Foothill – De Anza Community College District
Technology Plan
2011 – 2016

EXECUTIVE SUMMARY

The objective of the district's technology plan is to provide a roadmap for addressing project prioritization and key issues facing technology deployment and use at Foothill – De Anza Community College District. This plan is a guide for the efficient and effective development, implementation, and support of technology systems to enhance instructional delivery, student learning, and all associated district / college support systems enabling departments and programs to perform their missions and achieve their strategic objectives.

The plan was developed and vetted through the Educational Technology Advisory Committee (ETAC), a participatory governance committee dedicated to ensuring the effective use of technology across the district and associated colleges. The outcomes of this plan are the result of incorporating strategic guidance from the Board of Trustees and the chancellor, the strategic plans and technology plans of both colleges, an environmental analysis of future technology trends, several infrastructure analyses and audits, and surveys with other input from staff and faculty. This Technology Plan follows and builds upon the previous Foothill-De Anza Community College District technology plan entitled *INFORMATION TECHNOLOGY STRATEGIC PLAN 2005-2010*.

The development of this plan followed traditional strategic technology planning efforts by:

- Defining the mission of the Educational Technology Services (ETS) organization
- Creating a vision for ETS
- Determining the district's mission critical projects
- Identifying key issues and solutions affecting technology deployment
- Developing a performance measurement system to assess progress

Key outcomes of the plans are provided and discussed below.

ETS Mission

We enhance teaching and learning through technology and information services.

ETS Vision (abbreviated version)

1. We are a crucial asset and partner providing a significant educational advantage through the deployment of high quality computing and information services.
2. We provide our users with the ability to securely access district educational technology services and information from anywhere at anytime.
3. We implement a flexible computing environment that enables our educational community members to easily interact.
4. We create a computing environment that enables rapid adoption of learning technologies.
5. We create a computing environment where users attain self-sufficiency in their use of technology.
6. We organize our staff to rapidly learn new skills and technology.
7. We create collaborative organizational teams to achieve common goals.

The full vision statement begins on page 13.

Mission Critical Projects

All known IT projects (planned, requested or required) were consolidated into lists for review and prioritization. The projects were divided into two categories: one category for "Infrastructure" projects and the "Other" category for those projects requested by the colleges and the Central Services organization. The most important projects were designated as *mission critical* and scheduled for implementation. These projects are delineated in Tables 1 and 2 below.

Table 1: Mission Critical Projects – Other Category

Project Name	Goal
SLO Database	Develop a data collection system for SLO development & implementation
Middlefield Internet Connection	Replace the AT&T leased line with a CENIC WAN link (FH)
CashNet	Install CashNet system with Banner
ParSystem - ScanTron	Install new ScanTron system (DA)
Asset Management	Implement asset management functionality in EIS and support
Automation for Meetings	Provide an electronic environment to conduct meetings and facilitate access to information (CS)
Unified Messaging	Implement a messaging system for email, calendaring, fax, voice, etc.
District Web CMS	Deploy a content management system for the district Website (CS)
Universal ID	Implement a student / staff ID system with financial transaction capability

Table 2: Mission Critical Projects - Infrastructure Category

Project Name	Goal
Wireless Deployment	Deploy a wireless network at both colleges and district sites
Disaster Recovery	Provide a hot site disaster recovery capability for critical systems
DR Virtualization	Virtualize the Banner application
Data Center / ETS Building	Construct new facilities for data center systems
Network Rebuild	Deploy a fast, reliable network
Oracle Upgrade	Upgrade Oracle to 11G from 10G version
Argos Migration	Migrate MAUI users to Argos environment
PCI Compliance	Survey systems and implement PCI security measures
Perry Smith Audit *Red*	Ameliorate *red* security items
SIG Audit *Red*	Ameliorate *red* security items
End Point Data Encryption	Provide the technology & training to encrypt desktops and laptop user data
Academic History	Move pre-2000 academic history into accessible data store
Computer Replacement	Refresh computers on a 5 year cycle
Multimedia New & Refresh	Refresh & install new multi-media classrooms
Phone - PBX	Replace old phone system
Voice Mail System Upgrade	Upgrade FH/District VM System to match De Anza's to provide full interoperability

Schedules for mission critical projects will be provided on the ETS website. Note that these lists do not include small projects that can be completed within a week, Banner migration work (original project scope), and services such as smart classroom / computer installs or break / fix.

Key Issues

Three current issues affect the effectiveness of our technology organization to deliver applications and services; they are (1) limited / constrained resources, (2) the relationship between the central technology organization and the colleges, and (3) the need for a disciplined process to prioritize technology projects.

RESOURCES ARE CONSTRAINED

The number of permanent staff positions assigned to ETS has been declining since 2001. The current level of ETS staffing is well below standards recommended by the Systemwide Architectural Committee of the California Community Colleges System Office. Because of an aging, but large IT infrastructure and limited staff, most ETS staff members are dedicated to operational support (computer installations, break / fix, etc.) and rebuilding the IT infrastructure. This leaves little available time to roll out new applications and services. In addition, to ameliorate the lack of fiscal resources to fully fund all ETS staff positions, ETS has assigned the equivalent of nearly nine positions to work on Measure C bond projects using temporary bond funding. These positions no longer have permanent funding and without budget augmentation, ETS staff will be further reduced when this work has been completed. Additional significant cuts to district staff including the ETS organization are probable for the 2011-2012 fiscal year.

A top priority, when funding is available, will be to replace temporary funding with permanent ongoing funding for those positions currently assigned to Measure C bond projects. Also, to enhance the capability of ETS staff in facilitating the adoption of new applications and services, this plan recommends an augmentation of an additional 13 positions. Refer to Table 22 on page 31.

Finally, although the district has significant capital funds through the Measure C bond to continue rebuilding the IT infrastructure, there are significant shortfalls in this funding to accomplish the original goals set forth in the Measure C bond projects. Some funding shortfalls may also exist for completing the *mission critical* projects contained in the lists above. The total shortfall amount for Measure C information technology (IT) projects is estimated to be approximately $20,000,000.

Accordingly, the scope of work associated with each Measure C bond project related to IT has been adjusted to fit the available budget; however, as a result some mission essential infrastructure will not be built and / or sustained as a result. As an example, there are insufficient Measure C funds to continue replacing computers across the district on a five-year[1] replacement cycle over the 15-year life of the bond. Refer to Appendix J on page 65 for more details.

RELATIONSHIP OF ETS TO TECHNOLOGY USERS MUST EVOLVE

The relationship that ETS has with the colleges and the Central Service organization it supports is critical to facilitating a proactive use of technology as a strategic resource of the district. In the model used in this planning methodology, this relationship of the IT organization to its supported units is characterized as either a *job shop*, *architect* or *partner*.

In 2006, many (maybe most) district users viewed ETS as essentially a *job shop*, where ETS provided requested application support and services on demand. Since this time, a change of roles for ETS has occurred shifting the relationship towards that of a systems *architect*, primary as a result of the need and availability of funding to replace the IT infrastructure. To a lesser extent, ETS has also been invited to the table to work with the colleges as a *partner*.

In practice, an IT organization must perform all of these roles, although the extent to which IT occupies each role should be highly tailored to the organization. There are best practices associated with each of these roles identified in Table 23 (page 34) along with a comparison to our current practices and areas for improvement. One overarching goal of the ETS leadership team is to move the ETS organization more into the role of *partnership* with the colleges.

[1] The original Measure C bond goal for this project was to replace all computers in inventory on a **four**-year cycle.

Taking into consideration the areas identified for improvement in Table 23 on page 34, the ETS leadership team has identified four areas of focus for the future:

- Working with senior leadership, identify the roles for ETS as the colleges continue to grow and evolve
- Provide more consultation with users and encourage early collaboration
- Develop a formal technology project prioritization processes with senior leadership involvement
- Prepare and present briefings on emerging technology and facilitate discussions across the campuses

PROJECT PRIORITIZATION IS NEEDED

The previous process that employees used to request functionality improvements, new systems, and / or technology services has been very decentralized with users submitting requests directly to ETS without prioritization by college or district leadership. User expectations that all submitted projects could be completed by ETS within requested time frames did not take into consideration either the current workload of ETS teams or the importance of some projects over others. Initiating new projects often caused a cycle of disruption and inefficiency as ETS developers / technicians were pulled off projects in midstream to begin work on other "higher priority" projects. The result has been excessively long project implementation times and much frustration.

The size of the district, with its two colleges and Central Services departments, necessitates that the district adopt a formal technology project prioritization process that continuously sets and revises project priorities. This new process must be responsive to college and districts needs allowing for the inclusion of new projects as well as the elimination of existing projects, which may have fulfilled their objectives or no longer have a purpose. Accordingly, a prioritization process is proposed in this plan that involves the use of college and district leadership to maintain a list of major technology projects that is kept refreshed allowing ETS to schedule work on the highest priority needs of the colleges. Two goals associated with this prioritization process are (1) to achieve consensus regarding the priority order of projects and (2) to provide transparency in how the process works and what outcomes result from the process. Further details of the proposed prioritization process can be found in the section entitled *Project Prioritization Is Needed* beginning on page 35.

Performance Measurement

To promote an environment of continuous improvement, this technology plan establishes Administrative Unit Outcomes (AUOs) for each department of ETS, which may be found in Table 3 below. AUOs are used to define outcomes that the ETS organization tries to achieve through its support of district and college strategic plans and missions.

In addition, each ETS department defined several measures of effectiveness, which are viewable in the section entitled *Performance Metrics*. These performance metrics will indicate how well the ETS organization is achieving its AUOs. A list of metrics may found in Tables 24, 25, and 26, starting on page 39.

Finally, ETS is also tracking an additional group of metrics, as listed in the section *Workload Metrics*, for use in determining the amount of infrastructure support required per staff member. See Table 27 on page 40.

Table 3: Administrative Unit Outcomes

Department	Administrative Unit Outcomes	Metric
Information Systems & Operations	Employees are satisfied with the outcomes of their technology support requests	1
	Students and employees are provided with responsive applications and systems	2,6
Networks, Communications, & Computer Services	Employees are satisfied with the outcomes of their technology support requests	1
	Employees are provided with technology resources to accomplish their functions	2, 3, 4, 5
	Students and employees are provided with systems with a high percentage of uptime	6
	Students and employees are provided with sufficient Internet network bandwidth to accomplish their functions	7, 8
Institutional Research & Planning	Employees are satisfied with the outcomes of their research and planning support requests	1
	Employees are provided with research to support their job responsibilities	2

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PLAN OBJECTIVE

The objective of the district's technology plan is to provide a roadmap by which Educational Technology Services (ETS) can efficiently and effectively implement, support, and promote technology systems that enhance instructional delivery, student learning, and all associated district / college automated information technology (IT) systems to enable Foothill and De Anza Colleges to perform their missions and achieve strategic objectives.

DISTRICT TECHNOLOGY ORGANIZATIONS

Technology support at the Foothill-De Anza Community College District is provided primarily through a central district organization, but each college also has some local IT assets assigned to support technical systems for instruction as defined below.

District Central IT

The management, maintenance, and operation of the college's technological infrastructure and equipment are primarily handled through the district's central technology organization, *Educational Technology Services* (ETS). ETS is organized to support the development, improvement, and support of IT systems including software applications, networks, instructional computer labs, smart classrooms, personal computing, and telephony for the district's two colleges. A chart showing the organizational structure of ETS can be viewed at http://ets.fhda.edu/who_we_are. In addition to providing direct technical support through staff, ETS manages some of its systems through outsourcing contracts.

Foothill College IT

Foothill College provides a limited number of IT staff to directly assist with instruction in computer labs and support a few other instructionally related systems. The college has a Webmaster who coordinates and maintains the college's website (http://www.foothill.fhda.edu/index.php) and the curriculum management system (C3MS) (http://www.foothill.edu/cms/).

The associate vice president of external relations is responsible for the oversight of technology and leads a shared governance committee, called the Technology Task Force.

The Technology Task Force (TTF) is an auxiliary shared governance group that reports to the college's Planning and Resource Council (PaRC) and includes membership from the Academic Senate, Classified Senate, district ETS organization, administration, distance education representatives, faculty and staff technology and specialists. Under the authority of PaRC and under the guidance of the district technology organization ETS, the TTF provides a forum for informing overall district technology planning and is responsible the college's technology plan, technology decision-making and technology goals. The TTF creates a forum for college decision making, planning, and vetting issues for technology. The TTF addresses the following issues and tasks on an ongoing basis:

- Individual faculty and staff computers including replacement, priorities and hardware/software standards
- Classroom technology needs including instructor computing and audio visual hardware standards, priorities and planning
- College website and web technology needs; requests for new technology implementations and purchases beyond regular classroom and individual computing needs
- College priorities related to district-wide technology projects and implementations

De Anza College IT

De Anza College has a technology support organization called the *Technology Resources Group* (TRG), which supports many instructionally related systems at the college http://www.deanza.edu/trg/index.html. The primary functions of this group are:

- De Anza Web site content development, tools, applications and servers
- Video and audio systems engineering and support
- Multi-media production, including broadcast, webcast, CD and DVD production.
- Management of various systems including:
    - Curriculum management system (ECMS)
    - Course management system (Catalyst – Moodle)

The college also provides a limited number of IT staff (primarily at the instructional associate level) to directly assist with instruction in computer labs.

The vice president of finance & educational resources is responsible for the oversight of technology and leads a user committee, called the Technology Task Force to discuss technology issues, make recommendations for setting technology project priorities, and create a campus technology plan. Refer to http://www.deanza.edu/gov/techtaskforce/. The membership of this committee is listed at http://www.deanza.edu/gov/techtaskforce/members.html. The Technology Task Force reports to College Council.

Educational Technology Advisory Committee (ETAC)

ETAC is a district wide committee that is tasked with technology planning at the district level. It also reviews and makes recommendations regarding deployment of technology, the development of policy, and the resolution of issues impacting the delivery of services to students and staff. Information regarding membership, charter, meeting minutes, etc. can be viewed at http://ets.fhda.edu/etac/.

The ETAC committee is designed to be as inclusive as possible of all constituency groups (administration, faculty, staff, and students) from both college campuses and district Central Services.

The ETAC committee:

- Makes specific recommendations to the Chancellor's Advisory Council on the use of technology throughout the district with regard to both ongoing activities and future directions
- Keeps informed about the current activities and future plans in each of the technology areas - *Infrastructure*, *Information Systems*, and *Client Services* - through the appropriate ETS managers and its own subcommittees
- Monitors the operations, special projects, and overall budget of the Educational Technology Service (ETS) staff in an ongoing effort to have a comprehensive overview of the entire technological effort in the district
- Assess policy on matters such as intellectual property rights, appropriate use of technology, and standards

TECHNOLOGY PLAN DEVELOPMENT PROCESS

Scope

This Technology Plan will provide plans and schedules for addressing key issues, priorities and schedules of projects, and performance measurement tools for continuous improvement cycles.

