TECHNOLOGY MASTER PLAN 2016

PALOMAR COMMUNITY COLLEGE DISTRICT

Bonnie Ann Dowd, Ed. D., Assistant Superintendent/Vice President, Finance & Administrative Services

Accepted by FASPC on 11/04/10
Accepted by SPC on 11/16/10

TABLE OF CONTENTS

Accepted by FASPC on 11/04/10
Accepted by SPC on 11/16/10

I. EXECUTIVE SUMMARY

Strategic Plan 2013 was adopted by the Palomar Community College District Governing Board on February 16, 2010. Strategic Plan 2013 Goal 6 states: *Optimize the technological environment to provide effective programs and services throughout the district. Objective 6: Update Technology Master Plan 2005 to address:*

- *Access*
- *Training*
- *Evaluation*
- *Disaster preparedness and data security*
- *Ongoing technology, maintenance and replacement*

The Palomar Community College District Technology Master Plan 2016 has five major sections: the Executive Summary, Background, Technology Systems & Services, Technology Planning Process, and Recommended Initiatives.

The Background section contains information relevant to institutional and technology planning at Palomar College. The Systems & Services section describes the technology systems, support staff and services currently at the college to meet the needs of student learning, instruction, and District-wide communications. The Technology Planning Process section describes how the technology information was gathered, the plan's definition of technology, the areas of technology to be addressed, and the outcomes of the data gathered through the process.

The Recommended Initiatives section describes the directives, projects, and activities that the District needs to undertake to optimize the technological environment to provide effective programs and services throughout the district. The most beneficial among them being the creation of a small evaluation body that can comment authoritatively on new software and hardware proposed under the District's newly adopted Integrated Planning, Evaluation, and Resource Allocation Decision-Making Model (IPM). The initiatives have been categorized by type and grouped by implementation timeframes.

- Tier 1 Initiative: offers highly desirable benefits, can use existing resources, no additional funding required, addresses a user expressed need, or is a legal, safety or security requirement. Tied to Strategic Plan 2013 and departmental Program Review & Planning, the completion or implementation timeframe is estimated to be 1-3 years.
- Tier 2 Initiative: similar to Tier 1, but requires additional funding, assessment and planning. Tied to Master Plans and are envisioned to be completed or implemented in 4-6 years.
- Tier 3 Initiative: requires further study to determine feasibility and cost benefit.

Accepted by FASPC on 11/04/10
Accepted by SPC on 11/16/10

Since three fiscal years are involved in the Annual Planning, Resource Allocation, and Evaluation timeline process, the District's Strategic Planning Council (SPC) is expected to use this plan to ensure the Tier 1 Technology Initiatives are aligned with Strategic Plan 2013. The Tier 2 and 3 Initiatives are provided as a guide for identification of future District-wide priorities and objectives related to technology.

Accepted by FASPC on 11/04/10
Accepted by SPC on 11/16/10

II. BACKGROUND

Introduction

The primary mission of the California Community Colleges is "to offer academic and vocational education at the lower division level for both recent high school graduates and those returning to school. Another primary mission is to advance California's economic growth and global competitiveness through education, training, and services that contribute to continuous workforce improvement." (Chancellor's website: http://www.cccco.edu) The Board of Governors provides the leadership and direction in the continuing development of the California Community Colleges to fulfill these primary system-wide missions. Through its master planning and strategic planning processes, each district establishes its own vision, mission, goals and objectives in order to fulfill the promise of opportunity for students residing in its district as defined under California's Master Plan for Higher Education.

Planning is a process whereby an institution determines its long-term goals and objectives and then identifies the best approach to achieving those objectives. It is a continual process where performance is monitored against identified goals and objectives and activities are adjusted to accomplish the desired results. Increasing enrollments and decreasing funding have raised the demand and need for planning in higher education, especially with regard to technology, which is constantly changing and requires significant funding commitments. Therefore, a technology plan is vital to the effective operation of the district and attainment of its long-term goals and objectives.

Planning at Palomar

The longest-range level of planning is the District's Master Plan. Master Plan 2022 incorporates the Educational Master Plan and the Facilities Master Plan. The mid-range level of planning is the Strategic Plan, a three-year plan. The current Strategic Plan, SP2013, articulates the college's vision, mission, and values. It includes the college's goals along with specific and measurable objectives identified to accomplish these goals within this three-year planning period. The shortest-range level of planning is the Program Review and Planning (PR&P) process. This is a two-year process in which academic departments and college units evaluate their effectiveness based upon integration with the District Master and Strategic Plans, and plan for improvement. The departments and units document the results of this process and establish programmatic priorities through the appropriate divisional and district planning councils.

In 2009, the college reviewed these three planning structures and cycles and in fall 2009 adopted a revised planning structure, the Integrated Planning Model (IPM) that fully integrates the Master and Strategic Plans, and the PR&P process. This planning structure will guide the annual resource allocation process, which will address both institutional level priorities identified in the Strategic Plan and the department/unit level priorities identified in the PR&P process.

Master Plan 2022 (12 years)

In November 2001, the Educational and Facilities Master Plan Task Force was approved by the President's Advisory Council. The task force was charged with developing a comprehensive District-wide educational programs and services plan tied to the 20-year Facilities Master Plan. All campus constituency groups were represented on the task force. In addition, interested community members and at least one employee of Spencer/Hoskins Associates (a consulting group hired to assist with the development of the master plan) attended the meetings on a regular basis. In August 2003, the Palomar Community College District Master Plan 2022 was published and is available on the District's website: http://www.palomar.edu/masterplan/.

The Palomar Community College District Master Plan 2022 was developed to assist the District in planning for the growth and change of its educational programs and facilities needs until the year 2022. The document was written primarily for those concerned with the interrelationship between the educational process and the facilities needed to support the educational process; however it is also an important component in the technology master planning process. Demolition of existing facilities and new building construction have impacted the District's telecommunications infrastructure and the network systems of existing buildings have been upgraded to keep them current with the new telecommunication technologies planned for installation in the new buildings.

