Citrus Community College

Program Review

Technology and Computer Services Department

Spring 2011

Technology and Computer Services Department
Institutional Support Services Program Review

Spring 2011

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Technology and Computer Services Program Review
Table of Contents

Executive Summary

Technology and Computer Services Department Overview

The Technology and Computer Services (TeCS) Department manages the college network and related infrastructure, the central server room, the telephone system and related infrastructure, desktop computers and related peripherals for faculty, staff, classrooms and laboratories, and the administrative applications including the Banner WingSpan system and related support applications. The TeCS Department underwent a major reorganization and focus change in 2006. To meet the expanding integration of technology in all aspects of college life, the department chose to focus its technology resources on the implementation of available technology applications. This change to a technology "implementation" environment was a major departure from prior technology efforts of developing and supporting institutionally created applications. Additionally, technology was integrated into many aspects of governance at Citrus College. The technology governance committee, the College Information Technology Committee, was formed to develop policies and procedures related to technology and to undertake technology planning for the college.

Technology Planning

Technology planning has been increasingly formalized and integrated with college-wide planning. Planning for the college's technology needs is now integrated into the program review, governance and planning and is informed by output from program review, the College Strategic Plan, the Educational and Facilities Master Plan, and the Technology Master Plan.

Department Performance Highlights

With a staff of only 15, the TeCS Department maintains over 30 applications with related interfaces and reporting needs; supports almost 1500 desktops in classrooms, labs and staff and faculty offices and over 100 classroom podium systems; completes over 3200 support work orders per year; provides both inter- and intranet web environments and participates in 8 governance and 10 college committees

Special accomplishments during this reporting period include development of a integrated college web site; implementation of an emergency communication application, Citrus Alert; upgrades to the college network backbone and server room; implementation of the college enterprise resources planning (ERP) system, WingSpan; and the establishment of the College Information Technology Committee which developed the Technology Plan and technology board policy and administrative procedures.

Resource Needs

The TeCS Department has need for staff in both the Operations and Support Services and the Network and Systems Groups. To continue to support the campus technology infrastructure, improvements are needed in the server room to increase security and reliability. In addition, stable, consistent funding is needed for desktop and infrastructure replacement cycles

1. Citrus College Mission and Institutional Outcomes

A. Mission Objectives

Technology at Citrus College is an integral component of multiple aspects of learning, teaching and student support as well as the foundation and infrastructure for administrative and business processing. The Technology and Computer Services (TeCS) Department must therefore respond directly to the college's mission and values.

Citrus College Mission

Citrus College delivers high quality instruction that empowers students to compete globally and to contribute to the economic growth of today's society.

We are dedicated to fostering a diverse educational community and cultural learning environment that supports student success in pursuit of academic excellence, economic opportunity and personal achievement.

Mission Objectives

Citrus College is a safe, friendly, accessible environment where all students and community members may optimize their academic, career and cultural development.

As Citrus College continues to advance as a dynamic center for life-long learning, we will:

- Provide general, lower division coursework leading to an associate degree in the arts or the sciences;
- Prepare students to transfer to four-year colleges and universities;
- Offer technological services and support for students, faculty, and staff;
- Deliver programs to improve basic math, reading, communication, and ESL skills;
- Grant opportunities for students to develop a global perspective through a curriculum with international and multicultural applications;
- Furnish support services for the intellectual and personal development of all Citrus College students, including opportunities to participate in campus governance;
- Foster a comprehensive and enriching program of extracurricular activities;
- Conduct community education programs that encourage learning at every stage of life;
- Award occupational certificates and degrees for career preparation and advancement;
- Administer customized training programs for business and industry;
- Increase career development support for students, faculty, and staff through career exploration, counseling, job preparation, job opportunities, and academic and classified staff development;
- Collaborate with local high schools in articulation and curriculum development;
- Advance cultural and personal enrichment programs for the college and community members, and promote inter-collegiate competition opportunities for students.

<u>Vision Statement</u>
Citrus College will provide excellent educational opportunities that are responsive to the needs of the community and help students meet economic, social, and environmental challenges to become active participants in shaping the world of the future.

<u>Values</u>
- Student Focus: Meeting community and student needs by creating an educational environment and culture so students can attain a variety of goals.
- Excellence: Maintain a high standard of integrity and performance leading to the achievement of academic and professional goals.
- Collaboration: Seeking input from all sectors of the college and the community.
- Diversity: Fostering a learning community in which the values, goals, and learning styles of all students are recognized and supported.
- Life-Long Learning: Serving enthusiastic, independent thinkers and learners striving for personal growth.
- Integrity: Behaving ethically in all interactions at all levels.
- Technological Advancement: Keeping pace with global technology trends and enhancing traditional instruction with technology to prepare students for success in the work place.

B. Institutional Outcomes

To address technology needs for the college and to ensure that technology can support departments and division goals and objectives, technology planning has been increasingly formalized and integrated with college-wide planning. Planning for the college's technology needs is integrated into the college's program review, governance and planning. Technology planning is informed by output from program review, the College Strategic Plan, the Educational and Facilities Master Plan, and the Technology Master Plan. Once the technology needs are defined and prioritized via the planning process, the implementation of these resources are coordinated between the functional areas and the TeCS Department. This inclusive method allows the college to apply funding sources (general budget, instructional equipment, matriculation, construction, bond and grants) to comprehensively meet technology needs.

Long-term planning for technology infrastructure needs is coordinated in governance committees. The Physical Resources Committee coordinates long-term planning for technology infrastructure needs. Both the Chief Information Services Officer and TeCS Network Supervisor attend the Physical Resources Committee meetings. At these meetings, multimedia, networking and other technology needs are discussed including new construction, remodeling, and moving of technology resources and relocation of employees. The Construction Projects Committee manages the implementation of these major projects. The TeCS Network Supervisor attends the committee meetings on a regular basis to ensure that the TeCS department planning is coordinated with major project development. The successful opening of the Center for Innovation (CI) building demonstrated the effectiveness of including technology planning in construction projects. Over 80 faculty and 20 staff from across campus moved to CI with new desktops and printing support. To ensure that the network continues to upgrade and expand to meet increasing demands, the TeCS Department developed a five-year network refresh plan in 2007.

Instructional equipment planning is coordinated between Academic Affairs and the TeCS Department. A representative group of instructional deans, the TeCS Networking Central Computing and Telecommunications Systems Supervisor and Technology Operations and Support Services Supervisor attend a weekly coordination meeting. As instructional equipment funds become available either via yearly allocations from the Chancellor's Office or via grant funds, Academic Affairs determines how to distribute the funds to best support instructional programs. The deans bring these plans to the Academic Status meeting to coordinate the implementation with the TeCS Department.

Planning for implementation of a new application includes hardware requirements. The TeCS Department upgrades and expands servers and related support equipment in the central server room as new administrative systems come online. Whenever possible, applications share server and data storage equipment to reduce maintenance and replacement costs. Bond funds from Measure G enabled the college to purchase the Banner WingSpan system and included major upgrades to server and data storage equipment.

The College Information Technology Committee (CTIC) developed the first version of a college-wide Technology Master Plan during the spring of 2009. The CITC conducted a SWOT (Strength-Weakness-Opportunity-Threat) analysis and integrated the analysis with the technology needs defined in the Educational and Facilities Master Plan and the college's Strategic Plan. The CITC will evaluate and revise the Technology Master Plan on an annual basis. Based on this plan, the TeCS Department will plan and prioritize technology for central server room needs and college-wide infrastructure.

Both Academic Affairs and Student Services incorporate the results from program reviews into prioritization and planning for their technology needs. Instructional technology implementation is coordinated between Academic Affairs and the TeCS Department at a weekly Instructional Status Meeting. The Student Services senior staff has been working with the Chief Information Services Officer to prioritize the implementation of their technology needs. The Facilities Master Plan provides input to technology infrastructure planning.

2. Department Functions

A. Executive Summary

The TeCS Department manages the college network and related infrastructure, the central server room, the telephone system and related infrastructure, desktop computers and related peripherals for faculty, staff, classrooms and laboratories, and the administrative applications including the Banner WingSpan system and related support applications.

B. Department Function by Section

The TeCS Department is organized into four functional areas.

- Network, Central Computing and Telecommunications
  Led by the Network, Central Computing and Telecommunications Systems Supervisor this area is responsible for networks, email, central hardware and software systems, security, and phones. In addition, this group supports campus construction projects and manages the college's web site.

- Technology Operations and Support Services
  Led by Technology Operations and Support Services Supervisor, this area: performs all tasks and activities related to desktop hardware and software in classrooms, labs and offices; supports technology in the classrooms; staffs and operates the help desk; manages the work order system; and manages technology training.

- Instructional and Administrative Application Systems Development
  This area currently reports directly to the Chief Information Services Officer and includes all activities related to the development, testing, implementation and management of central and college applications such as the SunGard student, financial aid and human resources applications.

- Enterprise Resource Planning (ERP) Project
  The ERP Coordinator manages all aspects of the implementation of the SunGard ERP System.