Process

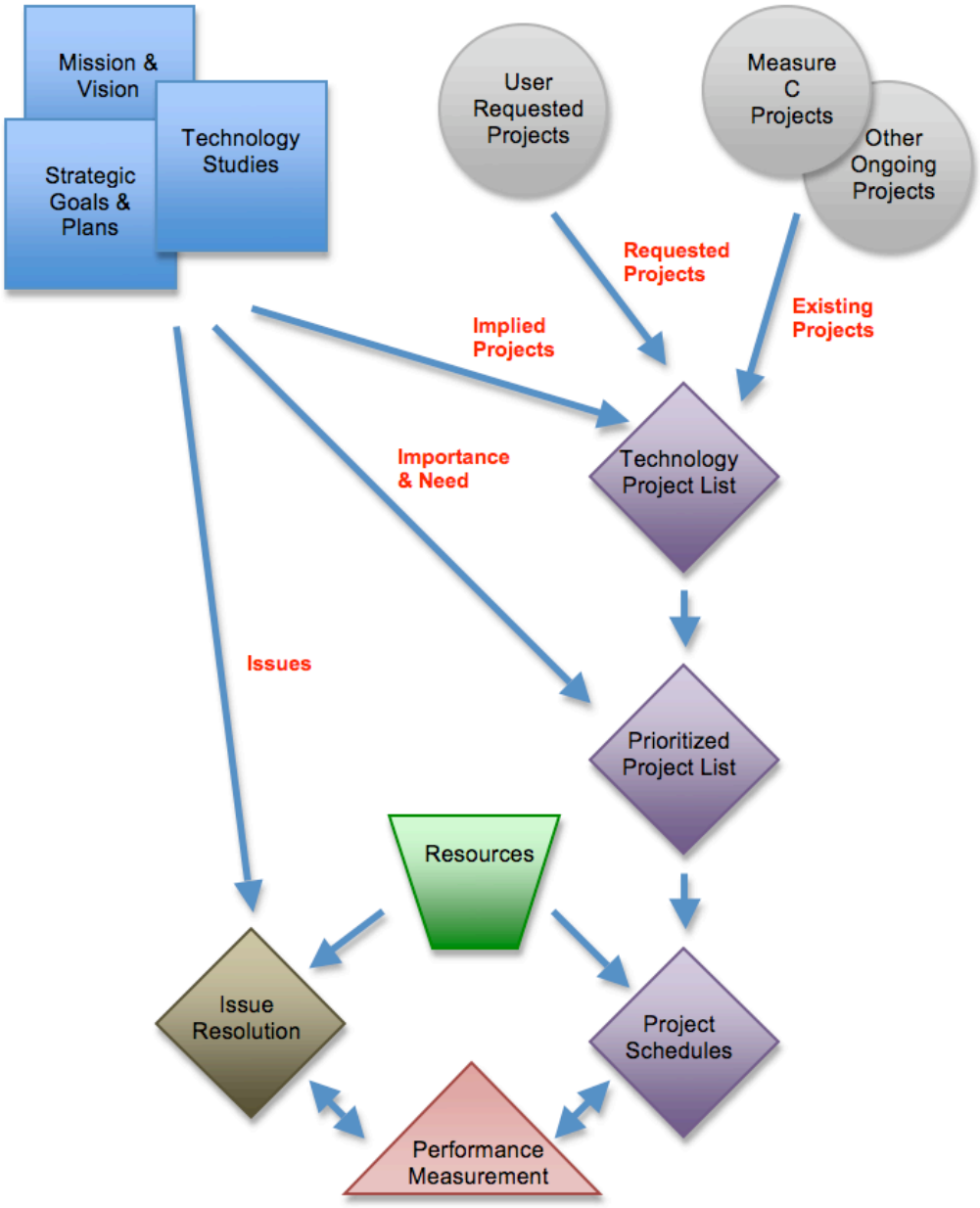


Figure 1: Technology Plan Development Process

The development of the Technology Plan involved several steps to determine requirements, prioritize projects, and address key technology issues for the district.

- Produce the environmental scan
- Develop mission and vision statements
- Identify and address key issues
- Prioritize technology projects
- Develop performance measurement tools for continuous improvement
- Document work and gain approval of plans

An integral part of the development of the plan was the involvement of constituent groups across the district in the planning process. Working through the ETAC committee, the plan was discussed in each of its component parts and suggestions and comments were considered and incorporated in developing the various plan products.

Although the description of steps below depicts a linear planning process, the actual implementation of planning was non-linear, with many tasks occurring in parallel and the results from *later* tasks being incorporated into *previous* tasks (e.g. the process loops back on itself).

At the same time that this technology plan was being developed, the colleges were working on their own strategic and technology plans, so much of the planning activities for the district and the colleges were conducted in parallel.

Steps

Tables 1 through 6 describe the steps used in the development of this Technology Plan.

Table 4: Steps - Produce the Environmental Scan

Action (Steps)	Method	Studies / Documents
Identify trends and developments in instructional and administrative technology	Survey current literature and solicit input from ETS directors & supervisors and ETAC	Technology Environmental Scan
Analyze security weaknesses and vulnerabilities	Contract with external analysts to conduct security audits	Summary – SIG Assessment Summary – Perry Smith LLP Audit Network / Security Architecture Study – Burton Group Consulting Services
Determine technology needs from staff and students	Survey perceptions of staff and students Solicit input from ETAC and senior staff	Staff Survey Student Survey User Requested Applications
Analyze performance, reliability, and suitability of the existing IT infrastructure	Identify system strengths and weaknesses by soliciting input from ETS directors & supervisors and ETAC	Technology Infrastructure Status
Ascertain college needs from college technology plans as well as district and colleges' strategic plans	Review technology plans developed by the technology taskforce of each college. Review college strategic plans	De Anza College Tech Plan Needs *(Foothill College Tech Plan needs are discussed later in this document.)*
Develop list of currently funded technology projects		Currently Funded Technology Projects

Table 5: Steps - Develop Mission and Vision Statements

Action (Steps)	Method	Studies / Documents
Revise and adopt ETS mission and vision statements	Solicit input from ETS directors, supervisors, & employees and ETAC	Mission Statement 2009-11 Vision Statement 2009-11

Table 6: Steps - Identify and Address Key Issues

Action (Steps)	Method	Studies / Documents
Develop key issues with regard to technology infrastructure and support	Solicit input from ETS staff and ETAC committee	*(Discussed later in this document)*
Develop plans to address issues	Solicit input from ETS staff and ETAC committee	*(Discussed later in this document)*

Table 7: Steps - Prioritize and Schedule Technology Projects

Action (Steps)	Method	Studies / Documents
Develop the technology plan project list	Use results of studies noted above	Technology Project List
Set up technology planning Website	Assign task	*(See Website content)*
Prioritize projects	CTO brings project list to groups for review and recommendations: • ETS directors & supervisors • ETAC • Tech Task Force (DA & FH) • Senior staff CTO submits recommendations to chancellor's staff Chancellor's staff ratifies or modifies recommendations	Recommendations for Project Priorities Prioritized Technology Project List
Schedule projects & acquire resources	ETS directors and supervisors schedule projects	*Project Schedule for mission criticalProjects*

Table 8: Steps - Develop Performance Measurement Tools for Continuous Improvement

Action (Steps)	Method	***Studies / Documents***
Create Administrative Unit Outcomes (AUOs) for each ETS unit	Discuss and critique ideas with ETS directors as a team	*(Discussed later in this document)*
Create metrics for evaluating progress on AUOs	Discuss and critique ideas with ETS directors as a team	*(Discussed later in this document)*

Table 9: Steps - Document Work and Gain Approval of Plans

Action (Steps)	Method	***Studies / Documents***
Create written technology plan and post to Web	Publish in written, electronic file and Web formats	*District Technology Plan 2010 - 2016*
Gain final approval of plan from chancellor's staff and Board of Trustees	Present findings and solicit feedback	
Brief plan to district stakeholders	Conduct a series of forums	*PowerPoint Presentations*

MISSION AND VISION

The ETS Mission and Vision statements were developed by the leadership of ETS, then shared with all members of ETS and finally vetted with the ETAC committee.

ETS Mission Statement

We enhance teaching and learning through technology and information services.

ETS Vision Statement

1. We are a crucial asset and partner providing a significant educational advantage through the deployment of high quality computing and information services.
    a. We plan to complete project work right the first time. We concentrate on quality with the goal of being defect free, while managing cost and schedule
    b. We provide tools and services to enable the colleges to have a significant educational advantage in producing student learning
    c. We negotiate project requirements and services with the colleges so that goals are achievable. We obtain a mutual understanding with the colleges regarding deliverables, schedules and costs
    d. We stay in front of user demand by identifying needs and assisting users in choosing appropriate and successful technology implementations
    e. We provide a full cycle of support for systems by measuring our performance and following up in a process of continuous improvement.
    f. We stay current with technological advances in all areas of information technology and institutional research relevant to an educational institution.
2. We provide our users with the ability to securely access district educational technology services and information from anywhere at any time.
    a. We provide:
        i. A pervasive deployment of wireless networking
        ii. A high reliability network
        iii. Self healing / recovering services
    b. We protect the confidentiality of the digital assets of the organization
3. We implement a flexible computing environment that enables our educational community members to easily interact.
    a. We provide technologies that facilitate:
        i. The distribution of electronic information among individuals and groups with common goals or interests
        ii. Multiple means of communication and conferencing to enable collaboration
    b. We assist collaboration by employing technologies that:
        i. Identify and connect individuals who share common interests
        ii. Provide a group working environment with collaboration tools (group editing of documents, etc.)

4. We create a computing environment that enables rapid adoption of learning technologies.
    a. We provide flexibility in our technical architecture through:
        i. The employment of desktop virtualization as well as other virtualization technologies
        ii. The creation and maintenance of a high bandwidth network with robust quality of service (QoS)
        iii. Continual research into new technologies that facilitate the delivery of instructional methods
        iv. Leveraging our relationships with key vendors to promote flexibility in the application of software packages (such as the ability to automate the process of developing, measuring and reporting on student learning objectives (SLOs)
5. We create a computing environment where users attain self-sufficiency in their use of technology.
    a. We deploy systems that:
        i. Are intuitive, self-healing, easy to use and adaptable
        ii. Will guide users to resolve difficulties without ETS intervention
    b. We provide a variety of approaches to enable users to exploit the functionality of IT systems
6. We organize our staff to rapidly learn new skills and technology.
    a. We provide opportunities for training by:
        i. Planning training into work schedules that move members between daily work assignments, special projects, and training opportunities
        ii. Building training opportunities into projects
        iii. Providing the means to motivate members to pursue educational opportunities
        iv. Tailoring training to individual needs
7. We create collaborative organizational teams to achieve common goals.
    a. We build collaborative teams by taking actions that:
        i. Promote trust among team members
        ii. Emphasize the value of team success
        iii. Support appropriate risk taking without consequences

STRATEGIC GOALS AND PLANS

Many sources provided guidance as well as requirements for the development of the technology plan including:

- Board Priorities
- Chancellor's Goals
- Foothill-De Anza Strategic Plan 2010-2016
- De Anza College strategic and technology plans
- Foothill College strategic and technology plans

Board Priorities

The board priorities for 2010-2011 identify two areas that directly reference technology:

- *Ensure that district facilities are modern and effective learning / working spaces*
  - *Continue oversight of bond projects*
- *Ensure that planning is integrated and progressing*
  - *Approve technology master plan*

The full list of board priorities for 2010-2011 can be viewed in Appendix A on page 41.

Chancellor's Goals / Priorities

The chancellor's priorities for 2010-2011 identify technology as one of eight primary goals

- *Goal #6 Technology*
  - *Focus on returning district to a leadership role in technology*
    - *Upgrade administrative technology to increase productivity and efficiency*
    - *Encourage scalable online learning*
    - *Encourage broader adoption of open educational resources.*

The full list of the chancellor's goals / priorities for 2010-2011 are listed in Appendix B on page 42.

Foothill-De Anza Strategic Plan 2010-2016

The district's strategic plan lays out three commitments:

- *Student Success & Achievement*
  - *Improve student outcomes and close the achievement gap*
  - *Improve basic skills*
  - *Improve the outcomes of vocational students*
- *Student Access*
  - *Sustain the fall-to-fall persistence rate of students in selected populations*
  - *Improve the participation rate of high school graduates within the district's service area*
- *Stewardship of Resources*
  - *Achieve structurally balanced budget*
  - *Provide appropriate staffing*
  - *Achieve environmentally sustainable practices in accordance with Board Policy 3214 and the Presidents' Climate Commitment*
  - *Align facilities (capacity) with student load*

The specific strategies that are used to achieve these commitments are found in the colleges' strategic plans, which are discussed with regard to technology implications below.

The complete district strategic plan for 2010-2016 may be viewed at http://fhdafiles.fhda.edu/downloads/homefhda/StrategicPlanFinalComposit.pdf.

De Anza College Strategic and Technology Plans

The four strategic institutional initiatives in the De Anza College Educational Master Plan 2010 – 2015 are:

- *Outreach*
- *Individualized Attention to Student Retention and Success*
- *Cultural Competence*
- *Community Collaborations*

Table 10: Excerpts from the De Anza College Educational Master Plan

The De Anza College Information Technology Strategic Plan was developed and approved through the campus governance process in 2007. Activities of the Technology Task Force (TTF), which is advisory to the College Council, include the following: *Determining criteria for developing proposals* *Prioritizing and coordinating campus technology initiatives in accordance with the Technology Master Plan* *Presenting technology overview to College Council* *Reviewing technology proposals from a technical perspective and make recommendations to College Council* *Developing and/or modifying technology policies and making recommendations to College Council* *Coordinating with governance groups when appropriate* *Communicating with constituency groups* *Collaborating with the district's Educational Technology Services (ETS) on design, implementation and maintenance of technology that affects instruction and administration services* *Defining process for identifying college- based technology standards (e.g., course management systems, content management systems, iTunes, etc.)* *Currently the TTF is working on integrating the technology plan with other campus and district strategic planning efforts, prioritizing the technology plan goals, and making recommendations to College Council and other campus governance groups. (p15)*

The De Anza College Technology Plan contains a list of actions pertaining to research, training, and infrastructure development areas. Key elements of the plan as it pertains to the district technology plan are contained in Appendix C on page 44.

The complete De Anza College Strategic Plan may be viewed at http://www.deanza.fhda.edu/emp/EducationalMasterPlan2010-2015.pdf.

The complete De Anza College Technology Plan may be viewed at http://www.deanza.edu/gov/techtaskforce/pdf/DATechStrategicPlanFinal2010_15.pdf.

Foothill College Strategic and Technology Plans

The three strategic initiatives for Foothill College are:

- *Building a Community of Scholars*
- *Promoting a Collaborative Decision Making Environment*
- *Putting Access into Action*

Table 11: Excerpts from the Foothill College Educational and Strategic Master Plan

In addition, a secondary goal of the master plan is to integrate the institutional planning at the campus level and with that of the district level. Some steps to achieve this goal include more intentional alignment of college plans with district plans, particularly in the area of sustainability and technology. (p4,5)

The Foothill College Technology Plan includes the goals and actions necessary to support the achievement of the strategic initiatives in their strategic plan as well as to support ongoing and future instructional delivery and student service operations. Key elements of the plan as it pertains to the district technology plan are provided below in Table 12.

Table 12: Foothill College Technology Master Plan 2010 – 2015 Priorities

During the 2009-2010 Academic year, the following priority projects emerged from the program planning process (in equal priority order).
Priority 1: *Complete the college-wide wireless implementation at Foothill College.*
Priority 2: *Implement a consistent standard for classroom multimedia technology so each classroom is equipped with a basic level of instructional technology.*
Priority 3: *Complete Banner implementation and successfully train staff and students in its many operations and functionality. (p5)*

The complete Foothill College Educational and Strategic Master Plan 2010 many be viewed at http://www.foothill.edu/staff/irs/ESMP/docs/EMSP_2010_version1.0.pdf.

