

Standard IIIC: Technology Resources

Introduction

As mentioned in Standard IIIA, Santa Monica College's human resources are its greatest asset in every area of the College including technology. The College's technology support personnel are integral to providing and maintaining the technological resources critical to student success and necessary for the daily operation of the College. They represent a dynamic team of specialists who rapidly respond to the ever-changing technological needs of the students, faculty and staff. Despite limited human and financial resources, they are able to consistently provide support for the College's technological needs, central to nearly all mission-critical operations of the College. The College is fortunate to have a staff of technology experts whose personal mission is to ensure that the College's instructional programs, student services and the day-to-day operations run smoothly and efficiently.

The College has implemented a variety of planning and evaluation processes to ensure that institutional, instructional, and support needs are addressed efficiently and effectively. Collegial interaction among the College's many organizations ensures that resources are allocated to meet both short- and long-term needs and help the College respond nimbly to changing conditions and emergencies.

For example, in the current climate of instructional offering reductions made in response to the worsening budget crisis, regular discussions among Admissions and Records, Academic Affairs, Distance Education, Counseling, Matriculation and Information Technology have enabled the College to effectively communicate with students to ensure they are kept up-to-date on changing enrollment conditions and processes. Similarly, monthly meetings between Academic Affairs and the instructional department chairs provide an effective vehicle for communicating technology improvement requests from the faculty and staff users to the Information Technology Department.

Long-term technology planning is realized through a process of cooperative, participatory governance that includes the input and cooperation of various committees, departments, and processes (e.g., the Academic Senate Joint Information Services and Distance Education committees, the Information Technology Department, the District Planning and Advisory Council and its Budget and Technology Planning subcommittees). Through these planning processes, the College has established long-term technology goals designed to:

- facilitate student learning and college operations through the effective use of technology;
- create universal access for users through a single interface and single sign-on to workstations;
- manage the complexity of new technology by utilizing an open architecture and adhering to current technology industry standards;

- optimize the availability, accessibility, and performance of the College’s technology resources;
- promote the effective use of technology through a variety of integrated systems, applications, and processes that enhance business automation, electronic communication, and collaboration;
- promote the effective use of technology by providing thorough, relevant training and other user support resources designed to help users skillfully and appropriately apply technology;
- integrate information technology asset management, project tracking, and support tracking to enhance equipment lifecycle planning;
- formalize technology use policies, regulations, and standards to protect the College’s technology resources and user-privacy; and
- implement cost-effective solutions to support the College’s current and future needs for telecommunications, networking, instructional, and administrative technologies.

Collectively, these technology-specific goals support the College’s Mission, Vision, Values and Goals, Strategic Initiatives and Institutional Learning Outcomes at the institution level and facilitate student learning and achievement of outcomes at the program level. This is a formidable endeavor requiring not only the cooperation of the organizational structures designed to plan and implement technological operations but also the recipients of those technological resources, which essentially include every organizational department of the College.

Integrated School Information System (ISIS)

An integrated enterprise system is a critical technology element in ensuring the College meets its varied and often complex information needs including those of its instructional and service programs, the California Community Colleges Chancellor’s Office, and Board of Governors, the federal government, and the needs of the individual students and staff members.

The Integrated School Information System (ISIS) is the heartbeat of the College’s information technology infrastructure. Developed internally by Santa Monica College Information Technology Department staff, utilizing an Oracle core technology infrastructure, ISIS is the equivalent of proprietary database systems such as *Banner* and *Datatel*, but unlike proprietary systems, ISIS is customizable to the College’s unique specifications by the College’s own staff. As a result, system modifications, while complex, time-consuming and often difficult to implement, are designed with the specific needs of the College in mind.

The system now employs a web-based portal design which pushes information out to the administrators, faculty and staff users of the system. As shown in Figure IIC-1, the administrative and staff portal enables users, depending on the system permissions granted to them, to access a variety of reports, class rosters, administrative functions, and information as

well as customize the portal to their own unique specifications. Several modules are included in this portal:

- The **Instruction Module** is where the classroom facilities, course catalog, schedule of classes and faculty work load are developed and maintained. The information contained in this module drives the printed and online class schedule and catalog and is integrated with other ISIS modules.
- The **Student Admissions/Records** is used to manage all of the records associated with a student upon admission to the College.
- The **Student Services Module** provides administrative staff access to tools for helping students meet their educational goals and tracks data related to those services (e.g., counseling, orientation, matriculation, and financial aid).
- The **Personnel Module** has two main functions: Employment Applicant Tracking and Campus Human Resources. Applicant Tracking is used to support classified position recruiting and hiring. The Campus Human Resources function provides system information about all college employees.
- **Miscellaneous Support** includes data relevant to the Purchasing Department and is interrelated with the Warehouse where received items are inventoried prior to deployment. This module is used to maintain information for other campus support areas including the Bookstore, Health Services, Campus Events, and computer labs.

Two other portals provide services specific to faculty and student users. The Faculty portal provides faculty members with interactive capability to manage their classes and to collaborate with counselors and other student services. Faculty can access relevant reports designed to facilitate class management and issue early alert referrals to students experiencing academic or other difficulties.

The Student Self-Service portal provides students with multiple interactive functions to update personal information, perform class searches and enroll in classes, pay fees, sign up for counseling workshops, view final grades and transcripts, and view other relevant information.

The enterprise system also provides information to or integrates with database and online systems used by various departments and programs including the document imaging system which links the fleet of multifunction reprographic devices deployed throughout the College, the online print job submission system (Digital StoreFront), the Bookstore's online textbook ordering system, and eCollege, the distance education course management system.

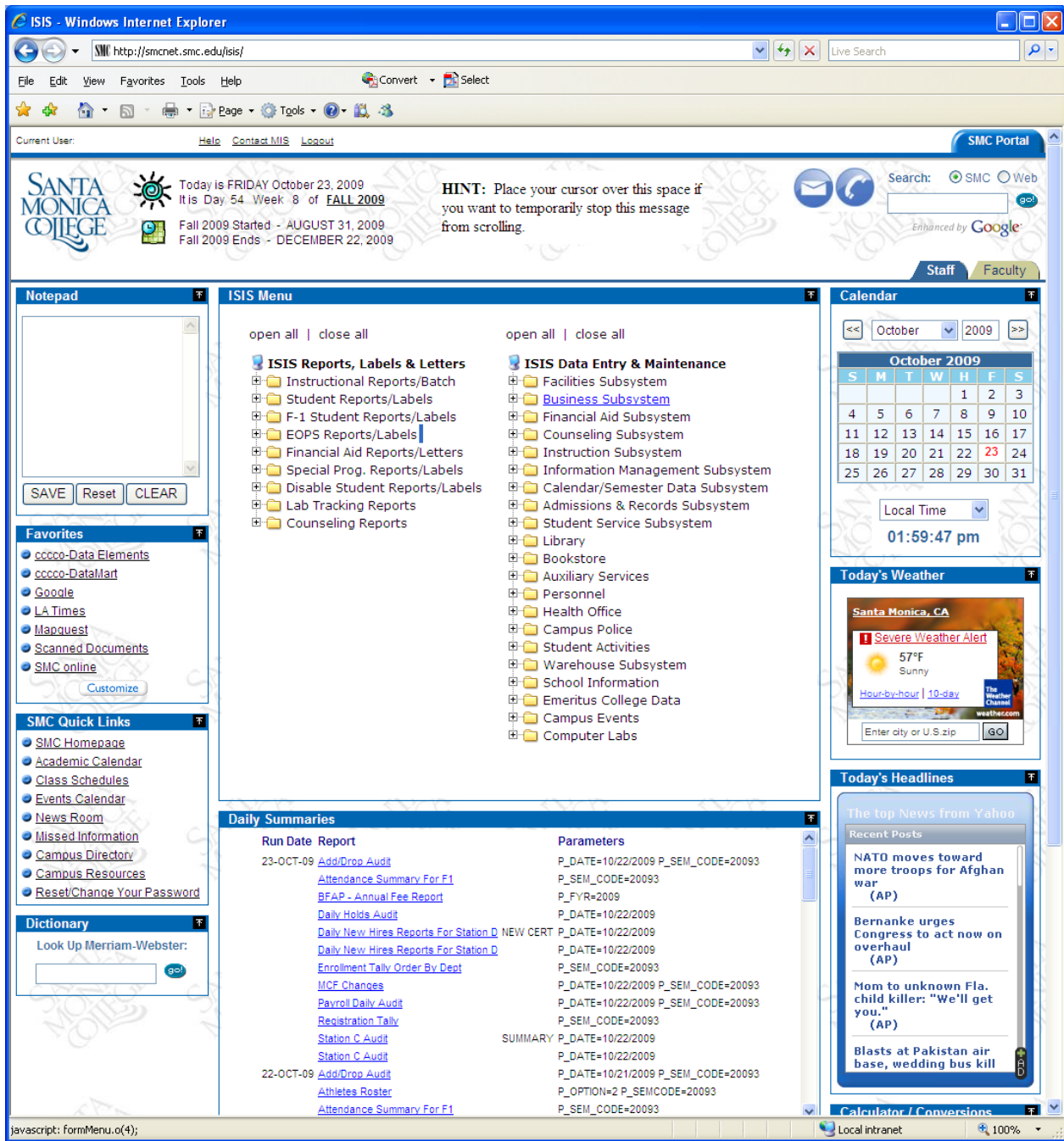


Figure IIIC-1: Web-Based Portal to the Integrated Student Information System (ISIS)

IIIC.1 *The institution ensures that any technology support it provides is designed to meet the needs of learning, teaching, college wide communications, research and operational systems.*

IIIC.1(a) *Technology services, professional support, facilities, hardware, and software are designed to enhance the operation and effectiveness of the institution.*

Description—IIIC.1(a)

To maximize effectiveness, the college community coordinates technology planning efforts through an organized structure of committees.

- The **Academic Senate Joint Information Services Committee** serves as an advisory board to all instructional services programs regarding telecommunications and academic computing and makes recommendations for the development of instructional computing resources and funding allocation for technology projects based on set criteria.ⁱ
- The **Academic Senate Joint Distance Education Committee** is responsible for the distance learning environment at the College. The committee discusses platform requirements, improvements and potential alternatives; formulates requests for and reports on the needs of the Distance Education program; documents effective instructional and support practices and protocols; implements policies and procedures that relate to the online environment; and makes recommendations regarding the Distance Education program as it relates to and interfaces with the college community.
- The **Academic Senate Joint Career Technical Education Committee** is responsible for ensuring the continued enhancement and development of new career technical education programs. This committee researches industry trends; gathers and analyzes labor market information; leverages resources whenever possible; determines the student recruitment needs and overall costs associated with new career technical education programs; and recommends Vocational and Technical Education Act (Perkins) funding allocations among the College's career technical education programs through an internal competitive proposal process.
- The **District Planning and Advisory Council (DPAC) Technology Planning Subcommittee** is responsible for developing and updating the *Master Plan for Technology* and for merging the instructional technology recommendations of the Academic Senate Joint Information Services Committee with student services, administrative, and infrastructure technology needs. The group establishes priorities according to the objectives of the *Master Plan for Technology* and makes recommendations within available funding sources. The Technology Planning Subcommittee makes recommendations to DPAC, which, in turn, makes recommendations to the Superintendent/President.