Strategic Planning (3 years)

In the fall of 2001, the Palomar Community College District initiated a strategic planning process to establish a vision, mission statement, goals and objectives, and to set priorities for action in serving the District. The strategic planning process included a task force from all constituency groups, an internal and external scan, and a campus-wide survey that identified five primary goals:

- Student Success
- Teaching and Learning Excellence
- Organizational and Professional Development
- Facilities Improvement
- Resource Management

The outcome, Strategic Plan 2005, was published in 2002 and established Palomar's current governance structure, which defines specific councils that report directly to an overall Strategic Planning Council (SPC). Palomar College established its Vision: *Learning for Success* as part of its Strategic Plan 2005 and that vision continues to guide the planning process.

As Strategic Plan 2005 came to a close, Palomar College updated its objectives and in November 2005, Strategic Plan 2009 was published. During the development of Strategic Plan 2009, the planning assumption that "*community colleges must increase their efforts to secure alternative funding sources"*, in conjunction with the facilities

Accepted by FASPC on 11/04/10
Accepted by SPC on 11/16/10

improvement objective to "*identify and provide appropriate levels of funding to support and ensure implementation of the facilities plan*" initiated thoughts of a bond measure. In November 2006 the voters of the Palomar Community College District showed their commitment to the college by approving the largest bond measure ever passed by a single college district in the history of the California Community College System. The bond measure, Proposition M, was based upon the District's Master Plan 2022.

Strategic Plan 2005 and 2009 documents are available on the District's website: http://www.palomar.edu/strategicplanning/SP2009andsp.htm

In the spring of 2009, SPC updated its strategic goals and objectives; Strategic Plan 2013 was adopted by the Governing Board at the February 16, 2010 meeting. To develop Strategic Plan 2013, SPC completed internal and external scans of the college community and its students, evaluated the priorities established in the college's various master plans, and reviewed the needs identified through the departmental and unit program review and planning process, and identified the following six goals:

- Implement an integrated planning, review, and evaluation model that provides for the allocation of resources on the basis of department/unit and college-wide priorities.
- Strengthen programs and services in order to support our students' educational goals.
- Ensure that the college's shared governance structure operates effectively and that the processes for decision-making are clearly defined and participatory.
- Recruit, hire, and support diverse faculty and staff to meet the needs of students.
- Ensure that existing and future facilities support learning, programs, and services.
- Optimize the technological environment to provide effective programs and services throughout the district.

Strategic Plan 2013 documents are available on the District's website: http://www.palomar.edu/strategicplanning/STRATEGICPLAN2013.pdf

Technology Planning (6 years) History

The first Palomar College technology master plan was published in 1998 and laid the groundwork for moving Palomar onto the Information Superhighway. The 1998 Technology Master Plan was developed to "Determine how the District will collect, create, access, disseminate, store, and, most important, use information to enhance student learning and what changes meeting this goal will necessitate." The plan was later updated and approved by the District's Governing Board in March, 2001.

On November 4, 2003 the Palomar College Strategic Planning Council formed the Technology Master Plan Task Force to develop a comprehensive, District-wide technology programs and services plan tied to the 20-year Educational and Facilities Master Plan. This plan was to include an assessment of the current state of technology

within the District as well as a long-term plan for technology resource allocation, including staffing, equipment replacement, facilities, and funding that will facilitate educational and administrative innovation and learning outcomes assessment.

Technology Master Plan 2005 was published in November 2005 and defined technology as anything related to electronic devices or associated software used in the performance of job-related duties in the classroom, labs or office environments. At the time, the Technology Master Plan was on a 5-year update cycle with the first year of the 5-year plan referenced in the plan's title, e.g., Technology Master Plan 2005 started in 2005. However, to be congruent with the District's other plans the most recent update references the last year of the plan and in accordance with IPM, the updates are on a 6-year planning cycle, i.e., the 2010 update of Technology Master Plan 2005 is titled Technology Master Plan 2016 (covering the 2011-2016 period.)

The goals and objectives defined in Technology Master Plan 2005 included:

- To achieve the mission and goals of the college as defined in the Strategic Plan
- To update the Technology Master Plan 2001
- To develop and implement a long-range budget plan for technology needs
- To ensure that an appropriate allocation of resources be included in the district fiscal plan for the implementation of the updated Technology Master Plan
- To develop and implement an environment that supports and encourages a review of the use of proven and cutting edge technology
- To review and improve upon the current committee and organizational structure with regard to technology related decision making
- To develop guidelines and support for adequate training in the use of technology in the workplace for all district employees

Additionally, the Technology Master Plan Task Force recommended streamlining the campus-wide technology committee structure by establishing a Technology Resources Committee (TRC) to annually review the plan and update it in conjunction with the District's Strategic Plan. TRC was also directed to keep the following goals in mind as general guiding principles in generating, revising, and updating Palomar's Technology Plan and analyzing accomplishments through the Annual Implementation Plans process:

- Keep abreast of new technologies, equipment, software, and educational delivery methods and utilize the best of these to aid our students to become trained and competent in their areas of study using the tools, equipment, and software they will need in their world of work or continued study
- Provide the necessary resources to keep current with the effective use of technology and continue to reach for the cutting edge of technology where possible
- Assess the effectiveness of the technology being used on campus using valid assessment methods; and, use that assessment to base decisions on where to most effectively provide technology funding

- Create a structure that will allow for the different areas of technology support to work together in a healthy and more effective and efficient manner
- Regularly assess the effectiveness of various technologies in providing an improved learning environment and ease for students in accessing registration, counseling, library, and all other student services and suggest improvements through the TRC
- Determine the best use of its physical and personnel resources to include planning for technology innovation, timely upkeep and replacement of equipment and software, adequate personnel to aid faculty, staff, and students with their technology needs
- Provide and assess training delivery methods to provide adequate and timely training for faculty, staff, and students through many formats, including online, self-paced training
- Prioritize technology needs into the budgeting process and explore grants, donations, partnerships, and other sources to help finance our needs in technology

The Strategic Planning Council (SPC) took action to dissolve the Technology Resources Committee (TRC) at its March 4, 2008 meeting. SPC delegated responsibility with regards to the Technology Plan to the Finance and Administrative Services Planning Council (FASPC) with operational issues primarily assigned to Information Services and academic issues to the Faculty Senate through the Academic Technology Committee.