C. History of the Department

The TeCS Department underwent a major reorganization and focus change in 2006. Prior to 2006, the TeCS Department, then known as the Management Information Systems Department, was supporting a homegrown, legacy management system. To meet the expanding integration of technology in all aspects of college life, the department chose to focus its technology resources on the implementation of available technology applications. This change to a technology

"implementation" environment is a major departure from prior technology efforts of developing and supporting institutionally created applications. The most important step in this change was the implementation of SunGard's Banner Enterprise Resource Planning (ERP) system. The Banner system, known at Citrus College as WingSpan, is an essential component of the college's administrative system.

In 2006, the TeCS Department was also restructured to enhance its ability to support the college's operations and improve effectiveness. Three functional groups were created to support each of three key technology areas. The Network, Central Computing and Telecommunications Group has responsibility for all networks, the college web site, email, central hardware, security, telephones and construction support. The Technology Operations and Support Services Group has responsibility for computer lab, classroom and staff desktop support, instructional software and hardware in classrooms and labs help desk support and training. The Instructional and Administrative Systems group implements, maintains all administrative software applications, and is responsible for supporting all state and federal reporting requirements. In support of the Banner WingSpan system, an ERP Coordinator was appointed to lead the continuing implementation and upgrading of the Banner WingSpan system. The coordinator chairs the Banner Working Group.

The change in technology focus was accompanied by a change in technology decision-making. Functional area managers and staff from student, instruction and administrative services now collaborate with the TeCS Department to plan and implement technology projects. To ensure the Banner WingSpan system continues to meet the college needs, a Banner Working Group was formed to set priorities for future upgrades and to coordinate implementation. This cross-functional group is composed of functional area leaders from credit and non-credit instruction; student services offices of Admission and Records, Counseling, and Financial Aid; administrative offices of Finance and Human Resources; and a representative from the TeCS Department. Several deans from Academic Affairs meet regularly with the TeCS Department to plan and coordinate upgrades to classrooms and teaching laboratories. A subcommittee of the Academic Senate, the Academic Computing Committee, has met with representatives from the TeCS Department to clarify teaching needs in the classroom. The TeCS Department is now an integral part of college-wide construction with a representative sitting on the Construction Projects Committee to ensure that technology is considered in all building projects.

Additionally, in support of this change in focus, technology is integrated into many aspects of governance at Citrus College. The technology governance committee, the College Information Technology Committee, was formed to develop policies and procedures related to technology and to undertake technology planning for the college. The CITC developed a Technology Master Plan not only to guide the implementation of technology at the college, but also to support the Educational and Facilities Master Plan and college's Strategic Plan. In addition to the CITC, the TeCS Department has representation on many governance committees: Physical Resources, Fiscal Resources, Institutional Research, Educational Programs, and Steering. In addition, the Chief Information Services Officer (CISO) attends the President's Council Meetings and Board of Trustee meetings.

D. Special Accomplishments

Integrated College Web Site
In 2006, a cross-functional task force led a comprehensive restructuring of the college's web environment consolidating four separate Internet sites to form the current site. The new site was developed using a content management system (CMS) provided by Sector Point. The task force designed a format that allows easy and consistent navigation throughout the web site while providing flexibility for individual offices and departments to present their web pages. The TeCS Department provides design support and training to assist offices and departments to maintain their sites. An intranet site was also developed for use by Citrus College faculty and staff. The intranet enables working groups to share materials. The intranet also provides a platform for offices and departments to share information, resources and forms with the entire college community. The Haugh Performing Arts Center also developed a new Internet site using the Sector Point tools.

Emergency Communications
The college has implemented an emergency communications tool, Citrus Alert, using Blackboard's Connect-ED tool. In the event of an emergency, the college is able to communicate quickly with students, faculty and staff via phone, email and text messaging.

Infrastructure Upgrades
During the current reporting period, the college has almost completely upgraded its administrative applications and supporting hardware. The college technology environment is network based. Servers, with large storage capacity, allow faculty to provide file sharing with students in computer labs as well as secure private data storage and sharing. Staff use the file-sharing environment on the servers to create information and data resources for use by all members of a department or office. A variety of hardware platforms, including Intel-based desktops as well as Apple computers, is provided for faculty and staff. Every network user has access to word processing, presentation, spreadsheet, database, and communication software and many discipline specific packages are available. Network servers provide centralized printing and file sharing support to all administrative and instructional users.

Banner WingSpan Implementation
A new enterprise resources planning system, the Banner WingSpan system, replaced the legacy student system during this reporting period. WingSpan includes the student, financial aid and human resource modules. Several related applications are integrated with Banner WingSpan system to support college information processing needs. A document processing system, Xtender, and a reporting tool, Crystal Reports, are directly linked to the Banner WingSpan system. Other applications integrated with the Banner WingSpan system include third party support applications for forms printing (Evisions), online fee payment (Official Payments) and computer job scheduling (AppWorx).

Technology Board Policy and Administrative Procedures
A board policy and seven related administrative procedures were developed to guide and govern technology use throughout the campus. Board Policy 3720, Computer and Network Use, creates the authority and defines the scope of application for all related administrative procedures.

The related administrative procedures define the procedures and their application to technology across campus. These administrative procedures are:

> AP 3720 - Acceptable Computer and Network Use
> AP 3721 - Computer and Network Account and Password Management
> AP 3722 - Computer and Network Connectivity and Access
> AP 3723 - Electronic Mail and Bulk Electronic Distribution
> AP 3724 - Data and Information Protection
> AP 3725 - Electronic Equipment Disposition
> AP 3726 - Telephone Services

An addition administrative procedure defining guidelines for web publications, AP 3727 - Web Publishing, is being developed by CITC.

E. Training

The TeCS Department provides desktop training in general applications such as Microsoft Word and Excel in scheduled workshops and one-on-one work sessions. The one-on-one work sessions focus on the detailed needs of the trainee and meet the specific needs of one office or department. The Microsoft Information Technology Academy is also available for faculty and staff training. This training can be used to prepare participants for Microsoft certification exams. As each module of the Banner WingSpan system is implemented, new training requirements for staff and faculty have followed. For new modules and applications, consultants provide training for functional area experts and technical staff. A TeCS Department staff member or a trained member of the respective office provides detailed training for staff via one-on-one sessions.

The deans and academic division support staff require specific training with each scheduling cycle due to upgrades to the Banner WingSpan system. A team of staff members from Instruction Services, Admissions and Records, and the TeCS Department provide this training. Following each training session, instructional staff members who would like additional help developing the academic schedule in Banner can attend work sessions. This Banner instructional training team also conducts review sessions to help faculty obtain rosters and input grades. Consultants provide training for offices that require annual Banner WingSpan upgrades, such as Financial Aid.

In conjunction with the TeCS Department, specific programs offer specialized technology training as needed. For example, training in CurricUNET is presented at the first Curriculum Committee meeting each academic year, as part of the Student Learning Outcomes Assessment workshops (SLO Marathons). One-on-one training is also provided by members of the Curriculum Technical Review Committee.

3. Service Recipients

A. Summary

The TeCS Department services all members of the Citrus College community. Students utilize technology to apply to the college, register for classes, and complete coursework. Faculty use technology to develop curriculum, obtain class rosters, input course grades and provide a distance-learning environment. Staff employ technology for purchasing, scheduling, managing student data, communicating, and managing their daily work. Managers rely on technology for data and statistical analysis to support planning and decision-making.

B. Students

Student Support Applications
All students utilize technology supported by the TeCS Department from their original application to the college through the completion of their educational goals. The number of students served at the college is listed in Table 1.

Table 1 – Student Headcount and FTES

	2006-2007	2007-2008	2008-2009	2009-2010
Annual Unduplicated Headcount	20,525	23,410	21,564	20,864
FTES				
Credit	9,983.86	10,422.03	12,318.65	11,081.99
Non-Credit	1,013.35	1,464.16	624.74	768.63

The TeCS Department collaborates with the Student Services and Academic Affairs to provide technology that supports students. The TeCS Department manages or supports many applications that enable matriculation and educational goal achievement. These applications are listed in Table 2.

Table 2 – Student Related Applications

Application	Function	On campus or offsite
CCCApply	Application to college	Offsite
Accuplacer	Placement testing	Offsite
SARS Suite	Counseling data management	On campus
Cynosure	Online orientation	On campus
HEAT	Online counseling – in pilot mode	On campus
RoboTranscript	Automated transcript ordering	Offsite
Banner Student Services Module	- Registration - Academic Scheduling - Academic History	On campus

	- Transcripts	
Banner Financial Aid Module	Financial aid	On campus
Banner Human Resources	Student employment on campus	On campus
Document Scanning	Xtender	On campus
Blackboard	Online course management	Offsite
Citrus Alert	Emergency notification	Offsite
Microsoft Live	Student emails	Offsite
CurricUNET	Curriculum management	Offsite
HRS	Human Resources/ Payroll	Offsite
Peoplesoft	Fiscal services	Offsite

Classroom and Laboratory Instructional Equipment

The TeCS Department maintains technology equipment in classrooms across campus. Over 1000 PC desktops and 50 Macintosh desktops are maintained in 39 labs and classrooms. Podium systems, which provide desktop and project equipment for instruction, are supported in over 100 classrooms. Table 3 below provides a summary of classroom and laboratory equipment.

