on an intersegmental

(CCC & CSU) advisory committee called the Implementation Advisory Committee (IMAC) and designated other representative to form what is now the core for the TTAC membership.

Area	Telecommunications and Technology Advisory Committee
Focus and authority	Broad – on goals, policies and plans applying technology to attain improved outcomes for student and system/college operations. Provides recommendations to the CCCCO.
Strategic Planning	Develops and recommends the vision, goals and objectives
Policy development	Recommends policies
Project Review	Reviews projects for applicability to the community college mission, vision, and goals.

TTAC FUNCTIONS

1. **System Technology Planning**: The California Community Colleges system is guided by the CCC System Long Range Technology Plan as approved by the Board of Governors. TTAC reviews the CCC System Technology Plan on an annual basis as it guides the technological development in the California Community Colleges. TTAC considers future applications and plans for; specifically, how the delivery of instruction and student services can be enhanced and how the system can develop its technological capacities.
2. **California Community Colleges Budget Change Proposals (BCP)**. TTAC provides advice and counsel on budgets that will support development of the system's CCC System Technology Plan and related activities. Methods of allocating resources are also reviewed by the Committee.
3. **California Community Colleges Technology Model Application Pilot Projects (TMAPP) and Telecommunications Systemwide Projects (TSP) Funds**. TTAC advises the CCCCO in relationship to projects, including initiation of new projects, evaluation, continuation of funding and development of long-term projects. Pilot project outcomes are reviewed by the Committee. New pilot projects are recommended in areas related to learning and student services and/or enhance the efficiency and effectiveness of the California Community Colleges and the CCC System Technology Plan.
4. **Technology Standards**. Based upon recommendations from the Systemwide Architecture Committee (SAC), TTAC provides advice regarding general industry standards and technical guidelines for hardware/software and technology related services to ensure a level of interoperability. TTAC approve technical standards and recommend "Best Practices" for use in systemwide projects.
5. **Intersegmental Collaboration.** TTAC provides advice to California Community College Chancellor's Office related to intersegmental governance. In addition, foster the California Community Colleges involvement with intersegmental (UC, CSU and K-12) technology initiatives.
6. **Relationship with the Technology Vendor Community.** TTAC, with assistance from the Foundation for California Community Colleges, involves the Vendor Community in identifying solutions to systemwide technology issues.

7. **Inter-Advisory Committee Collaboration.** TTAC collaborates with the Distance Education and the Library and Learning Resources Technical Advisory Committees in the development and implementation of related goals, objectives and activities.

MEMBERSHIP

The membership of the Technology and Telecommunications Advisory Committee is composed of the following representatives who are appointed by the Chancellor upon nomination by the appropriate group:

1. Five faculty appointed by the Academic Senate
2. Five CEOs appointed by the CEO Executive Council
3. Representatives from the following groups appointed by their councils:
    - Chief Instructional Officers
    - Chief Business Officers
    - Chief Information Systems Officers (2)
    - Chief Student Services Administrators
    - Student Senate
    - Disabled Students Programs and Services
    - Library and Learning Resource Programs
4. Chairperson, Systemwide Architecture Committee (SAC)

TERMS OF MEMBERS' APPOINTMENTS

A member is appointed for a three-year term, and may be reappointed. Membership will be based upon staggered terms of one third, one third, and one third. Terms of membership will be based upon the fiscal year.

CHAIR

A Chair elected by the group will serve for a two-year term. The Chair will preside at all meetings and work in cooperation with Chancellor's Office staff to determine the agenda, define annual goals, and develop a succinct annual report.

A Vice Chair will be selected and (s)he will act in the absence of the Chair. The vice chair will also serve for a two-year term.

The selection of a new Chair and Vice Chair will occur in the spring meeting prior to the Chair's final meeting.

Meetings

There will be a minimum of four meetings per year. The meetings for the year will be established no later than August 1 for the academic year.

SUBCOMMITTEES

Subcommittees will be formed as needed. There will be a Systemwide Architecture Committee (SAC).

Agendas will be received at least one week prior to the meeting. Action items will be defined and the bases for the recommended action delineated. Each agenda will include the minutes of the previous meeting.

DECISIONS

Decisions are made through votes of the regular membership and will be in effect upon agreement among a simple majority of those present, provided that a quorum of the membership is present. A quorum exists if a majority of the membership is in attendance. Meetings in which decisions can be made include face-to-face meetings, teleconferences, videoconferences, or other forms of synchronous communication. Decisions may also be ratified through asynchronous polling (email, mail, etc.) provided that a simple majority of the members are in agreement.

CHANGES TO THE CHARTER

Changes to this charter may be recommended according to the rules of affirming decisions as noted above and

The following table lists the TTAC Committee members and the colleges and organizations they represent.

Name	College	Organization
Dan Crump	American River College	Academic Senate
Catherine Chenu-Campbell	Sacramento City College	Academic Senate
Mark Wade Lieu	Ohlone College	Academic Senate
Jane Thompson	Solano College	Academic Senate
Ian Walton	Mission College	Academic Senate
Lucinda Aborn	El Camino College	CAPED
Will Baty	Santa Rosa Junior College	Library & Learning Resource Program
Nehasi R. Lee	Santa Monica College	Student Senate
Steve Kinsella	Monterey Peninsula CCD	Chief Business Officer
Martha Kanter	De Anza College	Chief Executive Officer
Pat Keir	San Diego Miramar College	Chief Executive Officer
Roe Darnell	Taft Community College	Chief Executive Officer
Ed Valeau	Hartnell CCD	Chief Executive Officer
Darroch F. Young	Los Angeles Pierce College	Chief Executive Officer
Donald Busche	Saddleback College	Chief Instructional Officer
Ernestine Moore	Pasadena City College	Chief Student Services Officer
Alan Holbert	Cabrillo CCD	Chief Info. Systems Officers Assoc.
Dale Pittman	Pasadena City College	Chief Info. Systems Officers Assoc.
Fred Sherman	Butte College	Chair, SAC
Patrick Perry	Vice Chancellor	CCC Chancellor's Office

Systemwide Architecture Committee (SAC)

Purpose

SAC provides technical expertise for planning the development and growth of the system-wide information-technology infrastructure for California Community Colleges. The system-wide IT infrastructure consists of those elements of technology (in the form of hardware, software, applications, practices, and standards) that are implemented at the community college system level. Broad objectives for the IT infrastructure are to facilitate student interaction with the community college system, to enhance collaboration among the community colleges and other elements of the California educational system, and to provide services in a cost-effective manner.

Authority

SAC is a sub-committee of the Telecommunications and Technology Advisory Committee (TTAC) that works in close coordination with TTAC to develop strategic plans, policies, implementation strategies, practices, and standards regarding the system-wide implementation of IT infrastructure. The SAC (through TTAC) may also provide recommendations to the California Community Colleges Chancellors Office (CCCCO) upon request.

Relationship between SAC and TTAC

Area	TTAC	SAC
Focus and authority	Broad – on goals, policies and plans pertaining to improved outcomes for students. Provides recommendations to the CCCCO.	Narrow - on technical and cost issues pertaining to overall system architecture and other aspects of IT implementation and operations. Provides recommendations to the TTAC.
Strategic Planning	Develops and recommends the vision, goals and objectives	Develops and recommends strategies to achieve objectives, specifies resource requirements, and identifies technical issues. Recommends system-wide technical standards as required.
Policy development	Recommends policies	Assesses impact of policies on technical operations, future design considerations, associated cost-effectiveness issues, and the ability to implement and maintain services. Suggests areas where policies and plans may be needed.
Project Review	Reviews projects for applicability to the community college mission, vision, and goals.	Reviews projects for system-wide architecture implications such as feasibility, interoperability, scalability, supportability, and the ability to replicate.

Regular Membership

The membership consists of a total of twelve community college representatives who are knowledgeable of and conversant in IT issues facing community colleges, alternative architecture designs, standards, and best practices.

The appointed membership shall be representative of:

- Small and large colleges
- Urban and rural colleges

- Instructional, library, and administrative computing support organizations

The membership is appointed as follows:

- The Chief Information Systems Officer Association (CISOA) appoints eight members. These appointments do not have to be CISOA members but they must work for a California Community College or the CCCCO. (CISOA-appointed members to TTAC are part of the eight representatives appointed to SAC.)
- The President of the State Academic Senate may appoint a member which is technically knowledgeable of architectural issues
- The project director of the grant, which funds the development of the system-wide backbone, is a member.
- The CCCCO project monitor of the grant, which funds the development of the system-wide backbone, is a member.
- The project director of the grant, which funds the satellite distribution center (CCCSAT), shall appoint a member to represent CCCSAT.

Associate Membership

Associate membership may be extended (by a decision of the regular membership of SAC) to experts from other organizations (inside or outside community colleges) who have strong credentials in technology and a willingness to participate in the committee.

Term

The term of regular membership appointed by CISOA shall be two years in duration. Associate membership shall be one year in duration. Members may be re-appointed to serve consecutive terms. The term of membership for grant directors is the duration of the grant. The CCCCO project monitor is a permanent member.

Chair

The project director of the grant, which funds the system-wide backbone, will act as chair. If this individual is not available or declines the position then the regular membership shall elect a chair with a term of office of one year. The chair may appoint a co-chair to serve in his / her absence at a meeting if required. The chair is responsible for recording the minutes of the meeting (or appointing another member to keep the minutes) and for communicating with TTAC and the CCCCO. The chair shall represent SAC at all TTAC meetings.

Meeting

Meetings shall occur as frequently as necessary (as called by the chair). Meetings should be scheduled so as to facilitate coordination with TTAC and be responsive to requests from the CCCCO.

Decisions

Decisions shall be made through votes of the regular membership and will be in effect upon agreement among a simple majority of those present, provided that a quorum of the membership is present. A quorum exists if a majority of the regular membership is in attendance. Meetings in which decisions can be made include face-to-face meetings, teleconferences, videoconferences, or other forms of synchronous communication.

Decisions may also be ratified through asynchronous polling (email, mail, etc.) provided that a simple majority of the members are in agreement.

Changes to the Charter

Changes to this charter may be recommended by the SAC, according to the rules of affirming decisions as noted above, and shall be approved by TTAC.
Systemwide Architecture Committee Members:

Name	Title	College
Fred Sherman, Chair	VP, Information Services and Technology	Butte Community College
Alan Holbert	Director, Computing Resources	Cabrillo Community College
Mick Holsclaw	Associate Vice Chanc., Info. Technology	Los Rios CCD
Gary Hughes	Director of Library and Academic Technology	Hartnell Community College
Dale Pittman	Director, Management Information Systems	Pasadena City Comm. College
Connie Rodriquez	CCCSAT On-site Engineer	Palomar Community College
Steve Stone	Director, 4CNet Backbone Project	Butte Community College
Lee Belarmino	Chief Information Services Officer	San Joaquin Delta College
Chris Brawner	Director, Networks and Video Services	San Diego CO of Education
David Harris	Chief Information Services Officer	San Bernardino College
Patrick Perry	Interim Vice Chancellor, Technology	Chancellor's Office
Catherine McKenzie	Specialist, Information Systems and Analysis	Chancellor's Office

Systemwide Project Evaluation Criteria

Developed by the SAC Committee and approved by the TTAC Committee and the CCC Chancellor's Office to be used to evaluate systemwide projects annually from a technical perspective.

1. Feasibility Study
   - Has a feasibility study been conducted?
   - Have the system components been chosen that are consistent with the recommendations of the feasibility study?
   - Are the recommendations from a feasibility study positive for project continuation?
2. Suitability for system-wide deployment:
   - Is the concept scalable for system-wide implementation?
   - Does the technical approach offer an economy of scale to the system when implemented?
   - Does the technical approach provide a positive cost-benefit to district?
   - Is the technical concept easy to implement and support by districts?
   - Are districts likely to adopt this technical approach?
3. Life cycle plan for components
   - Does each of the components (hardware and software) have an expected lifespan (e.g. support and improvement plan by vendor) commensurate with the expected lifespan and terminal objectives for the project.
     - ✓ Break project down into individual component parts and examine each to provide an assessment of how components fit into the lifecycle.
4. Goals vs. functionality
   - What is the correlation between the project goals and the performance of the project for the timeframe and phase under consideration? (e.g. does the functionality of the system meet project objectives?)
     - ✓ Use goals from project documentation (official version) or from project director (reality)
     - ✓ SAC should identify the actual / current goals as stated by the project director and determine the variance
5. Adherence to published standards
   - Does each of the system components meet the minimum level of technical standards?
6. Exposure to risk
   - Are there any areas of significant risk exposure for this project?
     - ✓ Overall technical approach (Leading edge – bleeding edge)
     - ✓ System components (maturity, proprietary, vendor organization stability)
     - ✓ User interface issues and willingness to adopt
     - ✓ Schedule
     - ✓ Budget
     - ✓ Performance

7. Outsourcing
    - Is it more cost-effective to outsource than to develop and / or maintain within the CCC system?
        - ✓ Should consider both cost savings and other advantages; don't let one consideration override the other
    - Can the CCC system effectively develop and maintain the technical system without outsourcing?
        - ✓ Consider helpdesk requirements 7x24
    - What is the risk to the to the primary missions of the CCC system if potential outsourcing vendor(s) experience bankruptcy, leave the business, or cutback resources rendering the outsourced system non-functional?
    - What phases of the project are appropriate for outsourcing?
        - ✓ Development and ongoing (maintenance) projects should use different criteria when examining the outsourcing question.
        - ✓ 'Bleeding edge' project may have resource needs that are better served through outsourcing.
8. Funding and resource support
    - Is the funding level adequate to achieve the stated goals of the project?
        - ✓ Consider all phases of the project lifecycle that are funded

Standards

1. Data transfer
    - All applications will include the ability to export information stored in databases to known, commonly used formats.
        - ✓ Delimited files (comma, tab, fixed length)
        - ✓ EDI X.12 (as appropriate)
        - ✓ SCORM (as appropriate)
        - ✓ IMS (as appropriate)
    - The system will provide sufficient bandwidth (linking to 4Cnet or other Internet link) to manage the volume of expected transactions. (Projects must have an evaluation of expected transactions per second and subsequent bandwidth requirements.)
    - Digital data communications must support all of the following transport mechanisms and protocols:
        - ✓ Ethernet, IP, and ODBC
2. System
    - The system will have capability to be easily ported to other sites (CCCCO or CCCs) for production operations and support. (The system will not be developed nor supported with non-mainstream components or tools.)
    - System components will be chosen for appropriateness with project funding and objectives.
    - Systems will have support plans that are adequate to meet project objectives during the life of the project or the expected life of the system, whichever is longer.