The complete Foothill College Technology Master Plan may be viewed at http://www.foothill.edu/staff/irs/ESMP/docs/EMP2010/Foothill_Tech_Plan_11.9.10.pdf.

TECHNOLOGIES STUDIES

The priorities and outcomes of the technology plan are also determined from eliciting requirements from studies including all of the following:

- External Technology Environmental Scan
- Surveys of User Perceptions
- Infrastructure Strengths and Weaknesses Analyses

Brief summaries of the studies are provided below. More information is available in the referenced appendices.

Technology Environmental Scan

During 2010, the vice chancellor of ETS conducted a literature survey of research and other pertinent reports regarding future trends in the use of instructional and administrative technology. Key findings are listed below:

SUMMARY OF KEY FINDINGS

- Develop support for computing devices other than computers, especially mobile devices such as cell phones, electronic readers, etc.
- Drive support costs down by adopting efficient IT management technologies such as server and desktop virtualization, advanced server architecture beyond blades, cloud computing (internal and external), and centralized data storage for users
- Provide ubiquitous wireless access to students and faculty
- Develop a unified communications strategy when replacing current PBX, email, and calendaring systems

A full set of results from the Technology Environmental Scan may be viewed in Appendix D on page 45.

Surveys of User Perceptions

In January 2010, the Institutional Research and Planning Department conducted two surveys to elicit the perceptions of users with regard to the capabilities of technology systems and services. Significant findings are provided below.

ETS EMPLOYEE AND STUDENT SURVEY RESULTS

Table 13: Percentage of Employees Indicating a Need to improve Services in the Following Areas

Service Area	%
Wireless	64
Multi-Media Classrooms	54
Training	50
Banner	44
Online Access to Inst Materials	44
Speed of Internet Access	37
Call Center Problem Resolution	33
Email	30
Calendaring system	25
Learning Mgmt Systems	21
Student ID Card	20
Video Production	20

Table 14: Percentage of Students Indicating Preferences and Beliefs

Issue	%
They would rather use their personal email account than a district-provided email account	82
Learning Management Systems (Catalyst, Etudes) are easy to use	52
Information on Websites is difficult to locate	37

Table 15: Percentage of Students Indicating a Need to improve Services in the Following Areas

Service Area	%
Wireless access	82
Student ID / Debit card	44
District / college provided email for students	31

Complete details of the surveys may be found at http://ets.fhda.edu/TechSurvey

Infrastructure Strengths and Weaknesses Analyses

TECHNOLOGY INFRASTRUCTURE STATUS

In 2010, the ETS leadership team conducted an analysis of the stability and performance of the district's major technology systems with the following results:

Table 16: Evaluation of District Technology Systems & Services

Rating	Number of systems[2]
Good (satisfactory functionality / performance / reliability)	6
Adequate – becoming *Good*	2
Adequate (provides basic but not necessarily desirable functionality)	9[3]
Poor – becoming *Good*	5
Poor (cannot perform basic functions – see list below)	6

The systems / services rated as *Poor* are:

- Automation for Call Center Support
- Presenting Information to Stakeholders – District (Website)
- Presenting Information to Stakeholders – Foothill (Website)
- Staff Technical Training
- Student Technical Assistance
- Universal Student ID Card (for student identification and financial transactions)

The full analysis of existing technical systems and services may be viewed in Appendix E on page 49.

DISTRICT NETWORK-SECURITY ARCHITECTURE STUDY

In August 2008 the district received the final report for an architecture study to redesign the network supporting the colleges and the district. The study provides a set of standards, protocols, and topologies to build a replacement network that connects the colleges and Middlefield Center, the local area networks used within the campuses, and virtual local area networks. The study also recommended appropriate security-related designs and practices. ETS will begin large-scale replacement of the network in 2011.

For further information regarding this study, contact the vice chancellor of ETS at 650-949-6120.

[2] Systems or services that do not exist (such as support for mobile computing) have not listed. Refer to the User Requested Applications List.

[3] In many cases, systems that were classified as *Adequate* were only marginally adequate and require replacement when time and resources become available.

SECURITY AUDITS

Summary - SIG Assessment

ETS commissioned and received in May 2009 the final report for an analysis performed by Strata Information Group, which recommended security practices to employ during the implementation of the new Banner administrative information system (also locally known as the *Educational Information System* or *EIS*). This study was conducted during the initial stages of the Banner migration project and highlighted a number of areas that the district would have to address as the Banner implementation proceeded. The district classified the audit findings in four categories in order of importance: 18 findings were classified as high priority, 12 were classified as medium priority, six were completed shortly after receiving the report, and 13 were not selected for adoption.

For further information regarding this audit, contact the vice chancellor of ETS at 650-949-6120.

Summary - Perry Smith LLP Audit

In January 2010, the district received the final report from an audit performed by Perry – Smith LLP auditors, which assessed the readiness of the new Banner administrative information system with regard to employing appropriate security configurations and practices in the new system. This audit was conducted during the beginning of the process to migrate to Banner and much of the district's / colleges' records were in transition between the old and new systems. The audit highlighted a number of areas that the district would have to address to enhance security as the Banner implementation proceeded. The district classified the audit findings in three categories in order of their importance: four findings were classified as high priority, 15 as medium priority and two as low priority.

For further information regarding this audit, contact the vice chancellor of ETS at 650-949-6120.

TECHNOLOGY PROJECTS

ETS consolidated all existing and requested projects into one list and vetted this list with appropriate constituent and leadership groups to rank projects in importance with regard to the needs of the colleges and the district.

Listing All Technology Projects

The list of technology projects that are important to the district and its stakeholders include (1) existing projects that are planned or currently being implemented, (2) projects that users have requested, and (3) projects that are implied by guidance authorities / legal mandates, etc.

EXISTING PROJECTS

In June 2006, voters in the district's service area passed the Measure C bond, which provides over $72 million to fund 24 major technology projects for technology infrastructure improvements. A list of technology projects funded by the Measure C bond program may be viewed in Table 32 of Appendix F on page 51. These technology-related projects were initially conceived and programmed to rebuild an aging and in many cases, non-functional infrastructure affecting the reliability and performance of the district's network, desktop computing, IT security, telephone systems, multi-media systems, and administrative applications.

Table 33 in Appendix F on page 53 lists an additional nine (non-Measure C) projects that are either planned or underway to supplement Measure C technology projects or rebuild other parts of the infrastructure.

REQUESTED PROJECTS

District users of technology (students and employees) have made requests to the district for additional technology services, applications, and improvements to existing technology services and applications. A list of these requests may be viewed in Appendix G on page 54. There are 21 requests on this list representing the most commonly requested areas; however, as users continually make technology requests resulting in a large backlog of unfilled needs, a complete enumeration would create a list much larger than the 21 current requests.

IMPLIED PROJECTS

In addition to the projects mentioned above, additional projects may be inferred from guidance and requirements inherent in district and college mission & vision statements, strategic goals & plans, technology studies, and regulatory mandates.

Initial Project Lists

Appendix H on page 57 contains two lists, one for infrastructure projects and one for all other projects, which enumerate all of the known projects that are currently underway, planned, implied, and *commonly* requested. The leadership team of ETS provided an initial ranking of these projects, which was then used by ETAC, the Technology Task Force committees at both colleges, and senior staff to make recommendations for adjustments. Suggested changes to the priorities as suggested by these groups may be viewed in Appendix I beginning on page 64.

Prioritized Project Lists

After considering the inputs from the appropriate leadership and constituent groups, the vice chancellor of ETS submitted his recommendations to the chancellor's staff, who made the final adjustment of priorities and finalized the ranking of the project list. The finalized project list is presented in two parts (*Other Projects* and *Infrastructure Projects*), in Tables 19 and 20.

LEGEND

Table 17: Project Size Codes for the Project List

Project Size Code	Project Size is:	if the Number of Skill Types needed is:	or the Duration lasts:	or the Implementation Cost is:
S	Small	> 1 <= 5	> 1 month & <= 2 months	> $10K <= $50K
M	Medium	> 5 <= 10	> 2 months & <= 4 months	> $50K & <= $200K
L	Large	>10	> 4 months	> $200K

Table 18: Criticality Rating Codes for the Project List (ETS Perception)

Criticality Rating Code	System Importance
C	Mission Critical
I	Important
N	Nice to have

OTHER PROJECTS

The projects in Table 19 below are ranked according to their importance in descending order (and grouped by their criticality rating.)

Table 19: Prioritized Project List for "Other" Category

Criticality	Project Size	Project Name	Goal	Impact - Outcomes	Project Director	Funding Source
C	S	SLO Database	Develop a data collection system for SLO development & implementation	Supports accreditation process	Chien Shih	Colleges TBD
C	S	Middlefield Internet Connection	Replace the AT&T leased line with a CENIC WAN link (FH)	Provide faster Internet speeds at Middlefield campus and for redundancy to main campuses	Sharon Luciw	Measure C A Budget Foothill TBD
C	?	CashNet	Install CashNet system with Banner	Automate collection and accounting of fees, etc. across multiple departments	Chien Shih	Colleges TBD
C	?	ParSystem - ScanTron	Install new ScanTron system (DA)	Automate creation, administration and scoring of assessment tests	Chien Shih	DeAnza TBD
C	M	Asset Management	Implement asset management functionality in EIS and support	Provide the ability to track the location and status of specified assets	Chien Shih	TBD
C	S	Automation for Meetings	Provide an electronic environment to conduct meetings and facilitate access to information (CS)	Immediate access to meeting materials anywhere, anytime Increased efficiency	Sharon Luciw	TBD

Criticality	Project Size	Project Name	Goal	Impact - Outcomes	Project Director	Funding Source
C	L	Unified Messaging	Implement a messaging system for email, calendaring, fax, voice, etc.	Increase functionality & reliability	Sharon Luciw	TBD
C	M	District Web CMS	Deploy a content management system for the district Website (CS)	User friendly environment to update content on website	Chien Shih	TBD
C	L	Universal ID	Implement a student / staff ID system with financial transaction capability	Students / staff have ID Students make financial transactions for services	Chien Shih	TBD
I	L	Banner Workflow	Implement workflow functionality in Banner to automate business processes	Increased efficiency and accuracy in business processes	Chien Shih	TBD
I	S	L7 / A8 Gig Connection	Install a gigabit connection from L-7 to A-8 (DA)	Provide better video streaming support services	Sharon Luciw	TBD
I	M	Tutorial Tracking & Mgmt	Develop system to schedule, track and account for student tutorial hours (DA)	Increase efficiency in tracking and scheduling student tutors	Chien Shih	Title III Grant
I	L	Mobile Devices	Support selected mobile devices	Mobile access to current information on PDAs, smart phones, etc.	Sharon Luciw	TBD
I	L	Virtual Desktop Interface	Deploy VDIs for selected labs and users	Lower cost of computer refresh Possible lower time to deploy images	Sharon Luciw	Measure C Carryover TBD
I	L	Curriculum Mgmt System Integration	Build a real time interface for curriculum management systems into EIS	Provide instantaneous data exchange between systems	Chien Shih	TBD
I	M	Single Sign-on	Implement single sign-on to access network services	Simplified access to electronic services for Banner and related applications Improved security	Chien Shih	TBD
N	M	Reports for Productivity	Develop reports to improve productivity of administrative processes	Higher quality – better outcomes in administrative processes	Andrew La-Manque	Carryover
N	M	Student Tracking Automation	Replace STS / Red Canyon system with a more functional system (FH)	Provide automated tracking of student attendance	Chien Shih	TBD
N	S	GIS	Geographic Information System for the District (CS)	Save time for staff	Chien Shih	TBD
N	M	Doc Imaging Workflow	Implement automated workflow for document imaging	Provide automation for document imaging processes	Chien Shih	TBD
N	M	Student Email	Provide a district branded email account to each student	Students can acquire vendor discounts	Chien Shih	TBD
N	M	LMS Integration	Build a real-time interface for Catalyst into EIS (DA)	Provide instantaneous data exchange between systems	Chien Shih	TBD
N	S	Remote Access	Provide users with access to district network services from off-campus	Work from remote sites with access to information	Chien Shih	TBD

INFRASTRUCTURE PROJECTS

The projects in Table 20 below are not listed in rank order, but grouped by their *Criticality* ratings.

Table 20: Prioritized Project List for "Infrastructure" Category

Criticality	Project Size	Project Name	Goal	Impact - Outcomes	Project Director	Funding Source
C	L	Wireless Deployment	Deploy a wireless network at both colleges and district sites	Reliable wireless access to the Internet	Sharon Luciw	Measure C
C	L	Disaster Recovery	Provide a hot site disaster recovery capability for critical systems	Timely recoverability of email, calendaring, DNS & Web sites / applications	Chien Shih	Carryover
C	M	DR Virtualization	Virtualize the Banner application	Improved disaster recovery capability	Chien Shih	Measure C
C	L	Data Center / ETS Building	Construct new facilities for data center systems	Increased reliability & sustainability of operations Reduced support costs Consolidation of ETS functions	Sharon Luciw	Measures E & C
C	L	Network Rebuild	Deploy a fast, reliable network	Increased reliability & speed of network Preparation for successful VDI implementation	Sharon Luciw	Measure C
C	M	Oracle Upgrade	Upgrade Oracle to 11G from 10G version	10G vendor support going away	Chien Shih	Staffing
C	S	Argos Migration	Migrate MAUI users to Argos environment	Reporting functionality for users of new Macs & PCs	Chien Shih	B Budget
C	M	PCI Compliance	Survey systems and implement PCI security measures	PCI compliance systems across all campus credit card transaction processing operations	Chien Shih	Business Office TBD
C	M	Perry Smith Audit *Red*	Ameliorate *red* security items	Acceptable response to Audit & Finance Committee Improved security	Chien Shih	No funds required
C	M	SIG Audit *Red*	Ameliorate *red* security items	Acceptable response to Audit & Finance Committee Improved security	Chien Shih	No funds required
C	L	End Point Data Encryption	Provide the technology & training to encrypt desktops and laptop user data	Increase the security of sensitive user personal data	Sharon Luciw	TBD
C	L	Academic History	Move pre-2000 academic history into accessible data store	Student services will have easy access into all electronic academic history	Chien Shih	Measure C
C	L	Computer Replacement	Refresh computers on a 5 year cycle	Minimal acceptable functionality in lab and desktop computers	Sharon Luciw	Measure C
C	L	Multimedia New & Refresh	Refresh & install new multi-media classrooms	Up-to-date functionality for instructional delivery	Sharon Luciw	Measure C
C	L	Phone - PBX	Replace old phone system	Integration with unified messaging Support for emergency operations	Sharon Luciw	Measure C

Criticality	Project Size	Project Name	Goal	Impact - Outcomes	Project Director	Funding Source
C	S	Foothill/District Office Telephone Voice Mail System Upgrade	Upgrade FH/District VM System to match De Anza's to provide full interoperability	More reliable system with additional features which can be used with the planned new telephone system (current high risk for failure)	Sharon Luciw	Measure C
I	M	L7 Server Virtualization	Replace and consolidate servers in data center	Lower cost of support Increase reliability of systems	Chien Shih	Measure C Carryover
I	M	Banner Batch Scheduling	Implement App Works in Banner	Assist in automating back-end data center operations	Chien Shih	Measure C
I	M	Perry Smith Audit *Yellow*	Ameliorate *yellow* security items	Acceptable response to Audit & Finance Committee Improved security	Chien Shih	No funds required
I	M	Prompt to Banner	Build a data exchange between Prompt & Banner	Reduced workload for Finance Office. Interest item from the Audit & Finance and CBOC Committees	Chien Shih	Measure C
I	M	SIG Audit *Yellow*	Ameliorate *yellow* security items	Acceptable response to Audit & Finance Committee Improved security	Chien Shih	No funds required
I	M	User Data Storage	Provide centralized data storage / backup for user electronic data	Increased security of stored data	Sharon Luciw	TBD
I	M	ETS Web Redesign	Refresh look & feel and information on ETS Website	Self-help information easily available to users	Sharon Luciw	TBD
I	M	Helpdesk Software	Replace Call Center software	Increase functionality and reporting capability of problem reporting system	Sharon Luciw	Carryover
I	M	Identity Management	Implement a common ID system to authenticate users for network based services	Lower cost of support Required improvement for single sign-on Required improvement of UID	Chien Shih	Carryover
I	L	L7 Data Center Renovation	Renovate L7 facilities for data center systems	Increased reliability & sustainability of operations Reduced support costs of operations	Chien Shih	Measure C

Note that these lists do not include small projects that can be completed within a week, Banner migration work (original project scope), and services such as smart classroom / computer installs and break / fix.