These committees, guided by principles of participatory governance, are integrated organizationally with other central planning groups, all of which collectively provide a mechanism for soliciting input and feedback from the college community. These processes generate the College's overall technology objectives.

Technology has become a ubiquitous element of the College, touching every facet of college operations and programming. Among them, several functional areas serve as key support and/or distribution points for major elements of the College's overall technology infrastructure:

- Information Technology Department
- Office of Institutional Research
- Distance Education Program
- Reprographics
- Media Services
- Library
- Website Management
- Academic Computing Laboratories
- Career Technical Education Programs
- Student Support Services

Information Technology Department Organization

The College is committed to providing technology services that meet both administrative and instructional needs and recognizes the importance of the underlying network infrastructure that supports these mission-critical technology services. This centralized structure enables coordination among technology service areas, integration of technology services and standardization of technology solutions. The structure also guides the overall direction of the College's technology direction and planning. This integrated approach provides all users with reliable access to the technology vital to the College's achievement of its Mission and Institutional Learning Outcomes.

To effectively deliver services, the College has identified four functional areas within the Information Technology Department; although each has its own primary mission, these areas work collaboratively to provide all college technology consumers with universal, secure access to the College's communications and information technology resources.

- **Network Services** implements and manages the College's network infrastructure including system design, departmental server-based application maintenance, network security, routing/switching, account management, networked printing, and server and email administration.

- **Telecommunications** deploys, repairs and supports the College's voice-communication systems, the copper and fiber-optic cabling infrastructure, desktop computers/applications and peripherals, and switchboard operations.
- **Management Information Services** creates, maintains and develops the College's enterprise system (ISIS) and reporting systems in support of instruction, enrollment services, business services, human resources, institutional research, student services, and other administrative areas. As described previously, ISIS provides college personnel access to a wide variety of data and reporting functions through a web-based portal.
- **Academic Computing** is responsible for providing academic technology support, maintaining student computer labs and classrooms including workstation deployment, software installation/maintenance, training faculty and staff, and providing in-person assistance to students and instructors in support of instruction.

This centralized organizational structure ensures that all aspects of technology support and services are provided and deployed to the main campus, to satellite sites and to remote users, thus minimizing the replication of support structures at multiple sites. One exception to this is the Academy of Entertainment and Technology which, because of its unique technology needs, has a dedicated staff to service the complex computer and other technological resources located at that site.

Office of Institutional Research

The Office of Institutional Research supports program stakeholders in building their own evaluation capacity as well as conducting institutionally focused research and data analyses. Teaching and learning are facilitated through the broad institutional data available on the Institutional Research website including college reports (e.g., equal opportunity survey results, transfer, program completion and graduation reports, and persistence reports), enrollment reports, and grade distribution. These reports are valuable to departments and programs preparing their program review reports and/or grant applications.ⁱⁱ

The Office of Institutional Research uses technology to help members of the college community define their assessment needs and methodologies and access standardized reports. In the future, planned functionality for the Institutional Research website will allow users to query the college database to build their own reports.

Distance Education Program

The College's Distance Education program has grown tremendously over the last ten years. Described fully in Standard IIA.1(b), the program supports nearly 10,000 students enrolled in a variety of courses each semester. In 2008-2009, classes offered online or in a hybrid format accounted for 12.5 percent of the College's FTES, and the program continues to grow.

The College's course management platform is provided through an external course management system (eCollege). The platform offers 24/7 student support and provides a variety of features

designed to help facilitate teaching and learning as well as support for course authoring and content development. A full-time multimedia specialist captions videos used in online courses to ensure that online classes meet state and federal accessibility requirements.

In addition, onground faculty have the option of using eCompanion, the course shell product that echoes the structure used for online classes, to provide their students with 24/7 access to supplemental course materials, internet resources, assignments, quizzes, and grades and the opportunity to communicate electronically with their instructor and classmates (via email, threaded discussions, and chat rooms). Currently, about 400 faculty members use eCompanion.

Reprographics

The College's Reprographics staff provide digital print services. As part of a strategic centralized management plan, the College has recently deployed a networked fleet of devices to provide copying, printing, and scanning functions. Print requests are routinely submitted electronically through the Digital StoreFront system, which allows users to submit documents for printing online, any time and from any workstation, directly to the central Reprographics Department.

Media Services

Media Services encompasses a wide variety of audio-visual support services for faculty, staff and managers. The office supports more than 130 classrooms that have been equipped with "smart" technology (which includes a computer, projector and other multimedia equipment installed in a semi-permanent lectern). Multimedia carts are also available in the Media Center and can be checked out on demand. The Media Services staff are available throughout the day and evening to provide telephone and/or field service to ensure that instructors and the audio-visual technology they use are fully supported.

Media production services include multimedia development, digital video production and editing, audio-visual duplication services, videoconferencing and content programming for the College's cable television channel. A relatively new online channel, "SMC on iTunesU," was produced in collaboration with Apple Corporation. This new media reaches out to local and global audiences with an eclectic mix of audio and video podcasts including guest lecturers, student orientations, campus events, course lectures, faculty/staff orientations and Board of Trustees meetings.ⁱⁱⁱ

Library

The Library houses over 200 personal computers, providing students convenient access to its online catalog, web-based proprietary databases, Internet resources, Microsoft Office software applications, specialized accessibility software such as Zoom Text, Jaws, Kurzweil (Models 1000 and 3000), and workstations, which are compliant with Americans with Disabilities Act requirements. The Library was the first building on the main campus with wireless access and the Library currently provides technical support for students experiencing wireless access

problems. Through the Library's webpage, students may report such problems by submitting a form, and a library staff member is on hand to assist them as needed.^{iv}

The Library subscribes to 47 databases, which provide access to over 10,500 full-text periodicals and approximately 19,000 electronic books. In addition, access to 7,300 freely available full-text periodicals is provided, for a total periodical count of 17,800. The electronic books and databases support the curricular needs of both traditional and distance learning students 24/7.



Figure IIIC-2: 200+ Student Computers in Use in the Santa Monica College Library

Website Management

The College's website underwent a major redesign to improve its functionality and better serve the needs of the college community. The new structure and format were deployed in 2007 for the departments deemed most critical to ongoing college operations. The website is currently undergoing a second phase of development to provide a consistent, uniform web presence for the entire college community.

Academic Computing Laboratories

Fully described in Standard IIC, computer and networked resources are distributed across the main campus and at the Academy of Entertainment Technology, Bundy, and Emeritus College satellite sites. Since 2003, the College has increased the number of computers available to its students from approximately 1,200 to over 1,600. Computing facilities include drop-in labs where students work individually on class assignments and utilize standard office, online-based and/or discipline-specific software, and computer classrooms.

Training and user-support resources are made available to both students and faculty. The labs are staffed by Academic Computing Instructional Specialists, who ensure that equipment is in good working condition and that student questions are answered promptly and accurately.

Career Technical Education Programs

As mentioned previously, technology touches all aspects of the College's instructional offerings in a variety of ways, whether through the technology resources used by students or in the way instruction is delivered. For example, the Health Sciences Department uses state-of-the-art

simulation mannequins in the Nursing Skills laboratory allowing students to practice their nursing skills and recognize patients' symptoms.^v Similarly, the Photography Department has made an investment in developing a robust and highly regarded digital photography program through the acquisition and deployment of digital cameras and computer hardware and software, enabling students to gain experience with equipment they will use in professional settings.^{vi} In all instructional programs, technology support is designed to meet student learning needs and to facilitate instruction. Two instructional areas are the heaviest users of technology: the Academy of Entertainment and Technology and the Computer Science and Information Systems Department.

- **Academy of Entertainment and Technology** provides state-of-the-art multimedia and graphic design curricula in a number of areas such as Animation, Game Development, Graphic Design, Interior Architectural Design, Post Production and Visual Effects. Academy students can take a wide variety of graphic design classes, ranging from foundation studio classes that emphasize design process to application-specific courses teaching Adobe Photoshop, Illustrator, and InDesign, as well as motion graphics and web design software.

The Academy has several state-of-the-art Windows and Macintosh classrooms, each equipped with 24 student workstations and an instructor workstation with video projection. In addition to the computer classrooms, a computer lab is available to all Design Technology students who are currently enrolled in a computer-based course. The laboratory features over 80 Windows and Macintosh workstations, color and black and white laser printers, scanners, and video capturing hardware.

The computers are installed with the software applications used in Design Technology computer courses including AutoCAD, Maya, ZBrush, Shake, After Effects, InDesign, PhotoShop, Dreamweaver and Flash. All of the computers at the Academy site are linked by an internal file sharing network.

Students have access to a dedicated digital audio and video editing classroom as well as several digital editing rooms. The site also features a green screen room and a 120-seat screening room.

- **Computer Science and Information Systems Department** provides technology and information science career training and transfer preparation curricula. The mission of the department is to provide an exceptional learning environment in which students can develop the skills and knowledge required for today's technology-oriented jobs and/or fulfillment of the requirements for transfer to four-year colleges and universities.

Students can pursue programs in Programming, Databases, Networking, Technology Project Management, Robotics, Web Site Development, Computer Graphics, and Business Office Computer Skills. The Robotics, Technology Project Management and Networking programs were developed under a grant, completed in 2008, from the National Aeronautics and Space Administration.

Student Support Services

Technology is also an integral element of many student support services. For example, the Counseling Department has worked with the Management Information Services Department to create a computerized appointment system, used by all counseling programs, that allows all counseling areas to track students who receive counseling services. Consequently, the Counseling Department knows that during the 2008-2009 academic year, 104,994 student counseling contacts were made. Technology has also enabled online counseling to expand student access to these vital services. In 2008-2009, 4,736 online counseling contacts were made. In addition, the number of students using the College's online orientation has tripled over the last eight years, from 7,227 students who accessed online orientation services in 2002-2003 to 24,654 students in 2008-2009.

Other student support programs also use technology to enhance the services provided to students.

- The **Career Services Center** offers computer-based career information systems for students to research possible career paths and internship opportunities.
- **Early Alert:** The College redesigned its Early Alert program and has deployed an online version to improve the efficiency with which instructional faculty identify students who may be experiencing difficulties and refer them to appropriate services.
- **Services for Distance Education Students:** With the exception of tutoring, services for online students match those provided to their onground counterparts including access to registration staff, financial aid advisors, academic counseling, and instructional faculty.
- **Disabled Student Services High-Tech Center and Technology Accessibility Services** promotes technological access for students with disabilities and compliance with legislative mandates for technological accessibility. Computing labs include software for students with disabilities such as screen readers and screen magnification software. More specialized software is installed upon request to meet the needs of individual students. Some labs also include specialized hardware such as scanners and trackballs. Additionally, most labs have at least one motorized adjustable table.