- Systems must be composed of components that are chosen for compatibility to the existing and / or proposed future CCC system infrastructure.
- If applicable and appropriate, the project must have the capability to collect data on actual:
  - ✓ Transactions per second (if applicable)
  - ✓ Number of hits to the web portal (if applicable)
  - ✓ User dwell time or time spent on line in an application (if applicable)

3. End user compatibility
   - Software applications will be compatible with the current version (or one major version behind) of the Microsoft operating system (on user computing platforms).
   - The data for the presentation of information to users (of Internet browsers) must be conveyed to users in HTML 1.0 format in addition to any other advanced formats that are provided
4. Servers and network operations systems (NOS)
   - Only commonly used (mainstream) operating systems will be employed on system level servers
5. Databases and DBMS
   - The project must publish a data element dictionary (DED)
   - The database (schema, data, embedded business rules, data validation rules) will have capability to be easily ported to other mainstream DBMS.
   - All data contained within a database shall be validated to the data definition upon entry
   - The DBMS must be ANSI SQL compliant.
   - The DBMS must be accessible via ODBC by query and development tools.
   - The DBMS must have security locking down to table and row levels
6. Query tools
   - The query tool must have capability to pass ANSI SQL statements to the DBMS or other backend systems.
   - The query tool must be commonly used within the CCC system.
   - The query tool must be ODBC compliant
7. Security.
   - Individually identifiable information and other forms of private data that are handled by the system (storing, accessing and transmitting) must be managed for compliance with Federal, state, and CCCCO privacy regulations (such as FERPA).
   - Unencrypted private data will not be transmitted unencrypted.
   - Access to private data will be managed through secure portals
   - *Incorporate standards from Digital Signature Project, CCCCO legal opinions, Secretary of State rulings.*
8. Access for individuals with disabilities *(TBD)*

9. Vendor provided systems and components
   - Vendor provided systems will comply with the same set of standards as above unless SAC recommends deviations.
   - Vendor provided systems and components must integrate with the existing infrastructure of the CCC system through the use of common methods, applications, and protocols that exist within the infrastructure.
   - Vendors must agree to bonding or some other contractual certification agreement to insure that private data remains secure both within their system and during transport to other linked systems within the CCC infrastructure.
   - Vendor provided systems must have a negotiated three year or longer maintenance agreement and warranty (unless the life of the system is planned to be less than three years)
   - Vendor provided systems must include the delivery of all hardware and software components necessary for contracted system functionality
10. Deviations
   - Deviations from standards require the approval of SAC.

Best Practices

1. Components should be chosen which have a significant market share within industry and / or the community college system.
2. Components should be available and supportable in the Community College System considering:
   - Capabilities of technical staff at colleges
   - Existing inventories of type components
3. Components should be chosen in which the vendor has implemented an active product improvement program (both from the perspective of an established history of development as well as future plans).
4. Project directors should solicit broad based input into need evaluation, requirements definition, and implementation process.
5. Components should be chosen that are not at the end of their natural life cycle where support may be non-existent or weak in following years. The time period for considering support issues should be a minimum of three years after the system is in production or within the planned lifecycle of the system, whichever is longer.

Recommended Tools

The following tools / DBMS are recommended for use in development and management of systems:

1. Databases
   - SQL Server
   - Oracle

2. Server Operating Systems
    - Windows family (NT and later derivatives)
    - Linux
    - Unix
    - Apache
3. Report Writers / environments
    - BRIO
    - Crystal Reports
    - SAS
4. Programming Languages
    - Java
    - Visual Basic
5. Programming Environments
    - Speed Ware
6. Web Development Tools
    - Cold Fusion
7. Office Applications
    - Microsoft Office products

The development of this list is neither complete nor intended to be all-inclusive. Other options may be chosen and used as long as the selected options are mainstream (e.g. have significant market share and use within industry and / or the community college system).

Appendix D

District Expenditure Reports

Districts are required to report on prior year expenditures for six funding sources, including TTIP funds, across nine funding categories. This provides a matrix structure that gives the Chancellor's Office baseline data pertaining to telecommunications and technology expenditures for the CCC system. Districts were required to report by August 31, 2001, for the 2001-02 Fiscal Year.

Funding Sources

Districts were required to report expenditures from the following six sources:

1. Telecommunications and Technology Infrastructure Program Funds
2. Instructional Equipment, Library Materials, and Technology Program Funds
3. General Apportionment Funds
4. Other State Funds
5. Federal Funds
6. Private Funds

Funding Categories

Districts were required to report the expenditures in the following six categories:

1. 4CNet Data/ Video connectivity
2. Library Automation and Technology
3. Satellite Downlinks
4. Technology for total cost of maintaining one's technology effort mode.
5. Technology Training (Human Resources)

Trends and Patterns

Funds by Source

Telecommunications and Technology Funds (TTIP) made up only 29% of technology dollars spent while General Apportionment funds accounted for 51%. Instructional Equipment, State Funds, Federal Funds, and Private Funds made up less than 20% of funding sources.

TTIP Funds increased by 74%, State Funds increased by 33%, Federal Funds increased by 9%, and Private Funds increased by 24%, but General Apportionment Funds decreased by 42%.

Almost 24% more money was allocated for technology In 2001-2002 than the prior year. TTIP and General Apportionment Funds increased due to increased efforts by the colleges in preparation for Technology II, meeting the total cost of meeting and maintaining their baseline minimum standards, as well as meeting their increased local college technology needs.

When TTIP funding began, categories such as Local Area Networks (LAN), Wide Area Networks (WAN), and Approved Local Technology Applications (ALTA) existed. Since the inception of the total cost of meeting and maintaining their baseline standard two year's ago, these technology areas, LAN, WAN, and ALTA have been converted over to the total cost of meeting and maintaining their baseline standard. Colleges clearly show an increase in the total cost of maintaining their technology effort category as they geared up for Technology II in 2001-2002.

In the past three years colleges have been spending the majority of their Instructional Equipment Funds in the meeting and maintaining their baseline standard (previously Approved Local Technology Applications). In 2001-2002, the 4CNet category decreased as colleges completed the installation/upgrading of their 4CNet equipment. Note that this may be misleading as many colleges reached the maximum of their 4CNet infrastructure and went to other sources for increased bandwidth.

Library and Human Resources areas also decreased expenditures in over the previous year though still double 1999-2000. We wait to see the impact of state budget reductions in 2002-2003 in TTIP funds and its effect on technology at the college level.

While only a minimal amount of Federal Funds were applied to 4CNet, the majority of Federal funds were spent in meeting and maintaining the baseline standards and Human Resources category.

The expenditure for faculty and staff development training for 2001-2002 was double that spent in 1999-2000. This growth shows the need to provide adequate training and development for existing staff and faculty as well as hiring and training technical support staff. The increase in the Human Resources area shows an increased level of training and development of faculty and support staff in the Technology field.

Almost 34% more General Apportionment Funds were spent in the last year compared to the previous year primarily due to Technology II.

Private Funds showed increased spending of 11% as compared to 2001-2002. Private Funding increased almost 16% in meeting and maintaining the baseline standard because we believe that more private funding came from local businesses during a time of economic "good times." As money became available from private sources, it was spent in meeting and maintaining the baseline standard over the other areas. We are concerned that the softening economy in 2002-2003 may cause a decline in private funding.

Most colleges spent state funds on Human Resources Technology Training and Libraries and allocated minimal dollars to meeting and maintaining the baseline standard and satellite. Again, this shows their commitment to improving the knowledge level of faculty and staff and assisting student through library infrastructure improvements.

Technology Funding and Expenditure Charts

Chart 1 shows the percentage of funds for the six funding sources (Telecommunications and Technology Infrastructure Program Funds; Instructional Equipment, Library Materials, and Technology Program Funds; General Apportionment Funds; Other State Funds; Federal Funds; and Private Funds) expended for technology by colleges in 2001-2002.

Chart 1
Total Funds for Telecommunications and Technology
Fiscal year 2001-2002

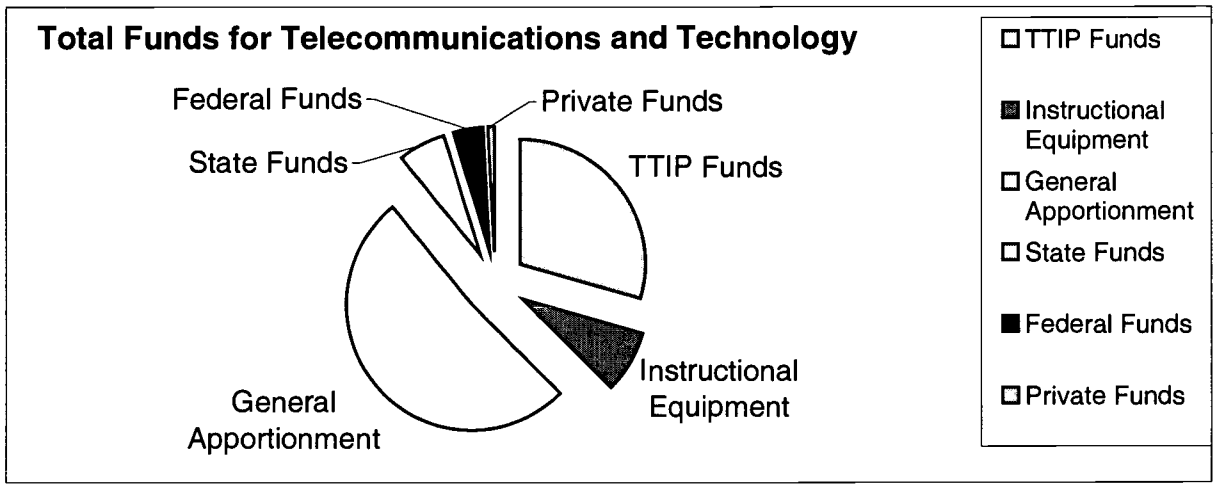


Chart Two below shows the relationship of funds in the six areas reported by the colleges across the previous three Fiscal Years (1999-2002). In 1999/2000, less money was allocated for technology. TTIP and General Apportionment Funds increased in 2000/01 due to increased efforts by the colleges in preparation for Technology II, meeting Total Cost of Ownership (TCO) baseline minimum standards, as well as meeting their increased local college technology needs. State, Federal and Private Funds fell when compared to 1998/99 years and we believe this may be a result of a softening economy.

Chart 2
Summary of Technology Dollar Sources
Fiscal Year 1999-2002

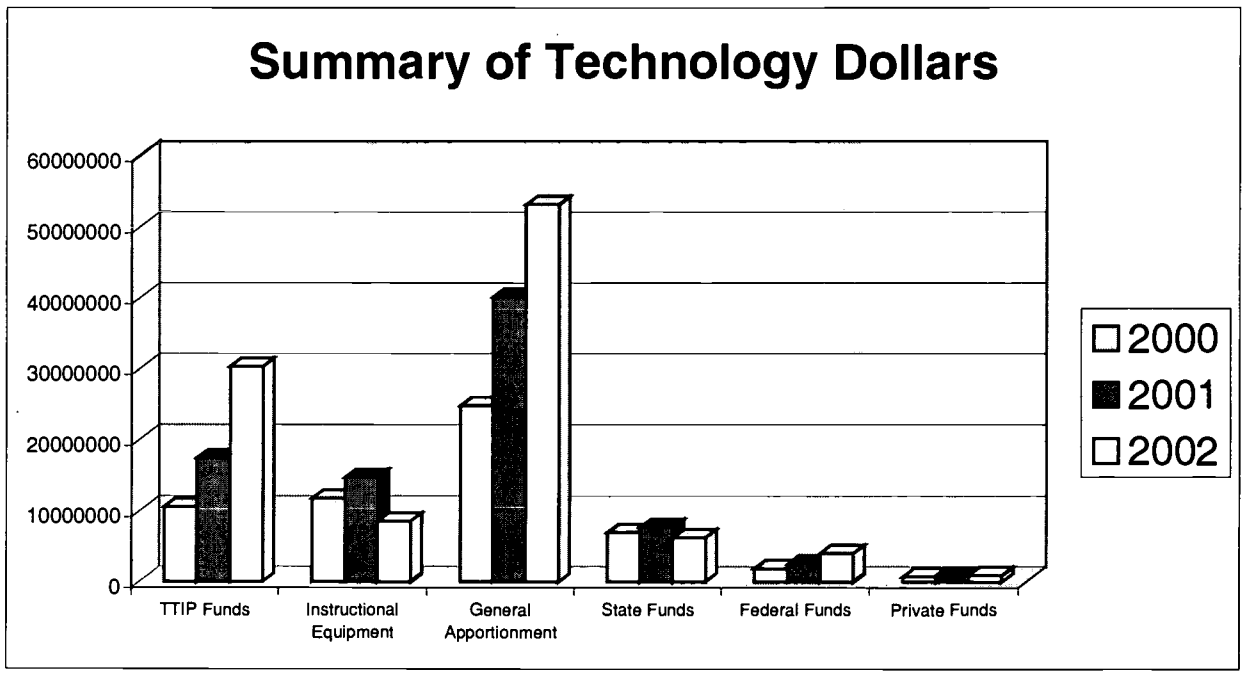


Chart Three below details the expenditure trends of the last three years in the six technology categories. When TTIP funding began, categories such as Local Area Networks (LAN), Wide Area Networks (WAN), and Approved Local Technology Applications (ALTA) existed. Since the inception of the TCO concept last year, these technology areas, LAN, WAN, and ALTA have been converted over to the meeting and maintaining the baseline standard. Chart 3 clearly shows an increase in the TCO category as the colleges geared up for Technology II in 2001-2002.

Chart 3
Summary of Technology Funds by Source
Fiscal Year 1999-2002

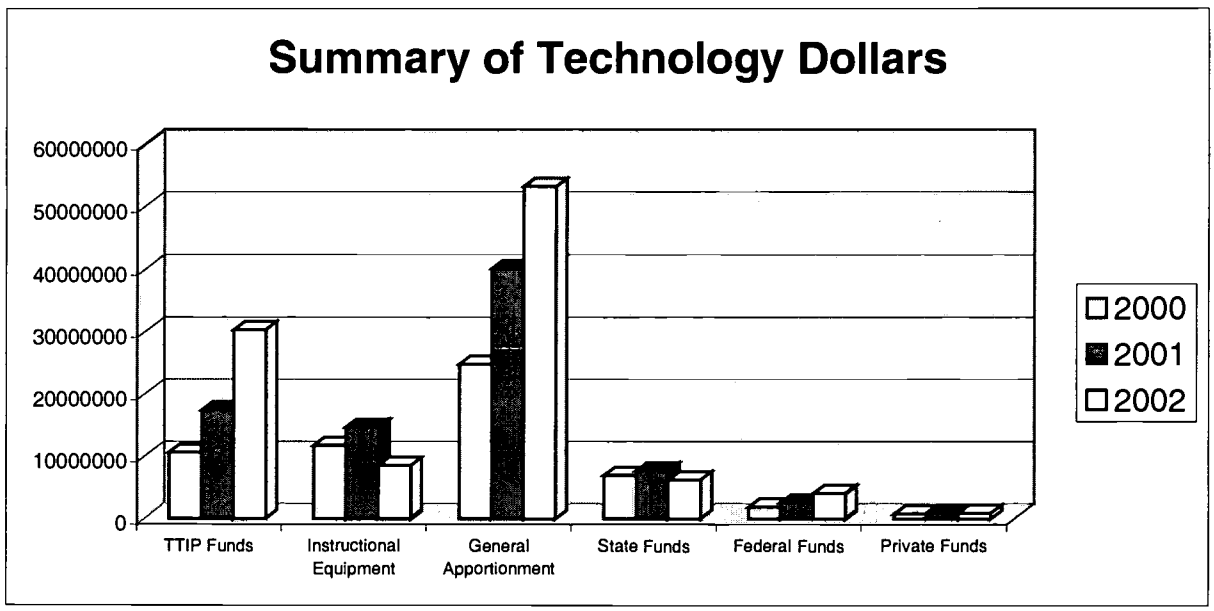


Chart Four below shows how Instructional Equipment funds were spent during the last 3 years in the six technology categories. In the past three years colleges have been spending the majority of their Instructional Equipment Funds in the Total Cost of Ownership area (previously Approved Local Technology Applications). In 2000/01, the 4CNet category increased as colleges completed the installation/upgrading of their 4CNet equipment. Library and Human Resources areas remained relatively constant over the previous three years. We wait to see the impact of state budget reductions in 2001/01 in Instructional Equipment Funds and its effect on technology at the college level.