Schedules for mission critical projects will be provided on the ETS website.

ISSUES AND RESOLUTIONS

The following issues were identified during the development of the district's Technology Plan:

- ETS resources are constrained and severely impact the capability of the technology teams to meet college expectations
- The relationship between ETS and the colleges regarding technology support should be redefined and strengthened
- A process for prioritizing technology work on an ongoing basis should be formalized.

Resources Are Constrained

THE STAFFING ISSUES

Resources (funding as well as staff) are split among many areas to support information technology across the colleges and the district:

- **Operations**: Support for workstation and lab computers, multimedia equipment, network and telephones, and applications (administrative systems, email, Web portal, etc.)
- **Infrastructure**: Banner implementation, network upgrade, wireless installation, desktop replacement, data center design and construction, security projects, etc.
- **Project Reserve / Contingency**: Set aside to perform emergency repairs and respond to high priority, short notice requests.
- **Measure C Construction**: Ensuring adequate IT infrastructure design in buildings and monitoring construction.
- **Other Projects**: User-requested projects such as replacing the universal ID card system, developing a unified messaging system and implementing single sign on.

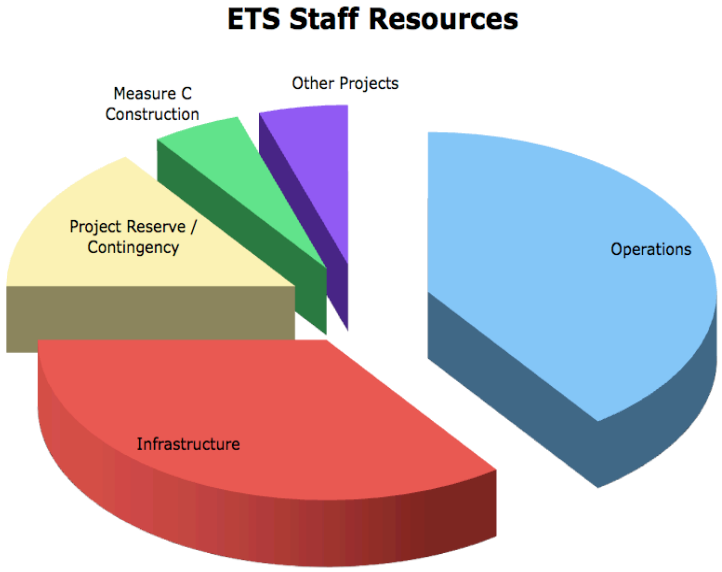


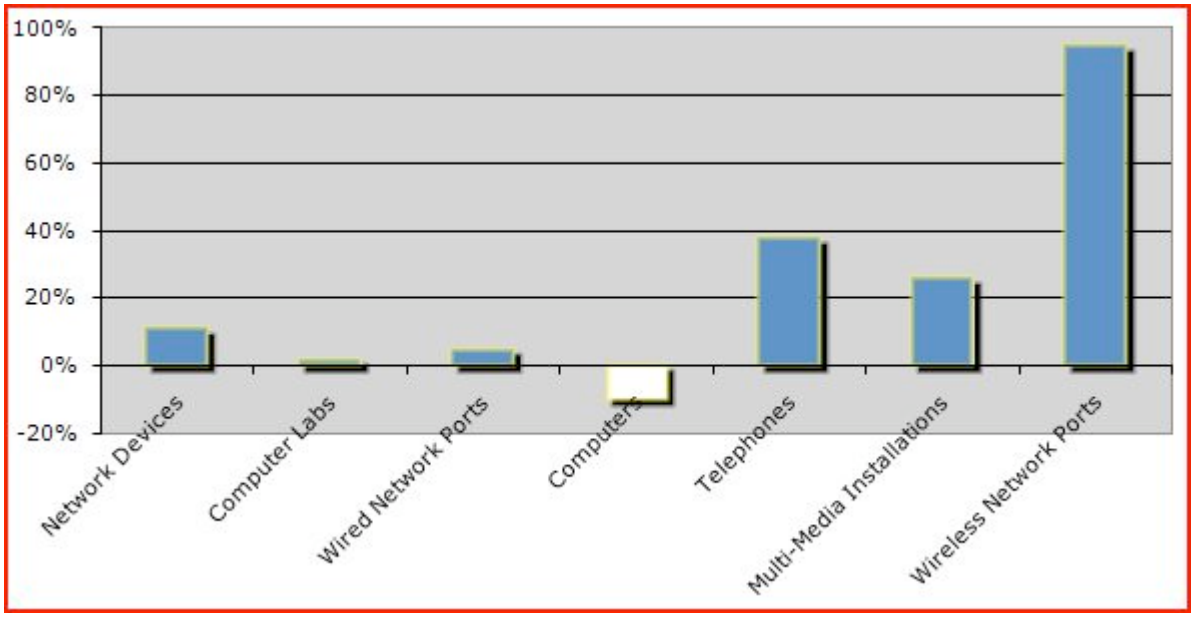
Figure 2: ETS Staff Resource Allocation to Its Functional Responsibilities

Currently there is a greater demand for technology services than ETS staff members can provide. Most users feel the impact of having very limited capacity in technical staff to support user-generated projects, represented by the small slice of the pie entitled *Other Projects* (see diagram above). The majority of ETS staff resources are currently expended in maintaining or improving existing systems (*Operations*) and in rebuilding the IT infrastructure.

ETS Staffing History and Analysis

Since FY 2000 – 2001 the IT infrastructure has grown significantly while ETS staffing levels have declined resulting in an increase in workload per ETS employee. IT infrastructure growth has been resourced through the Measure C bond program, which has provided funds for critically needed facilities, equipment and services. While computers have declined slightly, other aspects of the infrastructure continue to grow.

Figure 3: Percent of Change in IT Infrastructure Growth from 2008 to 2011



The current staffing level of ETS as of December 2010 is 65.5 positions. (The current ETS organizational structure may be viewed at http://ets.fhda.edu/who_we_are.) This amount includes both temporary and permanent positions as well as a four-person institutional research and planning team. Not included in the 2010 count is an additional administrative assistant (195-day temporary worker) supporting the Banner implementation.

Figure 4: Trends in ETS Staffing Levels (# of positions over time)

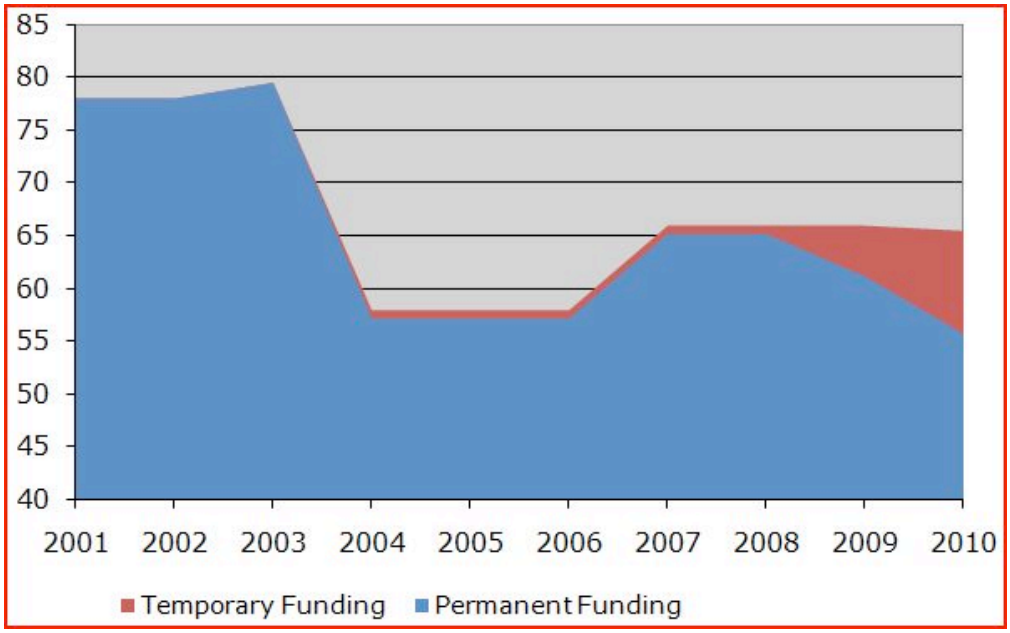
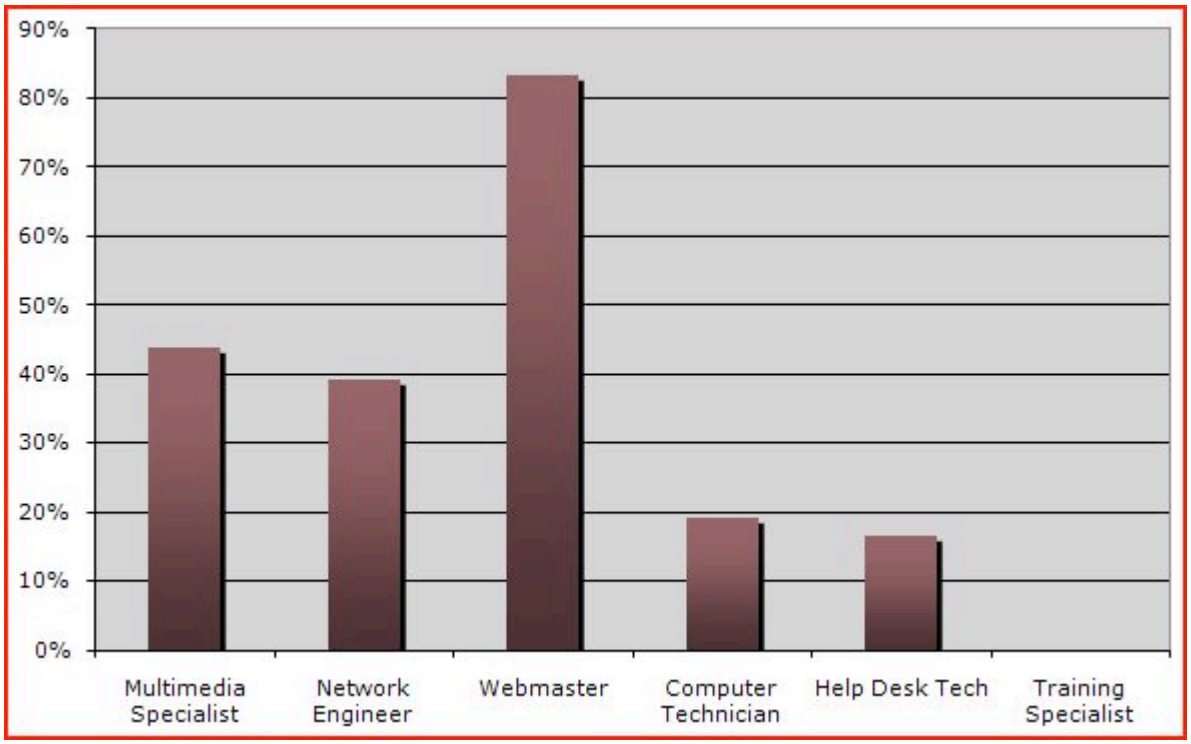


Figure 4 depicts historical staffing levels and includes both permanent and long-term temporarily funded staff.[4] The current level of permanently funded positions in ETS is approximately 30% below the level of staffing in FY 2002 – 2003 primarily due to cumulative cuts beginning in 2003.

Figure 5 below contrasts the California Community College Chancellor's Office standards / guidelines[5] for IT staffing versus the level of staffing in FY 2010 – 2011 available in the district. The number of IT managers in the district meets the system standard (not shown) but is still not adequate given the large number of simultaneous infrastructure projects requiring project managers. The staff levels depicted below do not include ETS staff on temporary funding.

Figure 5: ETS Staff Levels as a Percent of System Standards for Staffing



Measure C Technology Projects Support

To support the numerous projects funded by the Measure C bond (see Appendix F on page 51), several ETS personnel have been assigned to work on Measure C projects, under funding provided by this bond. Table 21 lists those permanent positions, which are currently receiving temporary funding either directly from the Measure C bond or from the general fund in support of Measure C projects. Note that this list is constantly changing according to the needs of the projects. When these Measure C projects complete, a shortfall will exist in the general fund allocation (A budget) for personnel costs. This will result in the loss of several employees from the ETS department if alternate funding sources cannot be located.

[4] "195-day" temporary and student workers are not included in the counts.

[5] As initially specified in the *CCCCO Technology Plan II* and updated periodically by the Systemwide Architecture Committee

Table 21: Technology Positions with Percent of Temporary Funding

Position	Project	%FTE
Computer Network Supervisor	Measure E / C supervision	0%[6]
Network & Communication Administrator	Measure E / C design & construction	100%
Network & Communication Administrator	Measure E / C design & construction	100%
Network & Communication Administrator	#340 Labor to install network equip/routers, etc.	10%
Network & Communication Administrator	#340 Labor to install network equip/routers, etc.	10%
Senior Systems & Network Programmer	#340 Labor to install network equip/routers, etc.	5%
Senior Systems & Network Programmer	#340 Labor to install network equip/routers, etc.	5%
Workstation & System Support Tech I	#330 Labor to refresh computers	80%
Workstation & System Support Tech I	#330 Labor to refresh computers	80%
Workstation & System Support Tech II	#330 Labor to refresh computers	80%
Workstation & System Support Tech II	#330 Labor to refresh computers	80%
Workstation & System Support Tech Sr	#330 Labor to refresh computers	35%
Instructional Systems Design Engineer	#713 De Anza Refresh MM #714 De Anza New MM #613 Foothill Refresh MM #614 Foothill New MM	30%
Programmer Analyst I	#360 Server refresh	50%
Programmer Analyst II	#350 Replace ERP	50%[7]
Senior Systems & Network Programmer	#350 Replace ERP	30%
Web / Client-Server Application Programmer	#360 Server refresh	50%
Program Coordinator II	#350 Replace ERP	100%[8]
	~9 positions <=	**895%**

[6] 80% of this position was moved to Measure C funding. We have retained permanent funding to re-establish the technical services supervisor position once the relevant Measure C projects are completed

[7] Funded temporarily out of the general fund (one-time EIS backfill allocation); the other 50% FTE of this position is covered with the 50% FTE for a position where the person retired

[8] Funded temporarily out of the general fund in support of the Banner implementation

THE STAFFING SOLUTIONS

Table 22 lists critical staffing needs for ETS.