Technology Master Plan 2005 is available on The Technology Master Plan Task Force website: http://www.palomar.edu/technologymasterplan/

Accepted by FASPC on 11/04/10
Accepted by SPC on 11/16/10

III. TECHNOLOGY SYSTEMS & SERVICES

Palomar College has invested heavily in its technology systems, support staff, and services to meet the needs of student learning, instruction, District-wide communications, research, and operational systems. Technology resources are managed through Information Services (IS), which is responsible for the telecommunications network infrastructure and the District's administrative applications, and the Academic Technology Resource Center (ATRC), which is responsible for specified areas of technology related to instruction. The college integrates technology planning with institutional planning. IS falls under FASPC and ATRC includes an Academic Technology Coordinator jointly appointed by the Faculty Senate and Superintendent/President. The Coordinator chairs the Academic Technology Committee. FASPC is chaired by the Vice President, Finance & Administrative Services; has responsibilities in regards to operational plans for the Finance & Administrative Services Division and the Council's members are appointed by various campus constituency groups to ensure broad representation on the Council.

Telecommunications and Network Infrastructure

The District's network infrastructure is comprised of Local Area Networks (LANs), a Wide Area Network (WAN), a Metropolitan Area Network (MAN), and Wireless Local Area Networks (WLANs). The District's WAN connects the San Marcos campus to five education sites: Camp Pendleton, Fallbrook, Mt. Carmel, Pauma, and Ramona, and to two City of San Marcos locations for Public Safety Training and the CCCSAT project. The MAN connects the San Marcos campus to the Escondido Educational Center via a Virtual Private Network (VPN) tunnel. The San Marcos campus LAN is comprised of 57 buildings connecting to a core infrastructure via air-blown fiber. The Escondido Educational Center consists of three separate buildings connected to the LAN. The WLAN provides open access to the Internet and secured access to the local Intranet. Wireless access is available throughout the Escondido Educational Center, in many areas on the San Marcos campus and at some of the education sites. IS is responsible for full implementation and management of all network devices and traffic. The District network security system is based on Cisco's Self-Defending Network Architecture. Dial-up and VPN connections are provided to staff from outside of the firewall. The District's telecommunication system consists of a Cisco Voice over Internet Protocol (VOIP) switch with T-1 connections to the educational sites and over 800 phones supporting more than 1800 extensions.

Hardware and Software

The District's computing and telecommunications hardware consists of Dell and Apple Macintosh computers and servers, Cisco networking equipment and EMC Storage Area Network (SAN). The software computing environment consists of Microsoft Windows, Exchange, SQL and Office Suite, Oracle DBMS, and Symantec, Cisco, PeopleSoft, Blackboard and Adobe applications. Apple Macintosh computers and other specialty hardware/software are an exception.

Technical Support Staff
In addition to managing and maintaining the telecommunications network infrastructure, the IS staff support and maintain the PeopleSoft administrative systems, the District's Data Center, and all desktop/laptop computers for administrative and academic use. The Academic Technology Resource Center provides support and user assistance for the Blackboard Learning System, academic and administrative websites, streaming media services, academic technology training, multi-purpose computer labs, and other general academic technology. The District's audiovisual needs are handled by the Audio Visual (AV) Department and the Palomar College Television (PCTV) staff supports instruction through the development, production, and broadcast of video courses.

Computing Resources
The Data Center houses over 100 academic and administrative servers and the District owns 3,264 desktop and laptop computers for administrative and academic uses, of which 1,696 desktops are located in student academic computer labs and 221 laptops are part of the mobile lab fleet. At least one desktop computer is provided for each full-time faculty member and a small number of circulating laptops are provided on an as needed basis through the AV and ATRC departments. The Part-time Faculty Work Center supports 15 computer workstations, and a faculty resource lab provides four high-end workstations. The remainder of the computers is used for administrative and student services functions.

Audio Visual Equipment
Digital projectors with controlling computers have been installed in 90% of the classrooms. The AV department services the equipment for both the San Marcos campus and Escondido Educational Center. Other specialized AV equipment is owned and managed by departments, such as microscope cameras in Life Sciences or specialized cameras, microphones, projectors, lighting equipment, and other devices in the Performing Arts and Communications departments.

Library Systems
The District's Library department uses the SirsiDynix library management system to provide an online catalog of the college's collection of print, media and electronic research materials, to provide circulation management services, and to manage technical processing of print, media and electronic resources. The library also manages subscriptions to a large number of online research databases, which can be accessed 24-hours-a-day/7-days-a-week (24/7) by District students, staff and faculty from off-campus or on-campus via an Online Computer Library Center, Inc (OCLC) EZproxy server for remote user authentication. In addition, the library manages a 24/7 virtual research assistance service via the Qwidget chat system through traditional web browsers as well as mobile devices. (http://www.palomar.edu/library)

Technology Services
The District's network facilities provide students with access to the Internet, PeopleSoft eServices, a self-serve web system, library research materials, and the Blackboard Learning System from any networked computer on campus. Additionally, wireless

services with access to the Internet are provided from most buildings, including the Library and the Student Union. Software applications such as Microsoft Office, Adobe products, SQL databases, and specialize applications are installed on student learning lab computers. IS provides the support services that assure the technology performs properly in support of student learning. Students can also access the Library databases and Blackboard Learning System securely from off-campus.

ARTC has digitized and encoded thousands of video and audio files for streaming under the aegis of the TEACH Act of 2002 and other governing statutes, and the delivery solution the District has put in place now guarantees almost 100% reliability and cross-platform compatibility for media delivery. A system to ensure compliance with governing copyright statutes for digitized and encoded media has been put in place.

PCTV produces video lectures for classes that are offered in nontraditional and traditional modes of instruction and provides video production services for faculty to record anything from a 30-second promotional video to a full lecture series, which can then be encoded and played over the Web. Video lectures are broadcast on Cox and Time Warner Cable systems Channel 16. PCTV also provides student access to educational content via alternative delivery methods: cable TV, "on demand" online streaming video, DVDs, and podcasting. A commercial quality broadcast facility provides instruction and internships in video productions to Graphic Communications and Radio and TV students. The facility also hosts the California Community College Satellite Network, 3C Media Solutions.