Chart 4
Summary of Instructional Equipment Funds Spent
Fiscal Years 1999-2002

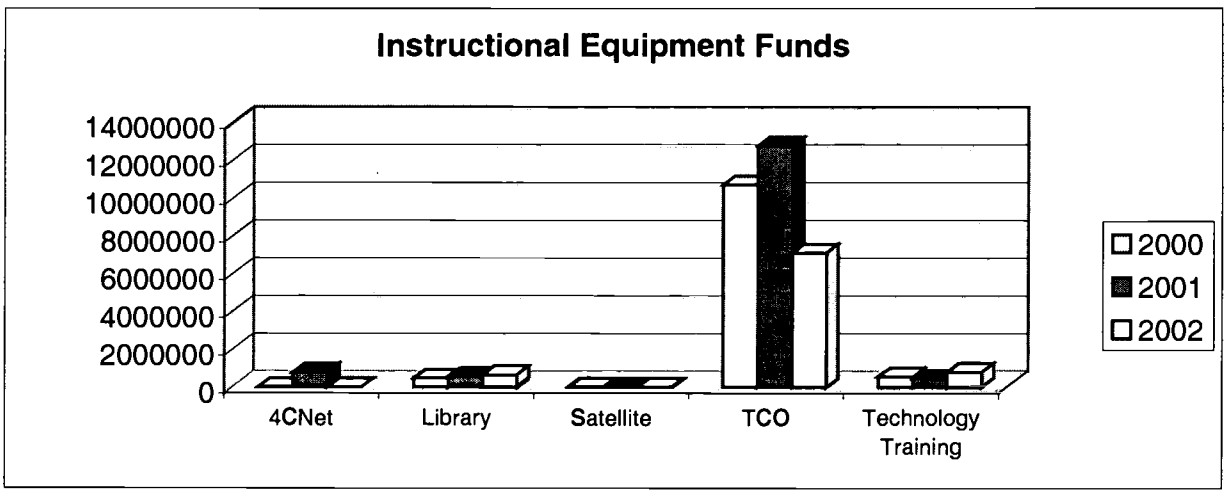


Chart Five below accounts for the trend of Federal funds spent in the six technology areas over the past three years. While only a minimal amount of Federal Funds were applied to 4CNet, Library, Satellite, and Planning areas, the majority of Federal funds were spent in the TCO and Human Resources category. distribution in Federal Funds clearly shows the concerted effort by the colleges toward using any and all funds that become available to prepare for Technology II. In 1998/99, faculty and staff development and growth resulted in increased technological involvement and may indicate the need to hire and train technical support staff as well as provide adequate training and development for existing staff and faculty. In 1999/00 the federal money spent in the Human Resources area fell dramatically but due to the increased focus in the TCO model for hiring, training and support personnel, more funds were allocated in the Human Resources area in 2000/2001.

Chart 5
Summary of Federal Funds Spent
Fiscal Years 1999-2002

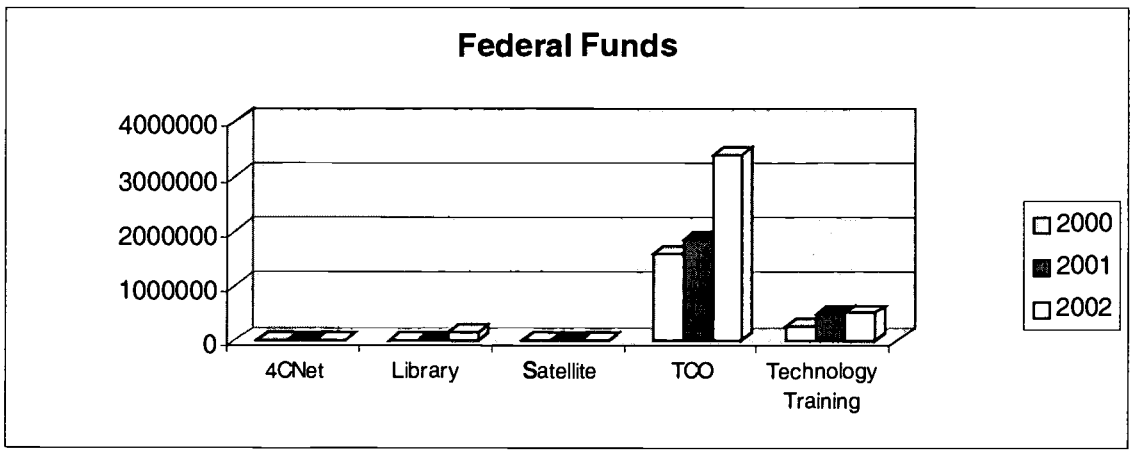


Chart Six below captures the trend of General Apportionment Funds applied to the six areas of technology. More General Apportionment Funds were spent in the meeting and maintaining the baseline standard last year than in the prior years and over twice what was spent in the first year. A slight gain in the Human Resources area shows an increased level of training and development of faculty and support staff in the Technology field.

Chart 6
Summary of General Fund Spent
Fiscal Years 1999-2002

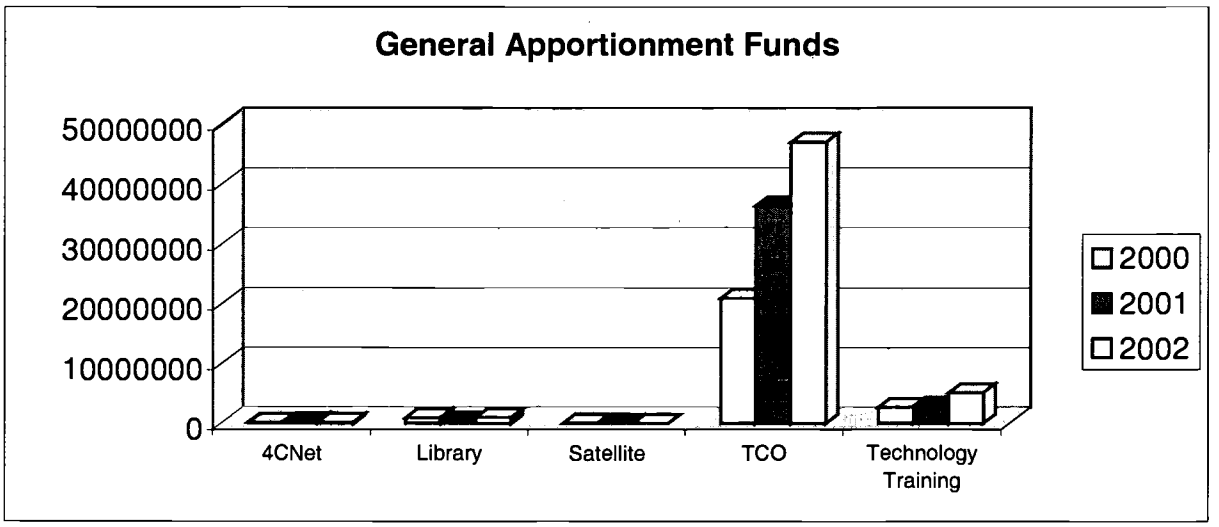


Chart Seven below depicts that there was increased spending of Private Funds in the meeting and maintaining the baseline standard compared to 2000-2001. Private Funding in the baseline standard area from 1999-2002 grew exponentially because we believe that more private funding came from local businesses during a time of economic "good times." As money became available from private sources, it was spent in the baseline standard area over the other areas.

Chart 7
Summary of Private Funds Spent in
Fiscal Years 1999-2002

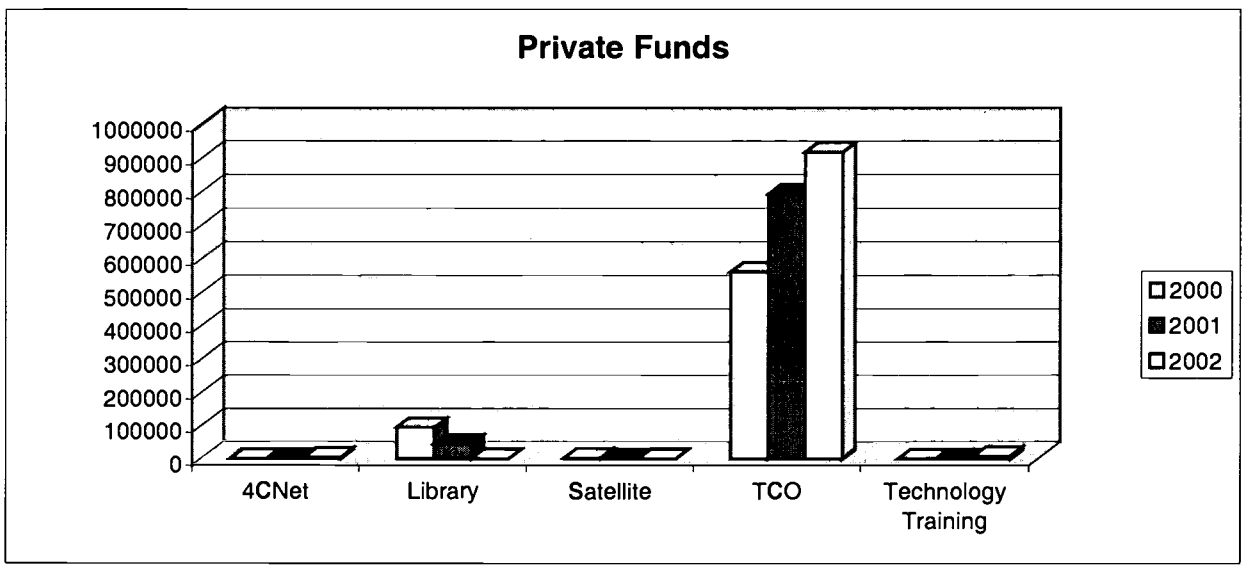
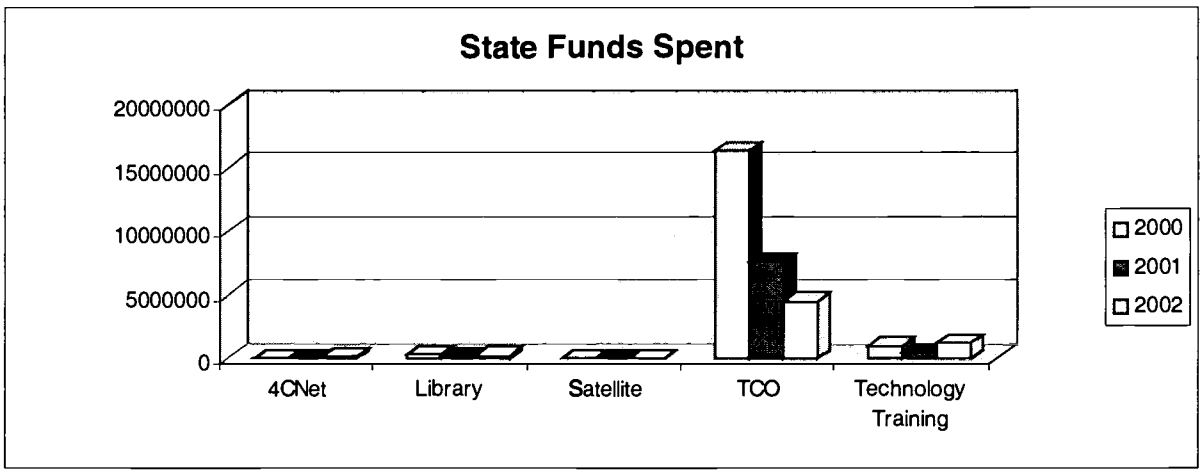


Chart Eight below shows a trend of how State Funds were spent in the last three years in the six areas of Technology. Most colleges spent state funds in the TCO category and allocated minimal dollars to 4CNet, Library, Satellite, Planning, and Human Resources. Again, this shows the level of support by the colleges toward the implementation of Technology II and their commitment to improving their current technology for access.

Chart 8
Summary of State Funds Spent in
Fiscal Years 1999-2002



Appendix E

Baseline Benchmark Project for Maintaining Technology

Overview: When educational institutions acquire computer hardware/software, they do so without factoring in the costs to support the equipment and infrastructure. As a result, there is often a lack of support to maintain, repair, improve performance of the equipment, as well as a lack of staff for training faculty, staff, and students. This creates delays and inefficient use. The total cost of maintaining one's technology effort assumes a relationship between computer hardware/software and support. It is a method of determining the full cost associated with owning and using computers in an educational environment.

Background: Since 1987, GartnerGroup has counseled enterprises to consider all costs associated with computing when making management decisions about desktop and LAN acquisitions, upgrades, support and administration. During this time, GartnerGroup has created and evangelized the concept of the total cost of maintaining one's technology effort to the IT community. As enterprises have begun to address the significant and rising costs devoted to their IT infrastructure, the message has gained wide acceptance among IT users.

Used as a management tool as part of an enterprise's annual planning process, the total cost of maintaining one's technology effort model can become part of a continuous process of measurement, simulation and improvement. Because budget decisions are ultimately based on a set of strategic IT goals, most enterprises must be able to determine various levels of the total cost of maintaining one's technology effort based on the decision being made. By using the total cost of maintaining one's technology effort model, enterprises can:

- Translate IT cost, staff, budget and other metric information into a total cost of maintaining one's technology effort "chart of accounts" for each organization.
- Compare the enterprise's actual total cost of maintaining one's technology effort to typical external comparative data. The typical total cost of maintaining one's technology effort reflects the enterprise's unique business type, size, worldwide location, assets, technology and complexity against other enterprises doing similar levels of work.
- Audit the results to highlight strengths and weaknesses in the enterprise's actual total cost of maintaining one's technology effort.
- Create a proposed environment or target total cost of maintaining one's technology effort based on improvements to assets and changes to technology and complexity, and compare the target total cost of maintaining one's technology effort with the actual cost.

The GartnerGroup research shows that the initial cost of hardware and software represents only 30 percent of the total cost of maintaining one's technology effort. GartnerGroup and the Telecommunications and Technology Advisory Committee (TTAC) worked at length to determine the total cost of maintaining one's technology effort appropriate for the Community College environment.

The total cost of maintaining a college's technology effort is the cost of supporting the 19 elements of the baseline technology effort model listed below. The total cost of maintaining one's technology effort model needs to be reviewed and analyzed on a

continual basis to reflect changing costs as they relate to equipment, software, training, and support personnel. The TTAC will review the model annually to determine adjustments to it as appropriate.