Planning and Development Processes

A comprehensive planning and development cycle is initiated annually to ensure needs are fully identified, solutions thoroughly evaluated, and resources equitably distributed. As shown in Figure IIIC-3, the cycle begins at the start of the academic year with a review of the *Master Plan for Technology* by the DPAC Technology Planning Subcommittee to evaluate progress made during the previous year. At the end of each fall semester, the Academic Senate Joint Information Services Committee solicits requests from the various information technology areas, academic departments, and faculty requiring desktop workstation upgrades. During the spring semester, the committee evaluates these requests based on a set of criteria that is disseminated to all groups and posted on its website.^{vii}

Highest priority is given to funding annual software licensing agreement obligations without which the College could not function, the most important being the infrastructural software licenses such as the Microsoft operating system and Office software site license as well as instructional software such as the Adobe suite, used in many of the technology-related disciplines. The committee evaluates requests from the various Information Technology areas responsible for maintaining and upgrading the hardware and network infrastructure for the

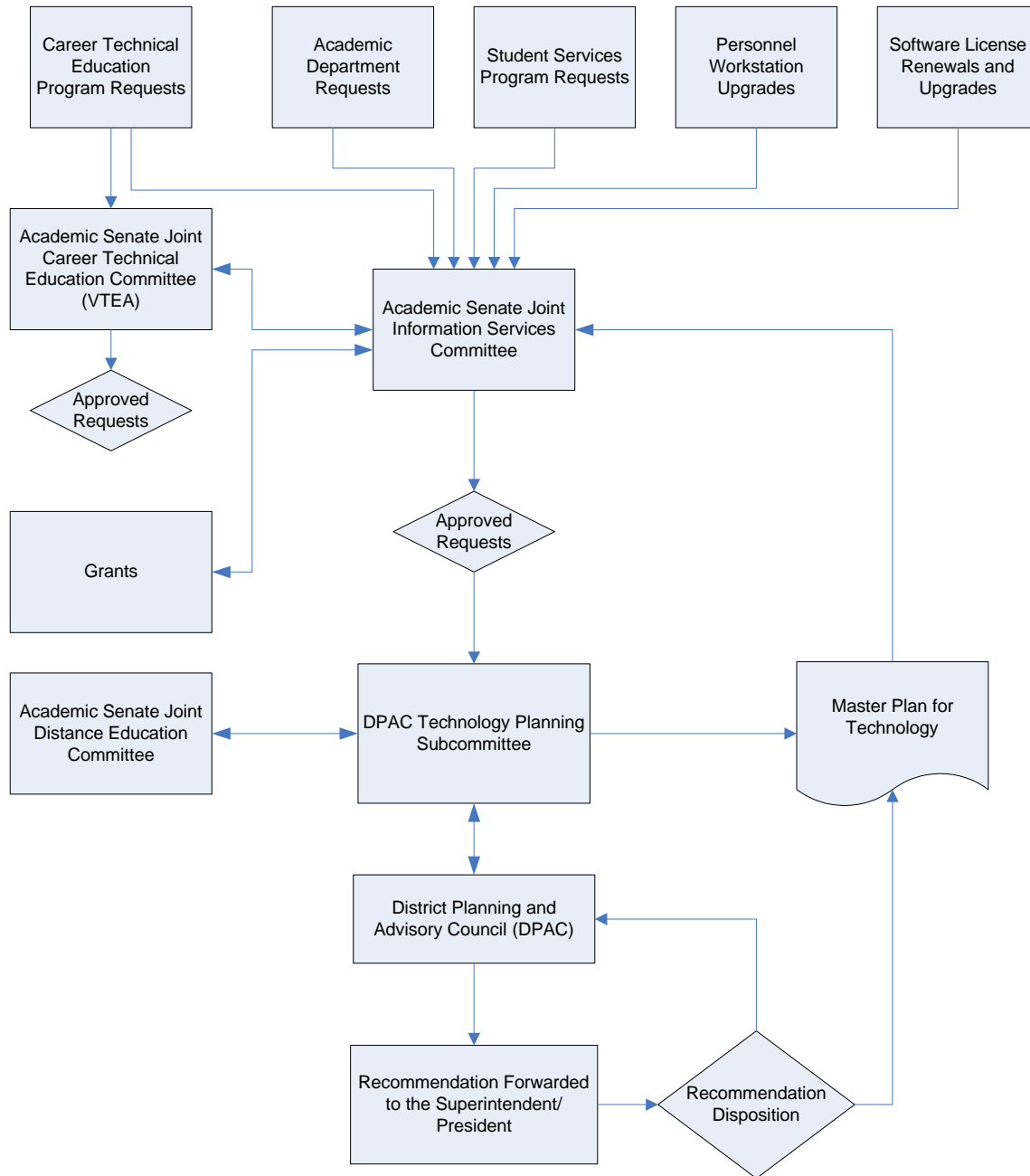


Figure IIIC-3: Santa Monica College Information Technology Planning Flow

College and contributes 55 percent of the cost for such requests, which represents the proportion of technology resources used for instructional purposes. Next, the committee ensures that funds are allocated for maintenance and upgrade of smart-enabled classrooms and smart carts. Currently, the College supports 131 smart-enabled classrooms, an 85 percent increase since the last accreditation report. Finally, department requests for instructional technology items and faculty requests for advanced upgrades for their desktop workstations are evaluated. (Faculty workstations are upgraded automatically with new or cascaded workstations at regular intervals.)

When funding is severely limited, the committee considers only those department and faculty requests that are vital to the continuation of existing programs. Requests for technology for career technical education programs are coordinated with the Academic Senate Joint Career Technical Education Committee to ensure that requests are not duplicated and that requests are compatible with the College's infrastructure. In addition, the Academic Senate Joint Information Services Committee closely collaborates with the Director, Grants to identify new or existing external funding sources that may be used for technology. For example, funding through the Basic Skills Initiative has been used to upgrade computer labs and provide smart-enabled classrooms and smart carts for the English, English as a Second Language and Mathematics departments.

Recommendations are forwarded to the DPAC Technology Planning Subcommittee, from which they are sent to DPAC. Once accepted by DPAC, these recommendations are forwarded to the Superintendent/President for final approval. At the end of each spring semester, departments and individuals are informed of the decisions made by the Academic Senate Joint Information Services Committee and approved by the Superintendent/President, and most funded technology requests are implemented over the summer. The technology planning and decision-making process is described in further detail in Standard IIIC.2.

Once new technology initiatives are identified, they are evaluated and prioritized according to planning category/scope, institutional importance, technical feasibility and other potential resource needs (e.g., financing, staffing and/or facility resources). Ongoing maintenance costs and the College's ability to provide the required support during an initiative's expected lifecycle are also considered as are matters of reliability, business continuity, disaster recovery and security. Approved objectives are then incorporated into the annual *Master Plan for Technology* update and scheduled for implementation by college staff, either internally or, if necessary, in conjunction with external technology partners. The College ensures limited resources are used effectively by incorporating well-documented and enforceable policies, procedures, standards, and regulations into the technology planning process.^{viii}

The instructional, student services and administrative needs of the College are the driving forces behind all technology initiatives. Keeping abreast of industry standards and educational technology trends, monitoring the performance of existing systems, and updating skills through training and certification all help the College anticipate many of these needs and implement scalable, service-oriented solutions designed to enhance the institution's operational effectiveness. The College avoids technological stagnation by encouraging the adoption of new technology resources, such as support services, technology facilities, and updated hardware and software.

For example, a recent effort in evaluating and implementing the College's server virtualization project is a typical example of how a technology initiative is identified, developed, and implemented. The technology project was initiated via the College's technology planning process. Once all funding, facility, and human resource requirements were identified and reviewed by DPAC, the Information Technology Services areas coordinated processes closely with one another and with other college operations (i.e., Purchasing and Accounting) throughout the procurement cycle. These processes included requests for information/proposals, reference checks, procurement, design, staff training, and implementation. All impacted functional user areas were informed to ensure a seamless and transparent transition. As a result, the current data center is now sustained within existing space, power, and cooling constraints. Prior to the implementation of the virtualization project, space, power and cooling in the data center were reaching maximum capacity. In addition, the College received approximately \$68,000 in incentives from the Southern California Edison Company as a result of the projected, ongoing electricity savings of 285,000 kilowatts per hour.

The development and enforcement of network and computer use policies also follow an extensive planning process. These policies maintain a high level of system security while at the same time protecting the integrity and privacy of user data. When breaches in security occur, the College takes immediate steps to investigate the incident and develop new policies to prevent its reoccurrence. For example, in Summer 2009, a "phishing" email (one designed to trick users into volunteering personal information) was able to infiltrate the network system. Several unsuspecting users responded to the unsolicited email (divulging their account passwords), resulting in spam being sent from the College and the subsequent temporary blacklisting of the College's email by many Internet service providers. The College, through its planning processes, responded immediately, undertaking a rigorous program of education and evaluating other methods to prevent future occurrences including a series of recommendations developed by the Information Services Committee and the DPAC Technology Planning Subcommittee, accepted by DPAC, and approved by the Superintendent/President.

Another challenge is the complexity and variety of technology tools and platforms, which often present compatibility conflicts or require support beyond what the College can provide. In the past, Information Technology was frequently called upon to support department-purchased technology equipment that was incompatible and sometimes in conflict with existing technology. To address this problem, the College now deploys a standardized list of hardware and software, thus maximizing cost-effectiveness and promoting operational efficiency.^{ix} The College's technology planning process further facilitates the implementation of unified purchasing plans which results in substantial cost savings to the College (see Standard IIIC.2).

Although providing services and support to multiple sites with geographically-dispersed technologies can lead to costly operational inefficiency and strained resources, the Information Technology team works to mitigate the effects of these challenges by adopting virtualization technologies, distributing software from a central repository, and using remote-access support tools, all of which help reduce the need for dedicated support staff at all facilities.

Through its Distance Education program, the College is committed to the creation, development and delivery of high-quality online courses that serve the needs of this rapidly-growing student

population. To support online faculty, the Academic Senate Joint Distance Education Committee regularly updates the *Distance Education Faculty to Faculty Handbook*, its online resource of effective practices and protocols. In addition, much of its work is conducted through various subcommittees: Platform Research (exploring alternative platforms); Best Practices (recommending effective practices); and Best Protocols (recommending protocols for effectively moving traditional courses online).^x

The College partners with an external vendor, eCollege, to provide a robust, secure and reliable course management system. The system includes 24/7 technical assistance for students and faculty as well as archiving and backup. In fact, feedback and evaluation of the eCollege platform by the College's online instructors and students has led to the incorporation of a number of improvements to the revised eCollege (.NExT) platform including refined Macintosh integration and enhanced accessibility and "Exam Guard" (a third-party product for test proctoring) features.

Using an external vendor strengthens and enhances the security and disaster recovery protection of distance education program content. For example, eCollege uses multiple tape libraries in addition to replicating data in near real-time to its disaster recovery systems. Tape backups of all course content are performed daily, weekly and monthly. Tapes are first stored in a fireproof safe at eCollege's Denver, Colorado facility and then transferred offsite for long-term storage. All three eCollege data centers have uninterruptible power supplies, air conditioning units and diesel generators capable of powering the facilities indefinitely. In addition, eCollege provides redundant, scalable network architecture and also partners with security vendors, thus providing a trustworthy, reliable and secure online environment.

The College's contract with eCollege is up for renewal at the end of 2009-2010. The Academic Senate Joint Distance Education Committee was charged with the task of exploring platform options to determine which would best meet the needs of the faculty, students and institution. After an extensive review and analysis of alternative platforms, which included surveying faculty who teach online and weighing the costs involved in providing equivalent support features, the Academic Senate Joint Distance Education Committee voted unanimously to maintain eCollege as the course management system provider.

Evaluation—IIIC.1, IIIC.1(a)

The College is committed to investing in technology resources to support the effectiveness of the overall student learning environment for both onground and online education. The College's in-house technical expertise and proactive approach to providing services, along with the active engagement of participatory governance groups (e.g., the DPAC Technology Planning Subcommittee and the Academic Senate Joint Information Services, Distance Education, Program Review and Career Technical Education committees), ensure that the College's Mission and Institutional Learning Outcomes are adequately supported by technology. Staffing levels, security concerns and budgetary/technical constraints are factored into new technology initiatives.