Table 22: Critical ETS Staffing Needs

Information Systems & Operations	Networks, Communications & Computer Services	Institutional Research & Planning	Other
Restore funding for staff identified in Table 21 and: (1) Sys Admin / DBA (1) Programmer (1) Project Assistant (1) Training Coordinator (1) Webmaster	Restore funding for staff identified in Table 21 and: (1) Network Technician? (1) Network Engineer (1) Network Admin (1) Multi-media Tech (1) Desktop Senior Tech (1) Call Center Tech	(1) Research Analyst	(1) Security Officer

In addition to restoring permanent funding for staff positions identified in Table 21 above, the additional staff identified in Table 22 will allow the ETS team to accomplish several objectives.

- Allow the formation of quick reaction project teams that will be dedicated to one or more projects so that work can continue essentially uninterrupted until project objectives have been accomplished
- Launch a sustained technology training program to service employees of the district
- Establish a dedicated Website management and development program to meet the needs of the district
- Strengthen the Call Center and assist in its transition to a helpdesk function, with the capacity to resolve at least 80% of support calls without further referrals
- Strengthen IT security throughout all information technology systems

As enrollment-based funding (base funding, growth and COLA) is recovered as the result of the state's recovery from recession, the district will prioritize position requirements, restoring funding and allocating new positions accordingly.

A special effort will be required to restore positions for employees working on Measure C projects when Measure C funding is exhausted, which will occur at different times depending on the project. If no additional funds can be allocated to restore positions, then ETS leadership will assess and prioritize positions across the entire ETS organization, before identifying specific positions for reductions.

Finally, ETS teams are researching methods to reduce the cost of supporting the infrastructure by employing technologies that are more efficient to maintain than current legacy systems. Some technologies that are being investigated include virtualization, automated monitoring systems, and user self-service systems, where users are able to acquire reports and other technology services without the intervention of an ETS team member.

THE FUNDING ISSUES

Funding issues impacting the performance and support of technology systems include:

- Shortfall in Measure C funding for technology projects
- Shortfall in funding for *mission critical* projects

Shortfall in Measure C Technology Projects Funding

With the passage of the Measure C bond, the district intended to establish a 15-year budget to acquire and support key technology systems and infrastructure as a key goal. However, because the IT infrastructure (numbers of computers and smart classrooms, etc.) has grown since planning for the bond was completed, and since the initial planning did not fully account for all labor and acquisition costs for new equipment and systems, the current Measure C budget for technology cannot support all original goals of the plan. As a result, most Measure C technology projects have been reprogrammed to fit within the available budget. As a consequence of this shortfall, the strategy of using Measure C funds to provide 15 years of support and maintenance for the infrastructure will not be successful.

Appendix J on page 65 lists the Measure C technology projects, their original objectives and their funding status. The total shortfall in funding to accomplish all original goals is approximately $20,000,000.

Shortfall in Mission-Critical Project Funding

Mission critical projects (other than those associated with Measure C) are identified in this technology plan in the section *Prioritized Project Lists*. The accompanying tables (Tables 19 and 20 starting on page 23) include the sources of funding identified for these projects. Even though funding sources for some are listed as TBD (to be determined), the district is committed to funding these projects and will allocate funding as needed when they are initiated.

THE FUNDING SOLUTIONS

Measure C Technology Projects

We have redefined the objectives (scope) of the Measure C technology projects to fit within their available budgets. Table 41 in Appendix J on page 65 lists revised objectives and other notes important to the restructuring of projects. In certain cases, carryover funding available to ETS will be used to fund critical shortfall areas.

Technology Plan Mission Critical Projects

The district departments and the colleges have committed to fund all *mission critical* projects out of one-time carryover or ongoing funds from various sources.

Relationship of ETS to Technology Users Must Evolve

Since 2007, the ETS leadership team has examined the relationship between the ETS organization and the colleges that it supports. Out of this discussion, the team developed a relationship model as a way of describing the current relationship as well as future, desired relationship with its users.

THE ISSUE

Relationship Model

One method to describe the relationship that the technology organization has with its parent organization is to examine the roles that the technology organization fulfills with regard to its parent organization described herein as *partner*, *architect*, and *job shop*.

In the *job shop* role, the technology organization acts as a provider of technology services and the relationship is similar to what a vendor provides for its client. Service Level Agreements (SLAs) and contracts essentially define the operational characteristics of this relationship. Services are requested and funding is provided by the parent organization. Organizational users specify their needs and requirements and the technology organization builds or acquires and supports systems to specification.

In the *architect* role, the technology organization proactively designs and supports a technology infrastructure to meet the needs of the organization. Projected user-defined requirements and priorities gained through discussions with users are employed by the technology organization to specify an architectural design, which is then built and managed. The *architect* role requires significant consultation with the parent organization.

In the *partner* role, the technology organization works closely with its parent organization in developing solutions and opportunities to expand the strength of the organization to meet its mission. The *partner* role requires extensive collaboration between the colleges and the technology organization. The technology organization becomes knowledgeable of and deeply involved in all facets of running the parent organization and is routinely brought into strategic business decisions. The parent organization includes the technology organization in discussions of emerging needs early in the process so that the technology organization can assist in requirement definition and choice of systems.

A technology organization should achieve a balance in fulfilling all three roles, although not necessarily in equal amounts, but rather tailored to the needs of the organization. It is important to note that it is essential to employ best practices for each role no matter how the roles are balanced.

Historical and Current Status

In 2006, many district users viewed ETS as essentially a *job shop*. Since then, a shift of roles for ETS towards the *architect* role has occurred due to the availability of technology funding through Measure C and the need to replace most of the existing IT infrastructure. To a lesser extent, ETS has also been invited to the table to work with the colleges as a *partner.*

THE SOLUTION

There are best practices associated with performing each of these roles and Table 23 identifies best practices as well as our current practices and areas for improvement. One goal of the ETS leadership team is to move the ETS organization more into the role of *partner* with the colleges. Taking into consideration the areas identified for improvement in Table 23, the ETS leadership team has identified four areas of focus for the future:

- Working with senior leadership, identify the roles for ETS as the colleges continue to grow and evolve
- Provide more consultation with users and encourage early collaboration
- Develop a formal technology project prioritization processes with senior leadership involvement
- Prepare and present briefings on emerging technology and facilitate discussions across the campuses

Table 23: Possible Roles for the IT Organization with Respect to District Stakeholders

ETS Role	Best Practices	Current district practices	What has to change
JOB SHOP	Service Level Agreement (SLA) defines capabilities, performance levels, and constraints on work	Previous attempt to establish SLAs failed; no SLAs exist	Could establish and use Service Level Commitments (SLCs) as an alternative
	Pay as you go, on demand services	Customers make requests ETS responds within the limits of its capacity, generally first come, first serve	Could set up a metering system where each entity has so many "units" of service available to them Could establish a "charge-back" system for non SLC work requests
	Customer sets priorities	Many customers – "everything is important"	Facilitate prioritization sessions with senior staff
	Customer provides resources for work outside of SLA (pay for services)	Sometimes occurs on small projects; many times customer is unable or unwilling to provide resources	Set expectation for what is possible through SLCs and prioritization process
	Job shops have robust helpdesk service centers and Web resources to handle 70% to 90% of service requests	ETS uses a "call center" with much less services than a helpdesk	Hire students, interns etc. until additional staff become available
	Job shop anticipates some customer needs	Occurs rarely, due to limited resources and many customer generated and infrastructure priorities	Better management of work requests
ARCHITECT	ERP and associated programs are developed and managed by a single organization	Banner ERP modules are managed by ETS Many applications (known and unknown) are initiated and managed by many other groups	ETS needs to create vision for technology and communicate it to the campuses The district may want to reorganize its technology organizations
	The network (backbone, LANs, WANs, etc.) are developed and managed by a single organization	The network is designed and managed by ETS Occasionally, users develop their own networks independent of ETS	ETS needs to continue to educate users on how to request services and the security implications of installing rogue network applicances
	The deployment of technology is coordinated across the district: - To minimize duplication and redundancy (of applications) - To arrange for fault tolerance and system recovery	Sometimes users contact ETS at the start of a technology project; many times they don't "If ETS cannot do the project, then we will do it ourselves" The district has multiple technology organizations that provide technology users	ETS needs to develop a way to encourage early communication with user groups needing technology The district may want to prevent the funding of technology projects that have no coordination with ETS ETS needs to establish clean interfaces with other technology organizations
PARTNER	Technical services and users work in a relationship based on: - Trust - Interdependency - Shared purpose	Trust exists between ETS and some users but not others Colleges pursue technology projects often without communicating with ETS (grants, new applications, vendor contact, etc.) Users have little understanding of ETS limitations Users sometimes dictate solutions, deployment schedules	Set expectations and meet them Build credibility by achieving results (many small wins) Enhance communication between ETS and users (Users) Work with ETS at inception of initiating technology projects

Project Prioritization Is Needed

THE ISSUE

Prior to this technology plan, the process that employees used to request system functionality improvements, new systems, and / or technology services was very decentralized and did not involve any filtering or prioritizing of requests at the department or college level before they were submitted directly to ETS. These requests frequently asked for short project completion times even if the department had not previously involved ETS in the process of choosing and purchasing the application. User expectations that all submitted projects could be completed by ETS within requested timeframes did not take into consideration either the current workload of ETS teams or the importance of some projects over others. Initiating new projects often caused a cycle of disruption and inefficiency as ETS developers / technicians were pulled off projects in midstream to begin work on other "higher priority" projects. The result has been excessively long project implementation times and much frustration.

THE SOLUTION

The size of the district necessitates that the district adopt a formal technology project prioritization process that continuously sets and revises project priorities. This new process must be responsive to college and district needs allowing for the inclusion of new projects as well as the elimination of existing projects, which may have fulfilled their objectives or no longer have a purpose. Accordingly, the following project prioritization process is proposed.

Process Steps

1. Users submit project requests to the appropriate technical organization (normally to ETS but could also be to the Technology Resources Group at De Anza College or Foothill College).
    - Technical teams are brought in early in the project definition process and work with users to define system requirements and develop potential solutions
    - Technical representatives work with users to estimate the scope, cost, and ranking[9] of projects
2. ETS will submit each project request to the appropriate college or Central Services *review authority* along with an interim ranking based on an analysis of project attributes
    - Each college and the Central Services will appoint a *review authority* to locally review and prioritize college initiated / requested projects. The *review authority* is either a committee or a person who has the responsibility and authority to act as a central clearinghouse as well as a decision-maker for prioritizing projects requested by the organization
    - Each *review authority* will create a prioritized list of projects based on the initial ranking by ETS as well as other relevant information
3. After prioritizing, the college and Central Services *review authorities* will submit their prioritized lists to the district *review authority*.
    - The district review authority shall be made of a senior staff member from each college and Central Services and the vice chancellor of ETS.
    - The district *review authority* shall convene on a quarterly or other to-be-determined frequency to consolidate projects from all three lists into one district prioritized list.
    - New or existing projects may be placed in front of previously prioritized projects that have not already been started.

[9] Refer to Appendix K on page 67 for an example of a project evaluation tool

- ETS and other appropriate technology organizations will develop schedules and refine cost estimates for *mission critical* projects[10], which can be initiated or completed within two years and which have a source of funding and point of contact (POC) identified. These schedules will be revised on a quarterly basis.

4. The vice chancellor of ETS shall submit the revised project priority list to chancellor's staff for review and approval and then communicate the list to ETAC, the Chancellor's Advisory Council (CAC) and Senior Staff.
5. Technical teams will begin work on projects according to the schedules
   - New projects must have both a source of funding and a point of contact (POC) before projects will be initiated. The point of contact is a person who has the authority and responsibility to make decisions about the project representing the user perspective (e.g. articulating requirements, setting dates for when functionality is needed, approving designs, signing off final products, etc.)
   - Once work has begun on a project, the technical team will continue to work on the project until it is completed (e.g. projects that have already started will not be disrupted by other projects except in emergency situations)
   - Technical teams may elect to work on projects that require minimal resources and can be completed in a short timeframes regardless of prioritization status
6. Technical teams shall report progress on project completion on a quarterly basis.
7. Dependencies, equipment life span and vendor maintenance / support availability will be taken into consideration in project scheduling

Definitions:

- Project: For purposes of this prioritization process, a project is defined as an activity undertaken to acquire, develop, enhance, or repair functional capabilities or services using IT components (software, hardware, or both), in which a significant level of effort is required to meet user objectives. A significant level of effort is defined as taking more than 40 labor hours to complete or costing more than $5,000. As an example, requests to install computers, repair workstations, or troubleshoot multi-media rooms should not be considered a project and will be addressed using normal ETS operational processes.
- Emergency situation: An emergency situation exists if:
  - A legal mandate or regulation requires timely project completion
  - Lives are threatened or property is at risk of unacceptable damage or loss without timely project completion
  - Unacceptable revenue loss to the district will result without timely project completion

  Note that an individual's failure to notify ETS of project requirements in a timely fashion does not constitute an emergency situation.
- Project initiation: Project initiation occurs when the project has been scheduled and the start date for the project has passed.

[10] Dependencies, equipment life span and vendor maintenance / support availability will be taken into consideration in project scheduling. *Mission critical* refers to the criticality of projects as listed on the Prioritized Technology Lists.

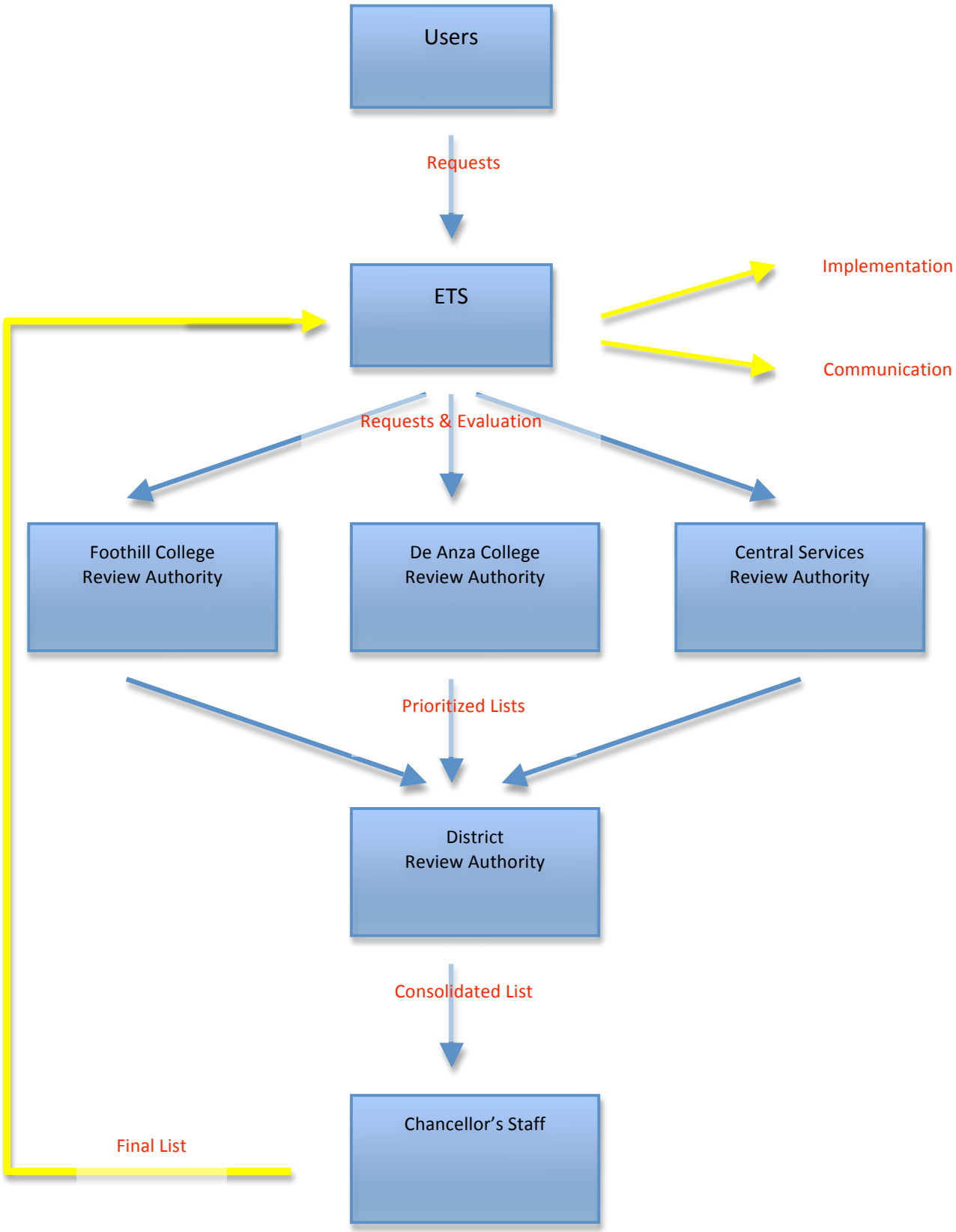


Figure 6: Project Prioritization Process

PERFORMANCE MEASUREMENT

To promote an environment of continuous improvement, this technology plan establishes Administrative Unit Outcomes (AUOs) for each department of ETS. These AUOs can be viewed immediately below in the *Administrative Unit Outcomes* section. AUOs are used to define those outcomes that the ETS organization is trying to achieve in its support of district and college strategic plans and missions.

