Rancho Santiago Community College District Strategic Technology Plan

2012 – 2014

Approved by the Technology Advisory Group – May 3, 2012
Approved by the Budget Allocation and Planning Review Committee – May 16, 2012
Approved by the Chancellor's Cabinet – June 11, 2012
Approved by Rancho Santiago Community College District Board of Trustees – June 18, 2012

Rancho Santiago Community College District
Strategic Technology Plan
2012-2014

I. Introduction

The Rancho Santiago Community College District (RSCCD) Strategic Technology Plan (STP) is a collaboration of the District Operations Center (DOC), Santa Ana College (SAC) and Santiago Canyon College (SCC). The current plan was written by members of the Technology Advisory Group (TAG). Through weekly meetings and collaborative research, the plan was first completed in April 2010. Each member of TAG participated in the development of this plan, providing valuable input in their area of expertise. Also, considerable effort was made to align the STP with the colleges' educational mission to optimize technology for student learning and promote successful student outcomes.

The STP shall remain a "living document" that is reviewed and updated regularly and used as an assessment guide for current and future technology needs at the colleges and within the district. A copy of the plan will be submitted by TAG to the SAC and SCC college councils, advisory committees and to the RSCCD Chancellor's Cabinet to update the committees on the technology implementation milestones achieved, as well as the technology challenges that face the colleges and district.

With the amount of technology information rapidly changing, RSCCD recognizes the importance technology plays in the lives of students and employees. Because information and communications technologies serve as the basis for influencing how people work, learn, communicate and do business, RSCCD is constantly evaluating and strategizing cost-effective ways to meet the technology expectations and demands of the students and workforce while being mindful of the budget.

The purpose of the STP is to serve as a benchmark for information and communication technologies currently being used throughout the district. This benchmark will be used to establish technology guidelines, standards and policies that will help guide the DOC, SAC, SCC and the college's non-credit educational centers, Centennial Education Center (CEC) and Orange Education Center (OEC), in response to the future technological needs of their faculty, staff and students. The plan, however, remains flexible to accommodate rapidly evolving technology and funding issues that may face the colleges and/or district.

The STP also includes administrative procedures and recommendations that need to be followed in order for the colleges and district to maintain the students and employees expectations for technology. These procedures and recommendations outline the budgetary requirements necessary to maintain currency in technology and infrastructure. The plan includes future staffing needs that require consideration to support the colleges' growth in technology.

Another purpose of the STP is to create alignment between SAC and SCC's technology plans, along-with the California Community Colleges (CCC) Technology III Plan (2007-2010).

The STP is designed to support the colleges and their educational plans, maintain the accreditation standard III. C. Technology Resources defined by the Accrediting Commission for Community and Junior Colleges (ACCJC). In summary, the STP demonstrates how technology impacts our students, how technology is used in the classroom, how technology helps students achieve their educational goal, and how technology keeps RSCCD on a competitive edge.

II. Planning Elements

A. Technology Advisory Group (TAG)
In fall 2007, RSCCD established a district Technology Advisory Group (TAG) that meets once a month to discuss, evaluate, recommend and share information and ideas related to the information and communication technologies used within the district.

Members of TAG include administrators, faculty and classified staff from both colleges and the district offices who are immersed in the implementation of technology or oversee technology functions as a part of their regular job. The current committee members include:

Name	Affiliation
Rose, Linda	SAC Academic Administration
Kushida, Cherylee	SAC Dist. Ed.
Miller, Becky	SAC Technology Committee
Pacino, Joe	SAC Classified
Shahbazian, Roy	SAC Faculty
Sweeney, George	SAC Faculty
James, Scott	SCC Classified
Rabii, Narges	SCC Faculty
Scott, Randy	SCC Technology Committee
Weispfenning, John	SCC Academic Administration
Sotelo, Sergio	CEC
Vargas, Jose	OEC
LeTourneau, Sylvia *	DO—ITS
Hopkins, Dean	DO—Public Relations
Childress, Curtis	DO—SCC ITS
Quach, Nicholas	DO—SAC ITS

* Committee chair

TAG Vision

> *To advance the operational efficiency and optimize student learning through technology.*

TAG Mission

> *To support district and college associated committees, groups and departments by coordinating technology requests, supporting the development of technology policies and procedures, and promoting student learning through technology.*

Any technology recommendation or decision made by TAG is forwarded to RSCCD's Chancellor's Cabinet for approval.

B. Information Technology Services (ITS) Structure
RSCCD maintains a centralized and collaborative Information Technology Services (ITS) department led by the Assistant Vice Chancellor. One of the primary missions of ITS, is to provide students and employees with quality technology services and systems that foster learning, productivity and collaboration.

The majority of ITS systems and services are centrally run from the DOC, but the department provides technical services and staffing to SAC, SCC and all of the educational centers and training sites within the district. ITS is responsible for operating and maintaining the physical infrastructure required to service the district's computer and telephone networks. The department also oversees the core business and communication systems that include email, telephone, student information, financial, and human resources.

The department is divided into four areas, which include Application Systems, Network Administration and Academic Support departments at SAC and SCC. Below is a list of services and responsibilities provided district wide by the individual ITS departments:

Application Systems
- Manage and integrate Enterprise Resource Planning (ERP) Systems
- Evaluate and integrate third party vendor functionality into ERP
- Provide State MIS reporting systems and services
- Maintain RSCCD research data warehouse
- Provide and maintain internal web/intranet/portal systems and services

Network Administration
- Host and maintain application servers
- Host and maintain enterprise storage systems
- Design, implement and maintain network and infrastructure equipment
- Develop strategies to manage network growth and internet bandwidth usage
- Develop mechanisms that provide a safe and reliable network (*e.g.* firewalls, antivirus, intrusion systems)
- Perform backups of enterprise data
- Maintain telecommunication system
- Maintain physical cable plant
- Support video surveillance
- Maintain wireless network

Academic Support
- Provide site-licensed operating system and business application software
- Install instructional software and equipment for faculty
- Procure and maintain academic servers
- Provide technical expertise of hardware/software specifications to colleges that meet district standards and instructional requirements
- Develop system and maintain instructional inventory of hardware and software
- Develop effective system in deploying, maintaining and monitoring classroom equipment and software
- Provide technical assistance to faculty, staff, and students on an as-needed basis
- Procure and maintain college computers, servers and printers
- Collaborate with Media Systems department to support classrooms

C. Guiding Principles for Technology
If RSCCD is to be successful in implementing its vision of technology and accomplishing its strategic goals, it is important for TAG to create a list of guiding principles that will define and direct the criteria for decision making in regards to purchasing and using information technology.

Below is a list of TAG's guiding principles:
- Our colleges strive to provide leadership in technology for the communities they serve.
- Students and the community deserve the best technology that is available.
- Technology can enhance RSCCD's ability to provide multiple modes of access and a consistent delivery of all services.
- Continuous assessment of technology services is vital for ongoing improvement.
- Critical district wide services/data must be standards-based, reliable and secure.
- Ease-of-use must be a factor in selecting and implementing new technology.
- Intra-district communication is a mission-critical element.
- Technology planning must be a major factor in local and district wide funding decisions.
- Funding for the development and upgrading of infrastructure must be considered in the budgeting process.
- ITS provides a district wide coordinating function.
- The integrity of data must be assured and safeguarded.
- Staffing should increase in proportion to the implementation and application needs of technology.

D. Assumptions

A primary reason that TAG has developed the STP is to insure that RSCCD looks to the future and develops progressive learning and working environments for its students and employees in order to foster positive student learning outcomes through the use of technology. Below is a list of planning assumptions developed based upon the input provided by members of TAG. The assumptions include the current internal and external environmental factors that affect the development and implementation of the STP. As assumptions change, the STP is to be modified accordingly. Therefore, an annual review of the STP will occur.

Student Assumptions:
- Students need access to resources and services at any time from any location.
- Student expectations and skills vary widely but are generally increasing.
- All electronic instructional materials and services meet or exceed Americans with Disabilities Act accessibility guidelines.
- Technology supports successful instruction.
- Technology is similar to and at relative parity with other local colleges.

Employee Assumptions:
- Faculty members expect current technology to support and enhance instruction.
- Technology requires more specialized staffing.
- Technology requires continuous employee training.
- Technology redefines work culture and environment.
- Staff development and communication is dependent on technology.

Support Assumptions:
- District wide technology cooperation will become increasingly critical.
- The demand for *general* technology support and adaptive technology support will continue to increase.
- Assess technology to assure the Americans with Disabilities (ADA) Act Standards are being met.
- Continually evaluate technology to improve and streamline business processes.
- Meet the growing demand for emerging technologies.
- Employ the most highly qualified technical support staff possible.

Resource Assumptions:
- The need for technology will always be greater than the resources provided.
- Due to the extreme budget crisis, the funds allocated for technology enhancements may be reduced.
- Federal stimulus money may be available for infrastructure updates and expansion.
- In order to make the most effective use of resources, a coordinated plan (like the STP) is needed for the design, deployment and use of technology.

General Assumptions:
- Demand for electronic access and communication will increase.
- Technology-related costs will continue to increase.
- A balance between a secure and service-oriented environment will be provided.
- Security will become more important for data integrity.
- Continuous updates in infrastructure, hardware and software will be provided.
- Reliance on the internet to accomplish essential functions will increase.
- Our electronic communication includes email, internet, intranet, mobile phones, PDAs, telephone conferencing, videoconferencing, wireless and remote access.
- New and easy-to-use technology will be implemented for all employees.

E. Assessment of Technology

Incorporating an assessment process into the STP fosters a more collaborative environment between the district and the colleges, creating an atmosphere where new technology and ideas can be presented and discussed. The results of technology sharing will continually help TAG develop a centralized process for managing innovation, implementing new ideas in technology, and evaluating its current technology standards.

A key component of the plan is imbedding a mechanism to evaluate and assess its purpose. On a regular basis, information is gathered through our research department, surveys, focus groups, managerial reviews, professional observations, program reviews, faculty/department advisory groups, and planning portfolios to help TAG evaluate and prioritize the technology needs of the district and colleges in order to allocate resources appropriately, better serving students and employees.

F. Resource Planning and Obsolescence

The development of technology standards and a centralized planning process allows TAG to be mindful of its budgets for future technology. With the regular assessment of technology incorporated into the STP, TAG plans and develops yearly timelines to coordinate the replacement and reallocation of computers, software, and hardware that have become obsolete.

III. Standards

Creating technology standards allows the district to consolidate and streamline business processes, leverage its buying power, and provide better support and training. The district recognizes the importance of allowing flexibility to create collaborative environments among its faculty and staff to explore new technologies that could benefit departments, programs, colleges or the district as a whole.

A. Network Infrastructure

One of the biggest challenges an educational institution faces is managing and maintaining its IT network infrastructure. The challenge also holds true for RSCCD, where demands, both internal and external, continue to increase as more administrative functions and business processes are automated or web-based. A secure, reliable, 24/7 connection to the district network and internet is a necessity. It is also important for the network infrastructure to be designed in a way that allows for scalability and growth. The district is mindful of its resources and continues to look for ways to maintain its network resources in a responsible manner, and it adopts proven technology rather than base its infrastructure on the latest fad.

RSCCD's network infrastructure is based on CISCO equipment, which manages the network traffic between the district operations center, colleges, and educational centers over a redundant *gigaman* connection and fiber backbone. An industry-accepted network management tool monitors RSCCD's equipment health, including traffic collisions, hardware outages, and application failures.

RSCCD's connection to the World Wide Web (WWW) is provided by the Corporation for Educational Network Initiatives in California (CENIC), which provides network connectivity to educational campuses statewide.

RSCCD is moving toward a "Single Sign On" strategy, which will use its existing Active Directory (AD) system for authentication for services that primarily involve its employees, such as for email. Services for students, like Blackboard and WebAdvisor, use the Lightweight Directory Access Protocol (LDAP) system. Once the "Single Sign On" capacity is in place, all passwords will be changed in one place for all corresponding services simultaneously, then encrypted, and stored in both authentication systems.

Offering wireless access to the district and college networks is increasingly important as more mobile devices and laptop computers are used as learning tools by faculty, staff, and students. Accessibility to a secure wireless connection will continue to expand in public areas, WI-FI hot spots, academic classrooms and other venues, such as the library, athletic fields, and administrative buildings as budget allows.

Centralized services provided by the Network team within ITS include:

Email—the email infrastructure is based on Microsoft Exchange 2003 which resides on a cluster of servers running Windows 2003. By fall 2012, the district will migrate to Microsoft Exchange 2010. This system currently supports full-time faculty, staff and part-time instructors, which is approximately 4,000 accounts. Gateway servers as also maintained to ward off spam and viruses.

Remote—the district provides remote access through dedicated remote access appliances which provide a secure tunnel from the end-user to the district. With remote access, an employee gains secure access to email, private directories, district intranet, etc.