Table 3 - Instructional Equipment Supported by the TeCS Department

Building	Podium Systems	Computers	
		PC	Macs
Totals	105	1004	52
Art Center	2	34	
Annex	2		
Aquatics	1		
Auto Tech	3		
Center for Innovation	3	24	
ED	4	134	
ES	2		
HH	2	21	
IS	3	140	
LB	27	41	30
Lec Hall	3		
Library	2	102	
LL	3	31	
LS	6	49	
Main Gym	2		
Math	12	121	
P3	2		
PA	3		
PC	11	153	
PS	4	113	
Tech A	1		
Tech C	7	41	22

C. Faculty and Staff

The TeCS Department supports all faculty and staff technology needs on campus. The groups and numbers supported include:

Table 4 – Employee Groups as of October 1, 2010

Employee Group	
Educational Administrator	30
Faculty - Tenured/Tenure Track	168
Faculty - Adjunct	261
Classified Administrator	6
Classified Professional	33
Classified Support	291
Totals	789

Source CCCCO Data Mart annual report as of October 1, 2010

Faculty and Staff Applications
The applications managed by the TeCS Department that support staff and faculty include:

Table 5 – Faculty and Staff Applications Supported by TeCS Department

Application	Function	On campus or offsite
Frontrange	Work order system	On campus
Banner Human Resources	Student employment on campus	On campus
Document Scanning	Xtender	On campus
Citrus Alert	Emergency notification	Offsite
Microsoft Live	Student emails	Offsite
Crystal Reports	Report writer	On campus
Collegenet R25	Room scheduling	On campus
Xtender	Document Scanning	On campus
PeopleAdmin	Employment application	Offsite
Banner Human Resources System	Human resources data management	On campus

Faculty and Staff Desktop Maintenance
The TeCS Department supports all faculty and staff desktops. This includes maintenance of hardware and software for the desktop as well as related peripherals including printers and scanners. 285 staff computers and 185 faculty computers are being supported.

D. Other - Technology Collaborations with Other Departments

The Office of Institutional Research (OIR) works closely and collaboratively with the TeCS Department to meet the research and reporting needs of the college. The OIR and the TeCS Department have developed a shared data environment using the Operational Data Storage (ODS) component of the Banner WingSpan system. Transactional and longitudinal data from both the college's and the California Community College Chancellor Office's (CCCCO) databases are maintained in the ODS and made available to the OIR staff. In addition, the TeCS Department and the OIR have developed a second research database that accommodates historic data from the college's legacy system and enables the OIR to combine current and future data from the Banner WingSpan system. The OIR implemented an online work request environment in spring 2009 to track and manage their own reporting request.

The TeCS Department works with several other offices and departments at the college to provide technology support and facilities. The Library provides an extensive online research environment, open computer labs, and computer classrooms. The Audiovisual Department, managed by the Dean of Business, CSIS, Distance Education, and Library, provides audiovisual equipment upon request and assists in the maintenance of classroom projection equipment. The Distance Education Office provides support for the Blackboard course management system including training for faculty using Blackboard, support for students using Blackboard and management of the remote Blackboard system. The Reprographics Center manages all technology support for publications and printing. The Office of Purchasing and Warehouse manages the college purchasing system, Escape.

4. Staff Resources

A. Organizational Charts

The Chief Information Services Officer reports directly to the Superintendent/President and leads the TeCS Department. The TeCS Department has a staff of 15 including the CISO, 2 supervisors and 13 classified staff. One position remains vacant. Student workers provide help desk support.

Chart 1 – Technology and Computer Services Department Organization
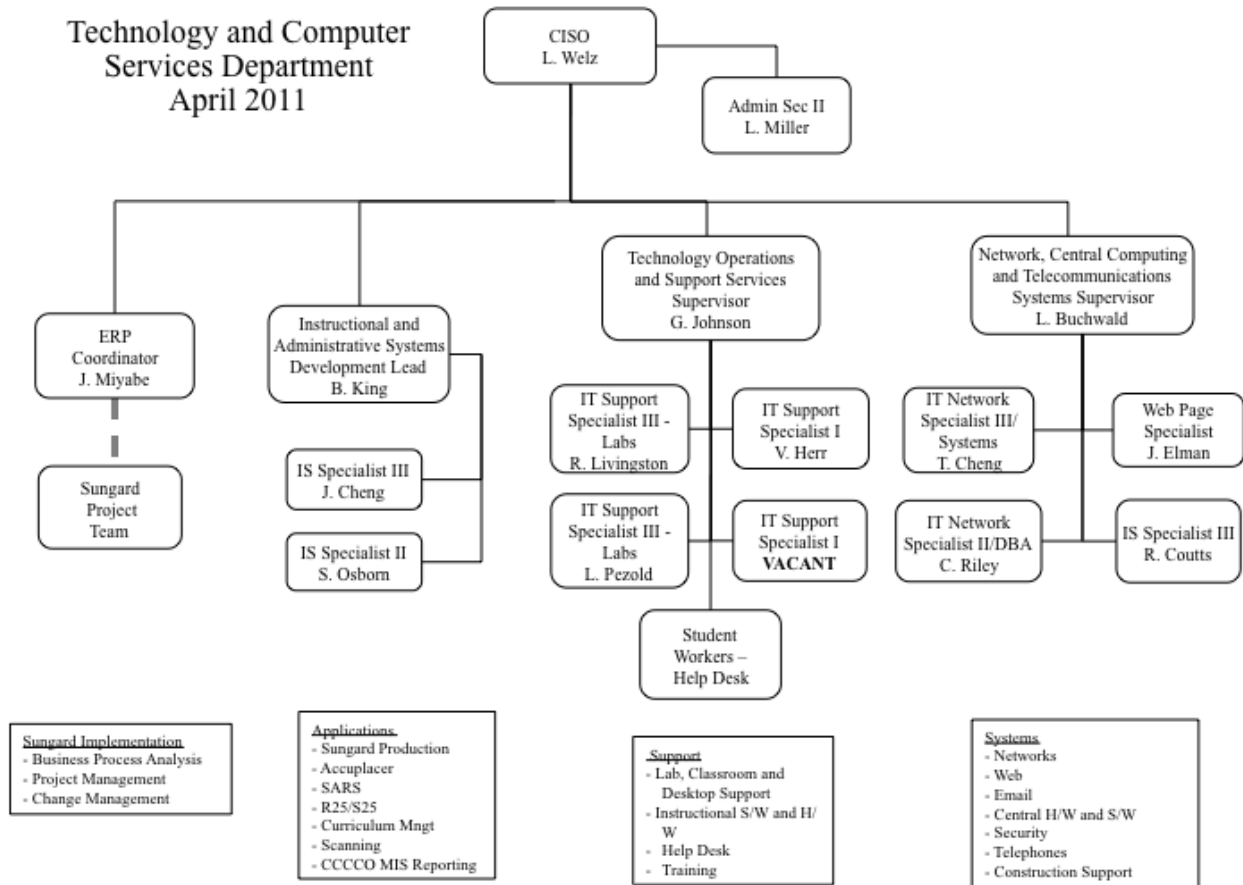
B. Assignments and Specialties

The TeCS Department supports the technology needs of the college is all areas of instruction and administration from the central systems to individual desktops. The staff is composed of individuals trained in their area of specialty.

Table 6 - TeCS Department Staff Assignments

Qty	Position	Assignment or Specialty
1	Chief Information Services Officer	Department Management
1	Administrative Secretary II	Supports technology purchasing; maintains all department records and paperwork; tracks department budgets; provides all administrative support; serves as the recording secretary for the governance committee, College Information Technology Committee
1	ERP Coordinator	Organizes and coordinates all work related to the maintenance, operations and upgrades for the Banner WingSpan system; works with staff from both within and outside the TeCS Department
1	Instructional and Administrative Systems Development Lead	Provides data and technical expertise and leadership; develops and maintains applications and programs for administrative and instructional support systems
1	Programmer Analyst III	Develops and maintains applications and programs for administrative and instructional support systems, leads development efforts
1	Programmer Analyst II	Develops and maintains applications and programs for administrative and instructional support systems
1	Technology Operations and Support Services Supervisor	Supervises all tasks and activities related to desktop hardware and software in both classrooms, labs and offices
2	IT Support Specialist III - Labs	Provides workstation technical support for classrooms and offices
1	IT Support Specialist I - Labs	Provides workstation technical support for classrooms and offices
1	Network, Central Computing and Telecommunications Systems Supervisor	Supervises networks, email, central hardware and software systems, security, telecommunications and the college web site
1	IT Support Specialist III - Networks	Supports and maintains system hardware, network and telecommunication equipment and related applications
1	IT Support Specialist II - Networks and DB	Supports and maintains system hardware and related applications; performs database analysis and maintenance
1	IT Support Specialist III - Systems	Performs system maintenance and backups
1	Web Page Specialist	Maintains and updates the college web site and web pages, trains end users on web page use and updates, assists in designing new web pages

C. Staff Preparation and Training

TeCS staff receive training as new jobs tasks and assignments arise and as new applications are introduced.

Hardware:
Network and system staff members have received training in maintenance and upgrades of network equipment upgrades by Extreme Networks and in the maintenance and upgrades of virtualization servers and clients by Systems Technology Associates.

Desktop/Workstations:
Operations support staff are using Microsoft Academy to train for the upgrade to Windows 7.

Applications:
Programming staff members have received the following training:

Chancellor's Office Management Information System Unit
Trainings presented by the Chancellor's Office Management Information System Unit of the Technology, Research and Information System Division. These may be in-person trainings or presentations made via the webinars.