Baseline Planning Tool:

The baseline planning tool was developed to track areas that are below the minimum standards as set by the Technology II Strategic Plan. This information will be used to demonstrate and support the needs related to the technology (the gap) for colleges. Categories are listed by priority with student PC baseline standards the first one that available funds would be spent in the current year.

Category 1: Student PC Baseline Standards

Category	Minimum Baseline Standard
PCs for student	One PC will be dedicated to student use for every 20 FTES.
PCs for student with assistive technology	10 percent of all computers in this category will be configured with assistive technology to provide increased access to students with disabilities.
Printers	One printer rated at 8 ppm or greater will be dedicated to every 30 student computers.
Office Software	80 percent of student computers will have access to word processing, spreadsheet, and presentation software.
E-mail	**To be reviewed later**
Internet	80 percent of student computers will have access to the Internet via a browser.
Virus detection software	Each student computer connected to the Internet will be protected by anti-virus software.
Student Online Services	80 percent of student computers will have access to all student online services provided by the college.
Refresh rate and currency of computers	PCs will be replaced on a three-year basis. This requirement is consistent with industry practices.
Online Library and Learning Resources	80 percent of student computers will have access to electronic library databases and the library card catalog.
PCs for student	One PC will be dedicated to student use for every 20 FTES.
PCs for student with assistive technology	10 percent of all computers in this category will be configured with assistive technology to provide increased access to students with disabilities.
Printers	One printer rated at 8 ppm or greater will be dedicated to every 30 student computers.

Category 2: Faculty PC Baseline Standards

Category	Minimum Baseline Standard
PCs for Full-time Faculty	One PC, with appropriate assistive technology as needed, will be provided for every full-time faculty member.
PCs for Adjunct Faculty	One PC, with appropriate assistive technology as needed, will be dedicated to part-time faculty for every part-time FTEF.
Printers	One printer rated at 8 ppm or greater will be dedicated to every 25 faculty computers.
Office Software	100 percent of faculty computers will have access to word processing, spreadsheet, and presentation software.
E-mail for Full-time Faculty	100 percent of full-time faculty will have access to campus e-mail via their computer. The E-mail system will enable off-site access.
E-mail for Adjunct Faculty	Each district/college will provide adjunct faculty with a campus e-mail account upon request.
Internet	100 percent of faculty computers will have access to the Internet via a browser.
Virus detection software	Each faculty computer connected to the Internet will be protected by anti-virus software.
Faculty Online Services	100 percent of faculty computers will have access to all faculty online services provided by the college.
Refresh rate and currency of computers	PCs will be replaced on a three-year basis. This requirement is consistent with industry practices.
Online Library and Learning Resources	100 percent of faculty computers will have access to electronic library databases and the library card catalog.
Digital Media Services	Optical-character recognition and image scanning are available to faculty.
PCs for Full-time Faculty	One PC, with appropriate assistive technology as needed, will be provided for every full-time faculty member.
PCs for Adjunct Faculty	One PC, with appropriate assistive technology as needed, will be dedicated to part-time faculty for every part-time FTEF.

Category 3: Managerial and Classified Staff PC Baseline Standards

Category	Minimum Baseline Standard
PCs for permanent administrative and classified staff	One PC, with appropriate assistive technology as needed, will be provided for each of 80% of the permanent administrative and classified staff.
Printers	One printer rated at 17 ppm or greater will be dedicated to every 25 staff members.
Office Software	100 percent of staff computers will have access to word processing, spreadsheet, and presentation software.
E-mail	100 percent of permanent staff will have access to campus e-mail. The E-mail system will enable off-site access.
Internet	100 percent of staff computers in this category will have access to the Internet via a browser.
Virus detection software	Each staff computer that is connected to the Internet will be protected by anti-virus software.
Administrative Online Services	100 percent of staff computers will have access to job-related administrative online services provided by the college.
Refresh rate and currency of computers	PCs will be replaced on a three-year basis. This requirement is consistent with industry practices.

Category 4: Support Baseline Standards (Based on a 5x8 schedule)

Position	Description	Basis	Min.
Computer Technician	Installs, configures, repairs, & maintains computer hardware and software including servers and assistive technologies. Maintains network connectivity and provides customer support.	1 / 125 computers (for all college / district computers)	1
Computer lab/classroom technical assistant	Provides simple technology maintenance and assists faculty & students during and out of class with technology issues.	1 / 75 computers (for all computers in labs and classrooms)	1
Network Engineer / Technician	Designs, installs, configures, repairs, & maintains campus backbone(s), networks, and WANs	1 / 500 computers (for all college / district computers)	1
Webmaster / Web Administrator / Web Designer	Designs and maintains the district's / college's Web infrastructure and Web site	1 / 4,000 FTES	1
Instructional Designer / Technology Specialist	Assists faculty with integrating technology into curriculum	1 / 100 FTE faculty (PT & FT)	1
Multi-media technician	Installs, configures, repairs, & maintains multi-media equipment (satellite downlink, broadcast equip., microwave, head-end delivery, etc.)	1 / 300 FTE faculty (PT & FT)	.5
Multi-media production specialist	Supports faculty with multi-media production, delivery, and operations.	1 / 200 FTE faculty (PT & FT)	.5
Technical Training Specialist	Trains staff and faculty. Runs a technology training center.	1 / 300 FTE faculty & staff (PT & FT)	1
Instructional Application Developer / Administrator	Designs, installs, configures, repairs, & maintains software applications to support instruction (e.g. systems analyst, programmer, systems administrator roles) to include support for email, library systems, course management software, listserves, and newsfeeds.	1 / 200 FTE faculty (PT & FT)	1
Communications Technician	Installs, configures, repairs, & maintains communication systems and wiring	1 / 1,000 FTE staff and faculty (FT & PT)	1
Helpdesk Technician	Provides a central point of contact to receive reports of technical problems from students, faculty, and staff. Documents all requests and notifies appropriate service area. Provides technical answers to questions.	1 / 5,000 FTES	1
Technical Manager	Manages technical personnel & sub-functions	1 /10 technical staff	0
Director or higher level manager who supports instructional systems	Manages overall instructional technology function. Acts as liaison with academic administration.	1	1

Key Definitions

Term	Definition	Applies to:
PC	Personal computer: Any system which is based on Intel or AMD chip architectures, thin clients (such as Sun's "Sunray"), and Apple computer systems such as the Macintosh series qualify.	All Students, Faculty, Administrative and Classified Staff Baselines
Offsite access	The email system will have the capability to allow members to access their accounts via home or remote computers. Current email system standards in 2001 that facilitate this are SMTP, MAPI, and POP3. Offsite access does not imply the requirement for a college or District to employ remote access services – RAS (e.g. modem dial-up services).	
Staff computers	Requirements for services referring to "staff computers" apply only to the personal computers assigned to permanent staff members as personal workstations (and not to all computers that may be dedicated to supporting administrative functions).	Administrative and Classified Staff Baselines

Baseline Benchmarking

The Baseline Benchmark Model Plan establishes a starting point to determine areas below minimum baseline standards recommended by our Systemwide Architecture Committee (SAC). The Baseline Benchmark Reporting Tool gathers data on current technology levels for each college within the California Community College system. Data presented here represents a sample of 107 of California Community College sites. The data covers the 2001-2002 fiscal year.

The first goal of the Baseline Benchmark Model Plan is to bring all the Community Colleges to a minimum baseline standard in all the Baseline Benchmarking Categories. The plan focuses on the minimum, not what the colleges actually need to meet student or industry demands for technological training, or what is standard in private industry, or even what are the minimum standards for K-12.

The Baseline Benchmark Implementation Planning Tool replaces the physical inventory requirement of previous TTIP Legislative Reports. This effort attempts to benchmark the gap between what the colleges currently have and an overall minimum. Additionally comparisons will be made between our minimal standards and those of the K-12 system where possible.

Once this effort brings the colleges up to a shared minimum, we can begin to work towards goals and priorities that can address the real needs of the colleges, their students who will be joining the future technology workforce, and employers who send their employees to our schools for further training.

Student PC Baseline Standard

In California, even more than in the rest of the United States, familiarity with the use of computers is fundamental to economic success. California Community College students can no longer be expected to function without a baseline of networks, hardware and software similar to what they will confront every day in the workplace.

Data from multiple sources make it clear, the Digital Age is having a disproportionate effect within minority and economically disadvantaged populations, and the distance

across the divide is increasing. In addition to other issues that face these populations, they experience a significant lack of access to technology. The CCCs must not only provide these students with access to technology, but also ensure that they and the faculty that train them are able to use technology effectively and that they can adapt to the fast pace of change in the Digital Age.

PCs for Students

In the years 2000 – 2005, the baseline minimum is 1 PC for every 20 FTES. Current calculations indicate that 57% of the schools responding to the survey are at a ratio of 1:13 lower, and that 37% of the schools responding to the survey are between the current 1:13 and the minimum baseline of 1:20.

Since less than 6% of the schools responding are above the minimum baseline of 1:20 it might be tempting to conclude that community colleges need no additional support. Tempting that is until the community college minimum baseline is compared to the Public Schools K-12 baseline of 1:5. Only 4% of our colleges meet this more realistic baseline minimum.

Thus we have a situation where students entering community colleges from K-12 have a shared expectation of computer availability that cannot be met. Additionally the most effected students are those with the most need and least access.

PCs With Assistive Technology for Students

In 1998, the Office for Civil Rights (OCR) of the United States Department of Education completed a system-wide review of accessibility for blind and visually impaired students in the California Community Colleges. The OCR directed that in order to satisfy the requirements of the Americans with Disabilities Act, community colleges must ensure that adaptive equipment and software are not confined to High Tech Centers at the colleges.

The baseline minimum requires10 percent of all campus computer systems to be configured with industry-standard assistive computer technology that provides access to students with disabilities throughout the campus (in libraries, computer labs, offices, learning centers, and job placement offices). Moreover, OCR mandated that newly acquired or developed software and hardware be designed to be accessible for students with disabilities.

The baseline minimum is for 10 % of all campus computer systems to be configured with industry-standard assistive computer technology so students with disabilities are provide access. Currently 73% of our colleges meet the baseline minimum standard.

Information Resources & Software

The baseline minimum is that 100% of PCs are able to access library databases, instructional servers, Web sites and instructional software. Currently 52% of the schools responding to the survey meet the baseline minimum.

E-mail

The baseline minimum is that each PC will have Web-based access to the campus e-mail system. Currently only 37% of the schools responding to the survey meet the baseline minimum.

Internet/Intranet Access

The California Community Colleges and the California State University (CSU) systems have worked collaboratively to develop and maintain the six-year-old statewide network. This network links the CSUs and the CCCs together into one data/video statewide network. However, the need for access and bandwidth continues to grow exponentially, especially as it relates to Internet access. Already 20 percent of the CCC sites were at capacity as of July 2000.

In addition, the individual colleges need to be able to expand their technology infrastructure to take advantage of the systemwide backbone.

The current baseline minimum is for 100% of PCs to be equipped with a browser for have Internet. 62% of the colleges meet at the baseline minimum, 53% of schools have all classrooms Internet enabled, while 14% of all classrooms have no connection at all.

In comparison, the Public Schools K-12 according to the California Statewide K-12 Technology report states the number of schools and classrooms with "dedicated, non-dial up" Internet connections as 90% for all sites and 77% for classrooms.

Refresh rate and currency of computers

Sustainability, that is, keeping the technology current, is a major challenge facing higher education institutions in the 21st century. Obsolete technology, which is common in colleges, is costly to support and does not represent the type of technology environment students will encounter in the workplace. There is also the challenge of ensuring that the underlying technologies of systemwide projects are sound and compatible with future technology directions.

PCs and assistive-computer technologies should be replaced on a three-year basis, consistent with industry best practices. The rationale is to introduce more manageable equipment and refreshing with newer software that student will encounter in the workplace.

Reporting shows that 82% of PCs and assistive computer technologies will be replaced on a three-year basis. Industry best practices is 100% replacement on a three-year basis.

In comparison, the Public Schools K-12 according to the California School Technology Survey estimates that 71% of computers will be replaced on a four-year basis.

Faculty Baseline Standards

The GartnerGroup research shows that the lack of readily available user-assistance and support is a primary barrier to the successful adoption of new technology and new technology-enabled methods. Faculty requires assistance in finding the appropriate technology tools to achieve the desired outcomes and in learning to use the tools that are selected. Further, training in the use of the tools must not be limited just to an initial tutorial, but should include ongoing assistance. Faculty members must be able to focus on the course content and that requires familiarity with the technology.

PCs for Full-time Faculty

The baseline minimum standard is 1 PC for every full-time faculty member. Currently 62% of colleges meet the baseline minimum, while 43% of schools are over the

baseline minimum requirement. Note that a faculty member may have both a desktop and a laptop computer.

PCs for Part-time Faculty

The baseline minimum is 25 percent of full-time equivalent Faculty (FTEF) will have a PC, with a minimum of 1/3 of these will receive them in the first year. Currently 66% of the colleges meet the baseline goal. 64% of schools meet the 1/3 baseline minimum baseline requirement for the first year.

E-mail

The baseline minimum standard is for 100% of PCs to have Web-based access to the campus e-mail system. 83% of colleges meet the baseline minimum requirement.

E-mail for adjunct instructors

The baseline minimum standard is for each adjunct instructor to have an e-mail account. Only 38% of colleges meet the baseline minimum requirements.

Internet/Intranet Access

Ability to use the Internet is becoming a required career skill, as a means of communication and an expanded source of information. Additionally many faculty and students communicate with each other as part of the education process.

The baseline minimum standard is 100% of PCs will be equipped with a browser for Internet access. 94% of colleges meet the baseline minimum requirements.

Access to Administrative Services

The baseline minimum standard is for 100% of PCS to have access to administrative systems when appropriate (by the end of 2003). 56% of the colleges meet the baseline minimum standard.

Information Resources & Software

The baseline minimum standard is for 100% of PCs to have access to library databases, instructional servers, Web sites and instructional software. Campuses are to make every effort to assure that these resources are operational with industry-standard assistive computer technology. 75% of campuses meet the baseline minimum requirements.

Refresh rate and currency of computers

The baseline minimum standard is for 100% of PCs and assistive-computer technologies to be replaced on a three-year basis, consistent with industry best practices. The rationale is to introduce more manageable equipment and refreshing with new software. 81% of PCs and assistive-computer technologies will be replaced on a three-year basis.

Administrative and Classified Staff PC Baseline Standards

The California Community Colleges Board of Governors, in *California Community Colleges 2005:* A *Strategic Response for Enabling Community Colleges to Make a Defining Difference in the Social and Economic Success of California in the 21st Century,* July 1998, reported that most of the increased enrollment demand for higher education in the 21st century will be served by the community colleges. The report also

states that "...the colleges will expand appropriate use of technology in providing support services, performing administrative functions, and in delivering instruction to achieve optimum use in existing physical plant and in best meeting the learning needs of students."

PCs for Full-time Administrative and Classified Staff

The baseline minimum standards are for 80% of full-time administrative and classified staff to be provided PCs, as appropriate. 66% of the schools responding to the survey meet the baseline minimum standard.

Office Software

The baseline minimum standard is for 100% of PCs to be equipped with office software including word processing, spreadsheet and presentation design software. 90% of colleges meet the baseline minimum requirement.