Servers/Virtual Servers—the district maintains over 100 servers, both physical and virtual. As new systems are required, ITS determines if the server requires a virtual or physical solution. Virtualization saves power and space, while providing flexibility to meet users' demands. A routine patch schedule exists that coincides with Microsoft's "patch Tuesday" to keep current with the latest security updates and threat protection. In addition, the district maintains several Linux servers.

Centralized Storage—the district's centralized storage solution is comprised of both storage area network (SAN) and network attached storage (NAS) solutions. As the systems grow, ITS evaluates which systems fit best on either the SAN or NAS in order to centralize storage and backup.

Antivirus/spyware—The antivirus and firewall product Symantec End Point is leveled at centrally managed environments to protect servers and workstations. ITS uses an antivirus server that monitors client workstations for threats and notifies the network team of viruses to be eliminated. If a serious threat arises, ITS has the ability to take immediate action to shut down individual work stations to prevent further infection.

Telecommunications— In summer 2009, RSCCD implemented a new Voice over Internet Protocol (VOIP) system from CISCO. Their product, Cisco Unified Communications Manager (CUCM) is an enterprise-class IP telephone call processing system that provides traditional telephony features, as well as advance capabilities, such as mobility, presence, preference, and rich conferencing services. The new system replaced the old PBX and Centrex systems, reducing monthly costs.

At a minimum, the supporting electronics are on the following replacement cycle:

Equipment Type	Replacement Cycle
Core/Backbone	10 years
IDF	5 years
Edge	Replaced when no longer able to repair
Wireless	5 years
SAN/NAS	5 years plus growth
Physical layer—Project based	15 years minimum
Call Manager	5 years

B. Computers

Generally a computer user falls into one of three types: Heavy, Moderate, or Light. Determining a user type depends on two key factors: how computation intensive a task will be, and how quickly the task must be executed.

Heavy users
- Require computers to have fast and reliable processors to complete timely tasks.
- Require computers with large amounts of memory to run one or multiple applications at once.
- Use their computers more than 75 percent of the time.

Examples of a heavy user include, but are not limited to: jobs/tasks that are graphic or computation intensive in nature, such as graphic design, CAD/CAM, and business and computer classes.

Moderate users
- Require computers that have average to above average processors to perform their daily tasks.
- Require computers that have average to above average amounts of memory to run one or multiple applications at once.

Examples of a moderate user include, but are not limited to: jobs/tasks that are somewhat graphic, computationally intensive, very graphic, or computation intensive, but not very time sensitive, such as everyday office tasks. The majority of academic computers, placed in classrooms and labs, and employee computers fall into this category.

Light users
- Require computers that have average processors to perform their daily tasks.
- Require computers that have average amounts of memory to run one or multiple applications at once.

- Light users tasks are not graphic, computation intensive or time sensitive in nature.

Examples of a light user include, but are not limited to: jobs that require access to the internet and tasks such as word processing, spreadsheet calculations, and basic database management. Additionally, it includes all computers used for basic functions, such as registering for classes online.

The useful life of equipment for heavy users is the shortest, followed by moderate users, and then by light users, which have the longest useful life. Because of this, equipment that is no longer suitable for the heavy users' high need for computing power may still be serviceable for the moderate or light users' lesser needs for computing power, and therefore can be recycled.

Establishing life cycles for technology helps the district to determine what equipment is obsolete or nearing the end of its service life, requiring its replacement. A comprehensive technology life cycle policy enables the college to predict costs and use funds more efficiently.

There are three main technologies with defined life cycles:
- Computers with monitors – Academic & Administrative
- Network Printers – Academic & Administrative
- Servers – Academic & Administrative

In order to define a life cycle for a given technology, both the service life and the useful life of the technology must be considered. Service life is the amount of time that the technology typically lasts before requiring maintenance and repairs beyond its value. Useful life of the technology is the amount of time before the technology is rendered obsolete by advances in that technology. Useful life, unlike service life, is a floating value determined primarily by the users' needs.

Because the useful life of technology is determined by the users' needs, equipment that is no longer useful to a user with heavy demands may be useful to another user with lesser demands. This means it is possible to redeploy technology that is obsolete in one role into another role where it is still useful. By redeploying old technology, significant cost saving can be realized.

Equipment Type	Maximum Service Life	Maximum Useful Life
Computers with monitors	6 Years	3 Years – Heavy Users 5 Years – Moderate Users
Network Printers – Academic & Administrative	6 Years	5 Years
Servers	5 Years	4 Years

C. Media Services
Media Services serves two primary purposes, with each college managing the operation differently.

- Media Production develops and creates audio, video, PowerPoint slides, rich media, and web presentation for faculty. Training of faculty and staff is included in their responsibilities.
- Media Systems provides support of Audio Visual (AV) equipment. This includes checkout of equipment, such as digital cameras, laptops, portable projectors and other related AV equipment. Upon request, they may deliver and/or setup up equipment for classrooms instruction and special events. They provide requirements for classroom mediation and work with vendors to install equipment.

Media Services and Academic Support work together to assess the classroom needs before purchases of media equipment. During installation, they continue to work together, to ensure all components operate correctly.

The following items are considered and discussed when mediating a district facility or classroom:

- Functionality
- Future capability
- Current equipment
- Room layout
- Lighting
- Sound
- Electrical outlets—ceiling and wall or floor
- Network Access, including wireless

While the majority of the SAC and SCC classrooms are mediated, the district is continually working toward complete mediation of all classrooms on the college campuses. Mediation has become an important element in the faculty's teaching practices, and the colleges have recognized the importance of classroom mediation. Therefore, media needs will be identified and subsequent installation required, consisting of a network jack, a projector placement and an instructor station, in all future classroom building construction.

Equipment Type	Maximum Service Life	Maximum Useful Life
Projectors	6 Years	5 Years

D. Software

Most employee computers run on the Windows operating system and feature the Microsoft Office Suite, which includes Excel, Word, PowerPoint and Outlook, for daily computing needs since it is the most widely used set of programs in business and industry and considered the de-facto standard. Outlook is used for district email, professional contact information, and managing one's calendar and task list. Every user's Outlook is configured to connect with the back end server (Exchange) that stores users' data. The server is backed up routinely, and staff can access their data from anywhere using the district's remote access (remote.rsccd.org).

The two academic support staffs in conjunction with the network staff have agreed on a core set of software in order to minimize any configuration collisions. The core software is funded by ITS, and as updates are released, the academic support staff, with input from the colleges and coordination with the network staff, develop a plan to install the latest versions. Essentially, the updating process consists of three factors: First, if the curriculum demands the newest version, then academic labs and their associated faculty will receive the updated software. Second, the newest software versions will be the standard on all new computers. Finally, faculty and staff needs will be evaluated to determine if their computers need the updated software.

A summary of the "core" set of software programs as defined by the colleges' Academic Support Directors and the Networking Department are:

- Operating System
- Internet Explorer
- Microsoft Office

- Datatel - Staff
- Adobe Reader
- Apple Quick Time Player
- Windows Media Player
- Flash

Academic departments purchase necessary licenses for specialized software outside the core standard software. Academic Support will install the software on the required computers.

Although the Windows operating system is installed on the majority of computers district wide, ITS supports Macintosh computers used for specific work or academic environments, such as publishing and professional video production. It is appropriate for students interested in these professional fields to learn the Macintosh operating system and its applications in order to prepare for successful careers.

IV. Technology and Instruction

In regards to the changing technology and the gap in faculty knowledge of these new technologies, the colleges and ITS frequently receive requests to purchase or provide technology/software so that faculty can enhance instruction. Some of the requested technologies have stabilized, some are older technologies not worthy of support, and some are so new they need to be researched. TAG has the responsibility to address these issues to promote appropriate technology in the classroom and online instruction. ITS is committed to support and promote the technologies researched and recommended by TAG.

Under the direction of the colleges' Offices of Distance Education, ITS supports the Blackboard system. However, TAG and ITS recognize and respect that the curriculum developed using these technologies are solely managed by the colleges.

Santa Ana College and Santiago Canyon College are in agreement that faculty at both campuses require instructional and on-going assistance with Blackboard and Distance Education best practice techniques. The administration of course creation, enrollment, assessment and problem resolution in Blackboard can be extensive and requires continual staffing for immediate support of students/faculty. As a classroom that is "open" to students at any time, day or night, the support of faculty and students is a primary concern to both ITS, for hardware, network and Blackboard application support, and the colleges for support of student/faculty account access and specific course support.

From the colleges' perspective, the ideal Distance Education Program for Rancho Santiago Community College District would be one that allows the colleges to remain competitive among other educational institutions and to meet student educational needs and expectations, knowing what currently works at our campus sites. To remain competitive and to more effectively educate students, each college would require an Instructional Design Center of which Distance Education would be a component.

Ultimately, the colleges would like an Instructional Design Center that includes the following functions: Director of Instructional Technology, Instructional Designer, ITS Liaison, Accessibility Expert (Americans with Disabilities Act), Media Expert, Web Designer, Trainer, Help Desk staff and Programmer. The center would require a facility on each campus as a one-stop location providing for a faculty training room, audio and video recording rooms, and equipment checkout and storage area.

As an ultimate solution to assist faculty in providing best practice Distance Education, the Instructional Design Center would provide a one-stop location for all faculty whether their course be online, hybrid, or face-to-face. It has been the experience of the colleges that faculty require this type of support as a drop-in location on-site. Thus, an Instructional Design Center is required at each college. Technology is used throughout the curriculum of each college and it is necessary for faculty to have the training, assistance, and tools ready for utilization.

V. ERP Systems

According to the California Community Colleges Technology III plan, "Enterprise Resource Planning (ERP) systems integrate, or attempt to integrate, all data and processes of an organization into a unified system. A typical ERP system will use multiple components of computer software and hardware to achieve the integration." This has proven true at RSCCD in that we have several software and hardware systems that comprise our ERP.

Datatel—Fully integrated solutions for Admissions and Records, Financial Aid, Financials, and Human Resources. These solutions leverage the same comprehensive data to maximize departmental efficiencies by improving departmental workflows, business processes, productivity, and efficiency across the entire district. Datatel is comprised of several Unix and Windows servers, providing "near" 24/7 access via the WebAdvisor product.

Blackboard—Designed to meet the needs of both students and faculty to work inside and outside the classroom in ways that make sense to learning. The Blackboard solution is used for our online curriculum, hybrid sections, and as supplemental to the traditional "brick-and-mortar" classes. The district has chosen to have Blackboard host this solution. Information is ported from Datatel to the Blackboard system.

OCDE—Orange County Department of Education (OCDE) houses our payroll system which includes entering position and related pay for employees, tracking leave accrual and usage, and tracking timesheet hours.

CurricuNet—Designed to automate the entire process of submitting course and program proposals to the State Chancellor's Office via the web, providing a streamlined process for a cumbersome process. Once course descriptions are approved by the State, they are then entered into Datatel. CurricuNet holds the history while Datatel holds the current descriptions.

CCC Apply—Our online application solution was product developed by XAP Corporation with the support of the State Chancellor's Office and used by many of the California Community Colleges. Datatel has an integration solution to import the data into Datatel.

Voyager—Both Santa Ana College and Santiago Canyon College use the Voyager Integrated Library System. This system is based on open architecture to serve today's academic and research needs.

Perceptive Software—Document imaging, document management, and workflow for the thousands of documents that make up a student's career at our colleges or to simply process an invoice for payment.

Astra Schedule—An interactive scheduling system that assists coordination of academic, event, and resource scheduling functions.

CI Track—An attendance tracking system to track the time students spend in open-entry/open-exit labs, tutoring centers, fitness centers, and Math labs, English labs, and computer labs.

These solutions contain the mission critical data for the entire district, therefore it is imperative that both the software and hardware are up-to-date, tested, and patched, and that the hardware is budgeted to rely on growth and upgrades.

With the implementation of Datatel, a committee of individuals from key departments was formed to test patches to these systems. With the software so tightly integrated, if a patch was not tested, the error will have a rippling effect, traveling through all the systems. Patches are loaded into a test environment on a monthly basis. This team tests patches and gives the approval to move patches into the production environment. This process is scheduled to occur monthly so the district does not fall behind on patches.

When there are patches to the operating system these solutions run on, they are first certified by the vendor. For example, if Oracle or HP updates their software, Datatel will first certify that their software has been tested on the new platform, then ITS will ask the committee to perform its tests. Once the committee is satisfied and has given ITS approval, the new operating system patches are moved into the production environment.

VI. Web Presence

The district is represented on the internet by three public facing web sites, the intra-net, and a series of niche web sites that are department or division specific. The majority of these sites are created, maintained and hosted on district servers.

External Sites
RSCCD's three main external (public facing) web sites include the district (www.rsccd.edu), SAC (www.sac.edu) and SCC (www.sccollege.edu). Each web site has its own distinct design, features location specific information and is maintained by content managers who use various content management systems to keep the web site's information current. Both SAC and SCC have established web committees, made up of administrators, faculty and staff , who meet regularly to review content, brainstorm and discuss web site enhancements and troubleshoot technical issues that affect the web site.

The RSCCD web site is maintained by a group of content managers from the different departments featured on the web site. The district does not have an established web site committee, but major changes or upgrades to the web site are done in collaboration between ITS and the district's Public Affairs/Governmental Relations department.