For example, the redesign of the College's website is a major undertaking that included gathering input from the entire college community and extensive planning that involved most of the College's participatory governance structures. The improvement to the functionality of the website has not yet been fully realized and the College's ongoing planning process ensures that the improvement of the website services continues. For example, additional modifications to the college website and its capabilities were recommended in the 2008-2009 Program Review annual summary report. Suggestions for improvement included making the search engine more user friendly; developing templates to ensure some level of uniformity; and establishing standards for updating department and faculty websites, thus improving users' ability to navigate. These improvements are currently underway.

The College also recognizes that distributed computing resources are costly to support with respect to staffing and require the efficient use of diverse equipment and software. Recent computing facilities have all been designed with functional sharing, maximized usage and minimum maintenance support needs in mind whenever possible. This approach has resulted in a 14 percent decrease in collegewide lab technical support staff and support for 40 percent more student computers installed across five satellite sites since 2003.

As outlined in the previous section, the College's Information Technology Department team is currently implementing virtual server infrastructure technology to minimize the hardware requirements needed to provide technology resources. Although the anticipated reduction in power and cooling requirements achieved through virtualization and consolidation of server technology has relieved the immediate power capacity deficiency in the main data center, the facility is outdated and unable to support modern server technology and future growth. The College has recently identified a feasible location (near the Media Center) on which to build a new data center, which will allow the various functional areas that comprise the department to be integrated into one central facility. This project will support the data center sustainability/server virtualization project that the Information Technology Department is implementing, as well as improve the reliability and availability of college technology resources.

The College's hardware and software technology decisions result from internal collaboration among technology support areas to determine the best solutions for meeting the College's needs. Due diligence is demonstrated in formal and informal requests for information and requests for proposals from vendors, feasibility studies, and effective pre-acquisition prototyping/testing (especially for large-scale implementations). Research, training and/or trial opportunities are provided whenever possible to technical staff in evaluating products prior to implementing new technology deployment plans. Consultations with other industry customers and higher education institutions are often conducted during the technology decision-making process as well. The College utilizes various methodologies to perform validations to ensure that effective and feasible technology decisions are made.

Technology needs are also identified through a variety of other means, including feedback from support services, government-mandated regulation changes (e.g., through management information system changes at state and federal levels, financial aid updates, and new or modified safety procedures and measures), departmental needs, and system monitoring of usage trends for capacity planning. That these needs are indeed being met is evidenced by user

feedback, system performance monitoring (as measured against performance benchmarks), program review reports (which include evaluating the effective use of technology), and a reduction in the number of requests for user support. These operational practices ensure the College's technology needs are proactively identified to maximize technology resource effectiveness and to plan for future enhancements.

Constantly evolving technologies and increasing technology usage place a severe strain on the limited number of technical support staff. In addition, recruitment of qualified candidates for new positions has been a challenge. For example, a permanent network services position, vacant since July 2003, was only recently filled, despite concerted efforts to locate a suitable candidate with the network skills and experience required for the position. Other positions have proven equally difficult to fill: Between May and July 2009, the College hired three critical Information Technology personnel, all of whom have proven to be valuable additions to the department and the College, but one has since resigned due to a competitive offer from the private sector of the industry.

Plan—IIIC.1, IIIC.1(a)

- The College will implement the plan to design and build the new data center, which will house all of the functional areas that comprise the Information Technology Department.

IIIC.1(b) The institution provides quality training in the effective application of its information technology to students and personnel.

Description—IIIC.1(b)

The mission of the College's technology training offerings is to provide relevant and effective training, documentation and assistance to its employees and students to maximize the efficiency of their use of technology. The College fulfills its responsibilities by providing diverse technology training opportunities as described below.

Technology Training for Faculty, Staff and Administrators

Training and technical support for faculty and staff are provided through a variety of avenues and delivery methods. The faculty/staff computer lab, located in the Media Center, houses approximately thirty computers, two scanners, three printers, two Scantron devices and one multimedia development workstation. Academic Computing staff consists of two full-time specialists who provide learning support with instructional technology applications. Distance learning support in the lab is supported by one full-time staff person, who specializes in multimedia development for online courses. Together, this technology staff group provides faculty and staff with varied support including periodic webinars, face-to-face training, and assistance with the following applications:

- eCollege (the course management system for online and hybrid courses)
- eCourse (course shells that host online course offerings) and eCompanion (course shells that allow online and onground faculty to augment their courses through tools such as

syllabi, calendar, discussion, chat, gradebook, class email, quizzes, and document sharing)

- Network and email account set-up
- Microsoft Office suite of software products
- Multimedia content development
- ParSCORE (electronic grading system)
- Document scanning
- Webpage design (faculty and department)

In addition to the specific in-house training programs described above, a variety of other, less formal training venues exist that contribute to the technological literacy of the College's staff, faculty, and administrators.

- **ElementK:** The College currently holds 500 licenses for access to the ElementK online technology training site.^{xi} This program offers employees a wide range of self-paced technology training courses including office productivity, multimedia, web-design, and programming as well as access to a comprehensive library of online books. In 2008, 57 faculty and staff attended 138 different courses for 170 combined hours. Based on the results of the usage evaluation, the College is exploring different possibilities to best match its needs. The ElementK license was originally a combined information technology skill and general technology course package. However, it is now being converted to an office productivity package with a larger number of licenses to fit broader general end-user technology training needs.
- **All-Access Online Library:** The College provides access to courses that are of a more technical nature than those offered through ElementK.^{xii} These courses are currently attended by Information Technology personnel as well as by Computer Science faculty preparing to teach new or upgraded software applications. The All Access Online Library from Total Training was recently piloted by a Computer Science and Information Systems professor whose experience was so successful that six additional licenses have been purchased.
- **@ONE Project:** College personnel have access to many resources on multimedia and online teaching at little or no cost through the California Community College's @ONE Project.^{xiii} Courses provided through @ONE include one hour "desktop" webinars on topics ranging from effective online teaching practices to using *Twitter* as a teaching technique as well as longer-term online courses, self-paced tutorials and in-person seminars.
- **Safari Technical Library:** The Safari Technical Library houses over 1,300 current technical references and serves as a resource for both students and staff.^{xiv} This

electronic catalog, which reflects current texts on computer applications, is a valuable asset for the Information Technology Department and other college staff.

- **Professional Development Day Training:** The College conducts two institutional flex days, Opening Day in the fall and Institutional Flex Day in the spring. Technology-based workshops are offered, usually geared toward the goals or theme of the particular day, which are determined by the Academic Senate Joint Professional Development Committee. Technology-based workshops are also used to impart important information about new processes or services available to faculty and staff. For example, the Media Center typically offers workshops for faculty on the proper use of equipment installed in smart-enabled classrooms. The Reprographics staff also conducts workshops on how to use Digital StoreFront to submit documents online for copying.
- **Vendor Training:** Software vendors often provide cost-effective training for their products. For example, not only does eCollege provide training to distance education faculty directly but also trains the Technology User Support Specialist, who then trains and provides support for faculty. Another example of training provided directly by the vendor is the Plato software used by the Health Sciences, English, ESL, and Mathematics departments.
- **External Funding Sources for Technology Training:** The College continually seeks external funding sources to support faculty and staff technology training.
 - Faculty and classified staff can apply for professional development funds, approved through the Professional Development Committee, for up to \$500 to subsidize the cost of attending conferences or local training sessions. Recent examples of funded projects and conferences include Adobe Creative Suite 4 training, an Accessible Media Conference, and a workshop on Software Maintenance.
 - Vocational and Technical Education Act funds may be used for technology-related training for faculty in career technical education programs.
 - Limited state categorical funding through Telecommunications and Technology Infrastructure Program is often used for technical staff training to support critical new technology deployment.
- **Training for Online Course Management:** The Distance Education program offers a diverse range of training opportunities for faculty preparing to teach or currently teaching online using eCourse and eCompanion (an online supplement for traditional classes). The College's Technology User Support Specialist provided hands-on workshops and training for approximately 125 faculty members in 2008. This in-house training is particularly important following major version upgrades of the eCollege teaching platform. In addition to training sessions and consultation provided by the User Support Specialist, faculty also have access to:

- webinars, faculty tutorials, course design support, and onground instructional salons provided by eCollege;
 - Professional Development Day workshops designed for distance education faculty;
 - peer-to-peer support and collaboration; and
 - the Distance Education Mentoring Program, a peer-training program that matches experienced online faculty mentors with new online instructors to assist them in developing their courses.
- **Peer-to-Peer Training:** Although a less formal mode of training, peer-to-peer training is perhaps the most widely-used means of technology training at the College. Typically, a power-user designee, trained by the technical development team, trains peers in the trained users' respective areas. For example, members of the Counseling Department have taught one another how to use a variety of online programs, many of which were developed by the college Information Technology Department including:
 - the Online Degree Audit System, which uses electronic records to document student progress towards fulfillment of transfer requirements;
 - the Transcript Evaluation Records system, used to submit requests for evaluation of credit previously earned to be used toward transfer requirements;
 - the Counseling Appointment and Student Appointment Tracking programs, used to record appointments and drop-in student contacts; and
 - the Early Alert Program, which allows instructors to refer students who are struggling in the classroom to counseling and other appropriate student support services.

Peer-to-peer training has also been used successfully by many instructional departments:

- A faculty member in the Modern Languages and Cultures Department has trained peers both within and outside the department to use online collaborative software (i.e., the Wimba Collaboration suite).
- The ESL Department annually devotes one of its departmental flex days to orienting new instructors and supporting continuing instructors in the use of eCompanion and the College's network system and in development and maintenance of faculty homepages.
- The Computer Science and Information Systems Department has found creative and diverse opportunities for technology training. Faculty members gain skills by informally teaching each other as well as observing colleagues' classes. The Computer Science and Information Systems faculty also acquire skills by sharing

various Internet resources (e.g., free online courses at Stanford and Berkeley, Adobe TV, iTunes and YouTube), workshops and technology texts with one another.

Technology Training and Support for Students

The College provides technology training for students not only through its instructional programs (which enable students to gain, for example, office skills, software product-specific skills and programming skills) but also training in how to use the various technological resources employed on campus. Examples of this training and support include the following.

- The Library conducts orientation sessions as part of the Student Success Seminar (Counseling 20), designed to help students access the varied technology-based resources available to them through the Library.
- The Nursing Skills Laboratory is designed to facilitate the skills development of students using state-of-the-art simulation mannequins that enable students to assess a patient's condition and practice the nursing skills learned during the class.
- The Welcome Center conducts online orientations to help students access online registration services and other technological resources designed to facilitate their educational experience at the College.
- The new Solar Photovoltaic program includes training on the technology used to install and maintain solar-based energy generating systems.
- The Photography program trains students using state-of-the-art digital photography equipment.
- The Modern Languages and Cultures Department maintains a language laboratory where students can improve their fluency in the language they are studying.

To be sure, the College also offers a wide range of opportunities for technology training through its credit courses. These classes include basic office skills courses such as keyboarding; courses designed to teach skills for specific software programs such as Microsoft Power Point and Microsoft Outlook; and courses in computer programming, ranging from basic classes such as Introduction to Computer Systems (CS 3) to more advanced programming such as Advanced Java Programming (CS 56) and JavaScript and Dynamic Hyper Text Markup Language (CS 81).