CCCApply - Online College Application Processing
Annual seminars presented by Xap Corporation cover the yearly updates and changes in CCCApply. In addition, online webinars focus on specific data changes.

CurricUNET - Curriculum Management Application
Six online webinars lead by the CCCCO that covered the new CurricUNET statewide curriculum approval process.

Resource 25 – College Room and Resource Scheduling Application
Training conferences provided by Collegenet Corp. to learn about R25 room scheduling options and upgrades.

DegreeWorks - Degree Audit and Student Education Planning Applications
Training conference presented procedures for implementation of DegreeWorks.

D. Professional Activities and Committee Participation

Professional Memberships

As an institution, Citrus College has memberships in two professional organizations related to technology in higher education: Educause and the League for Innovation in the Community Colleges.

Members of the TeCS Department participate in the Chief Information Services Officers Association, CISOA. Citrus is represented on the Chancellor's Office Systemwide Architecture Committee by Leigh Buchwald, Network Central Computing and Telecommunications Systems Supervisor. Joyce Miyabe, ERP Coordinator, is the Citrus Representative to the California Community College Banner Working Group and a member of the Configuration Control Board for that organization.

TeCS staff members have attended conferences presented by the following professional organizations:
> Educause
> League for Innovation in the Community Colleges
> Educause Security
> Society for College and University Planning – SCUP
> SunGard Higher Education Banner Summit

Professional Presentations

The following professional presentations were made by members of the TeCS staff:

February 2008 - *Dealing with Challenges in a Time of Change* at the Association of California. Community College Administrators (ACCCA) 33rd Annual Conference. Irene Malmgren, Roberta Eisel, Sylvia Smythe and Linda Welz.

October 2008 - *CCCCO MIS Reporting and Banner, Tips and Tricks*. California at the Community College Banner Working Group Conference. Joyce Miyabe and Linda Welz.

February 2011 - *Finally, Required Orientation for Student Success with Online Support.* League for Innovation in the Community Colleges Innovations 2011 Conference. Lucinda Over, Kristie Shimokawa and Linda Welz

<u>College Committees</u>

Members of the TeCS Department participate in governance committees including:
- Steering
- President's Council
- College Information Technology
- Physical Resources
- Financial Resources
- Educational Program s
- Institutional Research and Planning
- Student Learning Outcomes and Assessment (HotShots)

Members also participate in standing working groups and committees including:
- Accreditation
- Bond Construction Coordination
- Educational and Facilities Master Planning
- Enrollment Management
- Faculty Leaning Institute
- Mandatory Orientation Committee
- Matriculation Committee
- Scholarship
- Strategic Planning
- Student Services Counselors Coordination Meeting

E. Other – Awards Received

Leigh Buchwald received the first "Shining Star" award for Technology - August 2010

5. Physical Resources

A. Building and Facilities

Buildings
The TeCS Department is housed in the Information Services (IS) Building. All department offices and the main server room are located in the building. Additionally, networking and communications equipment is located in equipment closets throughout the campus. A large storage bin located on the south side of the IS Building provides storage for equipment and tools.

Network and Infrastructure
The TeCS Department administers the college's technology infrastructure including the network, central computer server room and equipment, and telephones. The Citrus College computer network core is a switched 100-gigabit Ethernet with 1-gigabit Ethernet fiber connecting individual buildings to the core and a DS3 fiber optic high-speed connection to the Internet. The college network has a backbone with fiber-optic cable, as well as twisted pair copper wiring to support communications. The core network has two secured segments, one administrative and the second instructional with additional segmentation as required for support services within the instructional environment. Wireless networking is available in several public areas of the campus such as the student center, cafeteria, Library, Life Long Learning Center, and Center for Innovation for individual laptop and PDA users. Wireless will also soon be available in the Math Building. The TeCS Department maintains computer servers in a secure room with environmental control and uninterrupted power supply (UPS). In 2007, the TeCS Department had a network security audit conducted by an outside vendor with no major findings. The department has implemented a five-year refresh plan to keep the college network up to date.

To ensure the reliability of the college's data resources, the TeCS Department has clustered major application servers. TeCS also maintains the storage area network (SANS) for the Banner WingSpan system on a multi-tiered cluster. The college has a contract for same day replacement for severe server failures. The disk drive can be replaced without loss of service.

The TeCS Department has implemented a three-level backup strategy and performs daily, incremental backups on all servers in the central server room. Tapes are stored in the department vault in the IS Building. Full backups are performed on weekends and the backups are stored locally in the cashier's vault in the Administration building as well as having the backups sent offsite for storage on a regular basis. The TeCS Department encourages staff and faculty to use central server disk storage for all data to ensure the data is backed up daily. Server space is also provided for data backup even if not utilized for daily processing.

Diagram 1 – Citrus College Network Topology

Citrus College Network Topology
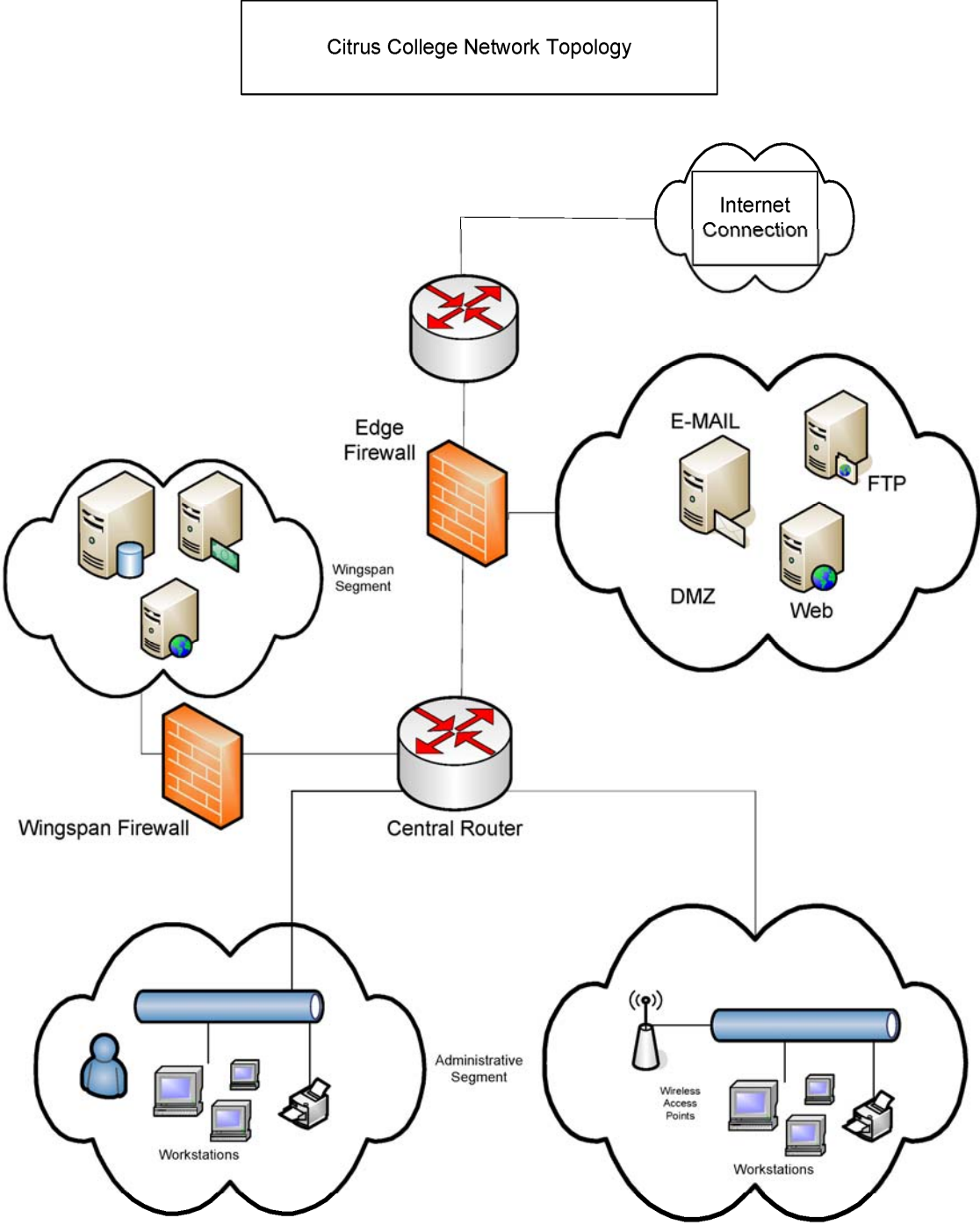
The TeCS Department has developed a disaster recovery plan to respond to the loss of the central server room as well as a major campus failure. Citrus College also participated in the CCCCO Statewide Architecture Committee disaster recovery plan using VM Ware.

System Security
Providing a secure technology infrastructure is a high priority for the college and security is a consideration for all technology facilities. Access to the campus central server room is limited to network and system administration personnel. All servers are maintained in this room with environmental control and UPS power support. The TeCS Department patches the server systems regularly with current operating system spy-ware and anti-virus software maintained from a central server. A perimeter firewall protects the college network. To provide additional security, the TeCS Department has split the network into two segments, administration and instruction. The college wireless network is limited to providing access to the Internet and does not provide direct access to college systems.