All three external site designs reflect the personality of each college and/or district location. The primary purposes of these websites are to provide visitors with:
- Current information on the college's and/or district's educational programs and services.
- Easy way to access enrollment information and register for courses online.
- Important contact numbers.
- Upcoming event information.
- Employment information.

One of the biggest challenges ITS faces is the various ways these three sites are maintained. Currently, all three are updated using different content management systems. Because these sites are large and need to be refreshed regularly it would benefit the district and ITS to deploy an easy to use content management

system for cost savings and reduction in staff training. By implementing one content management system SAC, SCC and RSCCD's web sites could share centralized information (calendars, newsrooms, image galleries, etc.) and be programmed similarly, but look distinctively different. This would also allow ITS to develop standardized procedures to insure all of the college and district web pages meet the accessibility standards that are in the Americans With Disabilities Act.

Intranets
The district hosts two intranets that provide resources for employees. RSCCD has a district-wide intranet which hosts employee-related information and resources, enrollment figures and trends, discussion forums to collect employee feedback on district-related topics, as well as benefit enrollment information.

Niche Sites
The district also hosts niche web sites for several economic development and education programs who are affiliated with the district. These web sites are typically .com or .org sites and are supported with various levels of district resources. At this time there are no formalized style guides for these sites, but the district expects a certain level of professionalism. RSCCD has no formal governance over these sites, but works with department or program administrators when issues arise. Support of these sites is based on availability of staff. These sites include:

Chancellor's Ball (www.chancellorsball.org)
Digital Media Center (www.dmc-works.com)
International Consortium for Educational and Economic Development (www.iceed.com)
Orange County Small Business Development Center (www.ocsbdc.com)
Orange County Youth Entrepreneurship (www.ocyep.org)
Santa Ana College Art (www.sac.edu/art) *
Santa Ana College Athletics (www.sac.edu/sports) *
Santa Ana College Dance (www.sac.edu/dance) *
Santa Ana College Fine & Performing Arts (www.sac.edu/fpa) *
Santa Ana College Journalism (www.sac.edu/journalism) *
Santa Ana College Music (www.sac.edu/music) *
Santa Ana College Speech (www.sac.edu/speech) *
Santa Ana College Theatre (www.sac.edu/theatre) *
Santa Ana College TV/Video (sactv.sac.edu)
Workplace Learning Resource Center (www.rsccd-wplrc.org)

* hosted on the external server (ext.sac.edu)

VII. Training & Support

The TAG committee, aided by the insight and input of the Technology Advisory Committees at each college, faculty and staff, has identified a critical deficiency in the area of training and support available within RSCCD. The committee has focused on the two major inadequacies within the district: Academic Training & Support, as well as, Operational Training & Support.

Academic training and support is vital to the professional growth of faculty and to provide a vehicle for faculty to become proficient with the available technology to enrich the students' classroom and virtual classroom experiences. Currently RSCCD has no formal training available for faculty to learn to use the available enrichment tools such as Camtasia, Adobe Photo Shop Premiere Elements, Acrobat Professional, Captivate, and other technological resources. "Recent financial constraints mean that universities cannot depend on extra money to solve problems like stagnant graduation rates, high rates of remediation, and poor student performance. Instead, the future of higher education depends on its becoming more productive and innovative, often through the use of technology" (Education Sector 1). Research has shown that "technology-rich schools generate impressive results for students, including improved achievement; higher test scores; improved student attitude, enthusiasm, and engagement; richer classroom content; and improved student retention and job placement rates." (NSBA 3). This research also discovered that education in technology rich environments "revolutionizes the traditional methods teachers use; students become re-energized and much more excited about learning – resulting in significantly improved grades – while dropout and absentee rates decrease dramatically. For high school students in the program, drop-out rates fell from 30 percent to near zero, while absenteeism was reduced from 8 percent to 4 percent. *Teachers can and will embrace technology, if they are given the kind of professional development and support they need"* (NSBA 6). Furthermore, "research clearly indicates that the single most important factor in the effective use of technology is the quality of the teacher knowledge of effective technology uses in instruction" (Valdez 7).

Based on the insight provided to the TAG committee and the supporting research studies, the committee is recommending that RSCCD make academic training and support a priority by creating Instructional Design Centers whose purpose is to provide training and support for faculty with an end result to enhance the learning experience in the classroom, whether the classroom is virtual (*e.g.* online classes), traditional brick-and-mortar classes, or a hybrid of both. The Instructional Design Centers would provide training courses, as well as a place where faculty can seek an individualized learning experience and solutions on current district academic technology. The TAG committee also embraces the idea of a "learning community" where more technologically savvy faculty can mentor those that are struggling with the new educational tools, in addition to providing an online forum for faculty to post questions and receive suggestions and answers from their peers.

Operational training and support is vital to the operational functionality and efficiency of the district. In light of the budget crisis the education system in California is facing, it is imperative that the district fully utilize the currently technology to maximize efficiency and productivity. Economist Robert Reich noted "the extraordinary productivity improvement generated primarily by information technology." Further supporting the statement, the "Federal Reserve economists released a study showing the use of IT has contributed approximately $50 billion in productivity output annually since the mid-1990's" (McGee 1). Finally, in 1991, the Joint Economic Committee Study concluded that technology has contributed significantly to employee productivity (Feroli 1). With budget cuts and reductions in the district workforce over the past few years, it is essential to the success of the district that employees be entirely competent in the technology available. Currently, there is no training available to employees on the district technology. The onus is on the employee to learn to use the technology with very few resources available. While each department may provide limited training to an employee, there is no centralized

training and support available to employees on district-wide technology such as Datatel, Outlook, RSCCD Intranet, Remote, or the phone system.

To capitalize on the available district technology, the TAG committee again recommends the transition to a centralized Help Desk, and the advent of a District Technology Trainer. The centralization of the Help Desk to a full service "Service Desk" will provide end users with a single point of contact, a standardization of service, and facilitate efficient and timely resolutions. Centralization would allow the District to provide extended service hours while reducing the operating cost of the Help Desk. A service desk environment would allow for self-help, documentation and training for support products and processes throughout the district. By using a tiered approach the proper technician can be assigned without general disruption of other services. The Service Desk would provide tiered support and escalation options as needed to provide the end user with high quality, consistent service and timely problem resolution while promoting a uniform and structured staff response. The first level of the Service Desk, would provide a level of self-assistance where users could reference a dynamic knowledge base for problem resolution, training, and reference. The second level would provide end users personal interaction with a Help Desk Analyst to help trouble shoot and resolve more complex business problems such as resetting passwords and account security, in addition to providing problem resolution and basic end user training. The third level of support provides advanced technical support, technical repairs, coordinates scheduling installations, repairs, upgrades, and enhancements, and maintains a knowledge base of technology-related repair and service contracts. The highest level of support is the beginning of the escalation process, if the issue cannot be resolved by level two or three. While lower support levels should have the root cause defined, a summary of actions taken, and suggestions for further action, it will be the responsibility of the level four support to take or assign ownership to ensure the timely resolution of the issue, including resource allocation and setting expected resolution time frames.

The District Technology Trainer would provide employees, both faculty and staff, training on district-wide technology such as Email, Remote, Intranet, Outlook, Datatel, and the Report Repository. Working in conjunction with the Service Desk to identify training deficiencies within the district and employee education opportunities, the trainer would develop curriculum to help district employees learn the intricacies of the technology and how to use the technology to its fullest capability. By providing a District Technology Trainer, employees would have the opportunity for individualized learning experiences and solutions, as well as standardized instruction in the technology that is utilized in the daily operations of the district. By maximizing the use of the available technology, employees can better and more efficiently serve the student population that they support, making their daily tasks easier to accomplish.

2012-2014 Appendix

Appendix A

Appendix A—Summary of Achievements and Highlights

The following is a summary of the technical achievements and highlights from 2011-12. This summary includes the major technological accomplishments and technology projects that are planned or in progress in the areas of instructional technology and district-wide technology. In addition, a projected Strategic Technology Plan cost summary, and summary of software and hardware maintenance costs are included.

<u>Achievements</u>
Instructional Technology:
- Faculty Technology Survey – A survey was completed to help the TAG Committee understand the current use of technology in instruction, and the perception of future advancements.
- Integrated Web-Based Technologies – Blackboard and MyMathLab are examples of the integrated web-based technology that faculty have successfully incorporated into the classroom.

TAG / District Office:
- Virtualization – ITS experimented with virtualization solutions in lab and administrative settings, to provide cost-effect, cutting-edge technology solutions for the district.
- IPAN Power Strips – IPAN Power Strips were installed throughout the district to provide energy savings and support the "green" initiative. The "smart" power strips are equipped with motion sensors to detect when the technology is in use, and to shut off the technology when not in use.
- TurnItIn.com – TAG approved the purchase of a district-wide license for TurnItIn.com, a powerful instructional tool, that can be integrated into Blackboard, and provide students with tools to assist them in writing original papers.
- Project Kaleidoscope – An open source educational resources grant was awarded to RSCCD to develop and implement a set of fully open general education courses in collaboration with eight colleges serving at-risk students.
- Faculty PIN Authorizations – Faculty can print add codes from Web Advisor to allow students to add the class online, automating the process and saving faculty, students, and administrators time and resources.
- Sharepoint 2010 Web Publishing – The district websites have migrated to Sharepoint 2010 Web Publishing to provide familiar content management tools, incorporate shared information systems, functions and features, as well as, allow peer collaborations with a district-wide best practices and standardized procedures.
- Remote System Upgrade – The hardware which allows employees remote access to email, personal and department folders has been upgraded and successfully implemented, providing employees with a faster connection, seamless downloading, and compatibility with new operating systems.
- District Tablet Guideline – With the advent of new technology, ITS in collaboration with the RSCCD Purchasing Department, developed a tablet guideline to provide a district standard and procedures for the acquisition, distribution, and use of tablets, such as iPads or Nooks. The guideline also encompasses as the programs or applications used on the devices, and the scope of ITS support.

Highlights of Current and Future Projects

Instructional Technology:

- Instructional Design Center – Both colleges' technology advisory committees recommend making an Instructional Design Center a priority. The goal is to develop, test, and analyze pilot programs to find a viable design and solution to make Instructional Design Centers a reality.
- Open Educational Resources / Flipping the Classroom – A unique and cost-effective learning experience can be provided by using open source material (including full text books), and assigning classroom lectures as "homework" utilizing the latest technology for delivery, while using in-class time for the completion of traditional "homework" in a flexible and interactive classroom learning community.

TAG / District Office:

- Library Systems – The colleges are exploring, and will be testing and evaluating a variety of long-term library solutions.
- Research Data Collection – The district will be investigating techniques, strategies, and products to provide full utilization by faculty, staff and students of the available data collected in Datatel to assess the proficiencies and cost-effectiveness of district programs, and student success.
- SQL Conversion – ITS is in the process of converting the district database from Oracle to SQL to provide significant cost-savings, and superior integration with the district ERP systems.
- Single Sign-On Strategy – Currently staff and faculty have multiple User ID / password combinations to access the district ERP systems. This project, which is in the development and testing phase, will consolidate the various User ID / passwords into a single User ID and password, to facilitate and streamline the authentication process, provide more efficiency and preserve district resources.
- Video Surveillance – The project has entered the installation phase, and will provide students, faculty, and staff with added security and a proven crime deterrent, with cutting-edge video coverage of key district locations.
- Wireless Upgrade – The installation phase is in progress at Santa Ana College and it is anticipated that the project will be complete by July 2012. Once complete, the remaining district sites will be upgraded and have wireless coverage to provide fast, convenient, and reliable wireless access for students, faculty, and staff. The upgrades are scheduled to be completed by spring 2013.
- Disaster Recovery Plan – Guidelines have been established, approximately 80% of the equipment has been purchased and installed, and the documentation is in progress. The Disaster Recovery Plan provides a vehicle for ITS to re-establish mission critical technology and services in the event of an emergency.
- Human Resources / Payroll Document Imaging Project – In the development phase, Perceptive Software has been contracted to develop electronic forms for the human resources and payroll departments. These forms will allow an entirely electronic work flow, including current and historical document storage, saving the district money, supporting "green" initiatives, and facilitating a more streamline process to save employee time and resources.