General computer support and informal technology training for students is provided by Academic Computing support personnel in computer labs across the College such as the Cayton Center Associated Students Lab, while computer laboratories located in the Science and Business buildings offer discipline-specific support. Faculty members who use technology in their classes are also a source of student training. For example, in Multiple Skills Preparation: Reading and Writing (ESL 10W), the lowest-level credit course in English as a Second Language, students meet weekly in a computer lab to learn how to access resources on the

College's homepage such as department websites, instructor homepages, eCompanion, and the student self-service portal for admissions and records. Other examples include writing courses such as English Fundamentals (English 21A) and Intermediate English: Essay Writing 1 (ESL 21A), for which students are required to participate in threaded discussions using eCompanion. In Reading and Composition (English 1), instructors teach their students how to locate scholarly sources using the Library's database.

One concern that college faculty have had regarding the use of technology in the classroom is that its use not supersede the need for information literacy. It is important that students develop information competency to critically evaluate information gleaned from various media sources. Librarians work closely with faculty members across the curriculum to assist them in incorporating research assignments into their courses. A librarian reviews every new course presented to the Curriculum Committee and confirms that resources exist to support it. A librarian also reviews new distance education courses and informs faculty of the electronic resources available to support the course in the online environment. The College has also added a new course to the general education curriculum, Reading Media: Acquiring Media Literacy Skills (Communications 2), designed to meet information competency guidelines. In addition, the Library provides diverse technology support to students:

- Library faculty are available to answer general questions regarding technology resources and the effective use of online materials for research.
- One-on-one training for students is offered by the Library's Computer Support Specialist, who assists students with connecting their notebook computers to the College's wireless network.
- The Library's Safari Technology Books Online database, in addition to its regular collection, provides excellent resources for technology training. The Library's 20,000 electronic books, many of which deal with technology, are a resource for distance education students and/or students who are unable to visit the Library in person.
- The Library subscribes to 47 online databases, which provide access to over 10,500 full-text periodicals. In addition, access to 7,300 freely available full-text periodicals is provided, for a total periodical count of 17,800. The electronic books and databases support the curricular needs of both traditional and distance learning students 24/7.

Student training is also available within the various Student Services offices including Counseling, the Welcome Center, Extended Opportunity Programs and Services (EOPS), Financial Aid and Center for Students with Disabilities:

- In the Counseling Department, student workers are trained on the counseling appointment program to make appointments for students. This initial exposure to counseling procedures has spurred several student workers to pursue degrees in counseling and several have returned to the College, first as counseling aides and later as counseling faculty.

- In the Welcome Center, as part of the orientation process, new students are guided through the student self-service system and the College’s website.
- Counseling provides training on a course search feature on the ASSIST website^{xv} to help students satisfy their Intersegmental General Education Transfer Curriculum (IGETC) requirements.
- Financial Aid teaches students how to navigate the Federal Financial Aid for Student Application (FAFSA) website and how to apply for federal and state aid. Student workers are trained on the use of the federal EdExpress and the Regent financial aid software systems.
- The Center for Students with Disabilities High-Tech Training Center provides a wide range of technology support to students with disabilities. The High-Tech Training Center staff teach students how they can use technology to compensate for any educational limitations caused by their disabilities. Assistive technology includes:
 - screen reading software which provides speech output of documents for students with visual impairment and/or learning disabilities;
 - magnification software for students with visual impairments;
 - voice recognition software, which allows students to input information by talking rather than typing;
 - “scan and read” technology designed to scan printed material into a computer, which then reads the material aloud;
 - Braille translation software, which translates computer documents into Braille and a Braille printer, which prints out the translated documents in Braille;
 - an on-screen keyboard for those who can use a mouse rather than type on a keyboard; and
 - alternative input devices (e.g., trackballs, glide pads, joy sticks) which provide computer access for students who cannot use a keyboard or voice input.

The College is also adapting its technological resources and methodologies to accommodate changes in the way students access information. The College has been podcasting lectures and Board of Trustees meetings for several years but is grappling with issues of access and the cost-prohibitive aspect of ensuring that podcasts are accessible to students who are hearing-impaired. The College also uses podcasts and e-blasts and has established a presence on both *Facebook* and *Twitter* to ensure that important messages about enrollment and critical dates and deadlines are communicated to students in the ways and through the devices typically used by students to access information today. Incorporating these new technologies expands the ways in which students access learning and enhances the skills of faculty who are using these new methods to facilitate learning.

Evaluation—IIIC.1(b)

Technology training for staff, faculty and administrators is fairly decentralized. Most technology training across the College is accomplished through utilization of diverse resources and peer-to-peer training. The College has maintained technological currency in spite of limited funding availability and an almost *ad hoc* approach to staff training. Nonetheless, anticipating increased technology demands of both staff and students, the College recognizes that current technology training methods need to be assessed to determine their relative effectiveness in meeting the needs of faculty, staff, and administrators.

Recognizing that technology resources are continually evolving, the College ensures that its usage policy and procedures are frequently updated through DPAC and its Technology Planning Subcommittee and the Academic Senate joint committees including the Information Services and Personnel Policies committees. The College also ensures that online training information is updated regularly.

Student training within the various functional areas (instructional programs and student support services) is effective based on the students' abilities to work within those areas. Instructional programs and student support services have developed student learning outcomes and are in the process of developing assessment processes to determine whether learning outcomes associated with the various programs are being achieved.

Plan—IIIC.1(b)

- The College will formally assess the training needs of its personnel and assess current training models to determine their effectiveness.

IIIC.1(c) The institution systematically plans, acquires, maintains and upgrades or replaces technology infrastructure and equipment to meet institutional needs.

Description—IIIC.1(c)

The College's technical infrastructure is maintained according to well-documented procedures designed to meet the College's growing technology needs as efficiently as possible. Equipment replacement and upgrades are accomplished through the technology planning process via a cyclic schedule, adjusted annually to meet ever-changing technical and budgetary requirements (see Standard IIIC.2 for a detailed description).

Information Technology staff and management devote significant time and attention to implementing plans approved through this cycle. Although the underlying technology infrastructure and the individuals responsible for supporting it are virtually invisible to end-users, they are critical to the smooth operation of the College. Securing a computing environment that protects the vast quantity of sensitive college and user data is equally critical. Before any new technology initiative is evaluated for potential adoption, its impact upon the infrastructure is

assessed, including hardware requirements, software upgrade plans, ongoing maintenance and support, network/system capacity plans, and associated security requirements. Information Technology staff handle the bulk of this planning and stay abreast of current hardware and software trends as well as methods used to determine the quantity and capacity of hardware and software required to meet institutional needs. Vendor meetings and demonstrations, on/off-site training, conferences, and exhibits help provide staff with the latest information. In addition, the Information Technology Department areas collaborate closely with one another and with other technology areas of the College, sharing information and experiences to accurately evaluate the feasibility and cost-effectiveness of new technologies.

The most crucial plans include security management, data/systems backup and recovery, network performance and capacity planning, desktop software management, upgrading and replacement of workstations and peripherals, and technology asset and support services management. The results of the planning cycle are documented in the annual updates to the *Master Plan for Education*.

Security Management

Each Information Technology functional area participates in ongoing re-engineering and enforcement of security policies established to protect the integrity of the College's information resources. To take advantage of functional improvements made available in systems software version upgrades, major security restructuring efforts are routinely planned and implemented. The internal security policies of each Information Technology area are also updated as new hardware and software functions are deployed.

Security falls under several categories:

- **Physical infrastructure security:** Information Technology personnel work to ensure that network equipment, servers and other technology-related devices are located in secure rooms or closets.
- **Directory structure:** The College utilizes a Lightweight Directory Access Protocol compliant directory structure to host domain network directory functions. These services require the regular maintenance of the user and computer accounts database and ensure replication of these data from the main campus to all satellite sites. Security is then enforced via a single sign-on environment.
- **Malware protection:** Information Technology maintains automatic updates to anti-malware software on workstations, servers, and all email systems to protect the College and its correspondents from viruses, Trojan horses, spyware, and other malicious software. In addition, account restrictions, which prevent ordinary users from inadvertently or intentionally installing malicious software on their workstations, are in place. Information Technology staff are available to install any specialized software requested by users.

- **Spam filtering:** The majority of email messages sent to college email addresses are in the form of spam (unsolicited bulk email messages). To combat this, the College utilizes a spam-filtering gateway which diverts suspect messages into individual junk boxes for review and management by recipient users.
- **Password security:** It is the consensus of industry experts that secure passwords are the most effective security mechanism in a networked environment. To this end, all users at the College are required to use passwords that contain a minimum of six characters and include both lowercase and uppercase letters as well as digits, and users are required to change their passwords annually. When changing their password, users are also required to read and acknowledge the Computer Use Policy which serves as a reminder to users not to divulge their passwords to anyone.
- **Network traffic management:** Network routers located at all of the College's sites isolate network traffic according to source, segregating data originating at workstations used by students from those used by faculty and staff, especially for the purpose of securing confidential data transmitted for administrative purposes. In addition, a network security policy prohibits student access to any faculty/staff workstation. A proxy server (a secure centralized computer that manages Internet requests from users) optimizes Internet connectivity for faculty, staff, and students on the main campus and all satellite sites.
- **Network firewall:** A secure firewall system efficiently detects and blocks unauthorized access attempts from the Internet.

Data/Systems Backup and Recovery

The College has extensive provisions in place for the recovery of data in the event of either a major or minor disaster. Data are archived on magnetic tapes and stored and secured in a fire-proof safe located within the Information Technology Department's offices. Daily tape backups are kept in the safe for a period of two weeks and are also stored off-campus. Tapes are collected weekly by an off-site data protection vendor and rotated in and out of storage on a six-month retention schedule so that all areas of Information Technology have access to critical data, stored on tapes, from this period. When the need arises, these tapes can be retrieved in a time frame corresponding to the extent of the data loss and the urgency of the need to recover it.

Network/System Performance and Capacity Planning

The College recognizes that a stable high-speed network and efficient server architecture are the foundations upon which all technology resources depend. To this end, the College assesses and re-evaluates technological deployments annually to ensure that the network infrastructure can continue to meet current and future usage demands.

- **Performance benchmarks:** Information Technology defines clear benchmarks for measuring system performance of all information technology services. These metrics are

developed in consultation with end-users so that Information Technology can deliver system performance that meets or exceeds reasonable user expectations.