In addition, in the following section entitled *Performance Metrics*, each ETS department has defined several measures of effectiveness. These performance metrics will indicate how well the ETS organization is doing in achieving its AUOs.

Each AUO has one or more performance metrics associated with it. The association between AUOs and performance metrics is indicated by the information contained in the parentheses at the end of each AUO in the *Administrative Unit Outcomes* section.

Finally, ETS is also tracking an additional group of metrics for determining if the amount of infrastructure support required per staff member is increasing or shrinking. These metrics will be used in future staff planning. Refer to the section entitled *Workload Metrics*

Administrative Unit Outcomes

INFORMATION SYSTEMS & OPERATIONS

- Employees are satisfied with the outcomes of their technology support requests (Metric: 1)
- Students and employees are provided with responsive applications and systems (Metrics: 2, 6)

NETWORKS, COMMUNICATIONS, & COMPUTER SERVICES

- Employees are satisfied with the outcomes of their technology support requests (Metric: 1)
- Employees are provided with technology resources to accomplish their functions (Metrics: 2, 3, 4, 5)
- Students and employees are provided with systems with a high percentage of uptime (Metric: 6)
- Students and employees are provided with sufficient Internet network bandwidth to accomplish their functions (Metrics: 7, 8)

INSTITUTIONAL RESEARCH & PLANNING

- Employees are satisfied with the outcomes of their research and planning support requests (Metric: 1)
- Employees are provided with research to support their job responsibilities (Metric: 2)

Performance Metrics

INFORMATION SYSTEMS & OPERATIONS

Table 24: Information Systems & Operations Performance Metrics

	Performance Metrics	Frequency	Measures ...
1	Moving average of user surveys on helpdesk requests broken down by college and constituency (faculty, classified staff, supervisors and administrators)	Weekly Quarterly	User satisfaction Note: all technical areas are averaged together.
2	Average page load time for accessing Luminis portal	Monthly	System performance
3	% of servers, which are 5 years and older	Annual	Age

NETWORKS, COMMUNICATIONS, & COMPUTER SERVICES

Table 25: Networks, Communications, & Computer Services Performance Metrics

	Performance Metrics	Frequency	Measures ...
1	Moving average of user surveys on helpdesk requests broken down by college and constituency (faculty, classified staff, supervisors and administrators)	Weekly Quarterly	User satisfaction Note: all technical areas are averaged together.
2	Number of computers deployed (refreshed and new)	Quarterly Annual	Work output
3	Number of computer labs re-imaged	Quarterly prep Annual	Work output
4	Number of unique images maintained	Annual	Work output
5	Number of multimedia rooms installed (refreshed and new)	Quarterly prep Annual	Work output
6	Monthly up time of selected systems: Telephone system at each campus and center Network at each campus (Internet, campus wide, isolated outages)	Monthly Quarterly Annual	System availability
7	% of Internet connection used at each campus (inbound and outbound)	Monthly	Resource usage
8	Number of wireless users per campus (FH, DA, Middlefield)	Monthly Quarterly Annual	Resource usage

INSTITUTIONAL RESEARCH & PLANNING

Table 26: Institutional Research & Planning Performance Metrics

	Performance Metrics	Frequency	Measures ...
1	Moving average of user surveys from completed requests broken down by college and constituency (faculty, classified staff, supervisors and administrators).	Weekly Monthly	User satisfaction
2	Number of requests for information / research projects completed.	Quarterly	Work output

Workload Metrics

Table 27: Annual ETS Workload Metrics

	Workload Metrics[11]	Measures ...	Area
1	Number of workstation technicians	Staffing levels	NC&CS
2	Number of multi-media specialists	Staffing levels	NC&CS
3	Number of network technicians / administrators / programmers	Staffing levels	NC&CS
4	Number of call center / helpdesk technicians	Staffing levels	NC&CS
5	Number of IT security specialists	Staffing levels	NC&CS
6	Number of application developer staff members	Staffing levels	IS&O
7	Number of webmasters	Staffing levels	IS&O
8	Number of training specialists	Staffing levels	IS&O
9	Number of operations technicians (data center)	Staffing levels	IS&O
10	Number of DBAs / operations programmers	Staffing levels	IS&O
11	Number of research professionals	Staffing levels	IR&P
12	Number of multi-media classrooms / installations	Infrastructure size	NC&CS
13	Number of computer labs	Infrastructure size	NC&CS
14	Number of wired network ports	Infrastructure size	NC&CS
15	Number of wireless access ports	Infrastructure size	NC&CS
16	Number of computers (workstations & labs)	Infrastructure size	NC&CS
17	Number of telephones	Infrastructure size	NC&CS
18	Number of data center servers	Infrastructure size	IS&O
19	Ratio of servers per technician (average)	Workload	IS&O
20	Ratio of applications per programmer (average)	Workload	IS&O
21	Number of request calls to Call Center received	Level of user demand	NC&CS
22	% of ETS budget to district budget	Resource availability	Pam
23	% of ETS budget allocated to each ETS director	Resource availability	Pam

Legend:

IS&O: Information Systems & Operations

IR&P: Institutional Research & Planning

NC&CS: Networks, Communications, & Computer Services

[11] Counts do not include supervisors / managers

APPENDIX A
BOARD PRIORITIES 2010 - 2011

Keep focus on student access and success

- Support recruitment and retention of students from underserved and underrepresented populations
- Encourage study and implementation of best practices in teaching and learning, including student services
- Identify strategies for closing the achievement gap and increasing goal completion

Ensure that district facilities are modern and effective learning / working spaces

- Seek permanent arrangement for Middlefield Education Center
- Determine future participation in NASA / Ames Educational Center development
- Continue oversight of bond projects

Maintain budget stability and seek alternative revenue sources

- Evaluate the impact of placing a parcel tax on the ballot
- Encourage proposals to foundations and state and federal agencies / entrepreneurial activities
- Achieve fiscally responsible bargaining unit agreements

Ensure that planning in integrated and progressing

- Support comprehensive accreditation self studies
- Approve technology master plan
- Approve update of facilities master plan

Ongoing priorities

- Community relations and outreach
- Legislative advocacy
- Institutional research
- Pedagogical excellence
- Open educational resources
- Environmental scanning / workforce gap analysis
- Staffing
- Budget
- Participation in trustee organizations
- Healthcare

APPENDIX B
CHANCELLOR'S GOALS / PRIORITIES 2010 - 2011

Goal #1 Human Resources

Build and develop an effective leadership and governance team

- Orient a new vice chancellor of business services
- Hire a new executive director for the Foundation
- Establish staff development agenda in support of stewardship and succession planning
- Maintain positive relations with employee groups.

Goal #2 Facilities

Ensure that district facilities are modern and effective learning / working spaces.

- Seek permanent arrangement for Middlefield Education Center
- Continue feasibility study of NASA / Ames Educational Center
- Oversee remodeling of Central Services building
- Provide oversight of bond projects

Goal #3 Fiscal Stability

Maintain budget stability and seek alternative revenue sources

- Provide leadership for the parcel tax initiative
- Increase proposals to foundations and state and federal agencies
- Work with Congressional delegation to pursue federal earmarks
- Support development of the Foundation board
- Identify alternative revenue-generating opportunities

Goal #4: Planning

Ensure that planning is integrated and progressing

- Support comprehensive accreditation self studies
- Complete technology master plan
- Update facilities master plan
- Develop parcel tax utilization plan

Goal #5: Community connections and district reputation

Establish and maintain community connections and enhance state and national reputation

- Obtain reaffirmation of membership in the League for Innovation in the Community College
- Identify opportunities for publication / presentation and award competition
- Join and become active in appropriate boards / organizations

Goal #6 Technology

Focus on returning district to a leadership role in technology

- Upgrade administrative technology to increase productivity and efficiency
- Encourage scalable online learning
- Encourage broader adoption of open educational resources

Goal #7: Student Success

Keep focus on student success

- Deepen the research agenda
- Rebuild student support services impacted by budget crisis
- Identify strategies for closing the achievement gap and increasing goal completion
- Ensure appropriate priorities are reflected in curricular offerings

Goal #8: Governance

Maintain and enhance effectiveness of governance processes

- Establish trusting, open and productive working relationship with the Board of Trustees
- Ensure adequacy and currency of board policies and administrative procedures
- Review mission and effectiveness of various governance / advisory bodies (chancellor's staff, CAC, APM, senior staff, all administrators / supervisors)
- Establish process for legislative / governmental relations

APPENDIX C
DE ANZA COLLEGE TECHNOLOGY PLAN NEEDS

Table 28 (below) lists selected critical technology needs identified in the De Anza College Technology Plan.

Table 28: Critical Technology Needs of De Anza College

	Service Area	Reference[12]	Requirement	Actionable by:
A	Technical assistance	Critical Issue 1. Teaching and Learning - Preliminary Goals	1: Provide support and troubleshooting assistance in a Web-based environment for students having instructional- technology-related issues.	College
B	Multimedia	Critical Issue 1. Teaching and Learning - Preliminary Goals	3: Continue installation of additional smart classrooms so that all classrooms will have multimedia equipment by 2015.	ETS
C	LMS[13]	Critical Issue 1. Teaching and Learning - Preliminary Goals	5: Establish college-specific standards for technology-mediated course delivery tools.	College
D	Labs	Critical Issue 1. Teaching and Learning - Preliminary Goals	6: Collaborate with ETS and the Technology Resources Group to maintain classroom-related technologies on a regular and efficient schedule.	ETS - College
E	Research	Critical Issue 1. Teaching and Learning - Preliminary Goals	7: Continuously monitor industry trends to identify new technologies and their potential applications to teaching and learning.	ETS - College
F	Wireless	Critical Issue 1. Teaching and Learning - Current Actions Needed to Meet Goals	4. Wireless implementation, when completed, will allow larger numbers of students to access instructional information more quickly and conveniently.	ETS
G	Research	Critical Issue 1. Teaching and Learning - Future Actions Needed to Meet Goals	2. Create a learning environment that supports communication and collaborations among students, instructors, and other academic partners.	ETS - College
H	LMS	Critical Issue 1. Teaching and Learning - Future Actions Needed to Meet Goals	3. Explain and describe the tools and features available in the course management system and the content management system to assist faculty in application of each system as appropriate	College
I	Research	Critical Issue 1. Teaching and Learning - Future Actions Needed to Meet Goals	4. Track, assess, integrate and support emerging collaborative and sharing technologies, including social networking tools, to enhance the learning environment.	ETS - College
J	Training	Critical Issue 1. Teaching and Learning - Future Actions Needed to Meet Goals	8. Raise awareness of significant legal and ethical issues concerning sharing of intellectual property and other digital content among students, faculty and staff.	ETS - College

[12] The numbers referred to the Reference and Requirement columns retain the original enumeration in the technology plan.
[13] LMS: Learning Management System

APPENDIX D
TECHNOLOGY SCAN

Summary of Key Factors

- Develop support for computing devices other than computers especially mobile devices such as cell phones, electronic readers, etc. (Table 29: Items C, D, E, F; Table 30: Item C)
- Drive support costs down by adopting efficient IT management technologies such as server and desktop virtualization, advanced server architecture beyond blades, cloud computing internal and external, and centralized data storage for users (Table 29: Item L; Table 30: Items B, I, K)
- Provide ubiquitous wireless access to students and faculty (Table 29: Items J, Q, R, ZD, ZI, ZK)
- Develop a unified communications strategy when replacing current PBX, email, calendaring, etc. systems (Table 29: Item I; Table 30: Items O, N)

Scan Details

Two tables are provided below describing key trends and rising technologies. References for these studies are listed in Appendix M on page 72.

Table 29: Key Educational Technology Trends

Item	Trend	Reference[14]	Possible district impact / response
A	Experience with and affinity for games as learning tools is an increasingly universal characteristic among those entering higher education and the workforce	Horizon 2009	Provide higher network bandwidth and greater computing capacities. May not be important
B	Visualization tools are making information more meaningful and insights more intuitive	Horizon 2009	Same comment as A. Also a key interest area for libraries
C	Higher education is facing a growing expectation to make use of and deliver services, content, and media to mobile devices	Horizon 2009 Horizon 2010	Include mobile devices as a part of supported infrastructure
D	Third-party applications, now available on several models of mobile devices, expand their utility even further	Horizon 2009	See comment in C. Support in multiple environments Students' device of choice may not be a computer
E	Development of mobile, ubiquitous and contextual computing	Horizon 2009 BECTA	See comment in C
F	Consumption of multiple technologies by young people	BECTA	Support multiple types of computing / information devices The digital divide still exists
G	Content delivery will be less dependent on specific devices due to the adoption of interoperability standards	Sharon Luciw	
H	Increased dependence on mobile technologies for social networking	BECTA	See comment in C
I	Growing use of Web 2.0 technologies by young people	BECTA	
J	Information technologies impact how people work, play, gain information, and collaborate. Those who use technology in ways that expand their global connections are more likely to advance	Horizon 2009 Horizon 2010	Increase support for collaborative technologies

[14] Codes in this column refer to reference titles (see bold type) found in Appendix M on page 72.