2012-2014 Strategic Technology Plan Cost Summary

	Budget 12/13		Budget 13/14		Budget 14/15		Budget 15/16		Budget 16/17	
Appendiex B-Positions	Equipment	Ongoing	Equipment	Ongoing	Equipment	Ongoing	Equipment	Ongoing	Equipment	Ongoing
Position Requests		231,806		318,539		169,550		318,539		286,432
Appendix C--Instructional Technology	**One Time**	**Ongoing**	**One Time**	**Ongoing**	**One Time**	**Ongoing**	**One Time**	**Ongoing**	**One Time**	**Ongoing**
Virtual Desktop for Labs and Library										
Virtual Servers	40,000			8,000		8,000		8,000		8,000
Licenses	30,000			10,000		10,000		10,000		10,000
Thin Clients	30,000		30,000							
Blackboard										
NBC Learn		8,000		8,000		8,000		8,000		8,000
Mobile	25,000			5,000		5,000		5,000		5,000
Turn-it-In		35,000		35,000		35,000		35,000		35,000
Section Total	125,000	43,000	30,000	66,000		66,000		66,000		66,000
Appendix D--ERP Projects	**One Time**	**Ongoing**	**One Time**	**Ongoing**	**One Time**	**Ongoing**	**One Time**	**Ongoing**	**One Time**	**Ongoing**
Single Sign On	50,000		500,000		500,000		500,000		500,000	
	One Time	**Ongoing**	**One Time**	**Ongoing**	**One Time**	**Ongoing**	**One Time**	**Ongoing**	**One Time**	**Ongoing**
Appendix E--Academic Equipment Replacement										
Santa Ana College	791,040		791,040		791,040		791,040		791,040	
Santa Ana College Continuing Education	205,660		205,660		205,660		205,660		205,660	
Santiago Canyon College	614,780		614,780		614,780		614,780		614,780	
Santiago Canyon College Continuing Education	247,620		247,620		247,620		247,620		247,620	
District Office	75,920		75,920		75,920		75,920		379,600	
Section Total	1,935,020		1,935,020		1,935,020		1,935,020		2,238,700	
	One Time	**Ongoing**	**One Time**	**Ongoing**	**One Time**	**Ongoing**	**One Time**	**Ongoing**	**One Time**	**Ongoing**
Appendix F--Network and Communications	1,028,980		1,028,980		1,028,980		1,028,980		1,028,980	
Grand Total	**3,139,000**	**274,806**	**3,494,000**	**384,539**	**3,464,000**	**235,550**	**3,464,000**	**384,539**	**3,767,680**	**352,432**

Software and Hardware Maintenance--Fixed Cost				12/13	13/14	14/15	15/16	16/17
				Estimated Cost	Estimated Cost	Estimated Cost	Estimated Cost	Estimated Cost
A.	Software and Application Maintenance							
		Datatel	Student Information System	294,000	321,930	352,513	386,002	422,672
		Datatel 3rd Party	Third party Tools	48,000	52,560	57,553	63,021	69,008
		Datatel	Solution Center	10,000	10,000	10,000	10,000	10,000
		Blackboard	Instructional Course Management Software	290,000	317,550	347,717	380,750	416,922
		NBC Learn	NBC Learn	8,000	8,760	9,592	10,503	11,501
		Paradigm	Turn-it-in	35,000	38,325	41,966	45,953	50,318
		Perceptive Software	Document Management System	50,000	54,750	59,951	65,647	71,883
		XAP	Online Applications	20,000	15,000	15,000	15,000	15,000
		Ad Astra	Section Scheduling	17,500	17,500	17,500	17,500	17,500
		Evisions	Form General tool used with Datatel	2,000	2,190	2,398	2,626	2,875
		ECS Imaging	Document Scanning System for Admissions	14,000	15,330	16,786	18,381	20,127
		ITPI	EOPS, Fitness Assessment, Ed Plans, Outreach, & DSPS	62,000	67,890	74,340	81,402	89,135
		College Source	Catalink	1,000	1,095	1,199	1,313	1,438
		ROC Software	Print Management Tool for Datatel	5,000	5,475	5,995	6,565	7,188
		Sector Point	Web Content Management System	145,000	158,775	173,859	190,375	208,461
		Curricunet	Curriculum Management Software--maintenance	24,000	26,280	28,777	31,510	34,504
		CSS	Powerware (UPS) Maintenance--SCC, DO, OEC, & DMC	25,000	27,375	29,976	32,823	35,942
		RAM Tech	Powerware (UPS) Maintenance--SAC	10,000	10,950	11,990	13,129	14,377
		CI Solutions	Attendance Solution for Datatel	3,500	3,833	4,197	4,595	5,032
	Total Software and Application Maintenance			1,064,000	1,155,568	1,261,309	1,377,096	1,503,882
B.	Server and Network Systems Maintenance							
		CISCO	Network Equipment Maintenance	106,000	116,070	127,097	139,171	152,392
		CISCO	Phone System (under maintenance until July 2012)	150,000	150,000	164,250	179,854	196,940
		Veramark	Phone System activity reporting tool	15,000	15,000	16,425	17,985	19,694
		Symantec Antivirus	Antivirus for PC's & Macintoshes; Ghost Imaging tool	45,000	49,275	53,956	59,082	64,695
		Forefront	Exchange Antivirus	12,500	13,688	14,988	16,412	17,971
		Servlet Exec	Web Application Server	6,000	6,570	7,194	7,878	8,626
		Juniper	Remote Access Solution	5,000	5,475	5,995	6,565	7,188
		What's up Gold	Network monitoring Tool	14,000	15,330	16,786	18,381	20,127
		SSL Certificates	Web Secure Socket Layer Certificates	4,600	5,037	5,516	6,039	6,613
		Verisign Certificates	Secure website Certificates	15,500	16,973	18,585	20,350	22,284
		VMWare	Virtual Server license	40,000	43,800	47,961	52,517	57,506
		Accuvant	Wireless	50,000	54,750	59,951	65,647	71,883
		Microsoft Campus Agreement	Microsoft Software License	150,000	164,250	179,854	196,940	215,649
		Palo Alto	Firewall	70,000	76,650	83,932	91,905	100,636
		Symantic Enterprise Vault	Email Archiving Solution	75,000	82,125	89,927	98,470	107,825
		IronPort	Email Traffic Appliance	70,000	76,650	83,932	91,905	100,636
		Video Surveillance	Video Surveillance		100,000	100,000	100,000	100,000
		Arruba	Wireless	50,000	100,000	100,000	100,000	100,000
		EMC	Avamar	150,000	164,250	179,854	196,940	215,649
		Hewlett Packard	Central Database Storage Solution (EVA & SAN)	60,000	65,700	71,942	78,776	86,260
		Hewlett Packard	Virtual Server maintenance	100,000	109,500	119,903	131,293	143,766
		Hewlett Packard	Emergency Support	10,000	10,950	11,990	13,129	14,377
	Total Server and Network Systems Maintenance			1,198,600	1,312,467	1,437,151	1,689,239	1,830,717
Grand Total				2,262,600	2,468,035	2,698,460	3,066,335	3,334,600

Appendix B

Appendix B—ITS Positions Request

2012-2013 Position Requests Projected Budget

SCC and SAC Academic Support
Due to the uncertainty of the economy, several Technical Support positions have been frozen this past fiscal year. At the time of publication, there are two positions currently frozen. First is a Technical Specialist I position at Santa Ana College and the second is the Help Desk Analyst position that has been located at Santiago Canyon College. As the demands for technology training and support increase for instructional and operational needs, TAG respectfully requests that when funding becomes available, these positions be a priority to fill.

New Positions
In support of the recommendations of the Strategic Technology Plan in the area of Training and Support, ITS will move the Help Desk Analyst positions to the district office where best practices and self-service training documents can be developed. ITS is requesting that a Help Desk Manager be hired to oversee and develop the department, and to provide employee and district-wide support.

Over the past five years, the district office has enhanced the network, upgraded the phone system, upgraded the remote system, enhanced the intricate email system, implemented virtual services with a disaster recovery solution located at Santiago Canyon College, improved and enhanced the backup and recovery methodology, and is currently replacing the wireless network at all locations, implementing a district-wide video surveillance system, and developing a same sign-on solution. As the services increase, the staff has not. To adequately support this new and enhanced technology, TAG requests an additional Network Specialist III position.

Costs:
Help Desk Manager	Grade L/Step 4	$114,924
Network Specialist III	Grade 19 Step 4	$116,882
2012-2013 Projected Budget Total:		$231,806

Future Position Requests Projected Budget
As the colleges grow and the demands on the ITS organizations grow, TAG predicts that 2-3 positions will be recommended per year. Therefore, for future cost predictions, three positions are budgeted.

2013-14 Projected Costs:
     Trainer $ 84,775
     Networking $116,882
     Programmer $<u>116,882</u>
2013-14 Projected Costs Total $318,539

2014-15 Projected Costs:
     SAC Technical Specialist $ 84,775
     SCC Technical Specialist   <u>$ 84,775</u>
2014-15 Projected Costs Total $169,550

2015-16 Projected Costs:
     Networking $116,882
     Programmer $116,882
     Technical Specialist   <u>$ 84,775</u>
2015-16 Projected Costs Total $318,539

2016-17 Projected Costs:
     Programmer $116,882
     Technical Specialist $ 84,775
     Technical Specialist   <u>$ 84,775</u>
2016-17 Projected Costs Total $286,432

Appendix B--Position Requests	12/13		13/14		14/15		15/16		16/17	
	Salary	Benefits	Salary	Benefits	Salary	Benefits	Salary	Benefits	Salary	Benefits
Helpdesk Manager	71,000	43,924								
Network Specialist III	76,000	40,882								
Trainer			50,000	34,775						
Network Specialist			76,000	40,882						
Programmer			76,000	40,882						
Technical Specialist					50,000	34,775				
Technical Specialist					50,000	34,775				
Networking Specialist							76,000	40,882		
Programmer							76,000	40,882		
Technical Specialist							50,000	34,775		
Programmer									76,000	40,882
Technical Specialist									50,000	34,775
Technical Specialist									50,000	34,775
Total ERP Software	231,806		318,539		169,550		318,539		286,432	

Appendix C

Appendix C—Instructional Technology

A. Santa Ana College
In fall of 2011, the Santa Ana College Technology Advisory Committee (SACTAC) conducted a survey of faculty across campus on their usage of instructional technology. Specifically, the committee wanted to understand the current uses and what faculty saw as future advancements. This section will put to use the findings of that study along with information gleaned from Department Portfolios to examine the direction that SAC has taken with regard to technology, and posit the ways in which SAC can continue this highly productive course.

According to the survey conducted by SACTAC, there was a marked increase in educational technology in the past few years. Many faculty members cited the inclusion of computers, projectors, and document cameras in the classroom as a key technological tool. Because of the presence of this technology in most of the classrooms at Santa Ana, instructors have found various uses for the technology, including creating power points of class lectures, utilizing applets for classroom demonstrations in math and science, and demonstrating the use of web resources for students.

The use of these in class tools has been especially helpful in integrating web-based technologies, such as Blackboard or MyMathLab with classroom instruction. Blackboard has gained significant traction amongst the faculties of SAC and SCC. This traction has been facilitated by the ability to integrate at home use of the web with in class use of the web. For instance, instructors who utilize in class power points can upload those documents to Blackboard for students to reference later. This adds significant benefit for the students by bringing aspects of their classroom instruction into the home. Blackboard has also been used extensively by instructors to disseminate instructional videos for additional guidance in courses such as Math, English and the Sciences. With the advent of You-Tube and an ever increasing number of individuals creating informative and high quality web video, Blackboard's capabilities to post links to instructional video is being utilized to great effect. Some instructors on campus have begun to develop their own instructional videos, particularly within the Math department at Santa Ana College. The development of these instructional videos has been aided significantly by the introduction of video authoring tools, particularly Camtasia.

The integration of web-based technologies and classroom technologies has extended beyond use of Blackboard. In the Math department, the use of MyMathLab has become quite widespread. The program, developed by Pearson, is now used by over 1,000 math students at Santa Ana. It is also used extensively at SCC. The value of the program lies in its ability to diagnose problem areas for students, develop skill-building problem sets, and to give students instant feedback about their work. Similar applications from Pearson, MyReadingLab and MyWritingLab, are being adopted by the English and Reading departments at Santa Ana. Several other web-based applications are also being considered or used on both campuses, although these are the most prevalent. The benefits of these programs are in their ability to provide students with instant feedback and save instructors considerable time grading and preparing homework sets, freeing them to develop innovative lessons and to interact with students more often.

Technology heavy disciplines, including vocational technologies and the sciences, have been increasingly utilizing technologies that mimic or replicate actual hands-on industry activities. These pieces of electronics and machinery allow instructors to expand the work of school beyond the classroom and into the world of everyday practice. Employers are demanding that new employees have real world skills and are capable of problem solving in real world situations. These pieces of technology allow students the opportunity to gain valuable experience. For example, the Nursing Department is currently using high and mid-fidelity manikins and virtual intravenous simulators to help students develop hands-on skills. Automotive technology uses state of the art diagnostic equipment to aid future mechanics in working with

increasing complex cars and trucks. And Engineering has been using CAD systems and computer programs that are industry standards to train students in drafting and dynamics.

A common theme across the technologies mentioned in the survey and those found in a brief survey of Department Portfolios is the manner in which technology is expanding the classroom beyond its brick and mortar borders. On the one hand, technologies such as Blackboard, instructional videos, and MyMathLab and MyReadingLab allow students to access instruction from outside of the classroom. Conversely, the use of computers, real world technologies, and document cameras allow for instructors to reach out to the outside world and give students experiences that may not have been possible ten years ago. The extension of the classroom and the integration of the outside world into the classroom are both developments that have the potential to transform what it means to go to school. New technologies, such as interactive white boards and virtual technology could also blur the lines between the theoretical classroom world and an applications-based outside world.