- **Internet Connectivity and Performance:** The College's Internet services are provided by the University of Southern California Information Sciences Institute and the Corporation for Education Network Initiatives in California, an organization that designs, implements, and operates the California Research and Education Network, a high-bandwidth, high-capacity Internet network specially designed to meet the unique requirements of educational institutions.
- **Network maintenance and monitoring:** Information Technology staff daily monitor critical system parameters to identify potential problems or resource shortages. They also document system changes and problem resolutions to facilitate follow-up activities and future troubleshooting.
- **Capacity planning:** Improvements in software and hardware, along with the constantly-expanding needs of end-users, push minimum technical requirements for equipment ever higher, requiring that Information Technology re-evaluate system resource capacity planning needs at least annually. In each budget cycle, proposals for the expansion of servers, devices, and other peripherals are developed and submitted to the Technology Planning Subcommittee for possible inclusion in the *Master Plan for Technology*. The proposals are developed using a Total Cost of Ownership model to anticipate both direct and indirect costs of implementation.
- **Integrated Student Information System (ISIS):** The College's Oracle-based enterprise system has recently undergone complete re-engineering to support single sign-on, which enables users to access most college resources with a universal username and password. The current system utilizes the latest Oracle Enterprise Database, Application Server, Internet Directory, and Portal technologies. Information Technology staff are continually devising new ways to utilize expanded functionality as it becomes available.
- **Server virtualization technology:** The Information Technology Department recently deployed a cutting-edge server virtualization infrastructure to run multiple "virtualized" operating systems on a small number of powerful physical host servers, which replaced 64 old servers. These new machines have a significantly smaller footprint and have reduced the energy requirements in the server room, which had outgrown the available uninterruptable power supply capacity. The successful planning and implementation process and other benefits of this project are evaluated in Standard IIIC.1(a). This also resulted in a substantial reduction in space, power and cooling requirements, along with the ability to easily add new virtual servers without the purchase of new hardware. The next stages of this project will bring additional servers with increasingly complex mission-critical functions into the virtual environment and will increase overall performance and service availability to the College's user community.
- **Network expansion:** The College works closely with the City of Santa Monica and the California 4Cnet (a centralized network backbone for California State Universities and

Community Colleges) to ensure that the bandwidth of the College's connection to the Internet expands to meet the growing demands of bandwidth-intensive technologies like video-streaming. The College is also rolling out a wireless network in common areas frequented by students, such as the cafeteria and the new main campus quad as well as satellite sites.

Desktop Software Management

- **Software maintenance:** In most cases, software maintenance agreements are purchased along with all new licenses for collegewide software, providing the College access to the most current versions of software packages at substantial cost savings. Upgrades of specialized titles licensed by individual departments are included in the technology planning process.
- **System management/Workstation Cloning:** The College currently manages more than 2,600 workstations, rendering frequent upgrades of individual workstations impractical. Instead, Information Technology uses Microsoft's System Management Server with Intellimirror Group Policy technology to accomplish centralized software distribution tasks whenever possible. To achieve an effective method of workstation installation, upgrade or repair, "images" of standardized workstation configurations (the complete operating system and software environment) are remotely deployed to individual workstations across the network. This is also helpful in collecting technology asset information and providing diagnosis capabilities to facilitate troubleshooting system problems at remote locations.
- **Software license compliance:** Currently, the College supports approximately 30 titles of collegewide licensed software and hundreds of specialized titles licensed by individual departments. If affordable site-wide licensing is not available, concurrent licensing is purchased based on a maximum number of allowed simultaneous users rather than the number of computers on which the software is installed. This arrangement results in substantial cost savings and enables a wider availability of software titles to the college community. On PC systems, the number of installations and/or simultaneous users for each title is monitored through the System Management Server while another product, KeyServer, is used for license compliance of Macintosh computers.
- **Student technology resource management:** There are numerous computing facilities available to students, many equipped with unique hardware and/or software requirements, each with its own use policies. To manage this diversity of service centers, a combination of off-the-shelf software and software developed in-house is used to effectively administer the computing resources involved.
- **Digital StoreFront:** The College recently launched rolled out the new Digital StoreFront, which allows faculty and staff to electronically submit documents for reproduction from their desktop, and networked Ricoh copiers that allow users to scan documents directly to their desktops.

Upgrading and Replacement of Workstations and Peripherals

The useful lifetime for a typical computer workstation and its associated peripherals primarily depends upon the types of applications installed and its initial system specifications. The needs of college users vary dramatically from those at the high end, where state-of-the-art video-editing and advanced programming techniques are being taught, to those who use their computers only for basic word processing and email. Technology resource planning is an ongoing challenge, balancing maintenance and repair needs, technological obsolescence, and ongoing upgrades while ensuring that college technology needs are met for both students and personnel.

A lifetime of between five and seven years is typical for most workstations. However, instructional workstations in areas using very high-end systems are replaced every two or three years, budgets permitting, to accommodate new software application demands. These high-end systems may still be used for several more years for less sophisticated applications. Thus, computers are refurbished and reassigned to users with more basic needs in a process of “cascading,” which has proven to be effective. Information Technology is careful to maintain standard minimum specifications for workstations used at the College so that cascaded systems do not remain in service too long, thus achieving a balance between the cost savings associated with cascading and the added costs of repairs and other support for outdated systems.

The College also supports a rapidly growing number of smart-enabled classrooms and smart carts containing computers and data projectors, which also need to be upgraded and/or replaced at regular intervals. The smart-enabled classrooms (which include Internet connectivity, a computer, a projector and other peripherals installed on a semi-permanent instructor lectern) have greatly enhanced instructional programs. However, ensuring the long-term maintenance required by this new technology places additional demands on the College.

Technology Assets and Support Services Management

A current and comprehensive inventory of technology assets provides the foundation for technology planning. All major technology assets are categorized and recorded in the College’s warehouse inventory system. As equipment is deployed, it is entered into the College’s technology helpdesk support system. The latter assists in the management of hardware and software deployments as well as user repair requests. It also provides valuable information on currently deployed assets critical to the technology planning process.

Evaluation—IIIC.1(c)

Security Management

The College has adequate security measures in place to protect against unauthorized access to its servers, networking hardware, and other devices. For example, the current firewall effectively detects and blocks unauthorized access attempts from the Internet. The implementation of the single sign-on environment provided by the Lightweight Directory Access Protocol compliant directory structure has been highly successful and is constantly being expanded. In early 2009, new functionality which allows faculty and staff to access class rosters via their standard

username and password was added to the College's enterprise system. While progress has been made, there are still some individual department database servers that need to be migrated before the College has a truly universal single sign-on environment.

Overall, users are satisfied with the McAfee antivirus solution implemented at the College. However, automatic updating of the virus signature databases during the user login process sometimes results in a significant delay before a workstation becomes usable. The Information Technology Department is researching a solution to this problem.

By early 2006, an increasing number of computers were being paralyzed and parasitized by spyware and adware, which resulted in a marked increase in service call requests to remove malicious software. Subsequently, two primary defensive measures were implemented by Information Technology:

- Malware management tools were purchased from McAfee in March of 2006 to reduce malware attacks. The tools consist of a hardware device that intercepts suspicious Internet traffic, software that protects the College on an overall network-wide basis, along with software that resides on each individual workstation. Unfortunately, for technical reasons, the desktop malware solution has yet to be implemented. The Information Technology Department is researching a solution to this problem.
- Previously, college users who had undertaken training to become "power users" were assigned permissions that authorized them to install hardware and software products on their computers. However, that same authorization (and the lack of a viable desktop malware solution) made the same users vulnerable to attacks by malware. To counteract this vulnerability, "power user" privileges were eventually revoked from almost all college users.

While both of these steps have resulted in a significant drop in spyware and adware infections, Information Technology staff are now required to install nearly all new hardware (even printers) and software (including updates) on workstations. Once a viable desktop malware solution is identified, the College will investigate ways of relaxing permissions so that users will be able to install authorized hardware and software while at the same time being provided with adequate protection against malware. This will have the added benefit of freeing up valuable Information Technology resources.

By Fall 2004, the College was contending with a growing burden of spam email that increasingly impacted employee productivity. The Network Services Department extensively researched and implemented a SonicWall spam filtering system to intercept undesirable email. Typically, the system checks an average of 64 million emails every year, filtering out roughly 60 million messages that are considered spurious. (More than 93 percent of all email sent to the College's email addresses is unsolicited.) One disadvantage of the spam solution currently in place is that the spam mailbox is not integrated into the email client so that users are required to transfer to a separate website to release desired email. If an equally effective solution that includes this functionality is encountered in the future, it will be considered.

The current password security protocols, which prevent hackers from obtaining passwords via brute force (dictionary attack) methods, have been largely effective; however, following the successful “phishing” attack during Summer 2009, users are being re-educated about the importance of keeping passwords secure by not writing them down or divulging them through unsolicited email.

In response to a series of recent incidents related to student password security, the College has changed its password management protocols for students. Along with providing them unified access to various technology assets, students may conveniently change or recover their own passwords.

The College is satisfied overall with its current network management implementation. However, although prohibited by the College Computer Use Policy,^{xvi} it is still possible for unauthorized computers (e.g., personal laptops) to be connected via an Ethernet cable to the college network and to access the Internet. Although they are unable to connect to college servers, these devices pose a significant threat, and the College is formulating measures to address this problem.

Data/Systems Backup and Recovery

The College has developed and implemented procedures to ensure that data backups are made in a timely and secure manner and is satisfied with the data/systems backup system currently in place. Indeed, backup procedures have remained essentially the same since 2004 with the exception of equipment, number of servers being backed up, and amount of data stored.

In April 2007, the Information Technology Department expanded and enhanced the disk and tape storage capacity and an updated backup tape device. The new centralized storage unit increased disk capacity from 1.5 terabytes to 30 terabytes, opening numerous possibilities for offering expanded services to the college community.

Currently backup tapes are stored securely at an offsite location. However, in addition to basic backup protection, the College is also developing an emergency continuity plan, a term used by industry to define the documents, instructions, and procedures needed to ensure continued access to mission-critical technology resources in the event of a catastrophic failure, such as the total loss of the main data center. This would be achieved by arranging for a complete image of all necessary network resources to be immediately available at a remote data center should the need arise.

Network/System Performance and Capacity Planning

Overall, the College ensures that performance and capacity of the network are monitored and that system performance keeps pace with growing user requirements. Network availability is rarely interrupted and routine upgrades are performed at times of the year and times of the day which impact the fewest number of network users. Effective procedures are also in place to regularly re-evaluate system resource capacity needs.

The College's enterprise system, ISIS, is functioning effectively and new software versions that increase performance and reliability along with enhanced functionality are implemented when available. Overall, offering self-service to students, faculty, and staff has eliminated much of the need to enter data manually. Indeed, the ability to share information among administrative staff, faculty, and counselors directly supports the College's mission of student success.

Similarly, as technology demands have increased, the demand for bandwidth has also grown and the College has implemented continual improvements to meet that growing demand. Starting out in the 1990s with a single T1 line, the College soon expanded to two T1 lines, which had a total throughput of three megabits per second. Soon thereafter funding from the Telecommunication and Technology Infrastructure Program allowed for the addition of a third T1 line. Several years ago, the College's demand outgrew the 4.5 megabit bandwidth. One line was expanded into two separate lines, inbound and outbound. The inbound line has a throughput of 30 megabits per second and handles Internet data transfers initiated from outside of the college firewall while the outbound line handles data transfers initiated from within the college firewall and offers a 45 megabit capacity. In Fall 2008, a one-gigabit connection that works in conjunction with the existing lines in a load-balanced relationship was installed. Before the gigabit line was installed, bandwidth was often measured at 98 percent of capacity. As a result of this new installation, utilization has now maintained at around 25 percent.

Demand for wireless connectivity has also exploded with the proliferation of laptop and netbook computers. The College initially planned to provide secure and reliable wireless access as part of the deployment of the City of Santa Monica's citywide public WiFi network. However, it soon became apparent that the City's plan could not accommodate the demand of so many college users.