Item	Trend	Reference[14]	Possible district impact / response
K	Demand for increasingly technological skills in the workplace	BECTA	Continue to support instructional departments' technology needs
L	Californians continue to say the most important issue in higher education is its cost	Californians	Drive support costs down
M	The percentage of students who felt positive about their CMS experience declined from 2006 to 2009	ECAR 2009	Research what students are looking for in Course Management Systems (CMS)
N	Students don't necessarily want a lot of technology in their courses. Technology doesn't replace good instruction	ECAR 2009	Research the critical success factors for effective use of IT in the classroom
O	~50% of students report that IT in the classroom improves learning	ECAR 2009	See comment in N
P	45% of students reported that instructors used IT effectively in the classroom	ECAR 2009	See comment in N Key concern for instruction Provide additional technical training to faculty
Q	Half of students own an Internet capable device but a third of these never use it to access the Internet	ECAR 2009	Research student laptop / netbook ownership at district When can we begin reducing number of computer labs?
R	Student laptop ownership has increased to 88%	ECAR 2009	See comment in Q. Should this be a requirement?
S	Resurgence of Artificial Intelligence (AI) in higher education	Sharon Luciw	

Table 30: Rising Technologies (Tools) Supporting Education

	Technology	Description	Reference	Possible district response
A	Mobiles	*Cell phones, etc*	Horizon 2009 Horizon 2010	Include in supported infrastructure
B	Cloud computing	*Service providers deliver common business application online which are accessed from a web browser, while the software and data are stored on the provider's servers*	Horizon 2009 Gartner Journeys Fortune	Shift services to external cloud services Develop internal cloud services
C	Geo-everything	*Geographical awareness in devices*	Horizon 2009	Use in mobile applications
D	Personal Web	*Collection of individual websites, blogs, blogrolls, linked lists, online presences*	Horizon 2009	
E	Semantic aware applications	*Applications where the meaning [semantics] of information and services on the web is defined, making it possible for the web to "understand" and satisfy the requests of people and machines to use the web content*	Horizon 2009	
F	Smart objects	*Beginning with radio-frequency identification (RFID) tags and smartcards, objects that carry information with them have been used for point-of-sale purchases, passport tracking, inventory management, and other uses*	Horizon 2009	
G	Service oriented architecture (SOA)	*Software development that packages functionality as interoperable services within the context of various business domains – requires a loose coupling of services*	Journeys	Follow development in EIS for possible integration of third party applications
H	Open source software	*Software which is licensed to allow access to core code for further development or modification of functionality by the public*	Journeys	Follow development of OS software for possible adoption
I	Virtualization	*The abstraction of computer resources (memory, drive space, processing capacity, etc.)*	Gartner Fortune Journeys Horizon 2010	Continue ongoing projects in server, desktop, and storage virtualization
J	Netbooks	*"Lower" cost computers that focus on Web applications and office productivity*	Fortune Journeys	Follow trends for possible increase student ownership of computers
K	Servers – beyond blades	*An architecture where memory, drive capacity, and processing capacity can be separately managed allowing efficient upgrading of the specific resource needed*	Gartner	Follow trend for possible adoption in data center
L	Web-oriented architectures	*These extend service-oriented architecture [SOA] to web based applications*	Gartner	
M	Enterprise mashups	*These combine data or functionality from two or more external sources to create a new service*	Gartner	
N	Social software & social networking (Web 2.0)	*Web applications which facilitate interactive information sharing, interoperability, user-centered design, and collaboration*	Gartner Journeys	Colleges should have a presence on Facebook, LinkedIn and Twitter

	Technology	Description	Reference	Possible district response
O	Unified communications	*The integration of real-time communication services such as instant messaging (chat), presence information, IP telephony, video conferencing, call control and speech recognition with non real-time communication services such as unified messaging (integrated voicemail, e-mail, SMS and fax)*	Gartner	Consider unified communications when acquiring new telephone system Already exists to some extent in ENS, Banner, and other products
P	Business intelligence	*Skills, processes, technologies, applications and practices used to support decision making*	Gartner	Continue to monitor for applications at the colleges / district
Q	Green IT	*Ecologically sound manufacturing and lower operating power consumption*	Gartner	Adopt green construction practices in the construction of new data center
R	E-Book readers	*Devices which download and display text & graphics*	Gartner Horizon 2010	Provide a low cost acquisition model for students to lower the price of textbooks

APPENDIX E
TECHNOLOGY INFRASTRUCTURE STATUS

Table 31: District Infrastructure & Technical Services Status

ID	Services	Current System / Service Provider	Major Issues	Future Suitability (Poor, Adequate, Good)
AA	Access to institutional data	Data warehouse => ODS/EDW + Hyperion		Good
AB	Emergency notification	Connect-Ed		Good
AC	Internet connectivity	CENIC		Good
AD	Learning management / course management - DA	Catalyst (Moodle)		Good
AE	Presenting De Anza information to stakeholders	Website (Omni-Update)		Good
AF	Presenting district information to stakeholders & SSO	Luminis		Good
BA	Automation of administrative functions (ERP)	IAPlus => Banner	IAPlus will not be supported by vendor past 2011	Adequate => Good
BB	Wireless connectivity to network resources	Wireless network	Wireless infrastructure being expanded	Adequate => Good
CA	Classroom multi-media	Technical staff	Slow pace of multi-media installation / renovation due to limited staff	Adequate
CB	eCalendaring	Meeting Maker	Not integrated with email Difficult to upgrade Lacks modern features	Adequate
CC	Email	Send Mail / Eudora client / Squirrel Mail – Webmail	Not integrated with calendar Client no longer supported Lacks modern features	Adequate
CD	Individual (personal) computing	Desktop / laptop computers (Dell / Apple) & applications	Expensive to support / replace Not enough staff to handle requests	Adequate
CE	Instructional lab computing	Computer labs (Dell / Apple) & applications	Untimely process to change images	Adequate
CF	Learning management / course management – FH	Etudes	Mixed reviews by faculty	Adequate
CG	Student attendance-tracking in labs	STS (Provost) Red Canyon	Many diverse systems doing the same job Lack of integration with student ID card	Adequate
CH	Technical assistance for staff	Call Center	Not enough staff to handle requests	Adequate
CI	Telephone communications	Fujitsu PBX	Manufacturer's warranty expired; no longer supports Limited functionality	Adequate

ID	Services	Current System / Service Provider	Major Issues	Future Suitability (Poor, Adequate, Good)
DA	Application hosting	L7 Data Center & associated servers	Crowded work area Lacks rapid disaster recovery (except for EIS) Inefficient use of resources	Poor => Good
DC	Document imaging	Hershey & IKON => BDMS & IKON	Not integrated with IAPlus	Poor => Good
DD	Data security		PCI compliance is an issue Email virus protection & spam filter works Network security needs Security audit recommendations	Poor => Good
DE	Internal digital connectivity	Campus networks ATM => CISCO gigabit	Frequent disruptions & limited bandwidth	Poor => Good
DF	Broadcast studio operations		Foothill has no video production and broadcast student capabilities	Poor at FH (Good at DA)
EA	Automation for call center support	DKHelp	Lacks modern functionality	Poor
EB	Presenting information to stakeholders – district	Website (Frontier / Manila)	Content manager lacks functionality	Poor
EC	Presenting information to stakeholders – Foothill	Website (Frontier / Manila)	Content manager lacks functionality	Poor
ED	Staff technical training	NA	Training limited to self-help	Poor
EE	Student technical assistance	NA	No assistance available	Poor
EF	Universal student ID card	Capture / GoPrint	Limited functionality / growth potential	Poor

APPENDIX F
MEASURE C FUNDED AND OTHER PLANNED PROJECTS

In 2006, the district proposed a bond to the voters of Santa Clara County to fund urgently needed facilities and technology development and renovation projects, which the voters passed that same year. Litigation on the bond delayed implementation until 2007. Below is a list of all major technology projects that are funded by the Measure C bond and that are funded through one-time carryover funds from the ETS budget.

Table 32: Measure C Bond Technology Projects Funded Through Measure C

	Project Name	Goal	Owner	Project #	Start Year	Finish Year	Funding Source	Funding Amount
A	Renovation of wireless infrastructure	Deploy a wireless network for student use across campus	Foothill College	151 => 390	2007	2011	Measure C	$822,741
B	Renovation of data center	Renovate the building that the L7 Data Center is located in	De Anza College	202	2012	2013	Measure C	~~$1,459,007~~ $1,395,557
C	Wireless infrastructure – Phases II & III	Deploy a wireless network for student use across campus	De Anza College	209 => 391	2007	2011	Measure C	~~$935,794~~ $889,004
D	Phone equipment	Replace phone PBX equipment twice	ETS	301	2011	2022	Measure C	$2,978,798
E	Network & security	Replace network infrastructure twice & improve security	ETS	310	2009	2022	Measure C	$3,707,924
F	Consultants spec network routers	Support Project # 310 with consultants	ETS	320	2009	2022	Measure C	$262,642
G	Labor to refresh computers	Support Projects 430, 611, and 711 with labor	ETS	330	2007	2022	Measure C	$1,764,013
H	Labor to install network equipt / routers, etc.	Support Project #310 with labor	ETS	340	2010	2022	Measure C	$705,605
I	Replace ERP	Replace IAPlus with Banner	ETS	350	2008	2011	Measure C plus Fund 14	$11,964,758
J	Server refresh	Refresh servers in L7	ETS	360	2007	2022	Measure C	$2,022,970
K	Server growth	Add additional servers as needed	ETS	370	2009	2022	Measure C	$156,801
L	Pay off existing loan	This amount was redirected to support Projects # 301 and 310	ETS	380	NA	NA	Measure C	~~$1,253,561~~ $0
M	District office / data ctr / renovation	Build new data center with work areas for ETS staff; renovate district office building	District / ETS	403	2009	2011	Measure C	~~$7,184,206~~ ~~$9,444,565~~ $8,972,337

	Project Name	Goal	Owner	Project #	Start Year	Finish Year	Funding Source	Funding Amount
N	Group II equip	For project # 403	District / ETS	G403	2009	2011	Measure C	$2,115,794
O	Desktops	Replace all computers on a 4-year cycle (includes funding for district computers)	ETS	430	2007	2022	Measure C	$1,094,500
P	Printers	Replace all printers (includes funding for district printers)	ETS	431	2007	2022	Measure C	$52,973
Q	Desktops	Replace all computers on a 4-year cycle (includes funding for district computers)	Foothill College	611	2007	2022	Measure C	~~$12,161,106~~ $11,066,606
R	Printers	Replace all printers (includes funding for district printers)	Foothill College	612	2007	2022	Measure C	~~$588,592~~ $535,620
S	Refresh multi-media rooms	Refresh existing smart classrooms	Foothill College	613	2007	2022	Measure C	$1,152,489
T	New multi-media, then refresh	Create new smart classrooms and use remaining funds for refresh	Foothill College	614	2007	2022	Measure C	$3,034,102
U	Desktops	Replace all computers on a 4-year cycle	De Anza College	711	2007	2022	Measure C	$14,971,179
V	Printers	Replace all printers	De Anza College	712	2007	2022	Measure C	$1,881,026
W	Refresh multi-media rooms	Refresh existing smart classrooms	De Anza College	713	2007	2022	Measure C	$1,999,215
X	New multi-media, then refresh	Create new smart classrooms and use remaining funds for refresh	De Anza College	714	2007	2022	Measure C	$2,116,816
							TOTAL	$72,423,196

Funding Status

In general, the objectives of the technology projects in the Measure C bond exceeded the funding that was available for these projects in the Measure C bond. Accordingly, scopes of some projects have been adjusted, and funds from other projects have been used to supplement the funds of these projects. Refer to notes below.

Notes

- Funding for Project # 350, *Replace ERP*, was augmented with general funds in the amount of $1,727,000 to cover additional costs related to implementing the new ERP (backfill, overtime, consultant, etc.) Additional amounts from the general fund were also used to augment the original Measure C budget for this project
- ETS support has been and will be continued to be required on all Measure C building construction projects
- Project # 403 has been divided into two projects (1) the new Data Center / ETS Building (2) Renovation of the District Office
- Funding from Projects # 430, 611, and 711 will supplement Project # 330, the ETS labor required for these projects
- Funding from Projects # 613, 614, 713, and 714 will be used to support the ETS labor required for these projects
- Refer to Appendix L for details of the allocation strategy that will be used to refresh computers across the district (for Projects # 430, 611, and 711)
- Refer to Table 33 (below) regarding additional funding provided to support specific Measure C projects

Table 33: Planned Use of ETS Carryover Funding for Technology Projects (FY 2010-2011)

Measure C Project #	Project Name	Goal	Total
350	Replace ERP	Obtain 3rd party validation of preparedness for Degree Works, Foundation, Banner Documentation Management System, and workflow modules	$80,000
310	Network & security	Installation costs for additional T-1s at Middlefield	$3,596
N/A	IDM framework – Phase 2	Integrate email, Meeting Maker, and directory services into MyPortal to establish single sign	$63,000
N/A	L7 virtualization planning	Develop virtualization plan for L7 to reduce number of servers and increase management efficiency	$20,000
N/A	Productivity through better reporting	Develop reports to increase productivity of departments	$30,000
N/A	Disaster recovery hot site	Provide real time switchover capability for Banner system for disaster recovery through virtualization	$150,000
N/A	Call center software	Migrate to a new call center software to enhance functionality not available in current system	$18,000
N/A	Virtual desktop interface	Deploy cost efficient and labor efficient desktop virtualization technologies	$45,000

APPENDIX G
USER REQUESTED APPLICATIONS

Table 34: Most Commonly Requested IT Applications

Item	Requested Area	Description	Interest expressed by: Comments:
A	Computer replacement	Refresh computers on a 5-year cycle	Administrators at colleges and students 55% of students surveyed said that they wanted more computers available for their use in open computer labs 51% of students surveyed said that they wanted more resources to improve the performance of computers in computer labs 36% of employees surveyed said that they wanted better performance in computers for faculty and staff use 21% to 24% of employees surveyed said that they wanted more computer labs for students with better computer performance
B	Multimedia new & refresh	Refresh & install new multi-media classrooms	Selected staff and faculty at colleges 53% of employees surveyed said that they wanted more resources invested in this area
C	Banner workflow	Implement workflow functionality in Banner to automate business processes	District HR & Finance departments; Banner Core Implementation Team 44% of employees surveyed said that they wanted more resources invested to increase the performance or capabilities of the administrative system (Note: this survey was conducted in the middle of implementation)
D	Universal ID	Implement a student / staff ID system with financial transaction capability	Student body governments and associated staff at colleges 44% of students surveyed said they wanted more resources invested in this area 20% of employees surveyed thought that more resources should be invested in this area
E	Virtual desktop interface	Deploy VDIs for selected labs and users	Senior administrators at district
F	Wireless deployment	Deploy a wireless network at both colleges and district sites	Senior administrators at colleges and students 82% of students surveyed said that they wanted more resources invested in wireless access 64% of employees surveyed wanted to increase resources in wireless access Students surveyed were equally divided on whether or not it was easy to access the Internet from on campus Only 37% of students surveyed stated that they have or planned to purchase a laptop computer to use on campus
G	Mobile devices	Support selected mobile devices with unified messaging	Administrators with smart phones
H	District Web CMS	Deploy a content management system for the district Website	District public information officer and selected technical staff
I	Unified messaging	Implement a messaging system for email, calendaring, fax, voice mail, etc.	Everyone across the district 28% of employees surveyed thought that more resources should be invested in the email system Only 17% of employees surveyed thought that more resources should be invested in the calendaring system