Users access all applications, whether supported on campus or hosted offsite, via assigned user logons and passwords. Password authorization is required for all staff and faculty and is granted on an as-needed basis. The college provides access to college network resources only to active students. Students must renew their password at the beginning of every term. Users must obtain permission for access from the respective functional area managers. The TeCS Department then assigns the user ID logons and passwords. The CITC developed new board policies and administrative regulations that define acceptable computer and network use and include security and privacy provisions.

B. Equipment and Materials

Desktop Environments
The TeCS Department manages the desktop equipment in the majority of computer classrooms and labs across campus as well as staff and faculty desktops. Desktop computers are currently on a four-year replacement cycle. With almost 2000 computers in classrooms, labs and on staff and faculty desktops, this equates to a replacement of approximately 500 desktop computers per year. Since replacement is not always feasible due to funding restraints, within any given budget year the TeCS Department replaces the oldest computers first. Exceptions occur when faculty or staff members require an upgrade to their desktop to accomplish given tasks. Construction projects that include funds for new desktop computers supplement the desktop replacement cycle. Grants also periodically provide funding for computer equipment.

The TeCS Department licenses desktop and general use software. The college purchases the majority of the licenses from the Foundation for California Community Colleges. Twice a year, the TeCS Department upgrades and/or replaces instructional software in classrooms and labs. Faculty requests are made to their respective deans for software upgrades in classrooms and labs.

The Operations and Technology Support Group provides general maintenance and support for all desktops. In 2006, the TeCS Department implemented an online work order system supported by

the Footprints application to manage desktop support. Staff can submit and track their work orders online. Non-TeCS department personnel provide technical support to a few areas of the college.

C. Applications and Software

The TeCS Department implements and maintains all administrative software applications and is responsible for supporting all state and federal reporting requirements.

The core of the administrative systems is the Banner WingSpan system, which includes the student, financial aid and human resource modules. Several related applications are integrated with the Banner WingSpan system to support college information processing needs. A document imaging system, Xtender, and a reporting tool, Crystal Reports, are directly linked to the Banner WingSpan system. Admissions and Records, Financial Aid and Fiscal Service use Xtender extensively to store and access supporting documentation. The TeCS Department and Institutional Research utilizes Crystal Reports to develop reporting tools that can be accessed by Student Services and Academic Affairs offices to run reports as needed. Other applications integrated with the Banner WingSpan system include third party support applications for forms printing (Evisions), online fee payment (Official) and computer job scheduling (AppWorx).

Several additional applications not directly integrated with the Banner WingSpan system have been implemented or expanded to support specific college processing needs. The SARS-SUITE provides counselors with appointment tracking, early alert functions, reminder calls, and reporting support. Data from the SARS-SUITE is interfaced to WingSpan and used by the TeCS Department for state reporting. Academic Affairs has implemented an enrollment management application (EMS) that allows deans to accurately manage enrollment data and the TeCS Department provides data for that application. Collegenet's Resource 25 is enabling the college to coordinated academic room scheduling with meeting and event management. The NoHo Software application provides administrative processing support for the childcare center. TeCS support staff maintain the system and implement updates as needed. To record student attendance in computer, science, music and dance labs, an attendance tracking system, CI Tracker, was implemented. CI Track records the course a student worked on while in the lab as well as the time spent on the assignment. TeCS staff retrieve data from CI Track and provide it to Admissions and Records for apportionment reporting.

Supported Third-Party Hosted Applications
To maximize the ability of the college to provide technology applications and support with limited staff, the college has chosen to implement several systems that are fully hosted by the application provider. As noted above, the college uses Blackboard as the course management system in a fully hosted environment. To provide current enrollment information to Blackboard, the college implemented an interface between the Banner WingSpan system and the hosted Blackboard environment. Curriculum development and maintenance has been automated with the CurricUNET application, again fully hosted and maintained offsite. Assessment testing is supported by the CollegeBoard's Accuplacer Testing systems, which is also hosted offsite. Students access the Accuplacer testing services from the Testing Center on campus, and, when testing is complete, their scores are automatically uploaded to the Banner WingSpan system. Community Education is implementing a fully hosted third-party support environment, Lumens, in spring of 2009 to manage course advertisements, student records, and faculty assignments. In February 2009, Citrus College

began using the CCCApply application system supported by Californian Community College Chancellor's office. Financial Systems continues to be fully support by Los Angeles County Office of Education (LACOE) including the accounting, payroll and some human resources functions. The Human Resources Department implemented an applicant tracking system hosted by PeopleAdmin.

6. Fiscal Resources

A. Budget

The TeCS Department budget from the general fund supports department salaries and supplies, college wide software licenses, support contracts and equipment purchases for both new and replacement equipment primarily for the central server room and larger applications. A small percentage of this budget supports the desktop replacement cycle.

The TeCS Department dedicates a portion of its budget to keeping the desktops and peripheral equipment up-to-date. As stated above, desktop computers are currently on a four-year replacement cycle although replacement is not always feasible because of funding restraints. Construction projects, categorical programs and grants often include funds for new desktop computers and thus assistance to the replacement cycle. The five-year network refresh plan developed in 2007 is a major step forward to ensuring that the college will have sufficient network resources to support its programs.

Table 7 – TeCS Department General Funds Budget

	FY 05_06	FY 06_07	FY 07_08	FY 08_09	FY 09_10	FY 10_11
% of Budget	56.0	57.7	55.1	56.5	56.1	55.5
Salary	1,063,003	1,199,575	1,212,526	1,228,805	1,272,788	1,313,171
% of Budget	16.95	17.06	16.92	18.32	19.30	20.8
Benefits	321,713	354,385	372,375	398,498	437,359	492,331
% of Budget	5.36	3.41	1.40	4.06	1.63	1.6
Supplies	101,787	70,810	30,904	37,211	37,000	37,000
% of Budget	0.72	1.17	1.86	0.92	0.00	0.0
Travel	13,578	24,408	40,852	5,060	0	0
% of Budget	14.62	11.51	16.36	16.02	16.47	16.1
SW Licenses	277,568	239,210	360,157	360,862	373,120	373,120
% of Budget	6.34	9.12	8.36	3.22	6.62	6.5
Equipment	120,405	189,492	184,046	145,152	150,000	150,000
Total Budget	**1,898,054**	**2,077,880**	**2,200,860**	**2,175,588**	**2,270,267**	**2,365,622**

B. State Programs

The TeCS Department has received Telecommunications and Technology Program (TTIP) funding from the Chancellor's office for the last 10 years. These funds have supported the purchases of servers for the central server room and most recently the new electronic signage in the CI Building. These funds have been slowly decreasing over the last five years.

While TeCS will not be receiving direct funding, the TTIP program does support Butte Technology Center, CCCConfer video conferencing, CENIC and CALWren statewide networks, which all support the Citrus College campus.

C. Incentive Programs

Science, Technology, Engineering and Math Grant
Supported by funds from a Science, Technology, Engineering and Math (STEM) Center grant, a pilot project was begun in the spring 2009 to replace current desktop computers with a virtualized computing environment. A new computer math lab and online tutoring environment will be implemented using this new technology. Through this pilot project, the TeCS Department obtained training and experience for implementing and supporting a virtual desktop environment.

Hispanic Serving Institutions Grant
This grant provided funds to replace desktop computers in the Writing Café.

D. Other

Fund 41 - Capitol Development Funds
The TeCS Department has received support from Capital Development Funds for major hardware and equipment upgrades and expansion. Projects include a five-year plan to fully upgrade the campus wide network. The funds also supported a major upgrade for the telephone system in December 2010. All switches were upgraded and all desktop phones were replaced.

Fund 42 - Revenue Construction Bond Funds
Revenue Construction Bond funds, Measure G, provided the funds for the original purchase and implementation of the SunGard Banner ERP System know as WingSpan. These funds supported the original purchases as well as 10 years of support (October 2005 - 2015) for the following SunGard products:
- Banner Student, Financial Aid and Human Resource modules
- Workflow Application
- Luminis, the Student Portal Application
- Xtender, the document scanning and storage application
- Operational Data Storage (ODS), the reporting application.