Consequently, the College implemented an independent plan to deploy wireless access directly to strategic points throughout the College. The initial deployment targeted areas where students tend to congregate in non-classroom settings, including the Library, Cayton Center and Clock Tower area. Based on the success of these initial deployments, wireless access has since been expanded to cover areas in the Business building, Drescher Hall, the Science building, Humanities and Social Science buildings (North and South), the Letters and Science building, the Main Stage, the cafeteria, the Performing Arts Center (formerly known as the Madison Campus), the Bundy site, the Academy of Entertainment and Technology, and the main campus quad area. In addition, Network Services will continue to coordinate with Facilities Planning to ensure that wireless access is included in all new construction projects.

As wireless network coverage continues to expand, so do the challenges of administration and support. To address these challenges, the College has purchased and is now migrating to new wireless controllers that will provide easier administration, rapid and consistent deployment of additional access points, and a more robust user experience. Once this migration has been completed, further deployment of access points will resume and additional coverage will be extended to other areas such as lecture halls and conference rooms, with the ultimate goal of providing ubiquitous access across all college sites.

Desktop Software Management

The College has employed an effective method for maintaining and upgrading collegewide software, mainly relying on categorical funding from the state such as the Instructional Equipment Block Grant to fund these upgrades; however, the financial resources generally used to maintain and upgrade software licenses continue to shrink. The College will have to develop a long-range plan for supporting software maintenance and upgrades without, or at best with greatly reduced, state funds.

The Microsoft System Management Server technology used to centrally distribute software across the network and monitor software license compliance is efficient and effective and the process in place to install operating systems and software environments from standardized images across the network is satisfactory. Plans are being developed to create a single, centralized image repository on a file server that will keep versions of each image for change management, documentation, and other administration purposes.

Upgrading and Replacement of Workstations and Peripherals

The system of cascading, which reassigns workstations that are no longer useful for high-end users to other users whose needs are less demanding, continues to be implemented although the process is not as effective as it once was due to the demands of increasingly complex software. And while the practice of cascading has maximized the use of equipment and results in significant cost savings, workstations must be consistently upgraded on a standardized basis so that the number of older machines simultaneously in need of upgrading is minimized. However, unpredictable levels of technology funding from year to year render this problematic.

In times of fiscal constraint, the College is able to extend the useful lives of workstations by several years by the use of random access memory and hard drive upgrades, an inexpensive and effective way of boosting the performance of older machines. In addition, the College is planning to pilot a thin client program that will use inexpensive diskless consoles that run software directly off of a network server. If successful, this approach promises to revolutionize the distribution of information across the College at a fraction of the cost of current stand-alone workstations.

The maintenance of hardware and software is an area of growing concern at the College. The College has designed its new buildings to incorporate technology. As these buildings have become operational, maintaining the burgeoning investments in technology has become a formidable task. The College prides itself on the breadth and depth of the technological resources afforded its students and personnel, but at the same time, these resources place an enormous burden on the College's limited and shrinking financial resources.

Plan—IIIC.1(c)

- The College will evaluate and implement an effective network solution to prevent unauthorized computers from accessing the College's network.

- The College will evaluate and implement a feasible security solution to more efficiently support user software and hardware installation needs.
- The College will evaluate and implement a more effective desktop anti-malware solution.
- The College will implement the emergency continuity plan once it is finalized.
- The College will evaluate the plan for upgrading/replacing workstations and other technology and evaluate alternatives to the current plan.

IIIC.1(d) The distribution and utilization of technology resources support the development, maintenance and enhancement of its programs and services.

Description—IIIC.1(d)

The College is committed to equitable distribution of technology resources to meet the needs of academic and administrative departments and all community members: students, faculty, and staff, including individuals with disabilities.

This distribution of resources is overseen by the DPAC Technology Planning Subcommittee^{xvii} which in turn receives recommendations from the Academic Senate Joint Information Services Committee^{xviii} after it reviews and evaluates academic departmental requests. The Information Services Committee also coordinates its resource allocation plans with the Career Technical Education Committee, which is responsible for allocating Vocational and Technical Education Act funds to career technical education programs, many of which have overlapping requests in the area of information technology. Coordination among the Information Services and Career Technical Education committees helps ensure that the equipment and software requested are compatible with the College's infrastructure. These funding recommendations are then incorporated into the annual updates to the *Master Plan for Technology*.^{xix}

Funding for technology is provided through a combination of the College's general and categorical resources. The College's general funds provide Information Technology staff compensation, supplies, maintenance contracts and occasional equipment purchases. Most equipment and software are purchased with various categorical funds, in accordance with the guidelines for the appropriate use of each funding source. For a complete description of this process and a list of major technology initiatives, see Standard IIIC.2.

Official guidelines for appropriate use of technology resources are provided through the College's Administrative Regulations (ARs). The College developed AR 2515, Computer and Network Use Policy, for college employees, and AR 4435, Responsible Use of Computer Resources Policy for students.^{xx,xxi} In addition, the faculty contract includes a computer use policy (Article 27, Computer and Network) which addresses the use of college computing facilities which are under the direction of the College.^{xxii} These guidelines are intended to maintain the security of the network concurrently with users' privacy rights and their reasonable access to available resources. The Technology Planning Subcommittee is currently revising a

draft Information Security Policy as a guideline to promote awareness of information privacy issues. The formal establishment of policies to guide users on effective use of technology resources is essential for a secured and efficient resource sharing environment.^{xxiii}

The College is committed to fulfilling its legal and ethical obligation to provide equal access to electronic and information technology to all students and employees, including those with disabilities. Consistent with this commitment, the College integrates into its annual updates to the *Master Plan for Technology* universal access goals based upon current accessibility standards (the 1998 revision to Section 508 of the 1973 Rehabilitation Act and California Assembly Bill 105) for both hardware and software, including web-based information. Balancing the importance of compliance with accessibility standards with the fiscal constraints that preclude hiring a full-time coordinator, the Information Services Committee formed a subcommittee to address accessibility issues, which resulted in the establishment of administrative regulations for enforcing and evaluating compliance along with accessibility guidelines for college computerized classrooms and labs.^{xxiv, xxv}

The College's planning process has resulted in widespread use of technology across all disciplines, student services areas and geographic locations. Computers are located in all departmental offices, most faculty and staff offices, all administrative offices, more than fifty student computer labs and classrooms, a faculty/staff computer lab and all smart-enabled classrooms.^{xxvi} The College provides external 24/7 support for distance education users through its course management system provider, eCollege, and in-house support for traditional, onground courses using an online tool for supplementary materials, eCompanion. Distance education enrollment services are fully integrated into the system as part of the College's commitment to ensure equitable access to technology for online learners.

The College continues to plan for growth while maintaining a reliable and secure infrastructure. A recent expansion in technology resources has included the provisioning of a tenfold increase in Internet bandwidth and the utilization of a new centralized data storage area network.

A student self-service system has been implemented to provide a secure class enrollment environment. Contracts with well-established online payment processing partners ensure that transactions are secure and meet industry standards while offsite storage of backups ensures the integrity of critical data.^{xxvii, xxviii} Additionally, the College's online portal to the enterprise system was deployed giving faculty and staff secure access to relevant institutional information. College computers are configured to ensure stability and security via automated patching and anti-virus protection updates.

Evaluation—IIIC.1(d)

The College's commitment to the effective use of technology, along with its comprehensive centralized planning process, ensures its technology resources are equitably distributed to all users. The technology implementation team works closely with users to ensure that technology resources keep pace with the College's current and future needs.

Student learning is supported through the equitable distribution of technology resources ensured by the work of the Technology Planning Subcommittee, a process enhanced by its consideration of recommendations from the Academic Senate Joint Information Services Committee. The funding process ensures that representatives from the college community have input affecting the outcome of this distribution.

This process has led to improvements in all aspects of technology services and ensures the distribution of resources focuses on meeting the needs at the district, college, and program/department level. At the district level, the process has produced a network computer use information security policy and procedure. At the college level, the *Master Plan for Technology* defines the College's technology infrastructure, as well as its server, workstation, and classroom technology hardware/software upgrade and replacement plan. At the program/departmental level, the process has recognized the need for specialized technology requirements such as Adobe software, assistive technology, and other instructionally-based teaching/learning tools.

The technology planning process ensures the use of available funding is optimized so that the distribution of equipment and software is equitable (see Standard IIIC.2 for more details). The use of technology to remotely install software updates on workstations further allows the College to maintain computer currency and security.

The current contract with the College's course management provider, eCollege, ensures the availability of a robust course management system for the next year. The Academic Senate Joint Distance Education Committee recently evaluated the possibility of switching platforms but after surveying faculty who teach online, exploring alternative options, and weighing the cost of possibly switching platforms, the committee voted unanimously to stay with eCollege.

A key component of technology planning is the recognition and inclusion of the total cost of ownership of new technologies in all stages of planning and implementation. To accurately project the impact of additional or new technology, planning must address, over and above the initial cost of any equipment or software, the costs associated with changes to physical space, additional network infrastructure, expansion of software license and additional staff to support new or additional technology along with the related maintenance and repair.

Plan—IIIC.1(d)

- The College will develop a model for determining the total cost of ownership when acquiring new, additional technology to ensure that adequate budget is available for maintenance and replacement.

IIIC.2 Technology planning is integrated with institutional planning. The institution systematically assesses the effective use of technology resources and uses the results of evaluation as the basis for improvement.

Description—IIIC.2

The processes by which technology services are developed—from the initial idea to the deployment of the end solution—are designed to ensure that technology resources are distributed systematically and equitably among members of the college community and that technical solutions effectively meet the needs of users. Before any new technology services are implemented, they are proposed and evaluated via the technology planning process.

The College’s technology planning, evaluation and reporting process has improved as a result of the reorganization of institutional planning at the College, implemented after the last accreditation visit. Technology resource planning is currently integrated into the College’s central planning process in which DPAC and the DPAC Technology Planning Subcommittee review and recommend changes to the *Master Plan for Technology*.

The DPAC Technology Planning Subcommittee:

- makes recommendations on technology planning matters to DPAC;
- develops the annual update to the *Master Plan for Technology* for submission to DPAC;
- reviews technology planning issues with respect to the College’s budget, human resources, facilities, student services, and instruction programs;
- focuses on technology integration and communication with other college planning areas;
- recommends collegewide technology solutions and provides ongoing support for the maintenance of the *Master Plan for Technology*; and

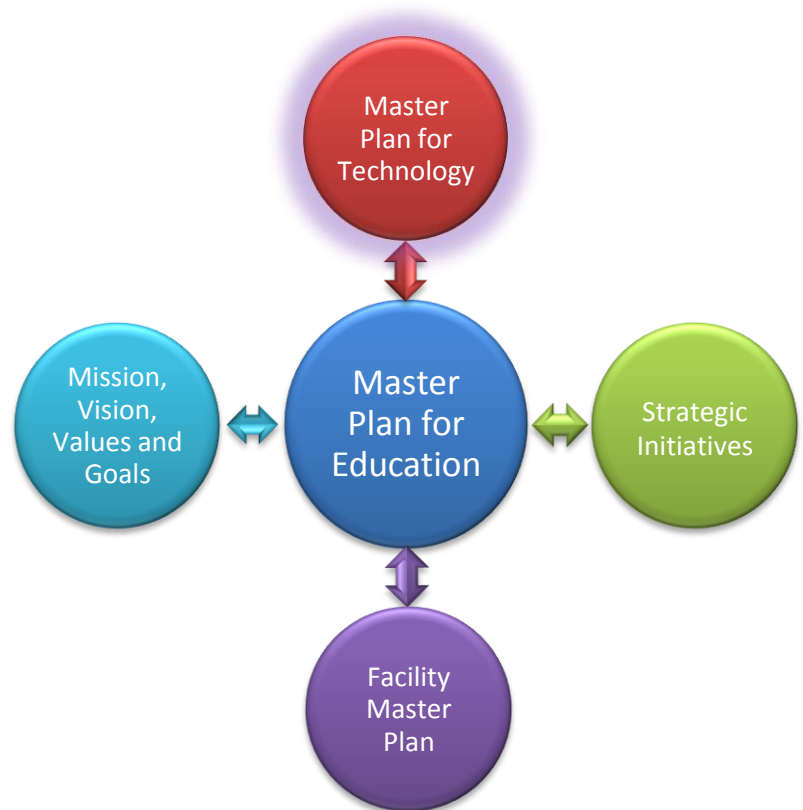


Figure IIIC-4: The Intersection of Santa Monica College’s Planning Documents

- supports institutional goals by ensuring its objectives contribute to the achievement of the College's Institutional Learning Outcomes.