In the past two months, SAC has undergone a shift from FrontPage web publishing to Sharepoint 2010. The program allows for greater ease in the creation of web documents, and the Web Committee at SAC is encouraging instructors to utilize these new capabilities. In addition to the web publishing capabilities of the program, Sharepoint also allows for shared documents, calendaring, and easy surveying. These tools can change the way that SAC faculty and staff conduct their administrative and pedagogical duties. Shared documents are already being considered strongly for use in accreditation. The calendaring features will allow faculty and staff to coordinate their activities in a more efficient manner. And surveying can allow the college to gather data about our operations. We are currently working on ways to expand the capabilities and use of this powerful product.

In order for the district to more fully utilize these technological opportunities, there needs to be greater amounts of training and education for faculty members in the use of these tools. As well, faculty needs to be instructed on how to design instruction that takes full advantage of our technological capabilities. Although the continued upgrade of equipment is necessary to maintain technology that is in working order, faculty and staff need to be instructed in the proper use of existing technology. Many of the capabilities of our existing technology remain untapped because either faculty do not have the proper education in their use or they lack the time to design curriculum and instruction that takes full advantage. In addition to education and instruction, planning on a wider scale needs to be undertaken to fully consider how the district might use these resources in an integrated manner.

The SAC Technology Advisory Committee feels strongly that the college needs an Instructional Design Center to help instructors integrate technology into their pedagogy. While technology has the potential to be a powerful tool for change and improvement, without the necessary guidance and structure, a teacher's practice does not change simply because a new technological item is placed inside of the classroom. Instead, instructors find ways to implement their old ways of teaching using the new technology. As valuable as this might be, it rarely harnesses the power of the new technology fully. However, the findings indicate that with the proper guidance, insight and creativity, instructors at SAC are open to transforming their practice via technology. An Instructional Design Center will facilitate these transformations and will significantly increase the return on the investment in these technologies.

B. Santiago Canyon College
Educational Technology is evolving at a rapid pace. The most significant trends are leveraging improved digital communication, utilizing inexpensive data storage and providing the ability to share stored data, and introducing advanced user-friendly software that makes it easy to produce high quality portable audio and video.

At SCC, the Mission, relevant to technology, is to innovate, create learning communities and teach students to achieve deep learning by collaborating and communicating with their peers and instructors. It is also critical to make programs easily accessible to students who are demanding deeper integration of technology in the classroom.

According to the California Community Colleges Chancellor's Office Distance Education Report, April 2011, distance education course offerings have nearly doubled in the last five years. Even more interesting is the US Department of Education's Evaluation of Evidence-Based Practices in Online Learning, which found that *"Blends of online and face-to-face instruction, on average, had stronger learning outcomes than did face-to-face instruction alone"* (Emphasis added).

In short, the process of deeply integrating technology into the classroom is desired by students and is more effective at achieving the mission.

SCC faculty members use a variety of equipment and application technologies in the classroom to present and/or create course content, engage students in more interactive learning environments, address different student learning styles, deliver greater value, and facilitate communication with students. SCC instructors are incorporating technology into their respective teaching –through online distance education courses, hybrid courses that are conducted partially online, or as blended courses that utilize course-specific programs and/or a course management systems (*e.g.* Blackboard).

In addition to course-specific programs and/or software, faculty use other applications such as presentation tools (*e.g.* PowerPoint, Camtasia, etc.), visual and audio content, visual and audio editing programs, communication tools (*e.g.* Skype, CCC Confer, WebAdvisor Early Alert, Twitter, Facebook), online lectures, classroom computer management systems, TurnItIn, and social networking tools (*e.g.* Twitter, Facebook, etc.).

The technology survey conducted amongst the faculty at SCC shows a strong interest in using technology in the classroom. The survey also indicates a great desire for training related to creating video, recording lectures, and recording Podcasts. There is also no evidence of a unified vision for how to use technology in the classroom or in the online environment. SCC's faculty are interested in keeping up with what is new in educational technology, but are expressing a broad disappointment with the lack of instructional design and learning technology support. The survey indicated a strong need for an instructional designer and educational technology support staff. The survey also revealed a strong need for updated computer hardware and software to support instructional technology. The request was strongest for a MAC computer lab, software purchases, and high tech lab equipment.

To support SCC's mission and to address the faculty's stated needs, it is critical to provide our faculty, staff, and students with a clear vision of how SCC intends to use technology to advance the mission. The recommendation of SCC's Technology Committee is to create a vision for educational technology in the classroom that will make SCC a leader in supporting student learning with technology, and to support that vision by creating and staffing an Instructional Design Center.

SCC is committed to using technology to increase student success by removing barriers that limit access to learning, and are committed to using innovative technology that promotes learning, increases motivation, connects us as a community, and creates time for motivating exercises that allow students to apply, analyze, evaluate and create.

The Open Educational Resources (OER) movement seeks to eliminate barriers that are erected by the increasingly high cost of textbooks and supplementary class materials. To meet this goal, OER

participants create and share all of their course materials including full textbooks, videos, audio, digital presentations, etc. These materials are copyrighted by Creative Commons and are always free to use and often free to alter, and redistribute. The OER movement saves students money, removing a financial barrier to entry, and encourages teachers to reinvigorate their course by evaluating, altering, and resubmitting OER to progressively improve lecture material and, ultimately, improve student outcomes.

"Flipping the Classroom" is a movement that seeks to assign class lectures as homework and what use to be homework is now done in class in an innovative learning community. This movement is being widely adopted because technology has progressed, making high quality video recording inexpensive and easy to author and distribute. Additionally, OER is available to use, which eliminates the need to spend time creating materials that already exist. When the lecture is delivered as homework, classroom time is available to create peer groups, lead by an instructor, where knowledge will be constructed through assignments given to students in an interactive and flexible classroom learning community.

To support this vision and achieve the goals stated above, SCC will need an Instructional Design Center and staff to support both online and traditional lecture courses. An Instructional Design Center will support this vision while continuing to evaluate emerging technologies that will improve student success and eliminate barriers to entry or completion. The instructional designer will also measure the effect of implementing new initiatives and ensure they are aligning with SCC's Mission and Educational Technology Vision. Other responsibilities include evaluating educational trends, researching, revising and creating new initiatives and avoiding expensive fad technologies that are not aligned with proven learning theory.

Acting on SCC's vision will require technology hardware and software support. The Instructional Design Center should have an accompanying computer lab/classroom that uses dual boot configured MACs so that each instructor may pick their operating system of preference for workshops and class materials creation (*e.g.* videos, Podcasts, etc.).

C. TAG/District Office

The district office continues to experiment with newer technologies which benefit both student and faculty, while providing the district cost-savings in equipment, support and energy. This past year, ITS has implemented more virtualization solutions in labs and public access terminals using a product from NComputing and implemented IPAN Power Strips provided by Southern California Edison.

Desktop virtualization from NComputing, Inc., a company that manufactures hardware and software to create virtual desktops, was researched in lowering desktop computing costs, improving manageability, and reducing both energy consumption and e-waste. After weeks of assembling, followed by months of testing NComputing's products by the students, the NComputing solution was selected and concluded to be the low-cost, most reliable, and an easy to deploy device.   To date, Santa Ana College has amassed over $168,000 in cost and energy savings. For example, take a scenario of implementing an NComputing solution compared to having five PCs, a indication of the savings is as follow:

ACQUISITION COST COMPARISON	
Acquisition cost of 5 PCs deployment (no NComputing)	$6,000
Acquisition cost of an NComputing deployment consists of:	
1) Shared PCs	$1,200
2) Access devices	$320
3) Extra monitors	$400
4) Extra keyboards & monitors	$80
5) Additional licenses	$80
Total acquisition cost of an NComputing deployment (including shared PCs):	$2,080

You save this much with NComputing:	**$3,920**
Which is a savings of:	**65%**
ANNUAL ENERGY COST COMPARISON	
Energy consumption of 5 PCs (no NComputing) deployment in kilowatt hours	1,650
Energy cost of an all-PC solution	$252
Energy consumption of an NComputing deployment (including shared PCs) in kilowatt hours	342
Energy cost of the NComputing deployment (including shared PCs)	$52
Reduction in energy consumption in kilowatts hours	1,308
Reduction in energy consumption (compared to all-PC):	**79%**
Annual electrical cost savings when NComputing is deployed:	**$200**

As virtualization technology continues to be a major focus in ITS infrastructure and operations, products from VMware, Inc., provide solutions in improving the efficiency and availability of ITS resources and applications. This product will prove to be useful in larger desktop environment settings, and continue to reduce costs and energy consumption. SAC and SCC will be piloting desktop virtualization in the classroom and lab settings during the 2012-2014 timeframe.

Budget: $100,000   Funding Source: ITS

Southern California Edison together with the California Energy Efficient Program (CEEP) rolled out the mass installation of IPAN Power Strips. These "smart" power strips have an auxiliary motion sensor that shuts off the strip when an occupant isn't at their workstation for 30 minutes. When the sensor detects motion in the workspace, power is restored. In the summer of 2011, SAC, SCC, and the district office received and deployed approximately 900 of these IPAN Power Strips into offices, classrooms and labs. This product was an ideal energy saving product and helped the entire district achieve "green" goals and objectives. This device can save up to $50 per year per station.

Combining these virtualization products, coupled with efficient energy saving technologies, has resulted in reducing costs and addressed environmental issues such as lowering carbon 'footprint' emissions.

D. Turnitin
On Thursday, October 6, 2011, the district Technology Advisory Group (TAG) recommended that the district enter into a site license agreement for *Turnitin*. The plan is, first, to have the agreement approved by the board and, second, to have full implementation and Blackboard integration for both SAC and SCC by January 1, 2012.

Turnitin is suite of three integrated products, which make it much more than simply a plagiarism detection tool. The first, and most well known and most utilized, product is the Originality Check that checks for instances of plagiarism. If the instructor chooses, students can check their own originality reports before final drafts are due in order to assist students with the revision and editing processes. In this way, *Turnitin* becomes a tool to assist students in catching quotation errors that might have otherwise been overlooked.

In addition to the Originality Check, PeerMark is the second product that manages assignments and allows student-to-student as well as instructor-to-student collaboration. Instructors can allow students to share their papers with classmates for a peer review process so that they can learn from others promoting a collaborative learning environment. Instructors can also review the drafts. This is a very useful tool, by allowing students to have their projects reviewed before they have to submit a final draft into Originality Check.

The third product is GradeMark, which now contains e-rater. In addition to providing automated grammar and punctuation comments via GradeMark's e-rater feature (not all automated comments correctly identify errors, and instructors can disable the feature), GradeMark allows instructors to provide electronic feedback to the students by providing editorial highlights, custom comments and editing marks directly into the student papers. Electronic grading has the potential to save time for the faculty while providing enhanced comments with links to online resources for the students. Furthermore, electronic grading will save paper, which aids in supporting a "green" environment.

These three products are packaged together into one rich suite of software, which is called *Turnitin*. To learn more or to view product demos or training sessions, visit their web site: www.turnitin.com

Training is one of five headings on *Turnitin's* home page with five sub categories. There are two good trainings titled "Getting Started" and "Instructor Training," and it would be beneficial to view these before any use of the product, as it would provide an excellent jump start on the entire suite. Instructors can "get started" with training immediately— even before the contract begins. In addition, on the right hand side of *Turnitin's* home page, there is an approximately five minute demo that instructors might find valuable. Finally, there are plans for spring 2012 flex week activities where faculty will enumerate the benefits of *Turnitin.com* that make it a rich resource for students and faculty, rather than simply an anti-plagiarism tool. Opportunities may be available to connect with faculty members from the English department that have been using this system for the past two plus years.

Budget: $35,000   Funding Source: ITS

E. Kaleidoscope
In fall 2011 RSCCD was awarded an innovative Open Educational Resources (OER) grant called Project Kaleidoscope. Project Kaleidoscope is the design and implementation of a set of fully open general education courses as a collaborative effort by eight colleges serving predominantly at-risk students. The project will dramatically reduce textbook costs and allow collaborative improvement of course design to improve student success.

While the project is quite complex, there are four key attributes that define the approach:

1. Kaleidoscope is a cross-institutional collaboration. The Kaleidoscope course designs are created by cross-institutional teams. Each course design is being developed by at least two partner institutions, and will be adopted by faculty members from other colleges.
2. Kaleidoscope course designs use the best of existing open educational resources (OER). Rather than adding to the wealth of existing OER, the faculty teams are assessing and leveraging existing OER. Where adequate open resources exist, commercial textbooks or materials will not be included in the course design.
3. Kaleidoscope course designs use a common assessment process. The course designs are created with assessment embedded throughout allowing faculty teams to understand where the course design is supporting student success, and where opportunities for improvement exist. The courses designs also enable rubric-based assessment of deeper learning outcomes.
4. Project Kaleidoscope will close the loop on improved course design and student learning. Using OER and a common assessment process will allow faculty teams to improve the course design and learning results based on analysis of embedded assessments and deeper learning results. The project requires this on-going, iterative review and improvement. (www.project-kaleidoscope.org)

The partner institutions have completed initial Kaleidoscope course designs and piloted the courses in fall 2011. The results were very positive and the colleges are excited to continue to enhance the Kaleidoscope courses that are being implemented in the spring 2012 term.