In addition, Measure G funds also covered consulting support for eight years (2005 - 2013) for the WingSpan project; the purchase and eight years of support for the Oracle database used with the

Banner SunGard products; and the purchase and five years of support for the hardware required for the Banner applications. When the Measure G support ends, support and consulting for WingSpan will need to be moved to the general fund.
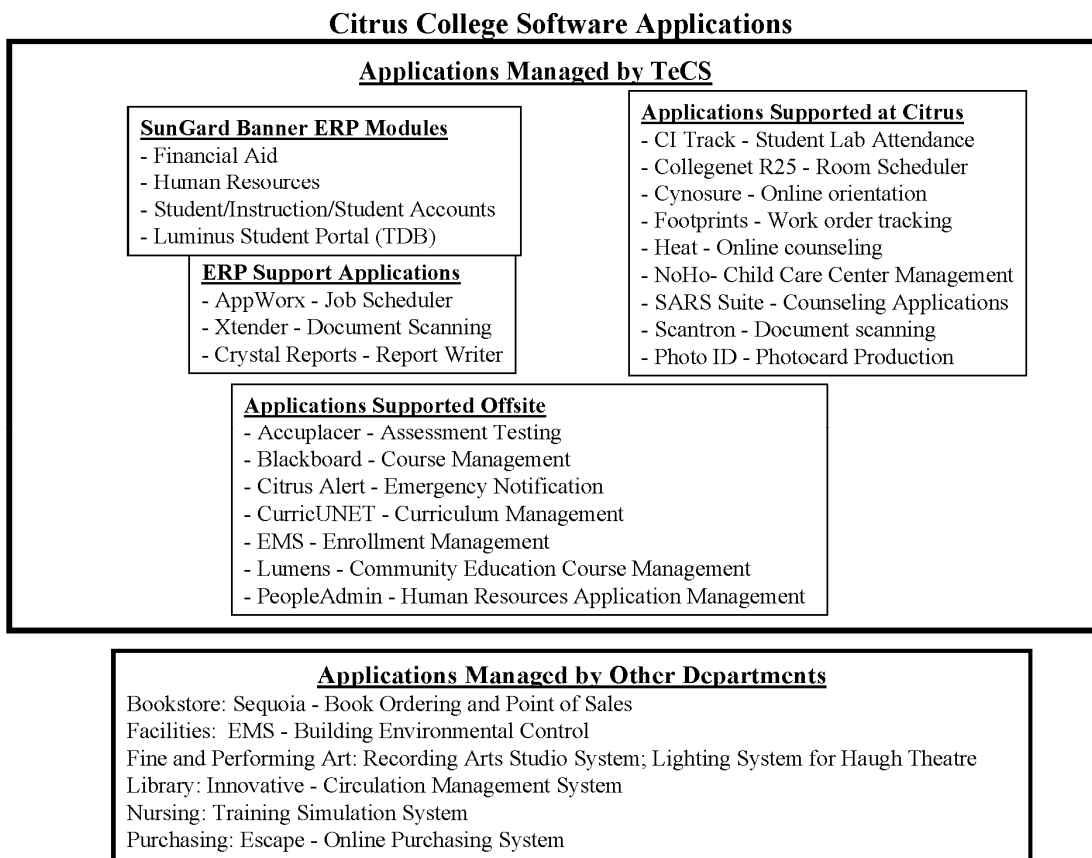
7.   Program Performance

A. Quantitative Performance Measurements

Application Support
The TeCS Department maintains, supports or assists almost 30 applications. These applications are documented in Diagram 2.

Diagram 2 – Citrus College Software Applications

Citrus College Software Applications

Applications Managed by TeCS

SunGard Banner ERP Modules
- Financial Aid
- Human Resources
- Student/Instruction/Student Accounts
- Luminus Student Portal (TDB)

ERP Support Applications
- AppWorx - Job Scheduler
- Xtender - Document Scanning
- Crystal Reports - Report Writer

Applications Supported at Citrus
- CI Track - Student Lab Attendance
- Collegenet R25 - Room Scheduler
- Cynosure - Online orientation
- Footprints - Work order tracking
- Heat - Online counseling
- NoHo- Child Care Center Management
- SARS Suite - Counseling Applications
- Scantron - Document scanning
- Photo ID - Photocard Production

Applications Supported Offsite
- Accuplacer - Assessment Testing
- Blackboard - Course Management
- Citrus Alert - Emergency Notification
- CurricUNET - Curriculum Management
- EMS - Enrollment Management
- Lumens - Community Education Course Management
- PeopleAdmin - Human Resources Application Management

Applications Managed by Other Departments
Bookstore: Sequoia - Book Ordering and Point of Sales
Facilities: EMS - Building Environmental Control
Fine and Performing Art: Recording Arts Studio System; Lighting System for Haugh Theatre
Library: Innovative - Circulation Management System
Nursing: Training Simulation System
Purchasing: Escape - Online Purchasing System

Data interfaces are maintained between multiple systems. These interfaces are documented the table below:

Table 8 – Banner Interfaces

Interface Type	Interface Application
Input to Banner	CCCApply for applications Accuplacer for assessment testing SARS for counseling data
Two-way interface	Cynosure for online orientation
Output from Banner	Blackboard for course work Bookstore for test book purchasing CI Track to record student work hours Citrus Alert for emergency communication Enrollment Management System Footprint for online counseling LA County Peoplesoft for payroll Photo ID system RoboTranscript for automated transcripts

The TeCS Department's work load varies based on multiple factors including annual reporting cycles, data requests from departments, and student data processing needs. The items below document the workload from January through May 2011:

- Wrote 235 scripts for data extraction and report writing
- Created 30 reports put into crystal reports for TeCS and supported departments to run
- Supported the Institutional Research Department's work on the Education and Facilities Master Plan
- Developed Student Conduct Database
- Modified 60 data inputs for Banner CCCCO MIS reporting engine
- Upgraded VTEA and Student Matriculation MIS report extracts and files
- Created over 50 ad hoc reports/data pulls for consultant support
- Distributed 20 to 25 large group emails per week

In 2007, TeCS implemented a formal work order system for the Operations and Support Group to track their services requests. This group has processed over 3200 work orders each year since 2007. Table 9 below documents the work orders processed.

Table 9 - Work Order Summary by Category
With Annual and Category Totals and Percentages

	2007	2008	2009	2010		
Totals	**3756**	**3216**	**3085**	**3496**	**13553**	
					Totals	**% of Total**
Banner	0	17	25	35	77	0.6
Diagnose/Repair	972	0	0	0	972	7.2
D/R Hardware	0	359	340	447	1146	8.5
D/R Software	0	158	151	244	553	4.1
D/R Peripherals	0	63	66	77	206	1.5
E-Mail Other	0	132	102	77	311	2.3
E-Mail Reset Password	0	200	219	224	643	4.7
E-Mail Not Working	203	123	54	56	436	3.2
Install Equipment	16	138	115	107	376	2.8
Install Software	342	343	337	283	1305	9.6
Mapping Request	0	48	54	18	120	0.9
Move Existing Equipement	59	55	51	48	213	1.6
Network Problem	86	120	85	116	407	3.0
Other	265	430	528	592	1815	13.4
Printer - Install Toner Cartridge	86	25	7	3	121	0.9
Printer - Install Fuser	0	2	1	7	10	0.1
Print - Problem	144	206	231	330	911	6.7
Projectors	0	6	23	37	66	0.5
Quote	0	3	22	17	42	0.3
Request New Equipment	103	29	12	20	164	1.2
Server Permissions	0	0	75	29	104	0.8
Service Request	1068	225	308	228	1829	13.5
Suspected Virus	33	39	71	131	274	2.0
Telephone Move	40	27	22	17	106	0.8
Telephone Other	0	65	103	256	424	3.1
Telephone Repair	0	59	44	66	169	1.2
Training Instruction	23	14	5	13	55	0.4
Wingspan Login Permission	12	21	34	18	85	0.6
Misc	304	309	0	0	613	4.5

B. Qualitative Performance Measurements by Program

2007 All-Employee Survey
The 2007 All-Employee Survey included three questions related to technology and equipment use on campus. These results showed that the majority of staff are satisfied with the technology provided.

3.0 Evaluation, Planning and Improvement – Questions in this area addressed how the college measures its own progress. The question related to technology in this area was 3.8: "Citrus provides adequate opportunities for training in technology related to my area of responsibility." The response to this question indicated that 68% of staff felt training was adequate.

Strongly agree	21.9%
Agree	46.7%
Disagree	17.7%
Strongly Disagree	5.0%
Not Applicable/Don't Know	8.8%

5.0 Organization – This section asked the college to evaluate if they have adequate resources to help students learn and succeed. Technology was addressed by Question 5.3 "The technology available on campus adequately meets my needs". Eighty percent of respondents agreed with this statement.

Strongly agree	25.5%
Agree	55.2%
Disagree	13.2%
Strongly Disagree	3.0%
Not Applicable/Don't Know	3.1%

6.0 Student Learning Outcomes – These questions were design to determine if the college is doing a good job at supporting student learning. One question asked was, "If you could improve something at Citrus, what would that be?" Nine options were provided and staff could choose two. Of the 535 responses, 25 (4.6%) responded that equipment and technology needs to be improved:

Faculty	16
Classified Employees	8
Management	0
Confidential/Supervisory	0
Student Worker	1

Community College Survey of Student Engagement
Citrus College has participated in the Community College Survey of Student Engagement (CCSSE) in 2008 and 2010. Several questions in the survey describe student use of technology. The results indicate that the use of the Internet and email has increased; computer use is emphasized in academic work; and students are generally satisfied with the computer labs and services. These results are show in Table 9.