E-mail

The baseline minimum standard is for 100% of PCs to have Web-based access to the campus e-mail system, and each adjunct instructor will have an e-mail account. 78% of colleges meet the baseline minimum requirement.

Internet/Intranet Access

The baseline minimum standard is for 100% of PCs will be equipped with a browser for Internet access. 84% of colleges meet the baseline minimum requirement.

Access to Administrative Services

The baseline minimum standard is for each PC to have access to administrative systems when appropriate (by the end of 2003). 72% of all schools responding to the survey meet the baseline minimum requirement.

Refresh Rate and Currency of Computers

The baseline minimum standard is for PCs and assistive-computer technologies to be replaced on a three-year basis, consistent with industry best practices. The rationale is to introduce more manageable equipment and refresh with new software. 83% of PCs with assistive computer technologies are being replaced by our colleges on a three-year basis.

Support Baseline Standards

Infrastructure means more than just computers, routers and wiring. Institutions must plan for the support of their technical environments or the result will be networks and computers that fail and even when the equipment is working faculty, students, and staff who do not know how to use them. A sound infrastructure plan must include permanent, qualified support staff on a full-time basis.

Network and Systems Administration
(Novell, NT, etc. include Wiring staff) Support Staff

The baseline minimum standard is 1 staff person for every 300 PCs. Only 26% of schools meet the baseline minimum requirement.

In comparison, the Statewide 2001 California School Technology Survey uses a baseline of 1 Technical Support Staff per 100 students, teachers, and computers. Only

9% of schools possessed certificated Network Support personnel.

Technical Management Support Staff

The baseline minimum standard is 1 staff for every 500 PCs. Only 32% of colleges meet the baseline minimum requirement.

Web Administration Support Staff

The baseline minimum standard is 1 staff for every 12,000 FTES. 44% of college sites meet the baseline minimum requirement.

Administrative Systems Support
(web, user development applications) Staff

The baseline minimum standard is 1 staff for every 12,000 FTES. 58% of colleges meet the baseline minimum requirement.

Level 1 Support Staff

The baseline minimum standard is 1 staff for every 150 PCs. Only 14% of campuses meet the baseline minimum requirement.

Application Development Staff

The baseline minimum standard is 1 staff for every 6,000 FTES. Only 33% of schools meet the baseline minimum requirement.

Network Staff

The baseline minimum standard is staff for every 12,000 FTES. 63% of schools meet the baseline minimum requirement.

Systemwide Guidelines/ Standards for the TTIP

This is a summary of fiscal year 2000-01 statewide standards and guidelines that were developed and adopted in previous years. There were six statewide technical standards and guidelines that were reaffirmed through the committee process and reaffirmed through Consultation. The six standards and guidelines are 4CNet, Library Automation and Electronic Resources Network, Satellite Network, Video Conferencing Network, Technology Planning and from the Technology II Strategic Plan, Technology for Access through the Benchmarking Model. The Technology for Access through the Benchmarking Model replaces the optional areas of previous years which included Local Area Networks (LAN), Wide Area Networks (WAN) and local technology application projects. The purpose of the standards and guidelines is to establish a consistent inter-operating environment between the colleges that maximizes the limited resources available to the system.

4CNet Guidelines and Standards

In response to the CCC Telecommunications and Technology Infrastructure Program, the CSU and CCC have implemented a working relationship between the two state higher education systems to create the California Community College and California State University Network (4CNet). The 4CNet is a dedicated data/video network linking each of the 128 community college sites, 108 colleges and 20 district offices not co-located on a campus plus the CCC Chancellor's Office, with the 22 CSU college sites and the CSU Chancellor's Office in Long Beach.

The 4CNet Goals reflect the need of the CSU/CCC to support the academic mission and institutional needs of campuses, by increasing the intellectual productivity of students, faculty and staff in their respective roles as learners, teachers, researchers and knowledge workers.

Currently the 4CNet minimum standard includes a T-1 for data connection and an additional T-1 for video connection to the other CCC and CSU colleges and universities. This standard applies to colleges and governing sites, but does not address the needs of the official CCC off-site centers. The CCC Chancellor's Office continues to monitor the need for additional bandwidth as services and applications expand the use of these connections by the CCC sites.

Library Automation and Electronic Information Resources Guidelines and Standards

The implementation of the Library Automation was spread over a three-year period beginning in 1997-98. The CCC has invested a total of $21,400,000 during that three-year period. In year one, colleges were required to convert at least 75% of their catalog records to the US MARC format and to acquire a FAX machine for the library. US MARC is the foundation format for library automation and electronic resources. It is the universal format for the conversion of library collections into a machine-readable format. Fax machines are essential for borrowing and lending information within the community college system. The completion of this effort has established library automation capability at all CCC libraries that allows students, faculty, and administrators the ability to search any CCC or CSU library.

In previous years CCC colleges were able acquire and install a library automation system consistent with the established system wide standards and to develop a Library Technology Plan. All colleges have certified compliance with the library automation initial requirements.

Every college developed a Library and Learning Resources Technology Plan by June 30, 2000, and the TTIP funds could be used for this purpose. The Library Technology Plans were required to be developed under the leadership of the Library Dean or Director for the college. The Library plans have been submitted and are currently being analyzed.

Satellite Downlink Reception Equipment Standards

A need was identified in the planning stages of the Technology I 1996-99 phase to provide satellite downlink capability for each California Community College using both analog and digital technology. Satellite downlink capability is one of the minimum requirements for inter-college connectivity specified in the telecommunications infrastructure. The satellite network is one of four statewide activities connecting the CCC system in the TTIP 1996-99 program.

The CCC Satellite Network enables colleges and districts to distribute and receive instructional classes and programs, administrative data, and faculty and staff development activities. The uplink facility phase is completed and the installation of the downlink sites continues. One hundred and four sites have been installed as of September 30, 2001 with the rest will be completed by January 2002. When fully installed and implemented, colleges and districts will be capable of receiving three types of satellite signals, two analogs and one digital. The network provides a vehicle for colleges to deliver content across the state, nation, and globe. Through the 4CNet, any college will be able to deliver a video signal to the digital uplink located at the Palomar College site and to a satellite. Programming will focus on a variety of academic, student services, and administrative needs.

The CCC has established coordinated satellite standards with the community colleges and the CSU for both analog and digital capabilities. The 4CNet network is designed to provide bandwidth over the backbone for satellite services for community college sites. Community colleges can therefore receive analog satellite signals at various bands and digital satellite signals that meet the current standards.

Video Conference Standards

The mission of the video conferencing is to facilitate real-time interactions for participants in instruction and administrative staff meetings within a single college and/or district and/or between colleges and districts in the CCC System. Video conferencing allows two-way video and two-way audio point to point and between multiple sites. This technology reduces the need for traveling and, therefore, reduces travel cost and improves the productivity of employees. The use of video conferencing in the classroom offers the best comparison to the traditional classroom between remote sites. Colleges can bring together students from different locations and conduct classes that otherwise might not be available.

In 1997-98, the first stages of the implementation of a systemwide video conferencing network were started. Stage one was an interim use of ISDN to connect colleges and to allow them to use the video conferencing technology. In 1998-99, the second stage

was designed to use the 4CNet to carry video conferencing signals between the colleges. This will reduce long distance cost on video conference calls between colleges and insure a level of reliability between sites.

The videoconference standard will allow for the deployment of video over the 4CNet backbone by establishing a separate T-1 line for video purposes for each approved site. The 4CNet maintain and operate as the video network control site. Video bridging is a component of services offered by the network as part of costs. The bridges allow the colleges and universities to connect to each other and to any other video site, nationally or internationally that has ISDN connectivity. There are no long distance costs to sites directly connected to the 4CNet backbone. When these last sites are connected, there will be 151 videoconference sites on the network, connecting 128 CCC sites and 23 California State University (CSU) sites.

Local College Telecommunications and Technology Planning Guidelines

During Technology I (1996-99) this has been an optional area. There were no funds allocated on a required basis for this area. Colleges are allowed to use funds for planning if they demonstrate compliance in the other required areas. Standards and guidelines were developed in 1996-97 to provide tools for colleges to conduct planning in this area. The Chancellor's Office conducted workshops to provide technical assistance to colleges in this area. There were 12 projects funded that concluded July 31, 1999 and 8 more that concluded on July 31, 2000. Colleges were provided $25,000 in mini-grants to assist in the planning process.

The 1999 National Campus Computing Survey Project data suggest that more campuses are coming to terms with strategic and financial challenges presented by information technology. Fully three-fifths (61%) of all institutions nationally have a strategic plan for information technology.

In FY 2000-2001, colleges are being required to develop a TCO Implementation Plan The development of this local plan was to be completed in conjunction with the college's academic and facility plans. Colleges that have existing plans prior to 1999-2000 were to update those plans to reflect the Technology II Plan goals and objectives. Funds received as a result of the TTIP could be used for other purposes within the TTIP if a college has a current and updated plan and completed the On-line TCO Implementation Plan.

4CNet Statewide Network Data Usage

From the initial installations of the T-1 (1.54 Mbs) in 1996, the bandwidth utilization by the colleges has continued to grow. Many of our colleges have grown to over 90% utilization and have required additional T-1s to meet faculty and student need.

Based on information supplied by 4CNet, an analysis was made of current bandwidth utilization, and a three-phased implementation was developed with the colleges that would need upgrades (75% or higher bandwidth utilization) the most being in the first phase. Though DS-3 has a capability of 44.736 Mbps, to control expenses, we will initially be supporting the colleges up to 10 Mbps for a single college/district connection or up to 20 Mbps for colleges/districts that act as hubs. As needs grow, we will evaluate the bandwidth supplied.

Chart One below describes the increases in total bandwidth use by the California Community Colleges on the 4CNet from 1999-00 to 2000-01.

CHART 1

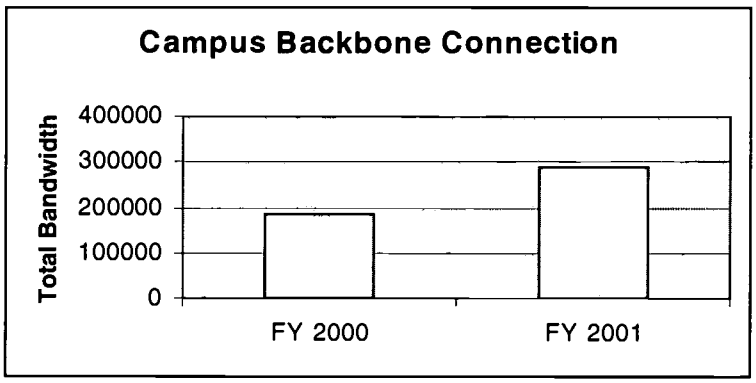


Table Two below is the current schedule to expand the size and scope of the CCC 4CNet backbone from T-1 to DS-3. The overlap in times is due to the need to order parts prior to actual connection.

Table 2
4CNet Connection Schedule

07/01-12/02	Connect phase one colleges (39)
07/02-03/03	Connect phase 2 colleges
10/02-07/03	Connect phase three colleges

CCC 4CNet Data Usage as Percent of T-1 Capacity

#	Site Name	4CNet Bandwidth	Alternate ISP	Peak 01 Usage	Phase I	Phase II	Phase III	T-1 only
1	Allan Hancock	3088	No	63%		1		
2	Antelope Valley	4632	No	57%			1	
3	Barstow	1544	No	48%				1
4	Butte	3088	No	96%	1			
5	Cabrillo	4632	1544	90%	1			

#	Site Name	4CNet Bandwidth	Alternate ISP	Peak 01 Usage	Phase I	Phase II	Phase III	T-1 only
6	Cerritos	4632	No	80%	1			
7	Chabot-Las Positas CCD (Hub Site)	4632	No	72%		1		
8	Chabot	-	-	-	-	-	-	-
9	Las Positas	-	-	-	-	-	-	-
10	Chaffey	3088	No	84%	1			
11	Citrus	3088	1544	74%		1		
12	Coast CCD (Hub Site) Existing 20 Mbps DS-3	6176	1544	72%				
13	Coastline	-	-	-	-	-	-	-
14	Golden West	-	-	-	-	-	-	-
15	Orange Coast	-	-	-	-	-	-	-
16	Compton	1544		90%		1		
17	Contra Costa CCD	1544	No	40%			1	
18	Contra Costa	3088	1544	65%		1		
19	Diablo Valley	1544	1544	97%	1			
20	Los Medanos	1544		36%			1	
21	Copper Mountain	1544		36%			1	
22	College of the Desert	1544	No	71%		1		
23	El Camino	4632	1544	88%	1			
24	Feather River	1544	3088	47%		1		
25	Foothill-DeAnza CCD	-	-	-	-	-	-	-
26	De Anza	3088	10000	95%	1			
27	Foothill	3088	10000	35%		1		
28	Ohlone	3088	1544	61%		1		
29	Gavilan	3088	3088	77%				1
30	Glendale	1544	3088	98%	1			
31	Grossmont-Cuyamaca CCD (Hub Site)	4632	No	89%	1			
32	Cuyamaca	-	-	-	-	-	-	-
33	Grossmont	-	-	-	-	-	-	-
34	Hartnell	1544	No	98%	1			
35	Imperial Valley	1544		68%			1	
36	Kern CCD (Hub Site)	6176	No	87%	1			
37	Bakersfield	-	-	-	-	-	-	-
38	Cerro Coso	-	-	-	-	-	-	-
39	Porterville	-	-	-	-	-	-	-
40	Lake Tahoe	1544	No	65%			1	
41	Lassen	1544		81%		1		
42	Long Beach City	3088	No	97%	1			
43	LACCD	1544	No	79%	1			
44	East Los Angeles	3088	No	87%		1		
45	Los Angeles City	3088	No	96%	1			
46	Los Angeles Harbor	1544	No	82%		1		
47	Los Angeles Mission	3088	No	84%		1		
48	Los Angeles Pierce	1544	No	83%		1		

#	Site Name	4CNet Bandwidth	Alternate ISP	Peak 01 Usage	Phase I	Phase II	Phase III	T-1 only
49	Los Angeles Southwest	1544	No	97%	1			
50	Los Angeles Trade Tech	3088		88%	1			
51	Los Angeles Valley Existing 9 Mbps DS-3	10000	No	55%				
52	West Los Angeles	1544	No	95%	1			
53	Los Rios CCD (Hub Site)	6176	No	97%	1			
54	American River	-	-	-	-	-	-	-
55	Cosumnes River	-	-	-	-	-	-	-
56	Sacramento City	-	-	-	-	-	-	-
57	Marin	1544		77%		1		
58	Mendocino	3088	No	35%			1	
59	Merced	3088		98%	1			
60	MiraCosta	3088	No	75%	1			
61	Monterey Peninsula DCP node site	3088		69%				
62	Mt. San Antonio	3088	No	97%	1			
63	Mt. San Jacinto	3088	No	60%	1			
64	Napa Valley	1544		85%		1		
65	North Orange CCCD	1544	No	68%		1		
66	Cypress	3088	No	80%		1		
67	Fullerton	3088	No	91%	1			
68	Palo Verde	1544		32%			1	
69	Palomar	3088	10000	91%	1			
70	Pasadena City	3088	1544	98%	1			
71	Peralta CCD	1544		0%			1	
72	Alameda	1544	10000	56%		1		
73	Laney	1544	1544	71%		1		
74	Merritt	1544	ISDN	86%		1		
75	Vista	1544		45%			1	
76	Rancho Santiago CCD	-	-	-	-	-	-	-
77	Santiago Canyon	-	-	-	-	-	-	-
78	Santa Ana College (Hub Site)	4632	3088	97%	1			
79	Redwoods	3088		69%			1	
80	Rio Hondo	3088	1544	75%	1			
81	Riverside Existing 5 Mbps with video	20000		25%				
82	San Bernardino CCD	1544	No	1%			1	
83	Crafton Hills	3088	No	39%			1	
84	San Bernardino Valley	3088	No	88%		1		
85	San Diego CCD (Hub Site) Existing 10 Mbps with video	10000	No	75%				
86	San Diego City	-	-	-	-	-	-	-
87	San Diego Mesa	-	-	-	-	-	-	-
88	San Diego Miramar	-	-	-	-	-	-	-
89	San Francisco CCD	-	-	-	-	-	-	-
90	San Francisco City (Hub Site)	4632	No	98%	1			