F. Library Systems

Both colleges are using Voyager Integrated Library System (ILS) software to manage their circulation and cataloguing systems. The software runs on a SUN Solaris operating system, which is seven years old and no longer supported by the manufacturer. During 2011-12, the colleges explored the possibility of moving to a variety of systems, but the most promising are not mature enough to purchase at this time. In the interim, the colleges have decided to continue the use of the Voyager software and migrate to a Virtual Machine (VM) server, already owned by RSCCD. Over the next few years, library staff and administrators, with support from ITS, will evaluate and select a long-term solution to replace the aging Voyager ILS.

G. Research/Data Collection

With the advent of the Datatel system, the district has acquired a powerful tool to assess the effectiveness of programs and to administer the various educational institutions in the district. Thus, there is an opportunity to leverage these systems to increasingly assess the effectiveness of courses, programs, and the colleges. Increasingly the district and the State of California have placed a premium on assessment and accountability in order to determine the efficacy and cost-effectiveness of various programs district-wide. Computer programs and training are necessary to allow faculty and staff to best utilize the data capabilities to the greatest effect.

Administrators, faculty, and departments need the ability to assess the effectiveness of various activities that are being undertaken for students' benefit. These activities are a myriad and include supplemental instruction, tutoring, course redesigns, and counseling services. Currently, there is very little way to coordinate students' involvement in these activities and their success. Individual student services that are offering programs to promote student success have very little recourse in finding out how effective a particular course of action was. Furthermore, faculty members are asked to assess their strategic learning outcomes (SLO's) for their courses. However, there is no clearing house for finding out if those SLO's have been accomplished or if the accomplishment of SLO's is having an impact on student course success. Going forward, in order to ensure that faculty and administrators have ways of assessing their own accountabilities, new programs and training in the data systems for members of the faculty are necessary.

Hence, in the next five years, there will need to be an improvement in the options that Datatel offers to administrators, faculty and departments. A survey needs to be conducted to assess the data needs of faculty and administrators. Then, in light of this survey, administration and faculty need to determine what new programs or capabilities would be needed from Datatel. Next, a survey of institutions can be conducted in which the district can determine if any might have Datatel programs and additions that would suit the identified needs. Finally, any needs that could not be met by outside vendors or by using programs instituted at other schools would have to be contracted internally to the ITS department for development.

Secondly, as new Datatel capabilities come on line a concerted effort needs to be made to educate and train staff, particularly faculty, in the use of the new features. As new faculty members are hired, Datatel capabilities and usage training should be a component of their training, and they should also be educated in how to effectively use data to accomplish their goals and assess effectiveness. Furthermore, pathways to identifying and addressing ongoing needs need to be built in to the data collection process.

H. RSCCD Instructional Design Software
RSCCD is committed to providing faculty with the software and hardware necessary to advance the implementation of proven instructional design principles, which elevate student outcomes. The rapid pace of instructional design evolution necessitates swift evaluation and implementation of emerging software to support instruction. Due to the swift nature of educational technology advancement, TAG will evaluate and recommend procurement of software continuously. TAG will also periodically evaluate the current educational software to eliminate technology that is ineffective or outdated.   Unless otherwise noted, funds for these procurements are the responsibility of the colleges.

Technology most commonly used to support instruction at the RSCCD
- Blackboard
    - Pricing
    - In-house licensing vs. hosted licensing
    - Overall value vs. other Learning Management Systems overall value
- Blackboard Modules
    - NBC Learn
- Audacity
- Adobe Suite products
- Communication tools
    - Social networking (*e.g.* Facebook, Twitter, Google +, etc.)
    - CCCConfer
    - Blackboard Chat
    - AIM
    - Google Talk, Video, +
    - Skype
- Open Educational Resource (OER) materials
    - My Open Math Lab
    - Khan Academy
    - Merlot, Connexions, Flat World Knowledge, and many University databases
- Internet-based resources
    - Fold.it, protein folding virtualization/gaming
    - Merlot OER Simulation searching
    - YouTube
    - iTunes
    - Creative Commons Licensing

Software recently supported by TAG
- Blackboard Modules
    - NBC Learn   Budget: $8,000   Funding: ITS
    - Mobile   Budget: $25,000   Funding: New Funds Requested
- Jing
- Camtasia Studio
- Video recording hardware
- Live Scribe Pulse Pen

Appendix C--Instructional Technology									
	12/13		13/14		14/15		15/16		16/17	
	Cost	Maintenance	Cost	Maintenance	Cost	Maintenance	Cost	Maintenance	Cost	Maintenance
Virtual Desktops for Labs & Library										
Virtual Servers	40,000			8,000		8,000		8,000		8,000
Licenses	30,000			10,000		10,000		10,000		10,000
Thin Clients	30,000		30,000							
Blackboard						0		0		0
NBC Learn		8,000		8,000		8,000		8,000		8,000
Mobile	25,000			5,000		5,000		5,000		5,000
Turn-it-In		35,000		35,000		35,000		35,000		35,000
Total ERP Software	**125,000**	**43,000**	**30,000**	**66,000**		**66,000**		**66,000**	**0**	**66,000**

Appendix D

Appendix D—ERP Projects

The 2011-2012 fiscal year has been filled with exciting projects for the ITS department. Most of these projects will span several years. Below is a highlight of the projects ITS has undertaken.

Oracle to SQL Conversion—Update
In 2010, Datatel announced that Oracle would be dropped as a backend database to the Colleague software due to new and existing clients moving towards SQL. Datatel has encouraged their clients to migrate to SQL. The district felt this project would be beneficial because it lowers the expense as SQL is significantly less expensive than Oracle. In addition, this conversion will allow ITS to house Colleague in a virtual environment and be integrated into the disaster recovery system.

The Application Development department has made significant progress on the Oracle to SQL conversion. The test server was developed on the virtual server system housed at Santiago Canyon College, the Datatel Oracle application has been installed, data converted, and 80% of the customizations converted. The production virtual server has been procured, the integrated user testing has been schedule for spring 2012, and the final move to production complete summer of 2012. This will save approximately $100,000 in software and hardware maintenance costs which will be used to offset other increasing maintenance expenses.

Single Sign-on Strategy
The single sign-on strategy is a project to merge the authentication required for all district applications, such as Web Advisor, Blackboard, Exchange, CI Track, library proxy system, and wireless access, into a single sign-on. The unification of the authentication process would provide end users with one User ID and password for all district applications. The Datatel desktop application, due to the sensitive and confidential information it contains, will be the only application that will require a different User ID and password. By eliminating the many User IDs and passwords that are currently required, employees will be able to more easily access the district applications, and ensure that the passwords remain confidential and secure. The scope of the project also includes developing a self-service password reset feature that would allow end users to reset their own passwords, without assistance from the Help Desk or ITS staff. The Web Advisor ID will become the district standard User ID. Though the project is still in the development phase, a test environment has been established. Working closely together, the Network and Application teams are developing program manipulations to facilitate the successful authentication merge for the district applications, and are testing the viability of these manipulations.

Budget: $50,000   Funding Source: ITS

Faculty Pin Authorizations
This system was created by ITS under direction of Admissions, granting faculty the ability to print multiple add codes, through Web Advisor, to distribute to students on the first day of class. This allows students on the waitlist, as well as those wanting to add the class, almost 24-hour access to add their sections regardless of the operational hours of Admissions. The codes when generated allow for a 72-hour window to add the section via Web Advisor as long as it is within the registration add period. The creation of faculty add codes that can be auto generated through Web Advisor provides faculty greater control over who enters their sections and eliminated a lot of physical paperwork from the Admissions front desk. This led to reduced wait times at Admissions and increased turn-around on students adding into the class prior to census.

Enrollment Management Tool
The Enrollment Management Tool (EMT) was created to allow administration at the colleges a way to forecast section building, FTES collection and instructional costs. It replaced the AEMS system that was in place under G-Link and was completely rewritten to be more user-friendly, as well as provide more relevant data. It offers a quick overview at every level within a college; campus, division, department, subject, course and section detailing section counts, faculty load, FTES collected and the breakdown of cost to revenue. The EMT has also spawned reports from the data that is stored within it, and due to the accuracy of the formulas, is now being used to drive many of the reports used for FTE collection. The EMT continues to evolve and change into a more inclusive system directly under the coordination of the Vice Presidents at each campus.

Early Alert
Early Alert is a custom WebAdvisor email notification mechanism that faculty can send to the student. It is a web formatted checklist that faculty have the opportunity to fill out, if any students are seen as struggling or have concerns in terms of coursework completion itself. The checklist then can generate a formal letter that is sent to students to inform them of resources they can use to become more successful in class. The email is specific for each campus and identifies the issues faculty have observed with the student and also provides for custom comments. The letter is automatically sent from the Dean of Counseling, even though faculty are creating it through WebAdvisor by filling out check boxes to send it to an individual or a batch of students. Because all the early alert data is stored in a database, that are queries to identify faculty that are not using Early Alert, and more importantly, what students are receiving multiple early alerts and are in need of intervention.

Document Imaging Project (Human Resources / Payroll)
Perceptive Software was contracted to develop electronic forms for the human resources and payroll departments. These forms will create an entirely electronic work flow, including electronic storage of new and historical documents, saving the district money, supporting "green" initiatives, and facilitating a more streamline process to save employee time and resources. This project is a collaborative effort of ITS, payroll and human resources departments, and is in the design and development phase.

Websites
In the summer of 2011, RSCCD began the process of migrating all of its websites to the MicroSoft SharePoint content management system (CMS). As of February 2012, Santa Ana College joined Santiago Canyon College on the SharePoint web platform with the RSCCD web and intranet sites scheduled for migration in fall 2012. The purpose of implementing a single CMS district-wide is 1) to provide content managers with a familiar tool to maintain their personal and/or department web pages and 2) to incorporate shared information systems, functions and features (*e.g.* calendars, wikis, documents, etc.) that can be utilized on all of RSCCD's SharePoint websites. SharePoint will also allow employees to collaborate on projects, share best practices and standardize procedures for maintaining the websites.

In 2012-13 TAG will be researching the development of a web portal where students will enjoy a centralized registration and information center. The portal will allow a single place for students to login to register for classes, register for financial aid, manage their student records, receive announcements, and communicate with various departments regarding their current student status. The portal will also enable faculty and staff to easily access information to make informed decisions and create collaborative team sites to share information, interact in real time, and increase productivity.

Appendix D--ERP										
	12/13		13/14		14/15		15/16		16/17	
	Cost	Maintenance	Cost	Maintenance	Cost	Maintenance	Cost	Maintenance	Cost	Maintenance
Datatel Portal			225,000	15,000		16,200		17,496		18,896
Single Sign-On Strategy	50,000									
Total ERP Software	**50,000**		**225,000**	**15,000**		**16,200**		**17,496**		**18,896**

Appendix E

Appendix E—Academic Equipment Replacement

The district standard plan calls for computers, both academic and administrative, to be refreshed on a four-year cycle. Printers and classroom projectors are to be refreshed every five years. Replacement computers are funded by the colleges or district department. Summary counts and replacement costs are below. A more detailed plan with five year budgets follows the summary.