Table 10 - Response to CCSSE Computer-Related Questions
From 2008 and 2010 CCSSE Survey

CCSSE Technology Related Questions - Answers are in percent of respondents				
Part of CCSSE Question 4 In your experiences at this college during the current school year, about how often have you done each of the following?				
j. Used the Internet or instant messaging to work on an assignment	**Very Often**	**Often**	**Sometimes**	**Never**
2008 CCSSE Survey	27	27	26	20
2010 CCSSE Survey	33	30	26	11
k. Used e-mail to communicate with an instructor	**Very Often**	**Often**	**Sometimes**	**Never**
2008 CCSSE Survey	14	20	32	34
2010 CCSSE Survey	20	30	34	17
Part of CCSSE Question 9 How much does this college emphasize each of the following?				
g. Using computers in academic work	**Very Often**	**Quite a bit**	**Some**	**Very little**
2008 CCSSE Survey	40	29	22	10
2010 CCSSE Survey	41	32	21	6
Part of CCSSEE Question 13 This section has three parts. Please answer all three parts including:				
(1) HOW OFTEN do you use the following services - Computer lab	**Often**	**Sometimes**	**Rarely/ Never**	**Don't know N.A.**
2008 CCSSE Survey	34	28	23	15
2010 CCSSE Survey	32	30	26	12
(2) HOW SATISFIED you are with the services - Computer lab	**Very**	**Somewhat**	**Not at all**	**N.A.**
2008 CCSSE Survey	42	30	6	23
2010 CCSSE Survey	41	31	8	20
(3) HOW IMPORTANT the services are to you at this college - Computer lab	**Very**	**Somewhat**	**Not at all**	
2008 CCSSE Survey	58	28	14	
2010 CCSSE Survey	59	28	13	

During the 2010 CCSSE survey, additional technology questions were added. Again, these results show that students are generally satisfied with the technology support provided at Citrus. The results from the technology questions are shown in Table 11.

Table 11 - CCSSE Special Technology Questions from 2010

Item	Result	Count	Percent
6. When appropriate, faculty effectively incorporates the use of computers and other technology into their teaching.	Strongly agree	260	31.0
	Agree	392	46.9
	Disagree	140	16.7
	Strongly disagree	26	3.1
	Not applicable	16	2.2
	Total	837	
8. I can find the information I need on the college's Web site	Very often	314	37.6
	Often	320	39.0
	Occasionally	177	20.0
	Never	24	8.4
	Total	835	
10. Where is the primary location that you use computers to do school work?	At my home	622	75.5
	At someone else's home	44	5.4
	At this college	129	15.7
	At my job	20	2.4
	other	9	1.1
	Total	824	
12. How often has your course performance or grades been affected because you had trouble with technological skills?	Very Often	34	4.1
	Often	81	9.8
	Occasionally	195	23.6
	Seldom	244	29.5
	Never	274	33.1
	Total	828	
14. At this college, assistance is available when I experience problems using computers and other technology.	Strongly agree	166	20.5
	Agree	457	56.5
	Disagree	139	17.2
	Strongly disagree	47	5.8
	Total	809	
16. I primarily use technology at this college to:	Obtain Web-based information and materials for my courses	484	59.8
	Contact faculty	68	8.4
	Perform web-based research	137	17.0
	Access library resources (catalogs, databases, articles)	103	12.8
	Contact friends and family	17	2.0
	Total	809	
18. In an average week during this school year, how often do you use online communication for educational purposes?	Every day or almost every day	186	23.0
	Several times a day	279	34.3
	About once a week	219	27.0
	Never or almost never	127	15.7
	Total	811	
20. About how many hours do you spend in a typical 7-day week using a computer for class assignments?	None	43	5.3
	Between 1 - 4	394	48.3
	Between 5 - 10	273	33.4
	Between 11 - 20	74	9.1
	More than 20	32	3.9
	Total	816	

Security Audit
A security audit of the Citrus College network was conducted in January 2007. No major findings were reported. Three minor findings were reported. The first two findings were addressed in 2007: several network security upgrades were required and operating systems updates were needed. The third finding indicated that written policies related to network use were needed. These policies were developed by the CITC and were completed by spring 2010. The next security audit will be conducted in January 2012.

Campus Audit Report
The TeCS Department has provided input to the District Software Operating Environment audits in 2008, 2010 and 2011. Questions from this audit address areas of environmental controls, system security, program development and change, management of operation controls, configuration controls, problems and incident controls and disaster recovery planning. No findings have been reported from these audits.

C. Trends and Impacts on Institutional Planning

The expanding use of technology in all areas of the campus constantly challenges the TeCS Department's ability to provide support and maintenance. The items below indicate the areas of expansion that require support by the TeCS Department.

Use of new application to improve department efficiencies
Many departments are incorporating new applications to improve the efficiency of their operations and service. The TeCS Department participates in review, choosing and often implementing the applications. TeCS may also provide maintenance and support. Examples of these applications include CCCApply, RoboTranscripts, Online Orientation, online staff and faculty parking permits, database for tracking nursing student data,

Increasing number of classes and labs with computers and podiums systems
Classroom technology podiums include computers and project equipment. Over 100 classrooms and meeting rooms now use this equipment.

Increasing technology infrastructure
With the increasing number of applications, more servers and storage equipment is required. Servers are shared across applications as often as possible. With the increasing number of servers, more support equipment such as racks and cooling equipment is required in the server room.

With more equipment being distributed to all buildings across campus, the related communications infrastructure such as wiring, switches and routers are required. Wiring closets are also required for each building.

Increasing needs for data for decision making
Citrus is adapting a culture of data driven decisions. Data summaries and reports are needed for this effort. The requests for these reports have increased dramatically. While the TeCS Department

creates all of the reports as many as possible are developed so that members of the departments and division across campus can run the reports without TeCS Department support.

Increasing need for reporting – state, federal and auditing
The CCCCO requires 12 standard reports for each term as well as six annual reports. Data is supplies to the National Clearing House several times a term. The TeCS Department supplies data to many departments for auditing reports. The TeCS Department works with Admissions and Records to create the state apportionment report, the 320 Report.

D. Goals and Objectives

Technology planning was formalized in 2009 with the development of the Technology Master Plan. The Technology Master Plan identifies major information systems and technology goals. This formal plan not only guides the implementation of technology at the college, but also supports the Educational and Facilities Master Plan and the Citrus College Strategic Planning Goals. The Technology Master Plan encompasses the development, management, operation, maintenance, and evaluation of the infrastructure, administrative information systems, operations support, and management of web resources.

The Technology Master Plan is a living document. As projects are completed, as new priorities arise, and as strategies change, the objectives contained in the plan are modified to reflect the needs of the college. The Table 11 documents the goals developed for the 2009 – 2014 Technology Master Plan.

Table 12 – 2009 to 2014 Technology Goals

Technology Area	Goals
I. Administrative Information Systems	A. Provide appropriate technology and work flow to support department and division processes and functions. B. Provide student-centered services and support for the matriculation processes C. Provide a self-service reporting environment that allows users to dynamically gather and present information. D. Implement technical support processes that improve the efficiency of services and support for faculty and staff
II. Educational Technology	A. Support integration of technology in classrooms, teaching labs and online instructional environments based on curricular and instructional needs
III. Network, Infrastructure and Telecommunications	A. Provide reliable and secure technology services for voice, data and video services
IV. Operations and Support Services	A. Provide a service-oriented organization to meet the growing demand for technology support
V. Web Environment	A. Provide tools for users to manage the content of their web pages B. Provide an intranet environment that encourages communication and information sharing C. Provide an internet environment that provides the college with a current, accurate and relevant web presence

8.   Program Effectiveness and Needs

A. Effects on Student Outcomes

The TeCS Department, with the help of Student Learning Coordinator John Vaugh, developed Student Learning Outcomes (SLO) for the department in the spring of 2011.   The SLOs are:

1. Students should be able to acquire information about technology services and incorporate the services into their educational planning.

2. Students should be able to understand the various communication options provided at Citrus College and know when to use each option.

3. Students should be able to access and efficiently utilize the technology tools and applications that support matriculation and educational goal completion.

B. Savings or Efficiency Measures

Desktop Replace Timeline
The timeline for desktop replacement was expanded from four to five or six years. With over 1000 computers in classrooms and labs and almost 500 faculty and staff desktops, a four-year cycle would be over 375 desktops per year. With a six-year cycle, the replace numbers are reduced to 250 per year.

Virtualization
Desktop virtualization is the creation of a virtual (rather than actual) version of an individual's desktop environment on a server rather than on one specific machine.   This enables the individual to be machine independent and log on to their desktop environment from any location on campus.

This concept offers Citrus multiple opportunities for savings and efficiency improvements. The majority of computer classrooms and labs will no longer have to be specialized making class scheduling more flexible. There will be no need to update classroom and lab desktops every semester reducing the workload for the TeCS Department Technology Operations and Support Services group thus providing more time to support other areas of the college. The cost for virtual desktop equipment is less than one half the cost of a current desktop computer. Virtualized computer desktops require less space than traditional desktops. Related classroom furniture cost can be reduced and more desktop computers can be provided in existing classrooms and labs. The energy costs for each virtualized desktop is also reduced.

With help from funding from the STEM grant, the TeCS Department successfully piloted a virtual lab during the 2009/10 academic years.   Desktop virtualization will be expanded across campus whenever feasible. The next major implementation will be the virtualization of the student computers in the library during the summer of 2011.

C. Resources Needed

Staffing
The TeCS Department needs support staff in the following areas.

Operations Support - 1 to 2 staff members.
The Operations Group consists of one supervisor and three support staff. The 2009-10 TTIP guidelines from the CCCCO, recommends one Level 1 support technician for every 150 computers. With the increasing number of desktops and related peripherals in classrooms, labs and offices and the increasing number of classes with podium systems, support requirements are increasing dramatically. The TeCS department currently has one support technician for every 500 computers and is acutely understaffed in this area.