#	Site Name	4CNet Bandwidth	Alternate ISP	Peak 01 Usage	Phase I	Phase II	Phase III	T-1 only
91	San Joaquin Delta	3088	1544	85%	1			
92	San Jose-Evergreen CCD (Hub Site)	4632		56%			1	
93	Evergreen Valley	-	-	-	-	-	-	-
94	San Jose City	-	-	-	-	-	-	-
95	Cuesta	3088	No	73%				1
96	San Mateo CCD (Hub Site)	6176	No	73%	1			
97	Canada	-	-	-	-	-	-	-
98	San Mateo	-	-	-	-	-	-	-
99	Skyline	-	-	-	-	-	-	-
100	Santa Barbara City	3088	9000	46%				
101	College of the Canyons	3088	1544	88%	1			
102	Santa Monica	3088	3088	89%	1			
103	College of the Sequoias	3088	3088	96%	1			
104	Shasta	3088	No	65%			1	
105	Sierra	3088	1544	84%	1			
106	College of the Siskiyous	1544	No	65%			1	
107	Solano	3088		53%			1	
108	Santa Rosa	3088	1544	95%	1			
109	Irvine Valley (Hub Site)	-	-	-	-	1	-	-
110	Saddleback	1544	10000	0%				
111	Southwestern	1544	1544	84%	1			
112	State Center CCD (Hub Site)	3088	No	98%	1			
113	Fresno City	-	-	-	-	-	-	-
114	Reedley	-	-	-	-	-	-	-
115	Ventura CCD	1544	No	59%			1	
116	Moorpark	3088	1544	61%		1		
117	Oxnard	1544	1544	67%		1		
118	Ventura	1544	3088	98%	1			
119	Victor Valley DCP node site	3088		83%				
120	West Hills	3088	No	65%		1		
121	Taft	1544	1544	65%		1		
122	Mission	-	-	-	-	-	-	-
123	West Valley (Hub Site)	3088	No	69%			1	
124	Yosemite CCD (Hub Site)	4632	3088	86%	1			
125	Columbia	-	-	-	-	-	-	-
126	Modesto Junior	-	-	-	-	-	-	-
127	Yuba	3088	4632	47%		1		
128	CCCCO	1544		69%		1		
				Total	**39**	**30**	**17**	**3**

CCC Video Usage Summary

This report summarizes the status and usage Video Conferences conducted by the Community Colleges across 4CNet. This is the second full school year in which the Community College video sites were all connected to 4CNet. The trend of video usage by the Community Colleges and the California State University systems has continued to increase.

This report does not include any numbers for conferences conducted by the individual Community Colleges or California State Universities over the campus owned ISDN lines. A large portion of the Community College campuses have retained their individual ISDN lines because of the volume of ISDN conferences with local high schools and other sites that the campuses have held in the past; while only a small number of California State campuses (less than a third) have their own ISDN capabilities.

This report in all instances compares the year October 2000- September 2001 (denoted as Oct 00-01) to October 2001-September 2002 (denoted as Oct 01-02) to show an increase or decrease in usage over this time frame.

Finally, this report will give you an idea of what we have been doing to accommodate the new demands for Video Conferencing, what improvements to the system have been made over the last year, as well as give a brief overview on the future of Video Conferencing over 4CNet.

Status of Video Installation at the Community Colleges

As is required for TTIP-funding, every community college site now has a H.320 compliant connection. Although most sites have a "standard" H.320 connection, two locations (San Joaquin Delta CCD and Cuesta College) are using an H.320 gateway while using an H.323 IP-based system on their local network. Five sites (Coast, Kern, Butte, Shasta and Siskiyous) are connected via a video bridge owned by these districts. Two of these sites, Kern CCD and Coast CCD, are using their video bridge to serve as a hub for constituent sites in their district. 44% of the sites have elected to maintain their ISDN dial-up functionality and thus have dual network and ISDN connection. The remaining 56% of the sites opted for a direct network connection but can still conduct video conferences with off-network sites by using the ISDN gateways available at the 4CNet MCU's located in Los Alamitos, Sacramento and Hayward.

An increasing number of sites have requested that their video circuit be split in order to connect a second CODEC or videoconferencing unit. 4CNet is responding to such requests as they are received with appropriate engineering solutions and contract modifications. There are 12 sites that currently are using more than one video room for video conferencing over 4CNet.

All sites have been provided with training on the use of the Video Scheduler. 4CNet continues to provide periodic Video Scheduler Training for new personnel due to staff additions and turnover.

Usage Summary

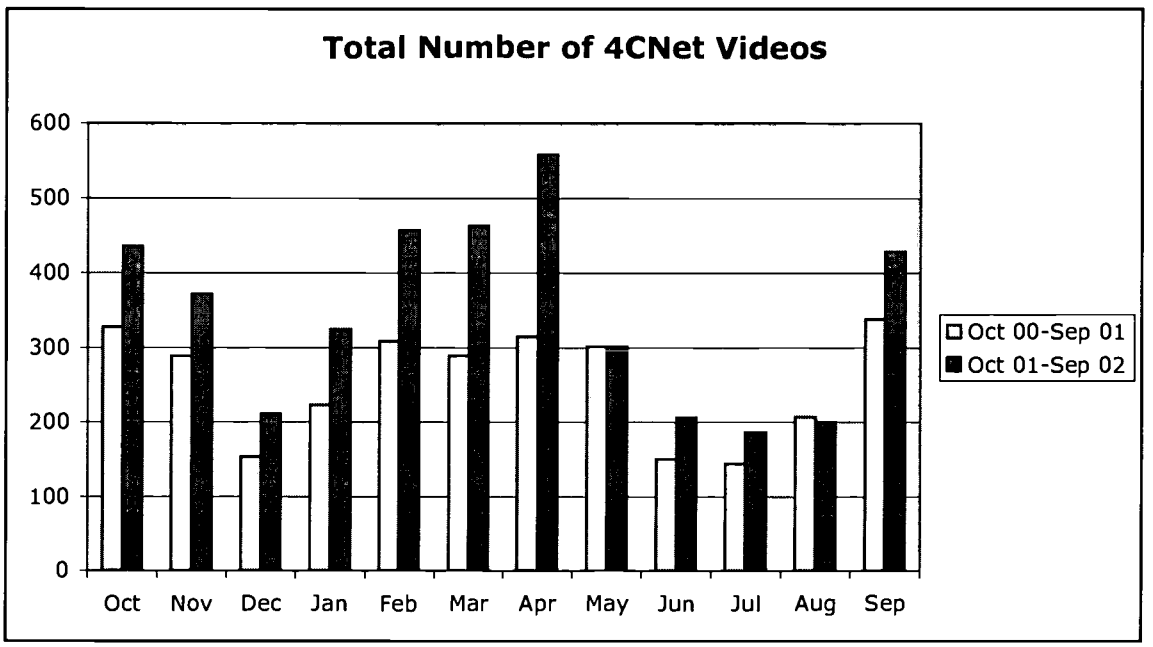
The use of Video Conferencing by the Community College sites connected to the 4CNet Video Conferencing network has continued to increase as follows:

Overall Video Conference Usage

The total number of video conferences scheduled (by both the Community Colleges and the CSU), and consequently set up by the 4CNet staff, increased from 3,076 last year to 4,142 this year. This increase of 1,099 Conferences over last year is an overall increase of 26.53%. While there were not significant increases or decreases in the number of conferences between individual Community Colleges or CSU Campuses, there was a significant increase in the number of conferences that the systems did together.

The two systems are increasingly collaborating in meetings. In the school year of 00/01 there were 554 Conferences conducted that included at least one Community College and CSU campus, in the school year of 01/02 there were 1967 (806 of these conferences were classroom instruction) conferences with at least one participant from each system. This is an increase of 71.84% in the conferences that included at lease one participant from each College System.

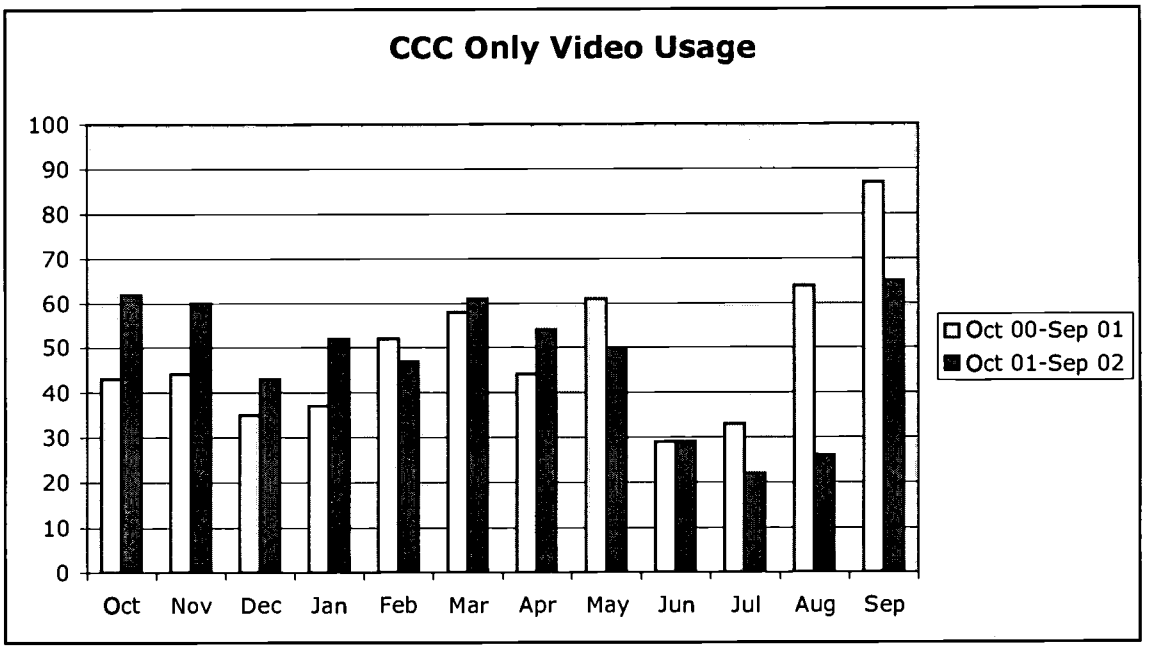
The usage patterns of video conferencing for both the Community Colleges and the California State Universities tend to follow similar patterns that are similar from year to year. The heavy usage months occur when school is in session. During August the number of conference begins to increase. September, October and November are typically heavy usage months with a decrease beginning in November and lower usage in December. We then see a significant increase in Video usage in January, February, March, April and May, with a significant decrease in use starting in June and lower usage again in July, where the cycle starts again. The following table is a chart of the total number of conferences scheduled for the October 00-September 01 and the October 01 – September 02 time frames and it clearly shows this pattern:



Although usage varies from month to month and year to year, you can also see by the above graph that the overall usage of video conferencing is continuing to increase from the 00-01 year to the 01-02 year.

Community College Usage (between Community College Campuses)

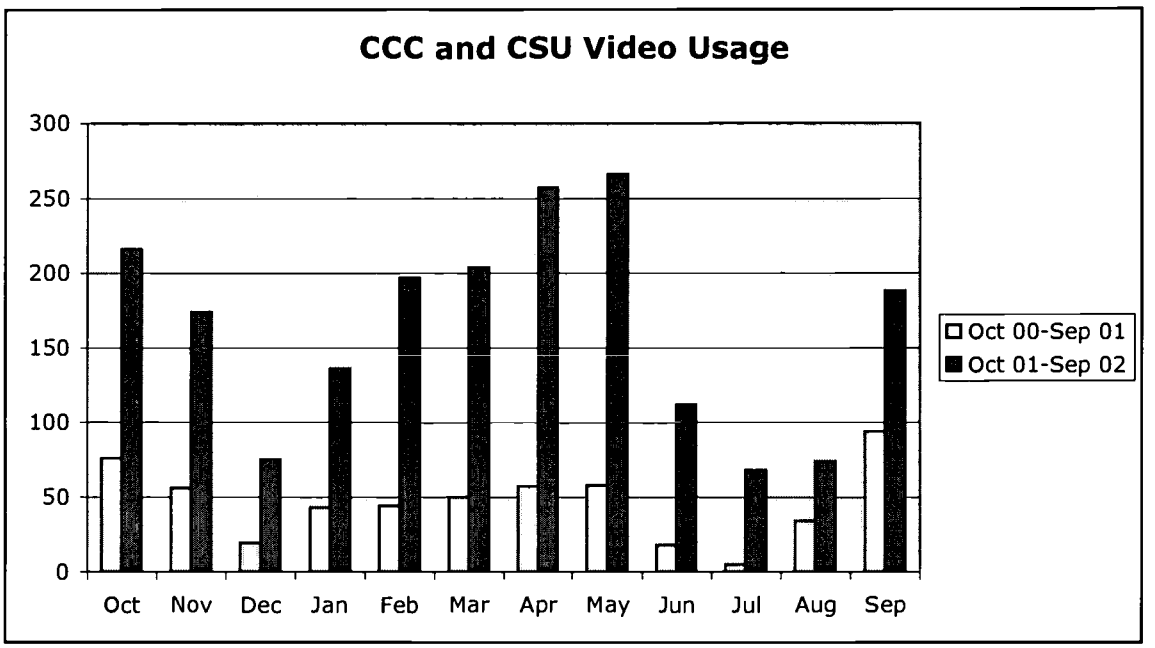
The following chart shows video usage from the 00-01 year to the 01-02 year for the conferences that occur between Community College campuses only:



There was no significant change in usage of 4CNet for conferences between the Community Colleges (no other entities involved).