Santa Ana College

Academic Computers	$135,900	
Classroom Computers	$372,900	
Administrative Computers	$ 61,800	
Printers	$ 64,960	
Projectors	$104,000	
Servers	$ 51,480	
Total	$791,040	Source of Funds: Santa Ana College

Santa Ana College—Continuing Education

Academic Computers	$ 14,700	
Classroom Computers	$114,900	
Administrative Computers	$ 11,100	
Printers	$ 39,680	
Projectors	$ 20,000	
Servers	$ 5,280	
Total	$205,660	Source of Funds: Santa Ana College

Santiago Canyon College

Academic Computers	$ 33,600	
Classroom Computers	$335,700	
Administrative Computers	$ 98,400	
Printers	$ 40,320	
Projectors	$ 89,600	
Servers	$ 17,160	
Total	$614,780	Source of Funds: Santiago Canyon College

Santiago Canyon College—Continuing Education

Academic Computers	$180,000	
Administrative Computers	$ 22,500	
Printers	$ 14,720	
Projectors	$ 30,400	
Total	$247,620	Source of Funds: Santiago Canyon College

District Office

Computers	$ 61,200	
Printers	$ 14,720	
Total	$ 75,920	Source of Funds: District Office Departments

Appendix E--Santa Ana College									
Division Name	**Qty**	**Cost**	**Replace Factor**	**12/13**	**13/14**	**14/15**	**15/16**	**16/17**	**Total**
Academic									
Academic Affairs	38	1,200	0.25	11,400	11,400	11,400	11,400	11,400	57,000
Business	31	1,200	0.25	9,300	9,300	9,300	9,300	9,300	46,500
Child Development Center	10	1,200	0.25	3,000	3,000	3,000	3,000	3,000	15,000
Counseling	65	1,200	0.25	19,500	19,500	19,500	19,500	19,500	97,500
Digital Media Center	64	1,200	0.25	19,200	19,200	19,200	19,200	19,200	96,000
Exercise Science & Athletics	20	1,200	0.25	6,000	6,000	6,000	6,000	6,000	30,000
Fine & Performing Arts	31	1,200	0.25	9,300	9,300	9,300	9,300	9,300	46,500
Human Services & Technology	32	1,200	0.25	9,600	9,600	9,600	9,600	9,600	48,000
Humanities/Social Sciences	54	1,200	0.25	16,200	16,200	16,200	16,200	16,200	81,000
Science, Mathematics & Health Sciences	80	1,200	0.25	24,000	24,000	24,000	24,000	24,000	120,000
ITS	28	1,200	0.25	8,400	8,400	8,400	8,400	8,400	42,000
Total Academic	**453**			**135,900**	**135,900**	**135,900**	**135,900**	**135,900**	**679,500**
Classrooms									
Academic Affairs (Library and Media System)	128	1,200	0.25	38,400	38,400	38,400	38,400	38,400	192,000
Business	592	1,200	0.25	177,600	177,600	177,600	177,600	177,600	888,000
Child Development Center	3	1,200	0.25	900	900	900	900	900	4,500
Counseling	40	1,200	0.25	12,000	12,000	12,000	12,000	12,000	60,000
Digital Media Center	62	1,200	0.25	18,600	18,600	18,600	18,600	18,600	93,000
Exercise Science & Athletics	4	1,200	0.25	1,200	1,200	1,200	1,200	1,200	6,000
Fine & Performing Arts	114	1,200	0.25	34,200	34,200	34,200	34,200	34,200	171,000
Human Services & Technology	57	1,200	0.25	17,100	17,100	17,100	17,100	17,100	85,500
Humanities/Social Sciences	90	1,200	0.25	27,000	27,000	27,000	27,000	27,000	135,000
Science, Mathematics & Health Sciences	78	1,200	0.25	23,400	23,400	23,400	23,400	23,400	117,000
Student Services (centers)	75	1,200	0.25	22,500	22,500	22,500	22,500	22,500	112,500
Total Classrooms	**1243**			**372,900**	**372,900**	**372,900**	**372,900**	**372,900**	**1,864,500**
Administrative									
Administrative Services	10	1,200	0.25	3,000	3,000	3,000	3,000	3,000	15,000
Mailroom	2	1,200	0.25	600	600	600	600	600	3,000
Student Services	166	1,200	0.25	49,800	49,800	49,800	49,800	49,800	249,000
Student Business	17	1,200	0.25	5,100	5,100	5,100	5,100	5,100	25,500
President's Office	3	1,200	0.25	900	900	900	900	900	4,500
Safety & Security	8	1,200	0.25	2,400	2,400	2,400	2,400	2,400	12,000
Total Administrative	**206**			**61,800**	**61,800**	**61,800**	**61,800**	**61,800**	**309,000**
Printers	**203**	1,600	0.2	**64,960**	**64,960**	**64,960**	**64,960**	**64,960**	**324,800**
Projectors	**130**	4,000	0.2	**104,000**	**104,000**	**104,000**	**104,000**	**104,000**	**520,000**
Servers	**39**	4,000	0.33	**51,480**	**51,480**	**51,480**	**51,480**	**51,480**	**257,400**
Grand Total				**791,040**	**791,040**	**791,040**	**791,040**	**791,040**	**3,955,200**

Appendix E--Santa Ana College Continuing Education									
Division Name	Qty	Cost	Replace Factor	12/13	13/14	14/15	15/16	16/17	Total
Academic									
Adult Basic Education	1	1,200	0.25	300	300	300	300	300	1,500
Basic Skills	1	1,200	0.25	300	300	300	300	300	1,500
CalWORKS	2	1,200	0.25	600	600	600	600	600	3,000
CASAS	19	1,200	0.25	5,700	5,700	5,700	5,700	5,700	28,500
Counseling	5	1,200	0.25	1,500	1,500	1,500	1,500	1,500	7,500
ESL	6	1,200	0.25	1,800	1,800	1,800	1,800	1,800	9,000
El & Civics	1	1,200	0.25	300	300	300	300	300	1,500
Professional Development	1	1,200	0.25	300	300	300	300	300	1,500
Family Literacy & CBET	1	1,200	0.25	300	300	300	300	300	1,500
High School Subjects	4	1,200	0.25	1,200	1,200	1,200	1,200	1,200	6,000
Resource Center	8	1,200	0.25	2,400	2,400	2,400	2,400	2,400	12,000
Total Academic	**49**			**14,700**	**14700**	**14700**	**14700**	**14700**	**73500**
Classrooms									
A-building	44	1,200	0.25	13,200	13,200	13,200	13,200	13,200	66,000
B-Building	55	1,200	0.25	16,500	16,500	16,500	16,500	16,500	82,500
C-Building	0	1,200	0.25	0	0	0	0	0	0
D-Building	75	1,200	0.25	22,500	22,500	22,500	22,500	22,500	112,500
E-Building	117	1,200	0.25	35,100	35,100	35,100	35,100	35,100	175,500
F-Building	27	1,200	0.25	8,100	8,100	8,100	8,100	8,100	40,500
Inmate Education	30	1,200	0.25	9,000	9,000	9,000	9,000	9,000	45,000
Older Adult Program	35	1,200	0.25	10,500	10,500	10,500	10,500	10,500	52,500
Total Classrooms	**383**			**114,900**	**114,900**	**114,900**	**114,900**	**114,900**	**574,500**
Administrative									
Administration	8	1,200	0.25	2,400	2,400	2,400	2,400	2,400	12,000
Attendance & Registration	15	1,200	0.25	4,500	4,500	4,500	4,500	4,500	22,500
Employee Services	8	1,200	0.25	2,400	2,400	2,400	2,400	2,400	12,000
Duplication	2	1,200	0.25	600	600	600	600	600	3,000
Child Development Center	2	1,200	0.25	600	600	600	600	600	3,000
BookStore	2	1,200	0.25	600	600	600	600	600	3,000
Safety & Security	1	1,200	0.25	300	300	300	300	300	1,500
Total Administrative	**38**			**11,100**	**11,100**	**11,100**	**11,100**	**11,100**	**57,000**
Printers	**124**	1,600	0.2	**39,680**	**39,680**	**39,680**	**39,680**	**39,680**	**198,400**
Projectors	**25**	4,000	0.2	**20,000**	**20,000**	**20,000**	**20,000**	**20,000**	**100,000**
Servers	**4**	4,000	0.33	**5,280**	**5,280**	**5,280**	**5,280**	**5,280**	**26,400**
Grand Total				**205,660**	**205,660**	**205,660**	**205,660**	**205,660**	**1,029,800**

Appendix E--Santiago Canyon College									
Division Name	Qty	Cost	Replace Factor	12/13	13/14	14/15	15/16	16/17	Total
Academic									
Academic Affairs	2	1,200	0.25	600	600	600	600	600	3,000
Business & Career Technical Education	8	1,200	0.25	2,400	2,400	2,400	2,400	2,400	12,000
Exercise Sciences & Athletics	6	1,200	0.25	1,800	1,800	1,800	1,800	1,800	9,000
Humanities, Social Sciences, and Art	38	1,200	0.25	11,400	11,400	11,400	11,400	11,400	57,000
Library	6	1,200	0.25	1,800	1,800	1,800	1,800	1,800	9,000
Math and Science	36	1,200	0.25	10,800	10,800	10,800	10,800	10,800	54,000
SS - Counceling	9	1,200	0.25	2,700	2,700	2,700	2,700	2,700	13,500
SS - DSPS	2	1,200	0.25	600	600	600	600	600	3,000
SS - EOPS	2	1,200	0.25	600	600	600	600	600	3,000
SS - Health Center	3	1,200	0.25	900	900	900	900	900	4,500
Total Academic	**112**			**33,600**	**33,600**	**33,600**	**33,600**	**33,600**	**168,000**
Classrooms									
Academic Affairs	10	1,200	0.25	3,000	3,000	3,000	3,000	3,000	15,000
Administrative Services - Media Systems	12	1,200	0.25	3,600	3,600	3,600	3,600	3,600	18,000
Business & Career Technical Education	133	1,200	0.25	39,900	39,900	39,900	39,900	39,900	199,500
Continuing Education	8	1,200	0.25	2,400	2,400	2,400	2,400	2,400	12,000
Exercise Science & Athletics	1	1,200	0.25	300	300	300	300	300	1,500
Humanties, Social Sciences, & Art	249	1,200	0.25	74,700	74,700	74,700	74,700	74,700	373,500
Information Technology Services	13	1,200	0.25	3,900	3,900	3,900	3,900	3,900	19,500
Library	164	1,200	0.25	49,200	49,200	49,200	49,200	49,200	246,000
Math and Science	420	1,200	0.25	126,000	126,000	126,000	126,000	126,000	630,000
SS -CAMP	44	1,200	0.25	13,200	13,200	13,200	13,200	13,200	66,000
SS - Counseling	36	1,200	0.25	10,800	10,800	10,800	10,800	10,800	54,000
SS - DSPS	18	1,200	0.25	5,400	5,400	5,400	5,400	5,400	27,000
SS - EOPS	3	1,200	0.25	900	900	900	900	900	4,500
SS - Student Services	8	1,200	0.25	2,400	2,400	2,400	2,400	2,400	12,000
Total Classrooms	**1119**			**335,700**	**335,700**	**335,700**	**335,700**	**335,700**	**1,678,500**
Administrative									
Academic Affairs	20	1,200	0.25	6,000	6,000	6,000	6,000	6,000	30,000
Administrative Services	19	1,200	0.25	5,700	5,700	5,700	5,700	5,700	28,500
Auxiliary Services	17	1,200	0.25	5,100	5,100	5,100	5,100	5,100	25,500
Business & Career Technical Education	12	1,200	0.25	3,600	3,600	3,600	3,600	3,600	18,000
Child Care	3	1,200	0.25	900	900	900	900	900	4,500
Continuing Education	3	1,200	0.25	900	900	900	900	900	4,500
Exercise Science & Athletics	5	1,200	0.25	1,500	1,500	1,500	1,500	1,500	7,500
Humanities, Social Sciences, and Art	11	1,200	0.25	3,300	3,300	3,300	3,300	3,300	16,500
Information Technology Services	22	1,200	0.25	6,600	6,600	6,600	6,600	6,600	33,000
Library	31	1,200	0.25	9,300	9,300	9,300	9,300	9,300	46,500
Math and Science	22	1,200	0.25	6,600	6,600	6,600	6,600	6,600	33,000
President's Office	7	1,200	0.25	2,100	2,100	2,100	2,100	2,100	10,500
SS - Admissions	46	1,200	0.25	13,800	13,800	13,800	13,800	13,800	69,000
SS - CAMP	5	1,200	0.25	1,500	1,500	1,500	1,500	1,500	7,500
SS - Counseling	32	1,200	0.25	9,600	9,600	9,600	9,600	9,600	48,000
SS - DSPS	4	1,200	0.25	1,200	1,200	1,200	1,200	1,200	6,000
SS - EOPS	9	1,200	0.25	2,700	2,700	2,700	2,700	2,700	13,500
SS - Financial Aid	35	1,200	0.25	10,500	10,500	10,500	10,500	10,500	52,500
SS - Health Center	4	1,200	0.25	1,200	1,200	1,200	1,200	1,200	6,000
SS - Outreach	9	1,200	0.25	2,700	2,700	2,700	2,700	2,700	13,500
SS - Student Services	12	1,200	0.25	3,600	3,600	3,600	3,600	3,600	18,000
Total Administrative	**328**			**98,400**	**98,400**	**98,400**	**98,400**	**98,400**	**492,000**
Printers	126	1,600	0.2	40,320	40,320	40,320	40,320	40,320	201,600
Projectors	112	4,000	0.2	89,600	89,600	89,600	89,600	89,600	448,000
Servers	13	4,000	0.33	17,160	17,160	17,160	17,160	17,160	85,800
Grand Total				**614,780**	**614,780**	**614,780**	**614,780**	**614,780**	**3,073,900**