The District's network infrastructure provides faculty with access to the Internet, library databases, Blackboard, and other online teaching materials from on-campus or off-campus. Most District classrooms have access to the Internet via dedicated computers. Laptops are provided to allow faculty the flexibility to access the Internet for teaching when their class meets in a classroom that does not have a dedicated computer. The District's network facilities in conjunction with the Microsoft Exchange hardware/software environment allow faculty, staff, and students to communicate with each other via email 24-hours-a-day/7-days-a-week (24/7). The District's PeopleSoft eServices and Blackboard systems support 24/7 communications and the administrative and academic websites at the palomar.edu domain comprise thousands of pages of information. The Palomar home page contains dynamic news and events features and the ATRC staff maintains various technology RSS feeds and blogs, and produces a monthly podcast and newsletter with information on technology developments.

In addition to managing the SirsiDynix catalog of research materials and subscription databases for student academic research, the District's library offers all the traditional technology resources standard with academic research libraries: media booking, interlibrary loan, a media resource center with public VHS and DVD players, microfilm/fiche readers, reserve holdings, research assistance from reference librarians both face-to-face and by synchronous and asynchronous electronic methods, and digital and information literacy instruction. Additionally, AV converts VHS tapes to DVDs and

creates DVDs for educational television programming that becomes part of the District's library collection.

The District uses the PeopleSoft Student Administration, Human Resources, and Financials modules to support its administrative services operations, including admissions, registration, financial aid, student records, human resources, payroll, budget, general ledger, purchasing, and accounts payable. Additionally, faculty, the Curriculum Committee, the Faculty Senate, the instructional deans, and Instructional Services use CurricuNET, a database-driven curriculum management system, to facilitate and maintain the curriculum development and review process and student learning outcomes at the course and program levels. Governet, the CurricuNET vendor, hosts the application and provides the ongoing technical support. Standard software, such as Microsoft and Adobe, is installed on staff computers, and IS provides the technical support to ensure these desktop computing systems perform properly. Content creation software from Adobe and others are licensed by the District and the Hershey document imaging system is used in Student Records, Financial Aid, Payroll, and Human Resources.

Student Computer Labs

The District maintains 63 separate student computer labs, the largest being the Academic Technology lab, with 176 public access computers. The number of computers available to students is adequate, although students may experience a wait for computers during prime times in the Academic Technology lab. Most of the 63 labs are used as classroom instructional labs rather than open, public labs. There are also eight wireless mobile labs assigned to various academic departments.

The Disability Resource Center (DRC) Adapted Computer Center, which is housed in the Library, has nine American with Disabilities Act (ADA) computers with specialized furniture and four workstations in the Academic Technology Lab dedicated to serving the needs of disabled students. ADA compliant workstations are also located in the Career Center, the Assessment Center, the English Lab, the English Writing Center, the Mathematics lab, and one of the Business Administration labs. The DRC supports disabled students with specialized facilities for testing, books on tape, assistive devices for the hearing impaired, Braille reading equipment, and other assistive technology housed in a dedicated facility.

IV. TECHNOLOGY PLANNING PROCESS

The Finance and Administrative Services Planning Council (FASPC) defined the plan workgroup membership. The Vice President, Finance & Administrative Services convened the workgroup and delegated responsibility of chairing it to the Interim Director, Information Services. The workgroup consisted of the following individuals:

- Jay Baker, Assistant Professor/Librarian, Library (Academic Technology Co-Coordinator)
- Dr. Haydn Davis, Professor of Psychology (Academic Technology Co-Coordinator)
- Mike Dimmick, Senior Network Specialist, Information Systems
- Terry Gray, Supervisor, Academic Technology Research Center
- Scott McClure, Systems Program Manager, Information Services
- Don Sullins, Interim Director, Information Systems (Workgroup Chair)
- Jose Vargas, Network Services Manager, Information Services

In accordance with the District's adopted Integrated Planning, Evaluation, and Resource Allocation Decision-Making Model (IPM) and aligned planning cycles, the workgroup was assigned the task of updating the Plan to cover a six-year period through FY2016. The technology planning process consisted of identifying technology needs from four main sources:

- Master Plan 2022
- Strategic Plans 2009 and 2013
- Program Review & Planning documents for FY2010-11
- Plan Contributor Interviews

Master Plan 2022 was written to assist the Palomar Community College District in planning for the growth and change of its educational programs and facilities needs over the next 20 years. The plan is used to guide future educational and facilities development in the District and has two major sections:

- The Educational Master Plan that forecasts the future of the educational programs and services
- The Facilities Master Plan that visualizes the spaces and technology needed by the educational programs and services in accordance with the Educational Master Plan

First, the Facilities Master Plan was reviewed to identify all construction activity planned for the San Marcos campus and Escondido Educational Center in the FY2011-2016 plan period in order to determine the technology needs. After passage of Proposition M in fall 2006, IS contracted for a network infrastructure assessment and development of telecommunications, cable and infrastructure standards in preparation for Master Plan 2022 construction. Since then, the District's network infrastructure has been upgraded and the most advanced cable, wireless and network products installed in the new

buildings and renovations to support current technologies. The major construction projects included in the Facilities Master Plan that affect this plan period are:

- Humanities Building
- Industrial Technologies Center
- Multidisciplinary Building A
- Planetarium
- Theatre Addition/Remodel
- North County Educational Center

It is Facilities and Information Services' responsibility to ensure selected architects and electrical contractors comply with the District's telecommunications, cable system and infrastructure standards in new building design and construction to meet the needs of future students, faculty and staff. Typically it is 2-3 years between building design and construction, so it is important that the architect's design meets District standards in order to adjust the construction bids to accommodate changes in technology. The District's Telecom Standards document is available on the IS website: http://infoservices.palomar.edu/.

Second, Strategic Plans 2009 and 2013 were reviewed to identify goals and objectives related to technology systems and services. Strategic Plan 2009 contained the following goals and objectives:

- Student Success
  - Develop protocols for maximizing efficient use of technology for communicating with students.
- Teaching and Learning Excellence
  - Provide up-to-date technology and related technical and equipment support for instructional purposes.
  - Provide comprehensive technology training for instructional purposes.
- Facilities Improvement
  - Complete the Multidisciplinary Instructional Building in March 2010.
  - Complete the Library/Learning Resource Center in FY 2011-12.
- Resource Management
  - Develop protocols that maximize the effective use of facilities.