Combined CSU and Community College Video Conferencing

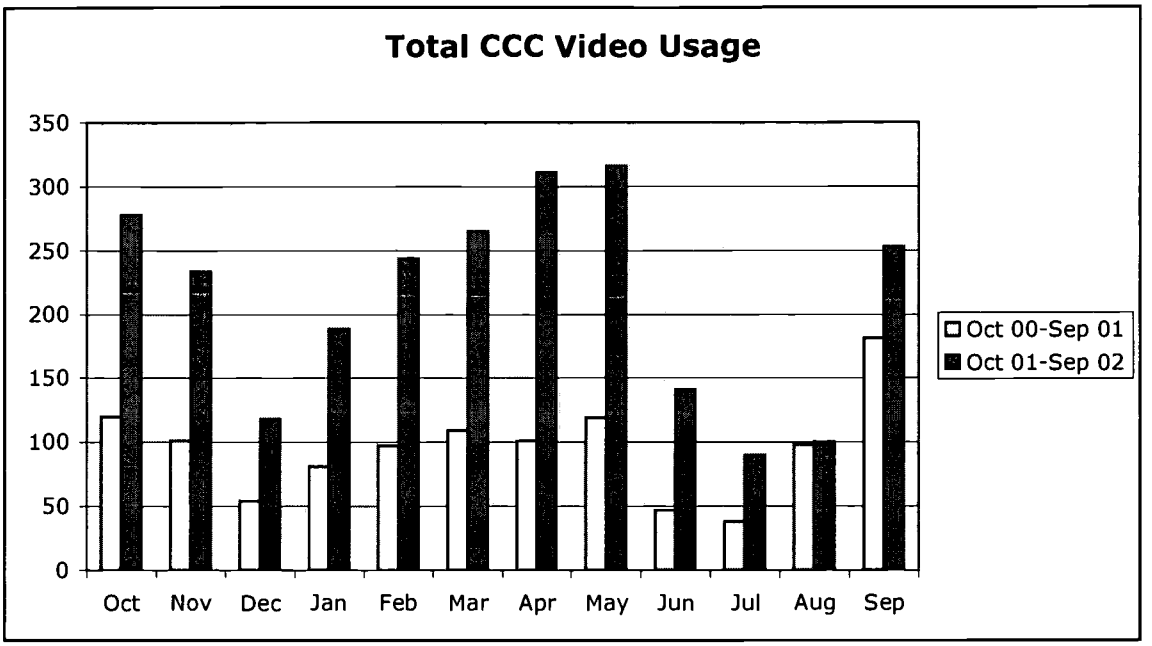
The largest increase is the combination of CSU and Community Colleges Videos. The chart below shows a comparison between Oct 99-00 and Oct 00-01:



The total number of conferences in the year Oct 00-01 was 554 and the year Oct 01-02 was 1967. This increase of 252 conferences represents a 71.84% increase in joint conferences between the CSU and the Community Colleges.

Total Community College Conferences

The total number of conferences that the Community Colleges are involved with is a combination of the Community College conferences, plus the Combined Community College and CSU conferences. When you look at that total, it shows how significantly the increase in Video Conferencing activity has been. The chart below shows a graphical representation of this by month:



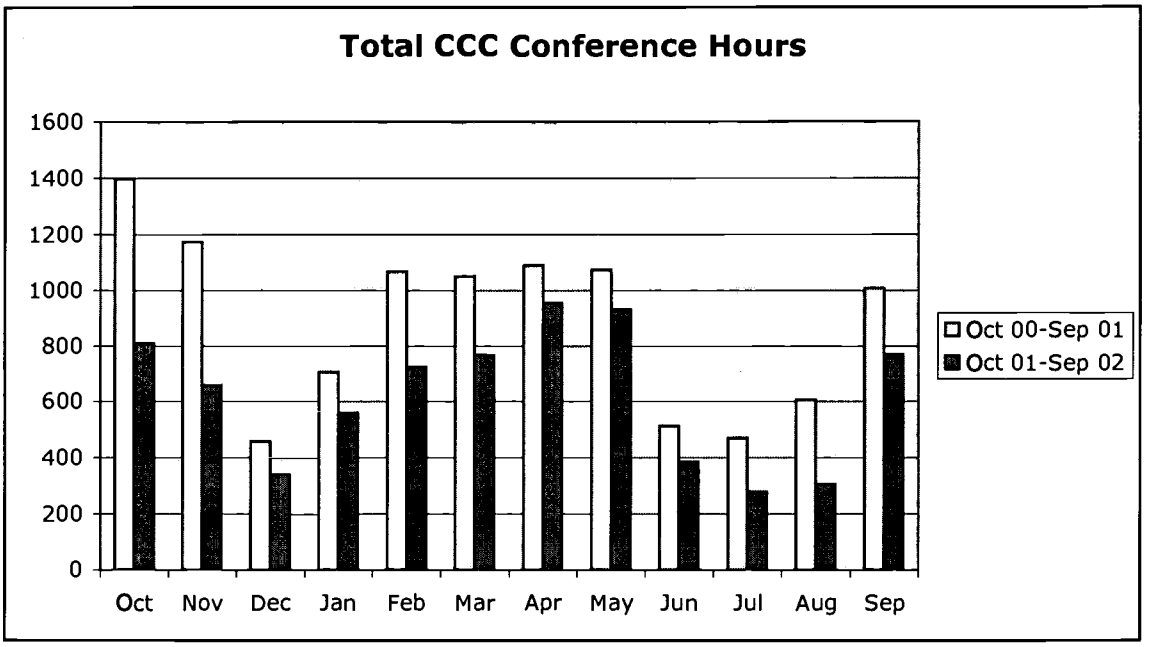
The total number of conferences from Oct 00-01 was 1146, while the total from Oct 01-02 was 2538. This increase of 1392 conferences that involve the Community College system either along with other Community College sites or between Community College and California State University sites. This is an overall usage increase of 54.85% in the use of video conferencing by the Community Colleges.

Conference Hours

Other signs that usage is up, is the increase in total conference hours used by the Community Colleges. The conference hours are the number of hours of an individual conference regardless of the number of sites involved. For example, if a 2-hour conference involves 5 sites, then 2 hours is counted towards the total number of conference hours. This is how all conference hours are calculated in the usage summary below.

Another way to count video usage hours is network hours. This number is significantly higher than conference hours because in the example above 2 hours would be counted for each site involved in the conference, thus network hours would equal 10 for the example above.

The following graph shows the total number of conference hours for the total number of Community College Videos for the period of October 99- September 00 and October 00-September 01:



The chart above depicts the conference hours used on the 4CNet video network by the Community College campuses. While the number of conference hours is down this year, the total number of conferences is up. This indicates that more conferences occurred for a shorter duration per conference.

Demands and Accommodations of Video Conferencing

We have now been using the automated process of setting up and tearing down the SPVCs that support video conferencing for about two years. Automation of video conferences has been a very successful way for us to be able to accommodate the increased number of conferences without increasing the demands on our staff or increasing the number of staff we currently have. Automation has allowed the Network Operations staff to monitor conferences as they come up and down, only having to intervene with conferences that are experiencing trouble.

The decrease in number of conferences that the Network Operations staff has to directly be involved with because of automation has allowed us to make other accommodations and be more flexible for video conferencing. We continue to be successful with the changes that were made to the scheduler last summer. Accommodating the scheduling of point-to-point conferences 1 hour in advance and Multi-points 24 hours in advance has been no problem. The campuses are very happy with these changes.

No other changes or accommodations have been made this year.

The Future of Video Conferencing over 4CNet

4Cnet continues to look at new Video Conference technologies. We have been supporting several campuses doing special projects and will continue to do so through out the year. Palomar Community College is working on some special satellite programs using video conferencing, and we have several sites that are experimenting with video over IP.

4CNet has been formed a group (CALVIP) that consists of representatives from the UC, K12, Community Colleges and CSU to look at and plan to change video conferencing on 4CNet from ATM based video conferencing to Video over IP in the next 18 months. The intention of this group is to put together a video over IP structure that will support all California educational constituencies to work seamlessly together with Video over IP.

Conclusion

The Community Colleges' are successfully participating in the 4CNet Video Network and increasing usage of it. We anticipate and are prepared for even further increase in demand for Video Conferencing this coming up year. We all believe that this system has been and will continue to be of great benefit to both the CSU and the Community College distance learning programs as we find new ways to work together.

CCCSAT/ACN/CCN Programming

Phase III of the CCCSAT Project has made us realize how sweeping the scope of the project can be. The first two phases of the project were geared toward establishing the basic infrastructure of the project, building consensus and developing resources to market an identifiable brand for CCCSAT that would enhance its position in California, nationally and globally. During Phase III we took the first, important steps toward building a funding base to supplement State funding. We researched and identified many potential and exciting business opportunities to generate revenue sources. We introduced the CCCSAT Project statewide and nationally – at conferences and conventions. And, we formed alliances and relationships to build consensus for success with many different communities and organizations state and nationwide. A summary of our key accomplishments is listed below:

- ALL 108 CCC campuses and 72 Districts are now linked to CCCSAT with receive sites. New affiliates include: the Tribal Digital Village, and the San Diego Workforce Partnership.
- ALL permanent, management staff is in place, and Phase IV hiring has begun.
- Marketing and Research & Development plans have been developed and implemented.
- ACN, the Affiliates Contribution Network, was launched and has delivered professional development and other content to various CCC entities.
- CCN is broadcasting *Data Stream*, a series of promotional spots with detailed information about the CCC system and its campuses.
- Connectivity and collaboration increases within the DCP (Digital California Project).
- BitCentral performed a complete CCCSAT system checkout and verification.
- CCCSAT web site provides information to affiliates, technicians, staff, faculty and students. Enhancements to the web site are ongoing.
- Power backup ensures successful 24/7 operations.
- Video Conferencing is being offered system wide, headquartered at the CCCSAT Network Operations Center (NOC).

PROVIDE THE PHYSICAL PLANT AND FACILITY that will house the Broadcast Center.

The foundation of the CCCSAT infrastructure was completed in June, 2000; remodeling to enhance 24/7 operations, create a venue for video-conferencing and house additional staff will be completed by January, 2003.

ON-SITE CONSTRUCTION OF SATELLITE UPLINK and Network Operations Center.

The CCCSAT engineering team has been making continuous progress in completing the technical infrastructure for the Network Operations Center (NOC). Monitoring for video sources, as well as the uplink monitoring and control systems have been installed in the new NOC area. Work is continuing on the implementation of the digital conversion and switching equipment in preparation for the integration of the video server. Fiber optic connections have been added to bring signals directly from the San Diego County Office of Education, as well as the Pacific Bell Television Operations Center in San Diego. This will allow delivery of video by commercial terrestrial fiber optic carriers directly to the CCCSAT NOC.

The DCP (Digital California Project) is operational and was tested with live programming during a 9-day trial with Chico State. The test broadcast aired over the CCCSAT-ACN Channel for a period of one week. Permanent use of the circuit was begun in January 2002, with CSU Chico transmitting classes to CCCSAT for uplink to Japan.

Progress is continuing for an all-digital ITFS television system at Palomar's receive sites.

A successful RFP was developed, published and a bid awarded for a net-edge video server and automation system for sites to be able to cache materials for playback over IP networks.

Successful design and implementation of the studio back up power project that we call the *Lean Green Backup Machine* was completed - ensuring successful 24/7 operations.

We are currently working with Cisco technology to deliver IP data over the CCCSAT Network. We have loaned Cisco Systems a DigiCipher II receiver to experiment with and develop a suitable interface protocol for this project. Summer, 2002 witnessed a successful Alpha Test.

BitCentral has performed a complete system checkout and verification on the entire CCCSAT uplink system. All operational parameters were found to be normal and the entire system is performing within Federal Communications Commission regulations. There were no problems that required extensive corrective measures or equipment replacement.

CCCSAT's On-Site Engineer and Chief Consulting Engineer regularly attended SAC (System-wide Architecture Committee) meetings. SAC has requested that our engineers draft the standards for all system wide satellite and video related projects.

CCCSAT broadcast a successful Spanish simulcast of "Heads Up" programs.

A Leitech logo inserter allows the individual CCCSAT Channels to run an identifying logo in the bottom right of the screen during broadcasts.

Ongoing PROGRAMMING operations for the CCCSAT Broadcast Network.

The accomplishments of programming have eclipsed our plans. As we work toward building a system of global delivery of distance education and other content, the past six months have been notable in bringing us closer to that goal. December 15, 2001 marked a turning point in the operations of the CCCSAT Network – and the 1st. Anniversary date of the DISH Network direct broadcast satellite service on CCN, that delivered more than 12,000 hours of broadcasting since its launch.

Telecourse programming agreements with Intelecom and Coast Learning systems were extended, ensuring a continued wide variety of telecourse programming for students. And, CCCSAT introduced "Your Learning with CCN", a series of Network ID's and promotional spots to promote our channels and identify the CCN-CCCSAT brand with our ability to provide quality higher education programming. CCCSAT continues to respond to viewer's requests for program schedules and course purchase information with brochures and letters.

The events in New York City and the concerns felt throughout the country provided CCCSAT with an opportunity to demonstrate how effective and viable we can be in responding quickly to unfolding emergency events nationwide. CCCSAT registered with

FEMA (Federal Emergency Management Agency) for emergency broadcast capabilities. During this period, CCCSAT down linked to our affiliates live teleconferences from the Centers for Disease Control about Anthrax and Small Pox.

CCCSAT utilizes NASA and PBS programs to provide free educational resource programming for our affiliates on ACN. One of the programs we have broadcast, for example, is *Destination Tomorrow*, a NASA program that focuses on the latest space exploration.

Two new AVID editing suites and new equipment, including an AVID Symphony editor and Fairlight Digital Audio Workstation were installed at off-site office. A new, modular set – that can be designed to represent a variety of different broadcast environments for various purposes was added to the broadcast production studio.

As a result of CCCSAT's coverage of the California Community Colleges Day at the Capitol and a subsequent interview with Chancellor Nussbaum, CCCSAT was asked to broadcast the monthly Board of Governor's meetings in Sacramento, thus further assisting us in building consensus and awareness of the scope and activities of the CCCSAT Project.

Data Stream, a series of promotional spots featuring unique stories, services and programs from the CCC system colleges, was incorporated into the ACN/CCN Channel schedules. The CCC system is introduced to viewers through spots containing interesting stories and unique characteristics of various campuses and regions within the CCC system. Initial spots included information on the coastal, desert and mountain campus regions that illustrate diversity within the CCC system. Numerous *Data Stream* promotions included: ASL: The Quiet World and Everybody Loves Ed. CCCSAT is researching and identifying potential sponsors for *Data Stream* as a means to generate supplemental revenue for the CCCSAT Network.

Production has included creation of news slates for CCN; a LIVE Workshop on Counter Terrorism; CCCSAT Behind the Scenes Live Tour; Palomar's Photoshop Telecourse; CVC Telenet Grant projects; and numerous tours of the CCCSAT facility. In addition to the tours given by our Marketing and Digital Satellite Team, we invited CCCSAT Affiliates to our studio for a two-day event giving them a real experience with the technology we have.

In conjunction with CCCSAT's goal to be represented nationwide on relevant professional committees, the Digital Satellite Network Manager has been selected for Intelecom's Course Review and Staff Development Committee and began a 2-year term in October 2001.

The Web Services Team has integrated marketing promotions on the web site for CCN and ACN. The web site has been established as a source of pertinent information and support for affiliates, technical staff, faculty and students. Additionally, program schedules are on www.ccnonline.org and in marketing packets.

CCCSAT Client Services has provided affiliate technical staff with information about availability to "pass through" CCN programming to local cable viewers. Over 15 affiliates now participate in this endeavor. They have also collected survey information from colleges indicating the number of households reached through their local cable companies' educational access channels. The amount is approximately 17 million households.