Appendix E--Santiago Canyon College Continuing Education									
Division Name	Qty	Cost	Replace Factor	12/13	13/14	14/15	15/16	16/17	Total
Academic									
ABE	16	1,200	0.25	4,800	4,800	4,800	4,800	4,800	24,000
Business Skills	82	1,200	0.25	24,600	24,600	24,600	24,600	24,600	123,000
Child Care	3	1,200	0.25	900	900	900	900	900	4,500
ESL	342	1,200	0.25	102,600	102,600	102,600	102,600	102,600	513,000
HSS	25	1,200	0.25	7,500	7,500	7,500	7,500	7,500	37,500
Inmate Education Program	96	1,200	0.25	28,800	28,800	28,800	28,800	28,800	144,000
Miscellaneous	36	1,200	0.25	10,800	10,800	10,800	10,800	10,800	54,000
Total Academic	**600**			**180,000**	**180,000**	**180,000**	**180,000**	**180,000**	**900,000**
Administrative									
ABE & HSS	4	1,200	0.25	1,200	1,200	1,200	1,200	1,200	6,000
Bookstore	2	1,200	0.25	600	600	600	600	600	3,000
Child Care	4	1,200	0.25	1,200	1,200	1,200	1,200	1,200	6,000
Counseling	8	1,200	0.25	2,400	2,400	2,400	2,400	2,400	12,000
Administration	8	1,200	0.25	2,400	2,400	2,400	2,400	2,400	12,000
Faculty	7	1,200	0.25	2,100	2,100	2,100	2,100	2,100	10,500
Hoteling	10	1,200	0.25	3,000	3,000	3,000	3,000	3,000	15,000
Registration	7	1,200	0.25	2,100	2,100	2,100	2,100	2,100	10,500
Resource Room	4	1,200	0.25	1,200	1,200	1,200	1,200	1,200	6,000
Student Services	4	1,200	0.25	1,200	1,200	1,200	1,200	1,200	6,000
Miscellaneous	17	1,200	0.25	5,100	5,100	5,100	5,100	5,100	25,500
Total Administrative	**75**			**22,500**	**22,500**	**22,500**	**22,500**	**22,500**	**112,500**
Printers	46	1,600	0.2	**14,720**	**14,720**	**14,720**	**14,720**	**14,720**	**73,600**
Projectors	38	4,000	0.2	**30,400**	**30,400**	**30,400**	**30,400**	**30,400**	**152,000**
Grand Total				**247,620**	**247,620**	**247,620**	**247,620**	**247,620**	**1,238,100**

Appendix E--District Operations									
Department Name	Qty	Cost	Replace Factor	12/13	13/14	14/15	15/16	16/17	Total
Campus Planning	9	1,200	0.25	2,700	2,700	2,700	2,700	2,700	13,500
Chancellor's Office	4	1,200	0.25	1,200	1,200	1,200	1,200	1,200	6,000
Education Services	10	1,200	0.25	3,000	3,000	3,000	3,000	3,000	15,000
Fiscal	34	1,200	0.25	10,200	10,200	10,200	10,200	10,200	51,000
Human Resources	22	1,200	0.25	6,600	6,600	6,600	6,600	6,600	33,000
Information Technology Svc - DO	25	1,200	0.25	7,500	7,500	7,500	7,500	7,500	37,500
Information Technology Svc - SCC/OEC	11	1,200	0.25	3,300	3,300	3,300	3,300	3,300	16,500
Information Technology Svs - SAC/CEC	22	1,200	0.25	6,600	6,600	6,600	6,600	6,600	33,000
Information Technology Svs - Training Room	15	1,200	0.25	4,500	4,500	4,500	4,500	4,500	22,500
Information Technology Svs - 318	7	1,200	0.25	2,100	2,100	2,100	2,100	2,100	10,500
Publications and Government	4	1,200	0.25	1,200	1,200	1,200	1,200	1,200	6,000
Publications - OEC	7	1,200	0.25	2,100	2,100	2,100	2,100	2,100	10,500
Purchasing	6	1,200	0.25	1,800	1,800	1,800	1,800	1,800	9,000
Warehouse--OEC	4	1,200	0.25	1,200	1,200	1,200	1,200	1,200	6,000
Risk Management	6	1,200	0.25	1,800	1,800	1,800	1,800	1,800	9,000
Public Safety	3	1,200	0.25	900	900	900	900	900	4,500
Public Safety-SAC	7	1,200	0.25	2,100	2,100	2,100	2,100	2,100	10,500
Public Safety-CEC	3	1,200	0.25	900	900	900	900	900	4,500
Pulblic Safety-SCC	4	1,200	0.25	1,200	1,200	1,200	1,200	1,200	6,000
Public Safety-OEC	1	1,200	0.25	300	300	300	300	300	1,500
Total	204			61,200	61,200	61,200	61,200	61,200	306,000
Printers	46	1,600	0.20	14,720	14,720	14,720	14,720	14,720	73,600
Grand Total				75,920	75,920	75,920	75,920	75,920	379,600

Appendix F

Appendix F—Network and Communications

A. Network Projects:
Video Surveillance
The Video Surveillance Project has entered the installation phase, with electrical installations to begin in March 2012. The project will provide new exterior coverage, as well as incorporate the existing video surveillance cameras that are installed in some key interior locations, such as the book store. The system will provide extra security for students, faculty, and staff.   The Video Surveillance Project employs the latest technology, such as digital high definition (HD) low light cameras with wide dynamic range. These cameras will be strategically place to record key campus and building entrances, exits, and other vital locations. The quality of the images will be clear enough to read the license plate numbers on vehicles entering and exiting the campuses. Research shows that the presence of a video surveillance system is a significant deterrent and effective crime prevention tool. Unlike the technology of old, the cutting-edge RSCCD system will provide continuous coverage as opposed to time-lapse video. Safety and Security will have sole access to the images, and is working to develop a policy relating to the use and viewing of those images to ensure the privacy of students, faculty, and staff.

Wireless Project—Update
Under the close supervision and direction of the district's Network team, the wireless project at SAC has progressed to the installation stage. Installation is expected to start in March 2012, and the project is scheduled to be completed by the end of June 2012. The upgraded wireless system will provide SAC with 98% wireless coverage, both interior and exterior. This is a vast improvement from the 20% interior-only coverage that was available at SAC prior to the wireless project. The new wireless network at SAC is an upgrade to the latest wireless technology, providing faster connections and a larger over-all capacity. Students, staff, and faculty should notice a dramatic improvement in the speed and availability of the SAC wireless network. The SAC wireless project has served as the blueprint and standard for upgrading the wireless networks at SCC, DMC, CEC, OEC, and the District Office. Site surveys for these locations have been completed, with work to commence in June 2012. The entire district will be complete by March 2013.

Remote System Replacement—Update
The Juniper hardware which allows district employees to remotely access their email and files through the site http://remote.rsccd.edu was upgraded. End users should not notice any significant changes in the look or feel of the remote site. The new equipment provides district employees with a faster connection, facilitates the seamless downloading of Microsoft Office documents, and is compatible with all newer operating systems. The new hardware has mobile applications that allow ITS technicians the ability to access the hardware remotely from mobile devices, to ensure a faster recovery of services if any technical issues were to occur.

Disaster Recovery
The district recognizes the potential financial and operational losses associated with service interruptions maintained by the Information Technology Services (ITS) Division. ITS developed a plan to address the recovery of systems under the direct control of the Information Technology Services Division that are considered critical for business continuity.

This plan is intended to be a guide and not a series of defined instructions in order to provide flexibility based on the situation. Since disasters are varied in nature, this plan provides guidance and documentation upon which to base emergency response, recovery, and resumption efforts yet allows flexibility for reasonable individuals to make informed decisions based upon the uniqueness of the crisis. Technology related disasters include a myriad of situations rendering services unavailable, from an isolated server failure to complete loss of the physical plant. Server or server component failure are

address by regularly scheduled and tested backup procedures. Spare servers are available to quickly restore services in these isolated cases.

The Disaster Recovery Plan address situations that cause a partial or total loss to the Network Operations Center (NOC) located at Santa Ana College. According to industry literature, typical disasters of this type are floods, long-term power outages, fires, explosions, and earthquakes. This plan does not include procedures to recover from an incident rendering both Santa Ana College's NOC and Santiago Canyon College's NOC useless.

The Maintenance & Operations building located at SCC provides ITS the facility to house recovery equipment. ITS designed a recovery center at SCC where the recovery equipment is used for testing for major applications (*e.g.* Datatel) which can be quickly turned into a production machine in the event of a disaster. This was done by purchasing virtual servers, located at SAC and SCC, designed to produce "mirror" images of the critical applications and their data. In addition, backups for both virtual systems are housed at the District Office, therefore the district's data is housed at three physical locations. The equipment is about 80% in place, critical applications have been designated with their order of recovery, and recovery documentation has begun. This document is considered a "living document," as new equipment being purchased will be taken into account, and the plan modified to reflect the changes.

B. Equipment Replacement:

Cable Plant

Cable plant includes wiring costs between building, within buildings, and data closets. These funds provide for the maintenance of this wiring. The budget listed is to replace fiber between buildings as needed, to upgrade a small set of data closets and building wiring. It should be noted that these funds are to maintain existing wiring. Projects that include, for example, new buildings or remodels should budget for any cabling needs defined by the scope of that project.

Budget: $152,500   Source: ITS

Network

The district standard plan calls for core network equipment be replaced every ten years and standard switches to be replaced every five years.

Budget: $368,200   Source: ITS

Uninterruptable Power Supply

All network and communication switches are attached to an Uninterruptable Power Supply (UPS) to guarantee network and phone connectivity for a specified period of time, in the event of a power failure. The district standard plan calls to replace smaller UPS's every five years. The large UPS's are schedule to have batteries replaced when they are five years old and the equipment replaced at ten years of age.

Budget: $ 29,460   Source: ITS

Servers

The district standard plan calls for the physical servers, housing the applications, to be replaced every three years, while the virtual servers are to be replaced every four years.

Budget: $166,820   Source: ITS

Storage and Backup

The district has two Enterprise Storage solutions for formatted and non-formatted data. Funding includes equipment replacement at five year intervals, as well as planned increases to the storage capacity.

Budget: $312,000   Source: ITS

Appendix F--Network and Communications		QTY	Cost	Replace Factor		12/13 Estimated Cost	12/13 Estimated Cost	13/14 Estimated Cost	14/15 Estimated Cost	15/16 Estimated Cost	Total
A.	Cable Plant										
	Fiber	1	45,000	1		45,000	45,000	45,000	45,000	45,000	**225,000**
	Data Closets	170	10,000	0.05		85,000	85,000	85,000	85,000	85,000	**425,000**
	Building	30	30,000	0.025		22,500	22,500	22,500	22,500	22,500	**112,500**
	Total Cable Plan					**152,500**	**152,500**	**152,500**	**152,500**	**152,500**	
B.	Network										
	Core Router	10	150,000	0.1		150,000	150,000	150,000	150,000	150,000	**750,000**
	Distribution Switches	11	15,000	0.1		16,500	16,500	16,500	16,500	16,500	**82,500**
	Chasis Switches	9	80,000	0.1		72,000	72,000	72,000	72,000	72,000	**360,000**
	POE Edge Switches	108	4,500	0.2		97,200	97,200	97,200	97,200	97,200	**486,000**
	Standard Edge Switches	65	2,500	0.2		32,500	32,500	32,500	32,500	32,500	**162,500**
	Total Network					**368,200**	**368,200**	**368,200**	**368,200**	**368,200**	
C.	Uninterruptable Power Supply										
	Data Closet UPS	80	700	0.25		14,000	14,000	14,000	14,000	14,000	**70,000**
	6 KVA	6	3,200	0.2		3,840	3,840	3,840	3,840	3,840	**19,200**
	20 KVA	3	15,000	0.1		4,500	4,500	4,500	4,500	4,500	**22,500**
	40 KVA	2	30,000	0.1		6,000	6,000	6,000	6,000	6,000	**30,000**
	160 KVA	1	120,000	0.1		12,000	12,000	12,000	12,000	12,000	**60,000**
	Battery replacement for 6 KVA	6	1,600	0.1		960	960	960	960	960	**4,800**
	Battery replacement for 20/40	5	8,000	0.1		4,000	4,000	4,000	4,000	4,000	**20,000**
	Battery replacement for 160 KVA	1	20,000	0.1		2,000	2,000	2,000	2,000	2,000	**10,000**
	Total Services					**29,460**	**29,460**	**29,460**	**29,460**	**29,460**	
D.	Appliances and Servers										
	Small Servers	55	6,000	0.33		108,900	108,900	108,900	108,900	108,900	**544,500**
	Large Servers	2	12,000	0.33		7,920	7,920	7,920	7,920	7,920	**39,600**
	Virtual Machines	10	20,000	0.25		50,000	50,000	50,000	50,000	50,000	**250,000**
	Total Appliances and Servers					**166,820**	**166,820**	**166,820**	**166,820**	**166,820**	
E.	Storage and Backup							**100,000**			
	SAN	4	200,000	0.2		160,000	160,000	160,000	160,000	160,000	**800,000**
	Growth	1	12,000	1		12,000	12,000	12,000	12,000	12,000	**60,000**
	Avamar	1	300,000	0.2		60,000	60,000	60,000	60,000	60,000	**300,000**
	Growth	1	80,000	1		80,000	80,000	80,000	80,000	80,000	**400,000**
	Total Storage and Backup					**312,000**	**312,000**	**312,000**	**312,000**	**312,000**	
Grand Total						**$1,028,980**	**$1,028,980**	**$1,028,980**	**$1,028,980**	**$1,028,980**	**$5,234,100**