Accepted by FASPC on 11/04/10
Accepted by SPC on 11/16/10

Strategic Plan 2013 contained the following goal and objective:

- Goal 6: Optimize the technological environment to provide effective programs and services throughout the district.
    - Objective 6.1: Update Technology Master Plan 2005 to address:
        - Access
        - Training
        - Evaluation
        - Disaster preparedness and data security
        - Ongoing technology, maintenance and replacement

Third, the Program Review & Planning documents were reviewed to determine the impact of departments' technology requests for FY2010-11. All, but a few were related to the acquisition of hardware, such as classroom computers, laptops, document readers, and specific lab equipment. The exceptions were the Graphic Communications Multimedia & Web department's proposal for building and equipping a multimedia movie studio and the Academic Technology Resource Center's proposals for licensing lynda.com training and the Blackboard Content Management and Community systems, and establishing a lending library of laptops, tablet computers, iPods, iPads, Kindles, and other newer technologies for faculty members.

Lastly, Plan Contributor Interviews were scheduled to provide full participation in the technology planning effort and proved to be the primary source of information for the workgroup. Over twenty multi-party Contributor Interviews were held and an email questionnaire was released towards the end of the data gathering phase to ensure all faculty and staff had an opportunity to be heard. Since the IMP Model calls for a new Equipment Master Plan to be developed in fall 2010, the workgroup narrowed the scope of the Plan by defining technology to be computer hardware and software, telecommunications, audiovisual solutions and other related processes and services for the Palomar Community College District. The attached appendices provide detailed information in regards to: plan contributors, interviews, questions and responses.

The outcomes of the data gathered through the Plan Contributor Interview process has been summarized within the following areas to address the goals and objectives of Strategic Plans 2009 and 2013 and to conform to the plan's definition of technology.

- Access
- Training and support
- Evaluation
- Disaster preparedness
- Data security
- Ongoing technology, maintenance and replacement
- Hardware and software
- Telecommunications and network infrastructure
- Audiovisual solutions
- Other related processes and services

Access

Access to technology must provide the means to students to achieve their learning/educational goals; faculty members to achieve their teaching goals; staff members to achieve their work-related goals; and community members to achieve their communication and enrichment goals. Thus, the workgroup determined that the overall goal of technology access is to provide the equipment, infrastructure, and software system to the community member *"who needs it; at the time they need it".* Many respondents suggested that the District ought to provide laptops or netbooks to students, either on a no-cost checkout basis, or on a financially aided lease basis. With a head-count above 30,000, any program to supply computing resources directly to individuals is very problematic; though small-scale checkout and larger scale financial aid programs seem possible and desirable. It was determined that the district needs to improve its communications to students related to the technology requirements of specific courses. If a course requires watching online video, for example, the schedule ought to reflect this fact with a system of small icons or some other notation. If Internet access is required for class success, this also ought to be indicated.

In constituent interviews, technology access and support for adjunct faculty was mentioned repeatedly. More technology resources, such as increased availability of computer workstations and software, should be made available for adjunct faculty for class preparation and technology training.

Many expressed a desire for expanding the self-service features of our Student/Faculty/Administrative systems. Student respondents felt they should have self-service access to their Educational Plans, Degree/goal progress, and Scholarship standings; in addition to a centralized web directory of faculty information including resume details/qualification. Administrative users expressed interest in expanding access to self-service in the areas of online applications for Faculty/Staff recruitment; online pay stubs and absence reporting. There was also interest in access to students' transcripts from other schools through the expansion of existing imaging system for the purpose of automating prerequisite checking, degree audit, and academic advising.

A few respondents noted the need for 24/7 access to computing resources and technical support, but did not express an opinion on how that could be funded.

Training & Support

Every group interviewed expressed the need for expanded training opportunities. Specifically some sort of self-paced training program such as lynda.com was viewed highly favorably by those familiar with it. It was commonly noted that new technology was frequently placed in the classroom, or on computer desktops, but no training was provided on how to use the equipment or application.

District specific training needs to be conducted on security policies and practices, backup procedures, and common computer basics. Many simply do not know what they do not know, and this was registered as a consistent complaint. Various individuals indicated that mandatory training should be instituted, but there are many

practical problems related to this idea. Certainly there is merit to the idea of a mandatory training session coming along with new technology. When a new computer is delivered, a training package should be delivered with it, either in an online or in-person format.

It was also suggested that an orientation to District standard technology be provided for new employees and that consideration be given to making a computer competency certificate a minimum qualification for employment.

Better support for Apple products was noted as a significant shortcoming.

The idea of reducing the number of disparate systems in use would also simplify training. Synchronized passwords or a single point of authentication is another way to help unify multiple systems.

Evaluation

The most important outcome from technology planning should be to develop an ongoing mechanism to evaluate and recommend the adoption of new technology proposals and resource allocations. A system that might work would involve creating a group of evaluators, something like a consumer reports lab or technology review board, and then the technologies suggested in PRP documents and through planning councils could be submitted to this group for evaluation and recommendations. The group would be charged with evaluating the technology, researching related issues, checking for consistency with ongoing master plans, discovering costs, and then making recommendations back to the planning councils. The group should be comprised of no more than six individuals from departments responsible for deploying technology, such as Information Services, Academic Technology, and the Academic Technology Coordinator and Chair of the Academic Technology Committee. All new technologies would have to either fit the new Resource Allocation Model (RAM) to ensure resource allocation decisions are tied to planning, or come with their own one-time and on-going funding attached. The identified group would be responsible for setting up pilot programs and reporting on evaluation findings to the planning councils.

Disaster Preparedness

IS has deployed a commercial backup system based on a system of differential, full, and semi-annual backups stored at an off-site storage facility to prevent the District's data from being lost in the event of a data center disaster. In fall 2009, a backup facility was constructed at the Escondido Educational Center and the Data Center Disaster Recovery Plan updated. The plan can be found on the IS website at: http://infoservices.palomar.edu/.

In order to maintain communications and a web presence with the campus community during a power outage, a backup generator was installed over the 2009-10 winter recess to provide alternative power to District's Data Center.