Network and Systems Support - 1 staff member
The Network group current has one supervisor and three support staff. The 2009-2010 TTIP guidelines from the CCCCO recommend one network/systems support staff for every 300 computers. The TeCS Department current ratio is one technician for every 500 computers and is again seriously understaffed in this area.

Facilities

Server Room
The server room is in need of physical upgrades to support security and provide an optimal functioning environment. Separate physical storage for software to be stored outside the server room is needed for security.

Even with the expected power reduction that will be realized with increase virtualization, the air condition equipment, which is over 10 years old, is not reliable. Over the past two years, the air condition equipment has failed several times. The resultant rise in temperature to over 90 degrees has required the shutdown of the servers and supported applications to prevent damage to the servers.

No backup power supply is currently available for the server room. However, a campus capitol upgrade project includes plans for a generator to support the server room in case of power outages.

Office and Work Space
The office spaces for the TeCS Department were remodeled in the spring of 2006. However, no additional space is available to add offices for new staff members. In addition, workspace is limited for computer hardware repair and staging prior to deployment. Options for expansion include using IS 109, which is the oldest classroom in the IS building, moving the student open lab to the Student Center when that building is remodeled, and/or dedicating the IS 107 office space to the TeCS Department as that space becomes available.

Classroom Podium System Replacement Support
Instructional Equipment Funding provides funds to replace three to six podium systems per year. Again, there are no permanent funds in the TeCS general budget to support a podium replacement cycle.

Desktop Replacement Support
Currently, the TeCS Department budget does not include funds for a regular and predictable desktop replacement cycle. The college has been fortunate to provide funds from capitol building projects, grants and individual department budgets to support this replacement. The TeCS staff is continuing to collaborate with other departments to include one-time technology funding projects in new grant proposals.

Infrastructure Replacement Support
Long-term planning for technology infrastructure needs is coordinated in governance committees. The Physical Resources Committee coordinates long-term planning for technology infrastructure needs. At these meetings multimedia, networking, telecommunications, and other technology needs are discussed including new construction, remodeling, and moving of technology resources and relocation of employees. The Construction Projects Committee manages the implementation of these major projects.

The servers that support the college infrastructure should be replaced on a five-year cycle. Beginning in fiscal year 2008-2009, the TeCS Department began using VMWare to assist in the replacement of campus servers.

Below is the projected replacement timing for the current server configuration. This diagram indicates the number of servers that are projected to be replaced each year and the number of servers that are candidates to move into the virtual server environment.

Diagram 3 – Server Replacement Cycle
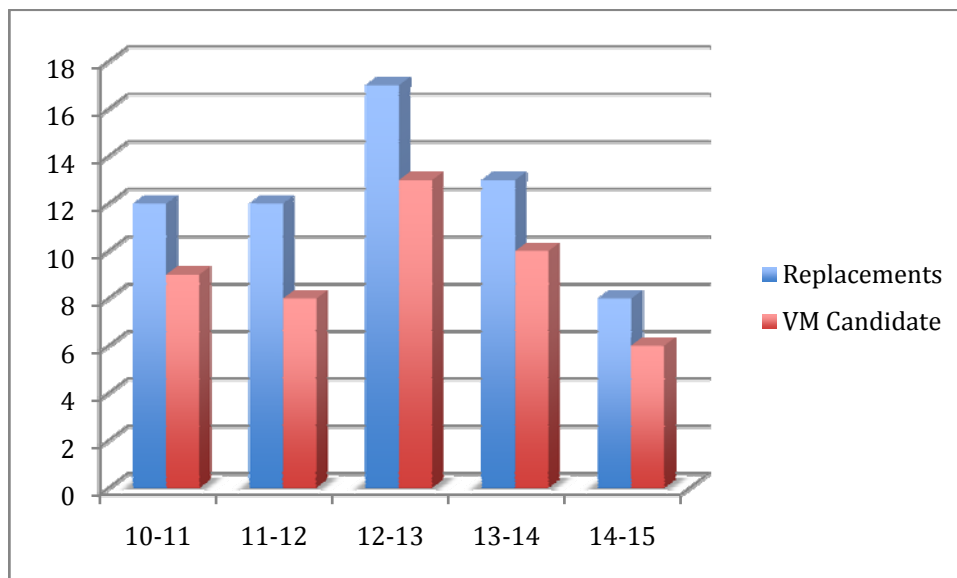
9.   Action Plan

Technology planning was formalized in 2009 with the development of the Technology Master Plan in 2009. The Technology Master Plan identifies major information systems and technology goals. This formal plan not only guides the implementation of technology at the college, but also supports the Educational and Facilities Master Plan and the Citrus College Strategic Plan. The Technology Master Plan encompasses the development, management, operation, maintenance, and evaluation of the infrastructure, administrative information systems, operations support, and management of web resources.

SWOT Analysis
The Technology Master Plan is based on a SWOT (Strength-Weakness-Opportunity-Threat) analysis conducted by CITC. The committee reviewed multiple external and internal documents and data sources to define the focus areas for technology planning. From these areas the implementation areas and goals, the annual action plans were developed.

Diagram 4 – Technology SWOT Analysis

SWOT		Internal Factors	
		Strengths	**Weaknesses**
External Influences	**Opportunities**	Leverages - Students able to work online - Web presence with Blackboard and WingSpan - Creative Marketing - Infrastructure including support of statewide CENIC system	Constraints - Need to make more services available online - Need to increase redundancy in infrastructure – requires funding - Need to increase network availability
	Threats	Vulnerabilities - Constantly changing software versions - Budget constraints - More reporting requirements - Basic accessibility	Problems - Lack of staffing - Budget cuts - Availability of computer labs

The Technology Master Plan is a living document. As projects are completed, as new priorities arise, and as strategies change the objectives contained in the plan are modified to reflect the needs of the college. The technology implementation areas and related goals developed for this plan are represented in Section 7E above. Each year strategies and objectives are developed for the implementation areas and goals. Table XX below contains the strategies and objectives for 2011-2012.

Table 13 - Implementation Objectives 2011-2012

1. Administrative Information Systems

Goal	Strategies and Objectives
1A: Provide appropriate technology and work flow to support department and division processes and functions	1. Update campus parking permit issue software process, assist campus safety in evaluating and implementing new parking permit software and procedures.
	2. Provide data conversion of Haugh Performing Art Center customer database for new online ticket sales product (tessitura).
	3. Provide financial interfaces between Financial Aid and campus Bookstore.
1B: Provide student centered services and support for the matriculation processes	1. Student Portal - An online student portal, MyWingSpan, will be launched
	2. Update and maintain cut scores and course placements in Accuplacer
1C: Provide a self-service reporting environment that allows users to dynamically gather and present information	1. Expand Reporting - Expand the self-service reporting environment so that offices and departments can generate reports as needed
	2. Convert data remaining on legacy system - Move the last of the legacy data to the Banner WingSpan or appropriate database so that data is available for research and reporting

2. Educational Technology

Goal	Strategies and Objectives
2A: Support integration of technology in classrooms, teaching labs and online instructional environments based on curricular and instructional needs	1. Desktop Videoconferencing - Provide training for staff and instructors on use of videoconferencing via desktop computers.
	2. Classroom content streaming and archiving Provide training and assistance to instructors and staff in appropriate use of equipment to record and stream live presentation over the web (MediaSite)
	3. Presentation technology updates for the classroom Update instructional equipment in classes replacing outdated projectors and adding document projectors and web cameras where appropriate
	4. Replace and expand student computers in the Learning Resource Center using desktop virtualization technologies.

3. Network, Infrastructure and Telecommunications

Goal	Strategies and Objectives
3A: Provide reliable and secure technology services for voice, data and video services	1. Server and Desktop Virtualization - Continue virtualization of Campus computing resources, both server and desktop
	2. Blade Servers (power and space savings) - Upgrade existing servers using blade and virtual technology
	3. Building level network capacity upgrades - Upgrade network connections to buildings (IS, AC, PC, VT, LL)
	4. Server Room power backup - Install generator to provide backup power for servers and environment.
	5. Web vulnerability filtering- Install edge monitoring and filtering for spyware and web vulnerability
	6. Wireless network expansion - Install additional wireless network access points in buildings (IS, PS)

4. Operations and Support Services

Goal	Strategies and Objectives
4A: Provide a service oriented organization to meet the growing demand for technology support	1. Response time for reported problems - Analyze response time by work order category and develop process improvements where needed
	2. Expanded training opportunities - Investigate training needs and explore options to effectively meet those needs
	3. Maintaining accurate desktop inventory - Establish repeatable and reliable procedures for maintaining desktop inventory

5. Web Environment

Goal	Strategies and Objectives
5A: Provide tools for users to manage the content of their intra- and internet web pages	1. SharePoint services - Train end users on new tools provided with the SharePoint environment
	2. Provide and train end users video streaming and storage for virtual learning environments (EduStream)
5B: Provide an intranet environment that encourages communication and information sharing	1. Update intranet - Update intranet to new Sharepoint environment to provide enhanced communication and document sharing.
5C: Provide an internet environment that provides the college with a current, accurate and relevant web presence	1. Update front page - Redesign the front page of the college web site to allow more information to be presented in a dynamic manner while still maintaining a simplistic design
	2. Expand use of new platform - Train users of web platform to enable them to appropriately choose and effectively present information