The *Master Plan for Technology* annual updates continue to serve as the document in which technology objectives are articulated, reviewed, implemented, and measured. In coordination with the annual updates to the *Master Plan for Education* and the collegewide planning process, there is a deliberate and substantive dialogue within the college community about methods to most effectively support student learning through improvements to teaching and administrative practices. Integrating technology into this planning process not only ensures decisions and objectives meet various institutional needs but also provides opportunities for reviewing other resource areas since the implementation of technology typically requires physical, human and/or financial support. The centralized planning approach therefore provides opportunities for collaboration and the integration of all applicable resource needs.

The annual technology planning process is initiated prior to each fall semester and continues on through the year. Before the semester begins, members of the college community, including administrators, faculty, classified staff, and student representatives, are consulted to identify potential members for the Academic Senate Joint Information Services Committee and the DPAC Technology Planning Subcommittee. The Information Technology Department, the Media Center, the Library, and other technology service support departments are also represented in these planning committees. The Information Services Committee focuses on academic technology initiatives while the Technology Planning Subcommittee evaluates proposals submitted by the Information Services Committee, by members of the college community, or through other collegewide technology-related initiatives. DPAC ultimately evaluates and integrates technology initiatives with other college resources, including those from Human Resources, Facilities, and Fiscal Services.

In the fall semester, these planning committees begin evaluating the status of all technology objectives that were initiated during the previous academic year, and they make recommendations for future needs based on implementation experiences and results. A tracking mechanism records the status of annual technology procurements. Also, an annual technology objective document is used to evaluate the implementation status of every technology objective. The feedback from all committee members is then formulated into agenda items for discussion and evaluation so that future technology implementation initiatives can be initiated. At the same time, all collegewide software renewals, equipment replacement, and infrastructure expansion needs are identified and summarized for final evaluation during the spring semester.

Program review is integrated with this technology planning process. During the self-study process, each department is required to address how technology is used to support its program outcomes and identify outstanding or future needs. The Academic Senate Joint Program Review Committee aggregates the departmental technology needs of the various programs in its annual summary, which is forwarded to DPAC for consideration.

At the end of the fall semester, a technology request solicitation letter is sent to department chairs or technology coordinators asking them to identify and request resources for fulfillment of

their technology needs. Announcements are also sent to all full-time faculty members allowing them to request workstation upgrades.

By mid-spring, the evaluation of annual objectives in the *Technology Master Plan* is merged with the departmental and individual technology requests and identified collegewide technology needs. Since funding resources are usually insufficient to fulfill all requests, the planning committees must evaluate and prioritize requests to develop technology planning objectives for the following year. The guidelines used for prioritization are to:

- renew critical collegewide software licenses required for basic college operations;
- evaluate status of student workstations and make recommendations for needed upgrades or replacements;
- evaluate requirements for upgrading and maintaining existing smart-enabled classrooms, including replacement projectors and bulbs;
- ensure that critical assistive technology needs are met, as required by law;
- evaluate mission-critical projects required to maintain the college technology infrastructure (e.g., software/hardware used for security and power protection);
- evaluate and recommend new network services technologies that have the potential to improve the effective use of technology collegewide (e.g., expansion of wireless networks and improved server technology);
- evaluate critical departmental software and hardware requests necessary for the delivery of instruction;
- evaluate faculty computer replacement requests to ensure workstations meet current curriculum requirements;
- reserve funding for the purchase of new computers for new full-time faculty;
- evaluate department technology requests for new hardware and software in support of future needs; and
- evaluate other *ad hoc* technology requests.

The Information Services Committee works in conjunction with other major technology initiatives and funding sources such as the Vocational and Technical Education Act (Title IIIC, Perkins) funding, emerging career technical education programs, the Basic Skills Initiative, and other private technology grants to identify additional funding support.

Once approved, a typical technical solution proceeds in several stages: meeting with end-users to determine their needs and establish the scope of the project; soliciting vendor presentations and

proposals; evaluating outsourced versus in-house options; and, if an in-house solution is selected, collaborating among technical staff and end-users to ensure the final product will match users' expectations. When outsourcing, the process expands to include collaboration among the College's technical staff, vendor representatives and end-users to determine how best to integrate vendor-supplied solutions with existing college technology. Either way, users and technical experts engage in detailed discussions throughout the development and implementation process to ensure that both parties understand needs and requirements and that the final product is technically sound, sustainable, and effective.

The College's procurement process ensures that vendor-supplied technologies are appropriate for the needs of users and are compatible yet not redundant with existing systems. Requests for all technology equipment purchases must be approved by Information Technology management prior to being processed by Purchasing. This system ensures that users consult with Information Technology before selecting any commercial products. Should conflicts arise, Information Technology works with the end-user and the manufacturer of the proposed product to identify, clarify, and resolve any potential problems. The Information Technology Department also verifies the feasibility and effectiveness of potential technologies with other colleges and organizations that have deployed them. Whenever possible, in-house Information Technology staff members are trained to ensure implementation is successful.

Evaluation—IIIC-2

To ensure optimal use of limited funding sources, the technology planning committees work closely with academic departments, technology support departments and technology vendors to ensure that needs are met. For example, in many cases, technology objectives can be met by workstation cascading (outlined in Standard IIIC.1(c)), partial workstation upgrades (e.g., addition of memory), and concurrent software licensing. While resource-sharing often achieves a higher return of investment and cost-effectiveness, some of these alternative solutions (e.g., computer cascades/memory upgrades) only defer the eventual need to purchase new equipment and are partially offset by an increase in internal maintenance and support requirements. Alternative models of equipment replacement plans are constantly evaluated to achieve improvement in the overall cost performance.

The result of these various efforts forms the basis for technology funding recommendations and implementation project plans which are consolidated by the Technology Planning Subcommittee into a final planning document, which is then submitted to DPAC. The updates to the *Master Plan for Technology* and objectives are finally evaluated and integrated by DPAC with other resource planning initiatives to ensure the College's resources are allocated and integrated without redundancy or conflict.

While the formal technology planning process ensures an equitable distribution of technology resources, technology procurement and implementation make certain that technical solutions are efficient and effective in meeting the pedagogical, operational, and administrative needs of users. These processes are highly interactive, with technical staff, users, and technology vendors sharing their expertise with one other.

The recommendations accepted by DPAC are ultimately forwarded to the Superintendent/President and the Board of Trustees for final review and approval. This process ensures that the technology needs of the college community are met, thus contributing to institutional effectiveness.

Plan—III.C.2

- The College will evaluate the plan for upgrading/replacing workstations and other technology and evaluate alternatives to the current plan.

Selected Standard IIIC References

- ⁱ Academic Senate Joint Information Services Committee Technology Funding Criteria: http://www.smc.edu/Projects/37/Information_Services/Documents/ISC_funding_criteria.pdf
- ⁱⁱ Office of Institutional Research website: <http://www.smc.edu/apps/comm.asp?Q=187>
- ⁱⁱⁱ iTunes U: <http://www.smc.edu/itunes/>
- ^{iv} Wireless Access Support webpage: <http://www.smc.edu/apps/pub.asp?Q=1431&B=2>
- ^v CNN Video on Nursing Shortage featuring the Santa Monica College Nursing Skills Lab: <http://www.smc.edu/missedinformation/youtube/default.htm> (scroll down to see the nursing story)
- ^{vi} Photography Department Facilities Description: <http://www.smc.edu/photo/facilities.html>
- ^{vii} Academic Senate Joint Information Services Committee Technology Funding Criteria: http://www.smc.edu/Projects/37/Information_Services/Documents/ISC_funding_criteria.pdf
- ^{viii} *Master Plan for Technology* <http://www.smc.edu/apps/Pub.asp?Q=1097>
- ^{ix} Recommended Technology Products: <http://www.smc.edu/apps/pubs.asp?Q=2&T=Recommended+IT+Products&P=265>
- ^x Academic Senate Joint Distance Education Committee website, Best Practices links: <http://www.smc.edu/apps/pub.asp?Q=664&B=1>
- ^{xi} ElementK online technology training site: www.elementk.com
- ^{xii} All-Access Online Library: www.totaltraining.com
- ^{xiii} California Community College's @ONE Project: www.cccone.org
- ^{xiv} Safari Technical Library: <http://proquest.safaribooksonline.com/>
- ^{xv} Project ASSIST website: www.assist.org
- ^{xvi} College Computer Use Policy: <http://www.smc.edu/apps/pub.asp?Q=740#policy>
- ^{xvii} DPAC Technology Planning Subcommittee, see <http://www.smc.edu/apps/Pub.asp?Q=1110>
- ^{xviii} Academic Senate Joint Information Services Committee: <http://www.smc.edu/apps/pub.asp?Q=849>
- ^{xix} *Master Plan for Technology*: <http://www.smc.edu/apps/Pub.asp?Q=1097>
- ^{xx} *Computer and Network Use Policy* under Administrative Regulation 2515: <http://www.smc.edu/projects/31/AR2000.pdf>

^{xxi} *Responsible Use of Computer Resources Policy* under Administrative Regulation 4435:
<http://www.smc.edu/projects/31/AR4000.pdf>

^{xxii} Faculty Contract, Article 27, Computer and Network: <http://www.smcfa.org/index.php/contract/13-contract-2007-2010/87-article-27--computer-and-network>

^{xxiii} Draft Information Security Policy:
http://www.smc.edu/policies/PlanningCommittees/DistrictPlanningAndAdvisoryCouncil/minutes_agendas/2006/2006-02-08-Minutes.pdf

^{xxiv} Administrative Regulations for enforcing and evaluating compliance:
http://www.smc.edu/policies/PlanningCommittees/DistrictPlanningAndAdvisoryCouncil/minutes_agendas/2006/2006-02-08-Minutes.pdf

^{xxv} Accessibility guidelines for computerized classrooms and labs:
http://www.smc.edu/projects/37/Information_Services/2007-2008/Documents/Accessible_Lab_Standards.pdf

^{xxvi} Academic Computing Labs: <http://www.smc.edu/acadcomp/labs/default.htm>

^{xxvii} Online Payment Vendor, Tier Electronic Payment Solutions: <http://www.tier.com/oursolutions.cfm>

^{xxviii} Records Management Vendor, Iron Mountain, Inc: <http://www.ironmountain.com/records/rms/>