There is also a need to identify and equip a secondary site on the San Marcos campus to support redundant services in the event of an infrastructure disaster. Use of emergency notification systems also need to be formalized.

Data Security

In response to questions about data security, a typical response from faculty and staff was "You tell me." There is a low level of awareness about data security on campus. Most assume the data is secure, but do not know what means have been taken to secure it, if any. Most do not have an appreciation of the potential threat or countermeasures.

There was a general complaint about spam—though the college has taken vigorous steps to suppress spam. Conversely, the District has been found to be a "spammer" by some ISPs. As a result, a new password procedure was implemented in December 2009 to address some of these issues. The procedure can be found at: http://infoservices.palomar.edu/procedures/PS.PasswordRequirements.pdf

While frustration was expressed at being forced to change passwords, and especially being forced to use passwords that conform to "strong password" rules, no real appreciation was shown for the implications of insecure passwords in a networked environment. A major education initiative ought to be undertaken with regard to security measures in concert with the roll-out of new procedures/technologies. Forced password changes, installations of spam filters, and port blocking all exist at Palomar, but more user training and education of what is involved is needed.

While the college has an "easy backup" system in place to back up the "My Documents" folder on Windows XP computers, many people displayed an ignorance of the program, had received no training in its use, and had no appreciation of what was being backed up or how one might go about getting it restored. The absence of a backup strategy for Mac computers was noted and those with a level of technology sophistication indicated that they had developed their own backup strategies.

Systems for institutional data security evaluation are in place, and Palomar should conduct a study that rates security practices, identify vulnerabilities, and propose solutions where the District may be at risk.

Ongoing Technology Maintenance and Replacement

The faculty and staff interviewed showed almost no awareness of the District's financial problem related to replacing current technology, specifically student lab and faculty computers or central server systems. Prop M investments will build up a very robust inventory, but when assigned Prop M funds are exhausted, the problem of replacing this inventory will be a challenge. Of highest priority should be:

- Investigations that might mitigate some of the costs in replacing the current stand-alone workstation model, such as thin client/server, virtualized environments, or cloud-computing concepts
- Establishing a fund for ongoing financing related to this issue.

The problem of funding discipline-specific software needs is still common. Common needs are funded through the IS department budget, but large, expensive programs such as are used in architecture, fashion, and other trades and industries disciplines have to find their own departmental funding for the specialized software they use regularly. Having sufficient funds allocated in annual budgets to maintain the District's technology systems and services is essential.

Another shortcoming of ongoing technology maintenance is the lack of a permanent budget to replace AV equipment, in particular digital projectors and projector lamp bulbs. Part of the problem is caused by the uneven adoption of AV technologies across campus. Written specifications for classroom AV support and a formal purchase rationale for AV equipment does not exist.

Hardware and Software

During the interview process various individuals noted that the full potential of the PeopleSoft and Blackboard systems had not been deployed. The District owns the "Learn" component of the Blackboard Academic Suite, but should evaluate the need for other components, such as the Content Management and the Community systems.

In regards to the PeopleSoft systems, the District license include self-service Payroll functions, such as online pay stubs, Academic Advisement, Contracts, Budgets, Absence Management and Fixed Assets modules that are currently not being used. The functionality of each module needs review to determine if implementation adds operational efficiencies. Additionally, there was strong support for mobile systems. Consideration should be given to moving the District's applications into the mobile environment while maintaining system integrity and security standards. Other applications mentioned included, Position Control for staff planning and budget management, online Facilities management system, student debit cards for refunds, energy management system, and print management to reduce the number of printers on campus. There was also some support for moving transactional functionality in PeopleSoft and Microsoft applications to the Internet using Google Apps.

Off-campus cloud storage systems are an intriguing possibility, but they are too new and too untried to be solid solutions for our growing data storage/access needs. Movement to a non-proprietary email system was not popular where that question was asked, but users agreed there might be merit in the idea. It is recommended that this be studied.

There was also support for a web content management system, one that would include uniform templates, version control of documents, document libraries, approval levels, and social networking features. There was a preference for a system that we could customize, such as the Ektron .Net-based system, though a more complete analysis needs to be conducted.

Some professors expressed support for a coursecast system that would capture/webcast/archive course lectures in order to improve learning outcomes by providing absent students with the ability to participate in a course lecture or to review the lecture in preparation for assessments. It was pointed out that some teaching involved the discussion of confidential materials inappropriate for coursecasting, and if implemented, it be done on an individual basis. Additionally, concerns about ownership of the intellectual property of lectures, academic rights, and working conditions needed to be resolved.

Interest was also expressed in an automated question response system, like RightNow Web, which could build a knowledge base of commonly asked questions, focus user inquiries, and reduce phone-support commitments.

Replacement of existing hardware is an enormous issue, but not a lot of awareness of potential District funding for new technology was manifest during the interviews. This, obviously, must be a high priority for technology planners. The same can be said, to a lesser extent, to the licensing of District standard software. Certainly investigation of alternative models is indicated.

Many respondents thought that laptops might be an acceptable replacement for desktops for full-time faculty members, provided they had the same functionality. There was also a positive response to replacement of desktop computers with thin-client models or virtualized desktop environments.

Telecommunications and Network Infrastructure

Almost nothing was said about telephony and telecommunications in general during the interviews. Nevertheless, it is extremely important that the District go forward with training on how to use the Voice-over-IP and Berbee IP paging systems, institute an emergency communications system via voice mail and text messaging, investigate a central-point-of-contact telephony system integrated with an online knowledge base, develop procedures for work-at-home telecommuting, and pursue other telephony advantages that could be implemented.

In regards to the network infrastructure, the working group was encouraged to perform the engineering and structural planning necessary to accommodate the needs of future technological growth, even if the District could not presently afford the technologies today.

Many respondents rated full-campus wireless coverage as very important or of supreme importance. Not only was the district encouraged to build-out its wireless infrastructure to cover the entire San Marcos and Escondido campuses, but it needed to configure it to provide unlimited connectivity through a proper addressing scheme. It was suggested that username and password authentication be used for wireless access to improve security and allow access to internal network resources (Intranet), rather than the current internet-only access. Some users expressed the need for faster network access speeds and 100% up-time for all systems, both highly desirable goals.