ACN has provided professional development courses to Human Resource personnel, Affiliate technical staff, Vocational Nursing Departments and Early Childhood departments.

CCCSAT adheres to the mandated requirements of the Americans with Disabilities Act to provide accessibility for physically challenged students and will continue to make a concerted effort to close caption its telecourses airing on CCN. CCCSAT also provided *real-time* closed captioning for the October, 2001 series of CCCCONFER *Meeting Time* programs. Research is ongoing for offline and real-time closed-captioning and sponsorship programs airing on CCN and ACN.

Ongoing TECHNICAL operations for the CCCSAT Network

The traffic operators have an approximate 0.0041% error rate in broadcasting. More than 97,500 events were scheduled and broadcast between September 1, 2001 and June 30, 2002.

From December 15, 2000 – June 10, 2002, the following broadcast hours have been logged:

- CCN has broadcast for 541 days, for a total of 12,969 hours (168 hours weekly)
- ACN has broadcast for 541 days, for a total of 14,607 hours (27 hours weekly).

We are currently researching programs and participating in demonstrations to identify software vendors for a network traffic management system. This system will archive the video programs distributed on the various networks and allow for tracking of program airtimes, dates and other specifics. The system will produce reports so that our sponsors can facilitate improvement of scheduling and tracking of their programs.

We have contacted the National Association of Broadcasters (NAB), the Broadcast Financial Management Association and local vendors and requested that they provide us with a list of companies that create, sell or provide service in the broadcast traffic market area. Product demonstrations were held at Encoda Systems, Protrack, Medigenix, Sintex Media, ScheduAll, and Xtech. Staff also conducted interviews at the San Diego County Office of Education, Time Warner, KPBS, Cal State Chico, Cox Communications, Daniels Cablevision, PBS, and KGTV as to how these companies schedule television programs, commercial spots, special events and teleconferences. Additional vendors and system upgrades were previewed at NAB 2002 Conference. Discussions are ongoing with two specific vendors. The project has been extended with a focus on the purchase and installation of a new automation system, servers and DVD archive. The bid for the turnkey system has been extended until the completion of analysis and compatibility is determined. A decision will be reached at the conclusion of system demonstrations, and installation of any equipment will be extended until after the acceptance of the formal bid purchase.

To determine the functionality of broadcast traffic system, the Operations staff monitored and evaluated NOC operational functions, procedures and customer needs to determine a better method that could be used to improve productivity and efficiency. Operations policies and procedures are in development. Additional procedures will be needed after the new traffic system is installed. Support staff for the Network Operations Center (NOC) continue to be hired to meet the needs of the 24/7 operation.

Periodic training of Network Operations Center staff continues. Specialized training specific to the new traffic system will be conducted when the system is in place. Data transfer will also be performed at that time. Staff has been working on the current data system to ensure accuracy of information and video content for the servers and DVD archive.

Ongoing MARKETING AND BUSINESS SUPPORT for programming to ensure success of the CCCSAT Network.

A full-time Marketing Services Manager and support staff were hired in Fall, 2001. Work began immediately to create a "brand" identity for CCCSAT and its Channels. A new CCN logo was developed and approved in November 2001 and will be "laid out" on a variety of collateral for the purposes of copyright approval in January 2003. The design for a new CCCSAT logo was completed in June 2002, and work is in process to develop collateral materials with this logo, such as letterhead and business cards.

A draft of a public relations plan was completed in November 2001. Included in this plan are procedures to provide information to affiliates through web site updates, and recognition of affiliates' participation through press releases and articles, as well as photos and mentions on the CCCSAT web site. A marketing plan is currently being developed for full integration with the public relations plan and is scheduled for completion in Fall 2002.

The Marketing Team was successful in disseminating information to CCCSAT affiliates by introducing the CCCSAT Network to the Association of Chief Human Resource Officers (ACHRO) through a direct mail piece promoting the CCCCONFER *Meeting Time* live video Conference events. The HR Officers distributed this material throughout their individual campuses. Over 67,000 of these pieces were produced and mailed to campuses system wide.

In addition to building relationships with the HR and Public Information Officers (PIOs) throughout the CCC system, Marketing has established relationships with the marketing and media departments of the Chancellor's Office.

A marketing kit is being developed that will introduce CCCSAT to numerous audiences for the purpose of extramural fund raising and other promotional activities.

Marketing is completing a comprehensive list of state, local, trade media begun in Summer 2001. Activities involved cultivating and establishing relationships with editors and reporters, as well as identifying stories to pitch to publications. The database for these lists and information will also hold information (Friends of CCCSAT group) about local chambers of commerce, key regional campus staff contacts, CCC Public Information Officers and staff development personnel. Marketing is also working with Research and Development to identify potential sponsorship opportunities in the San Diego Community College District.

CCCSAT has purchased a portable trade-show booth (a 20" TV/VCR), and Marketing has developed collateral materials (such as sales support materials and giveaways). The Marketing staff assists with the coordination of trade show and other exhibitor details for CCCSAT staff.

CCCSAT staff members have attended and presented at numerous conferences, such as the Telelearning, Academic Fall Sessions, Western Cable Show, NAB XStream,

GTCWest, 2002, NAB, 2002, TechEd2002, West Coast Electronic Government Forum, Broadcast Educator's Association Conference, Latina Leadership Network Conference, and Satellite2002. The ETV Staff Assistant co-presented with a Program Specialist from the Chancellor's Office at the California Virtual Campus (CVC) Annual Conference.

In order to encourage usage and promote the CCCSAT Network, CCCSAT staff have developed on-going relationships with key administrators system wide, including Wayne Murphy (Chief Human Resources), Kathy Welch (California Organization of Associates Degree Nursing Program), Mary Pontius (CAEYC), and Rhonda Stewart (Heads Up Network), Gary Kauf (Ohlone College) and Marty Kahn (DeAnza College).

Provide a STANDARD PACKAGE OF SATELLITE TELECOMMUNICATIONS INFRASTRUCTURE.

A circuit has been established between CSU Chico and the CCCSAT Network Operations Center to deliver distance learning programming over the 4CNet and the CCCSAT Network. An additional T-1 circuit has been installed for this purpose and the NOC to prevent tie-ups with the 4CNet video conferencing circuit. Additional connections will be tested in January 2003.

CCCSAT engineering is currently working on a system topology for the delivery of data and IP video over the CCCSAT Network. This is being done in collaboration with Cisco Systems.

A distance-learning environment has been prototyped by CCCSAT engineering and found to be a viable solution for remote locations not served by any terrestrial Internet service provider. A Starband bi-directional satellite Internet terminal was combined with both a Dish Network received and a DigiCipher II receiver and was completely capable of delivering high quality TeleNet courses anywhere in the United States. Explorations are underway to use this technology in conjunction with the Cal IT2 Project at UCSD to deliver distance education to Native American reservations.

A Pacific Bell fiber optic circuit has been installed between the San Diego County Office of Education (at their expense) to deliver K-12 distance learning programs via the Affiliates Contribution Network CCCSAT Channel (ACN). The distribution of a K-12 live math homework help line show is scheduled to be tested in Summer, 2002 and broadcast via CCCSAT in Fall 2002. The Pacific Bell fiber optic circuit used by the K-12 community can also be used to deliver broadcast quality video and audio to the CCCSAT uplink from virtually anywhere served by fiber optic service in the United States. This includes broadcast stations, PBS stations and other professional broadcast facilities. The circuit is capable of immediate switching between several different feed with one phone call to Pacific Bell's San Diego Television Operations Center.

Form an ADVISORY COMMITTEE to counsel the Broadcast Center on operations and programming.

Faculty, administration and technology staff were recruited to serve on the CCC System Advisory Committee. The first CCC System Advisory Committee meeting was held "virtually", with various staff introducing themselves via an electronic meeting to our new committee members. A direct mail piece was sent to the new members, as well as two email follow-ups. The *Virtual In Person* Breakfast was held on December 6, 2001. In January 2002, the first actual face-to-face meeting was held at the CCCSAT NOC. More than 20 members attended. The meeting was very productive and lively and

produced many ideas for the future of CCCSAT and its relationship to the campus communities it serves.

Develop plan to supplement State funding

The position of Research and Development Manager was filled in December 2001. A blueprint was immediately developed for the creation of a business and development plan to include integration with the marketing plan for aggressive brand development and management. Initial research produced a business plan outline for acquiring earned revenue sources, as well as collateral materials to use in outreach activities.

The Research & Development plan focuses on three distinct areas: distance education, state agencies, and corporations and businesses. There are nearly 1,000 State agencies in California and we intend to contact a majority of them to inform, educate and explore potential revenue sources for CCCSAT with them. Through our participation as an exhibitor for the GTC West, 2002 Conference in Sacramento, we have established contacts with many State agencies, including the Department of Health Services, Employment Development Department (EDD), and the Department of General Services.

Research and Development staff has worked closely with Dean Smith of the Chancellor's Office and Larry Fitch of Workforce Partnership to cover the cost of installing 10 downlinks throughout San Diego County at various Workforce sites.

We are working with the Tribal Digital Village Project on a proposal we submitted to SBC/Pacific Bell Foundation to expand the project by 25 additional downlink sites for the Native American reservations.

Additionally, we are part of a joint project with the San Diego County Office of Education. Working with professional simulation trainer – Dr. John Dentico of Leadsimm, Inc. and Tom Fraser, former Baltimore Chief of Police. In June, we submitted a multi-year proposal to use the CCCSAT broadcast system as a vehicle to deliver trainings to volunteers for Homeland Security.

Revenue Generating Projects

Research & Development Manager has created a *Corporate Showcase* format – 20 corporations will be given the opportunity to showcase their latest and greatest to CCC students. Each corporation would develop a one-hour program, showcasing their newest technologies, products and services. The potential is inviting for corporations as this offers them an opportunity to address more than 1.5 million students in the state.

Another project as a potential revenue-generating source is the idea of a Diversity Channel that would provide airtime for non-commercial educational programming. We are currently working with a Vietnamese group on developing programming and are also involved with a Spanish language organization for the same purpose.

The *Digital Partners* Program created by Research & Development provides large corporations with the opportunity to develop their own corporate channel – that could be used for their own internal uses, such as incorporating homeland security training and professional development for their staff.

Future plans for CCCSAT include the development of three ACN Channels – Sports – News – and Arts. These channels would broadcast community college content to the

CCC system, such as football and basketball games, current events programs, and plays and student films.

A research plan was developed to identify training and development departments within State of California agencies for the purpose of developing contacts for supplemental revenue sources. An initial plan was also developed to identify and contact corporations for program sponsorship and other forms of supplemental revenue. Research was initiated into international opportunities to generate revenue by examining foundations that are involved with the former states of the USSR. The Research & Development Manager identified key conferences to attend for networking among other extramural fund-raisers.

The CCCSAT engineering team has been making continuing progress in completing the technical infrastructure in the Network Operations Center. Monitoring for video sources, as well as the uplink monitoring and control systems have been installed in the new NOC area. Work was completed on the implementation of the digital conversion and switching equipment for the integration of the video server system. Fiber optic video connections have been added to bring the signals directly from the San Diego County Office of Education and the Pacific Bell Television Operations Center in San Diego. This allows delivery of video by commercial terretrial fiber optic carriers directly to the CCCSAT NOC.

BitCentral performed a complete system checkout and verification on the entire CCCSAT uplink system. All operational parameters were found to be normal and the system is performing within Federal Communications Commission regulations. No problems were noted that required extensive corrective measures or equipment replacement.

Develop OPERATIONS Maintenance Plan

All CCCSAT technical systems receive preventive and corrective maintenance by the CCCSAT Engineering staff and Consulting Engineer on an on-going basis. All exceptions are noted and problems repaired as they arise. There are no outstanding maintenance issues in the CCCSAT Network Operations Center or uplink facility.

New video monitors have been installed in the NOC to replace irreparable units.

Due to budgetary limitations imposed this year, replacement of the aging character generator will be deferred until next fiscal year.

DEVELOP FISCAL MAINTENANCE PLAN

Fiscal staff positions have been upgraded and incumbent staff members received job advancements to assume greater responsibilities and were completed by December 2001. Work is ongoing to enhance fiscal monitoring systems. All relevant reports for the period July 12, 2001 to June 30, 2002 are current.

A comprehensive audit of CCCSAT was undertaken Spring. Our Fiscal Department cooperated fully with the auditors – several individual staff members were interviewed, along with a full review of our bookkeeping and financial accounting processes.

Building on a successful 25-year tradition of delivering distance educational telecourses to Palomar students, the CCCSAT Project is now delivering distance learning statewide – and through the CCN Channel, nationwide and globally.

CCCSAT has the potential to reach a minimum of 10 percent of the CCC system's student population of 1.5M, or 150,000 students. These students represent a broad perspective of educational needs, including the traditional student who will get his/her AA degree, and people seeking an opportunity to expand their education and knowledge with additional courses or vocational training.

The CCN Channel on the DISH Network increases CCCSAT's programming capability to reach approximately 6 million homes nationwide and in North America. The potential audience for CCCSAT programming on CCN is hard to calculate at this point. As promotion and marketing efforts steadily increase, we should see a significant rise in access to the sites. If curriculum programming can be developed with system wide collaboration to be able to offer an AA degree at any CCC campus from telecourse programming, national and global student enrollment prospects are enormous.

We can't over emphasize how important this year has been for the growth and acknowledgement of CCCSAT system wide and nationally. Our acquisition of the DISH Network public interest Channel has solidified our importance and viability to deliver distance education and other content system wide and nationally. Hundreds of people from coast to coast regularly inquire about various courses that they see on the DISH Network.

We have identified ***CCCSAT and Student Success*** as the hallmark of Phase IV. Efforts have been crystallized to bring distance education and other content to students system wide and throughout the nation. CCCSAT has the tools, technology and staff to make a difference in education.

Our efforts to reach out into the community we serve has brought us closer to forming alliances and relationships with many diversified entities – including the Tribal Digital Village and the San Diego Workforce Partnership, as well as numerous State agencies. We anticipate that the foundation we have built during Phase III will bring us closer to our goal of becoming self-sustaining, as well as enriching and expanding the educational life of students system wide and nationally.

The Data Stream promotional spots are drawing considerable interest from colleges statewide who have contributed content for them – creating national and system wide exposure for the special news about their campuses and programs – and developing a national perspective for the California Community Colleges system.

The CCCSAT web site is providing pertinent information to Affiliates, technicians, staff, faculty and students. As the site grows, we will continue to add more enhancements. A new CCCSAT logo has been designed and will be implemented in Fall 2002.

24/7 Operations have been ensured through the installation of the backup generator on the Palomar campus. This has been an extremely positive and important element toward creating CCCSAT dependability.

U.S. Department of Education
Office of Educational Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)

NOTICE

Reproduction Basis

[X] This document is covered by a signed "Reproduction Release (Blanket)" form (on file within the ERIC system), encompassing all or classes of documents from its source organization and, therefore, does not require a "Specific Document" Release form.

[ ] This document is Federally-funded, or carries its own permission to reproduce, or is otherwise in the public domain and, therefore, may be reproduced by ERIC without a signed Reproduction Release form (either "Specific Document" or "Blanket").