A faculty concern expressed in the interviews was the capability to turn off the wireless Internet at designated times during class. Faculty wanted to turn off smart phone access too, though this, of course, is beyond the ability of local authority. Turning off wireless access is also impossible when access points are designed for broad area coverage.

More electrical outlets in classrooms and labs for students to charge laptop batteries was also described as a need.

It was strongly recommended that construction of the new North and South educational centers include wireless access plans.

Audiovisual Solutions

The most prominently mentioned AV need among respondents was interactive whiteboards, followed by document cameras and tablet PCs. Palomar has made little use of smart boards and ought to evaluate and recommend their use where need and desire to use intersect. Document cameras, such as those being used in the Math and Life Science departments have shown a great deal of potential. The workgroup recommends a standard system be selected and deployed District-wide where applicable. Selection of a standard tablet PC is also recommended.

The most important AV need District-wide is a centralized control system based on digital projectors connected via Ethernet, with a central control program accessible from any workstation. The control system needs to be programmable so that all projectors can be turned off at designated times in order to maximize lamp life.

A corresponding need is for more precise specifications for room configuration and wiring. There were complaints about existing rooms being designed without the teacher or students in mind. This is true of classroom computer location and the types of wiring available to those who wish to connect laptops in the classroom. The configuration of the classroom computer is also problematic in that you must be an administrator on the system to install software, so it cannot be installed on the fly. Fortunately, the room concerns have been addressed with the users in all new and remodeled buildings.

A central repository of digital media was suggested, with appropriate security to allow instructors to give presentations from any classroom, without carrying laptops or other media with them from place to place.

Other Related Processes and Services

While the general reception of an idea like a paperless environment at Palomar was not viewed as practical or desirable, a surprising number of those interviewed supported the idea. Therefore, the opportunity exists for a limited adoption of a paperless environment. The meeting scenario was noted in discussion of this matter because meeting organizers often send an electronic version of the related meeting documents with instructions to print them and bring them to the meeting. When one arrives at the

meeting, it turns out that the organizer has also printed a copy for each participant, “just in case.” It was pointed out by several of those interviewed that meeting rooms designed with access to computers, and/or instructions to bring laptops along to meetings, would eliminate the need for all the wasted paper/toner/print infrastructure. There was support for replacing paper intensive administrative paperwork with automated, self-service applications that utilize electronic workflow concepts to replace signatures on paper.

Technology-related physical systems mentioned during the interviews include keyless room lock systems, surveillance cameras, and student/employee notification systems. All ought to be investigated and implemented, based on findings, with notification systems being the highest priority.

Accepted by FASPC on 11/04/10
Accepted by SPC on 11/16/10

V. RECOMMENDED INITIATIVES

During the planning process, it became obvious that numerous directives, projects, and activities needed to be initiated to deal with the needs of the Strategic and Master Plans, Program Review & Planning, and to attend to the concerns heard in the Plan Contributor Interviews. The tables that follow provide the recommended initiatives to address these needs and concerns and to optimize the District's technological environment to provide effective programs and services throughout the district.

The initiatives were categorized by type to address Strategic Plan 2013 Goal 6 Objective 6.1 and to conform to the plan's definition of technology, and then grouped by Tier using the following criteria:

- Tier 1 Initiative: offers highly desirable benefits, can use existing resources, no additional funding required, addresses a user expressed need, or is a legal, safety or security requirement. Completion or implementation timeframe is estimated to be 1-3 years and is tied to Strategic Plans and departmental Program Review & Planning.
- Tier 2 Initiative: similar to Tier 1, but requires additional funding, assessment and planning. Completion or implementation timeframe is estimated to be 4-6 years and is tied to Master Plans.
- Tier 3 Initiative: requires further study to determine feasibility and cost benefit.

Note there is no assumption of priority based on the order in which the initiatives are listed. However, the workgroup believed the most beneficial initiative was the creation of a small evaluation body that would comment authoritatively on new software and hardware based on established campus technology specifications. It is recommended that the Finance and Administrative Services Planning Council Technology Master Plan 2016 workgroup be tasked with this responsibility beginning in fiscal year 2010-11. The workgroup is a subgroup of FASPC; however it will serve as a resource to all planning councils.

Accepted by FASPC on 11/04/10
Accepted by SPC on 11/16/10

Tier 1 Initiatives

Access:
Expand wireless network access to all District owed assets.
Expand wireless network to include access to campus network resources for faculty, staff and students based on security profile.
Improve access to information by providing more self-service functionality in the Student and Faculty eServices systems to facilitate academic advising, prerequisite checking, and degree audit.
Provide more open labs for students, and provide signage so students will know about them.
Revise VOIP system auto-attendant processes and caller functionality in the Call Center application.
Training and Support:
Provide training on District security policies and practices, including email security, viruses, phishing attempts, spam, acceptable use of email, and other email-related topics.
Develop a personal computer backup strategy for all campus computers and publicize its use.
Evaluation:
Allocate technical resources to research and evaluate new academic and administrative technologies.
Create a small evaluation body that can comment authoritatively on use of new software and hardware based on established campus technology specifications.
Disaster Preparedness:
Keep the Data Center Disaster Recovery plan current.
Validate application priorities and redundant hardware strategy for the Escondido Educational Center Disaster Recovery facility.
Implement a disaster notification system, such as School Messenger
Data Security:
Implement stronger password requirements and more secure change control procedures.
Implement Secure Sockets Layer (SSL) encryption security on all web servers.
Develop an educational initiative on privacy policies and security measures being taken by the District and inform system users.
Develop data security guidelines and provide orientation for faculty and staff.
Ongoing Technology, Maintenance And Replacement:
Establish an annual budget to support ongoing technology, maintenance and replacement.
Review end-of-life status of the District's servers, computers, digital projectors, and audiovisual assets to project annual expenditures.
Ensure technology needs identified in the annual Program Review and Planning (PRP) process meet established campus technology specifications.

Accepted by FASPC on 11/04/10
Accepted by SPC on 11/16/10

RECOMMENDED INITIATIVES

Software and Hardware:
Implement new functions and features in the District's Student and Administration Information Systems (PeopleSoft) to improve eServices, streamline administrative tasks and comply with federal and state regulations.
Implement new versions of District standard operating systems, applications, and desktop productivity software, where appropriate, and maintain currency by applying software patches when available.
Implement new functions, features and software upgrades in the District's library management system (SirsiDynix).
Implement a system whereby laptop computers with docking stations can replace faculty desktop computers.
Implement a system of electronic signatures in order to move manual business functions online.
Network Infrastructure:
Provide the bandwidth necessary to keep the District's systems stable and secure and robust enough to support current technology.
Increase CENIC (Corporation for Education Network Initiative in California) building and off-site center connections as demand dictates.
Replace the Data Center infrastructure to support increase in bandwidth requirements.
Ensure the conduit/cable infrastructure and network systems in all buildings comply with District standards to support access, software applications, telecommunications, audiovisual solutions, and security.
Telecommunications:
Implement new versions of network operating systems and applications, where appropriate, and maintain currency by applying software patches when released.
Implement an emergency notification system capable of immediately contacting all students and staff via multiple, optional means of communication, including calls, text messaging, an email.
Complete roll-out of Berbee paging system and add phones in all classrooms which can be utilized with the system.
Add emergency phone systems District-wide.
Implement E911 system.
Add redundancy to phone systems.
Audiovisual Solutions:
Develop standards for network-based AV devices and systems to simplify the selection, ordering and support of AV equipment.
Secure all technology equipment to prevent theft and operational damage.
Develop a sound system standard for classrooms based on need.
Create an ongoing, line-item budget for replacement of digital projector lamps.
Other Related Processes And Services:
Allocate proper facilities and workspace for technical staff.
Complete the segmentation of network infrastructure and client services in Information Services.

Accepted by FASPC on 11/04/10
Accepted by SPC on 11/16/10

Tier 2 Initiatives

Access:
Implement a content management system to standardize web access to District information.
Training And Support:
Implement a remote desktop support application such as WebEx.
Create a computer competency program for faculty and staff.
Consider a chat feature for student help with the District's PeopleSoft and Blackboard applications.
Increase quality and quantity of training and support for Apple computers.
Build a phone tree linked to a central assistance point that will better handle user inquiries and increase levels of self-help
Establish a District standard to link the deployment of new technology with training on how to use it.
Disaster Preparedness:
Develop a system of campus digital signage for emergency notifications.
Data Security:
Install network intrusion prevention and detection systems.
Implement single sign-on system.
Software And Hardware:
Acquire and implement new modules within the District's Learning Management System (Blackboard), specifically the Content Management System and the Community System.
Implement a Facilities maintenance management system, such as DirectLine to streamline work requests.
Network Infrastructure:
Add building automation for facilities functions.
Add network infrastructure redundancy to support critical services.
Audiovisual Solutions:
Implement a central control system that would network all digital projectors and provide software control of all critical projector functions available from any computer.

Accepted by FASPC on 11/04/10
Accepted by SPC on 11/16/10

Tier 3 Initiatives

Access:
Research desktop virtualization to allow students to remotely connect to lab computers and to extend the usefulness of older computers.
Add support for mobile devices in both the District Learning Management System and Student Information System.
Create a laptop loan or lease system for students.
Improve access to scanning resources for students and faculty members.
Evaluate keyless entry system installed in the HS Building and make a recommendation for all campus rooms.
Study the feasibility of disabling Internet in selected classrooms on demand.
Study the feasibility of allowing mobile devices to access the District's email system via a wireless connection.
Training/Support:
Study the feasibility of providing a single Call Center for faculty, staff and students for technical assistance: hardware, software, AV equipment, PeopleSoft, Blackboard, eServices, etc.
Create a full-day technology orientation event.
Study the feasibility of a 24/7 helpdesk or alternative automated systems.
Study the feasibility of deploying self-paced training, such as lynda.com to all students, staff and adjunct faculty.
Disaster Preparedness:
Study the feasibility of implementing a secondary network hub for redundant campus network services.
Data Security:
Research, and if appropriate, install additional monitoring systems.
Research biometric security technologies for added security.
Software And Hardware:
Study feasibility and acceptability of deploying a web content management system, including a unified web authoring tool.
Study the feasibility of converting District file storage to cloud-based storage systems.
Study the feasibility of converting District productivity software to cloud-based products, like Google Docs.
Study the feasibility of implementing roaming profiles that follow employees and students to any District computer.
Study the feasibility of implementing a non-proprietary email system similar to Gmail or Windows Live Mail to replace the proprietary Exchange system now in use by the District.
Study the feasibility to, and if feasible, replace public student and selected staff workstations with virtualized client/server implementations where all work is web-based.
Investigate the feasibility of deploying a lecture capture, such as the coursecast system in selected classrooms.

Accepted by FASPC on 11/04/10
Accepted by SPC on 11/16/10

RECOMMENDED INITIATIVES

Network Infrastructure:
Study the feasibility of adding network infrastructure redundancy to support critical services.
Research network management systems to monitor for bottlenecks and ensure traffic is safe and secure.
Study the feasibility of creating a Network Operations Center and expand support to 24x7.
Telecommunications:
Evaluate a 311 system, where non-emergency comments and suggestions can be submitted by students, faculty and staff.
Evaluate installation of video conferencing services.
Audiovisual Solutions:
Investigate interactive whiteboard technology and recommend a deployment strategy where indicated.
Study classroom deployment of computers, cabling and control systems, and design a more effective classroom configuration with standard cabling specifications that meet the needs of teachers.
Create a plan to make more interactive student polling devices (clickers) available throughout academic departments.
Create a formal program for faculty members to checkout laptops, digital cameras and digital camcorders.
Study the feasibility of installing networked webcams over whiteboards to capture and store class notes for student review.
Develop a plan for deployment of tablet computers where appropriate.
Install blu-ray players or blu-ray equipped computers in all classrooms.
Investigate and recommend LCD monitors as replacements for digital projectors and screens where appropriate.
Enhance District scheduling to account for AV resources.
Other Related Processes and Services:
Research the feasibility of using paperless systems, such as the Hershey imaging system to reduce paper supplies.
Study the feasibility of implementing an IP-based video surveillance system for campus security.
Investigate the feasibility of eBook content and the deployment of eBook readers for selected learners

Accepted by FASPC on 11/04/10
Accepted by SPC on 11/16/10