Item	Requested Area	Description	Interest expressed by: Comments:
J	User data storage	Provide centralized data storage / backup for user electronic data	De Anza vice president
K	Single sign-on	Implement single sign-on to access all network services	Banner Core Implementation Team and selected staff across district
L	Student email	Provide a district branded email account to each student	Selected faculty and administrators Only 18% of students surveyed responded that they would rather use a district-issued email account rather than their personal account
M	Automation for board meetings	Provide an electronic environment to conduct board meetings and facilitate access to information	Senior administrators at district and associated staff
N	Remote access	Provide users with access to district network services from off-campus	Banner Core Implementation Team and selected staff across district
O	Web-based information	Provide easy access to information for students regarding administrative procedures as well as instructional materials for studies	40% of students who use the district's / colleges' Web sites said that it was difficult to locate the information they need
P	Network	Deploy a fast, reliable network	37% of employees surveyed stated that they wanted more resources invested to increase the speed (throughput) of the network
Q	Video production	Develop video production capabilities at District / Foothill College	20% of employees surveyed were interested in increasing resources in video production
R	Telephone system	Replace old phone system	Only 15% of employees surveyed were interested in increasing the amount of resources in the telephone system
S	Online learning resources	Provide more resources online such as magazines, books, journals, etc.	64% of students surveyed said that they wanted more resources invested into online resources 44% of employees surveyed said they wanted more resources invested in online instructional materials
T	Technical training	Provide ongoing technical training for employees	50% of employees survey stated that they wanted more technical training for staff
U	Institutional research	Provide more research capability in analysis and support	23% to 29% of employees surveyed wanted to increase the capabilities of Institutional Research
V	Assistive technology	Provide assistive technologies in computing environments to allow accessibility to all staff and students.	41% of students surveyed said that they wanted more resources invested in assistive technologies 19% of employees surveyed said that they wanted more resources invested in assistive technologies
W	Learning management systems	Improve or replace the learning management system (Catalyst, Etudes)	22% of students who use the district – college Web sites said that it was difficult to use the learning management systems 21% of employees surveyed thought that more resources should be invested in the learning management systems
X	Student tracking	Improve or replace current student tracking systems (red canyon, STS-Provost, etc.)	DA Student Success Center Other areas from both campuses

Item	Requested Area	Description	Interest expressed by: Comments:
Y	Appointment scheduling	Integrate DA Student Success Center into SARS	DA Student Success Center
Z	Asset management	Implement an asset management tracking process	District business office
AA	Workflow processing	Implement workflow processing module in Banner	Multiple departments in district
AB	Technical support	Provide more technical support (faster response, higher quality, longer hours)	33% of the employees surveyed wanted to increase resources to improve the quality of tech support with only 19% in favor of increasing the hours of support 26% of the students surveyed said that they wanted more resources invested in technical assistance for students
AC	Technical discussions	Discussions of technology vision, priorities, emerging technologies impacting instruction & services, coordination, and technology approaches to increase efficiencies (semi-annual?)	Presidents

APPENDIX H
CONSOLIDATED PROJECT LISTS

The following tables identify the consolidated project lists for *Infrastructure* and *Other* projects with their initial assignment of priorities by ETS. Note that some projects have been added to these lists as reflected in the final prioritized lists. Refer to Legend at end of this appendix for an explanation of abbreviations and references.

Legends

Table 35: *Project Size* Codes for the Consolidated Project Lists

Project Size Code	Project Size is:	if the Number of Skill Types needed is:	or the Duration lasts:	or the Implementation Cost is:
S	Small	> 1 <= 5	> 1 month & <= 2 months	> $10K <= $50K
M	Medium	> 5 <= 10	> 2 months & <= 4 months	> $50K & <= $200K
L	Large	>10	> 4 months	> $200K

Table 36: *Criticality Rating* Codes for the Consolidated Project Lists

Criticality Rating Code	System Importance	Status
C 1	Mission Critical	Non-functional or non-existent
C 2	Mission Critical	Limited or poor functionality
I 1	Important	Non-functional or non-existent
I 2	Important	Limited or poor functionality
N 1	Nice to have	Non-functional or non-existent
N 2	Nice to have	Limited or poor functionality

Table 37: *Reference* Codes for the Consolidated Project Lists

Reference Code	Study	Explanation
DA Tech	De Anza Technology Plan	Only ETS related projects are noted
Infrastructure	Infrastructure Study	Only "poor" rated systems are noted
Measure C	Measure C Projects	All projects are noted
PS Audit	Perry – Smith Audit	Only *red* and *yellow* rated issues are noted
SIG Audit	SIG Audit	Only *red* and *yellow* rated issues are noted
Scan	Technology Scan	Only key findings are noted
User	User Requests	All requests are noted
Vision	Vision Statement	All applicable vision elements are referenced
Network	Network / Security Architecture	Full study – no summary

In the project list, an item identification number referring to specific project follows the *Reference Code*

"…" indicates that several items in the study apply to the project

Infrastructure Projects

Table 38: Consolidated Project List for Infrastructure Category

Criticality	Project Size	Project Name	Responsible Teams	Goal	Impact - Outcomes	Funding Source	References
C 1	L	Academic History	App Sys Ops & Sys	Move pre-2000 academic history into accessible data store	Student services will have easy access into all electronic academic history	Measure C	Banner conversion
C 1	S	Argos Migration	Ops & Sys IR&P	Migrate MAUI users to Argos environment	Reporting functionality for users of new Macs & PCs	B Budget	Banner conversion Vision – 5
C 1	M	Oracle Upgrade	App Sys Ops & Sys	Upgrade Oracle to 11G from 10G version	10G vendor support going away	Staffing	Banner conversion
C 1	L	Data Center / ETS Building	Ops & Sys App Sys Net & Comm IRP	Construct new facilities for data center systems	Increased reliability & sustainability of operations Reduced support costs Consolidation of ETS functions	Measure C	Measure C – M Infrastructure – DA
C 1	L	Disaster Recovery	Ops & Sys Net & Comm	Provide a hot site disaster recovery capability for critical systems	Timely recoverability of email, calendaring, DNS & Web sites / applications	Carryover	Infrastructure – DA
C 1	M	DR Virtualization	Ops & Sys	Virtualize the Banner application	Improved disaster recovery capability	Measure C	Infrastructure – DA
C 1	L	End Point Data Encryption	Net & Comm Tech Svcs	Provide the technology & training to encrypt desktops and laptop user data	Increase the security of sensitive user personal data	Unfunded	Network
C 1	L	Network Rebuild	Net & Comm	Deploy a fast, reliable network	Increased reliability & speed of network Preparation for successful VDI implementation	Measure C	Measure C – E … Vision – 2a … Infrastructure – DE User – P Network - all
C 1	M	PCI Compliance	Net & Comm Ops & Sys	Survey systems and implement PCI security measures	PCI compliance systems across all campus credit card transaction processing operations	Measure C New?	Vision – 2b Infrastructure – DD

Criticality	Project Size	Project Name	Responsible Teams	Goal	Impact - Outcomes	Funding Source	References
C 1	M	Perry Smith Audit *red*	Net & Comm Ops & Sys	Ameliorate *red* security items	Acceptable response to Finance & Audit Committee Improved security	Measure C	PS Audit Measure C – E Vision – 2b Infrastructure – DD
C 1	M	SIG Audit *red*	TBD	Ameliorate *red* security items	Acceptable response to Finance & Audit Committee Improved security	Measure C	SIG Audit Measure C – E Vision – 2b Infrastructure – DD
C 2	L	Computer Replacement	Meas C / Tech Svcs	Refresh computers on a 5 year cycle	Minimal acceptable functionality in lab and desktop computers	Measure C	DA Tech – D User – A
C 2	M	L7 Server Virtualization	Ops & Sys Net & Comm	Replace and consolidate servers in data center	Lower cost of support Increase reliability of systems	Measure C Carryover	Scan – 2 Measure C – J … Infrastructure – DA
C 2	L	Multimedia New & Refresh	Meas C / Tech Svcs	Refresh & install new multi-media classrooms	Up-to-date functionality for instructional delivery	Measure C	DA Tech – B … Vision – 1b User – B
C 2	L	Phone - PBX	Net & Comm	Replace old phone system	Integration with unified messaging Support for emergency operations	Measure C	Measure C – D Vision – 3a User - R
C2	S	Voice Mail Upgrade	Net & Comm	Upgrade FH/District VM System to match De Anza's to provide full interoperability	More reliable system with additional features which can be used with the planned new telephone system (current high risk for failure)	Measure C	Infrastructure
I 1	M	Banner Batch Scheduling	Ops & Sys	Implement App Works in Banner	Assist in automating back-end data center operations	Measure C	Banner conversion
I 1	M	Prompt to Banner	App Sys	Build a data exchange between Prompt & Banner	Reduced workload for Finance Office Interest item from the Audit & Finance and the CBOC Committee	Measure C	Banner conversion
I 1	M	Perry Smith Audit *yellow*	TBD	Ameliorate *yellow* security items	Acceptable response to Finance & Audit Committee Improved security	Measure C	PS Audit Measure C – E Vision – 2b Infrastructure – DD
I 1	M	SIG Audit *yellow*	TBD	Ameliorate *yellow* security items	Acceptable response to Finance & Audit Committee Improved security	Measure C	SIG Audit Measure C – E Vision – 2b Infrastructure – DD

Criticality	Project Size	Project Name	Responsible Teams	Goal	Impact - Outcomes	Funding Source	References
I 1	M	User Data Storage	Ops & Sys	Provide centralized data storage / backup for user electronic data	Increased security of stored data	Measure C New?	Scan – 2 Vision – 2 User – J
I 2	M	ETS Web Redesign	CTO & Dir	Refresh look & feel and information on ETS Website	Self help information easily available to users	Unfunded	Vision – 5 User - Q
I 2	M	Helpdesk Software	Call Ctr Ops & Sys	Replace Call Center software	Increase functionality and reporting capability of problem reporting system	B Budget	Infrastructure – EA Infrastructure – EA
I 2	M	Identity Management	App Sys Net & Comm	Implement a common ID system to authenticate users for network based services	Lower cost of support Required improvement for single sign-on Required improvement of UID	Carryover	Infrastructure – DD
I 2	L	L7 Data Center Renovation	Ops & Sys Net & Comm	Renovate L7 facilities for data center systems	Increased reliability & sustainability of operations Reduced support costs of operations	Measure C	Measure C – B Infrastructure – DA
I 2	L	Wireless Deployment	Net & Comm	Deploy a wireless network at both colleges and district sites	Reliable wireless access to the Internet	Measure C	Scan – 3 Measure C – A … DA Tech – F Vision – 2a … User – F

Other Projects

Table 39: Consolidated Project List for Other Category

Criticality	Project Size	Project Name	Responsible Teams	Goal	Impact - Outcomes	Funding Source	References
C 2	L	Curriculum Management System Integration	App Sys Ops & Sys	Build a real time interface for curriculum management systems into EIS	Provide instantaneous data exchange between systems	Unfunded	Possible integration Upgrade to Banner
C 2	M	Single Sign-on	App Sys Net & Comm	Implement single sign-on to access network services	Simplified access to electronic services for Banner and related applications Improved security	Unfunded	User – K
C 2	M	Unified Messaging	Ops & Sys Net & Comm	Implement a messaging system for email, calendaring, fax, voice mail, etc.	Increase functionality & reliability	Unfunded	Scan – 4 Vision – 3a DA Tech – G User – I
I 1	L	Banner Workflow	App Sys	Implement workflow functionality in Banner to automate business processes	Increased efficiency and accuracy in business processes	Unfunded	Banner conversion Measure C – I User – C, V
I 1	L	Universal ID	App Sys	Implement a student – staff ID system with financial transaction capability	Students / staff have ID Students use to make financial transactions for district services	Unfunded	Infrastructure – EF User – D
I 1	L	Virtual Desktop Interface	Meas C / Tech Svcs Net & Comm	Deploy VDIs for selected labs and users	Lower cost of computer refresh Lower time to deploy images	Measure C Carryover	Scan – 2 Measure C – O … Vision – 4a User – E
I 2	M	District Web CMS	App Sys	Deploy a content management system for the district Website	User friendly environment to update content on district website	Unfunded	Infrastructure – EB Vision – 3a User – H, O
I 2	M	Reports for Productivity	IR&P	Develop reports to improve productivity of administrative processes	Higher quality – better outcomes in administrative processes	Carryover	Vision – 3a
I 2	M	Student Tracking Automation	App Sys Tech Svcs	Replace STS / Red Canyon system with a more functional system	Provide automated tracking of student attendance	Unfunded	User – X
I 2	M	Tutorial Tracking and Management	App Sys	Develop system to schedule, track and account for student tutorial hours	Increase efficiency in tracking and scheduling student tutors	Title III Grant	User – X, Y

Criticality	Project Size	Project Name	Responsible Teams	Goal	Impact - Outcomes	Funding Source	References
I 2	S	Upgrade Middlefield Internet Connection	Net & Comm	Replace the AT&T leased line with a CENIC WAN link	Provide faster Internet speeds at Middlefield campus and for redundancy to main campuses	Unfunded	User – P
I1	S	Foothill GIS	Net & Comm	Geographic information system for the District	Save time for staff / police	Unknown	Recent user request
I2	S	Install Gig Connection between L7 and A8	Net & Comm	De Anza College TRG request: installation of a gigabit connection from L-7 to A-8 to provide better video streaming support services for students.	Better able to troubleshoot problems and resolve quickly	Unfunded	Recent user request
N 1	M	Asset Management	Tech Svcs	Implement asset management functionality in EIS and support	Provide the ability to track the location and status of specified assets	Unfunded	User – Z
N 1	S	Automation for board Meetings	CTO TBD	Provide an electronic environment to conduct board meetings and facilitate access to information	Immediate access to board materials anywhere, anytime Increased efficiency of board operations	Unfunded	Vision – 3a User – M
N 1	M	Document Imaging Workflow	App Sys	Implement automated workflow for document imaging	Provide automation for document imaging processes	Unfunded	Banner implementation issue
N 1	S	KJ's Satellite Cafe FH 6500	Net & Comm	Install voice & data cabling to support Cafe needs	Permanent west side FH campus cafe for students and staff	Unknown	Recent user request
N 1	L	Mobile Devices	Tech Svcs	Support selected mobile devices	Mobile access to current information on PDAs, smart phones, etc.	Unfunded	Scan – 1 Vision – 3a DA Tech – G User – G
N 1	M	Student Email	Sys & Ops	Provide a district branded email account to each student	Students can acquire vendor discounts	Unfunded	DA Tech – G Vision – 3a User – L
N 1	L	Video Production	TBD	Develop video production capabilities to support District / Foothill College	Capability to create video content in multiple formats for instruction	Unfunded	Infrastructure – DF User – Q
N 1	L	Workflow Processing	App Sys	Implement workflow processing module	Increase efficiency in using Banner	Unfunded	Banner conversion User – AA

Criticality	Project Size	Project Name	Responsible Teams	Goal	Impact - Outcomes	Funding Source	References
N 2	M	LMS Integration	App Sys	Build a real-time interface for Catalyst into EIS	Provide instantaneous data exchange between systems	Unfunded	Banner conversion
N 2	S	Remote Access	Ops & Sys Net & Comm	Provide users with access to district network services from off-campus	Work from home or other remote sites with access to information	Unfunded	Vision – 2 User – N

APPENDIX I
RECOMMENDED MODIFICATIONS OF PROJECT PRIORITIES

The following changes to project priorities were proposed by individuals as indicated:

Table 40: Recommended Changes to Project Priorities

Group / Project	Educational Technology Advisory Committee (ETAC)	Technology task Force - De Anza College	Technology task Force - Foothill College	Senior Staff
Wireless				nc C (Christina/Judy)
ParSystem - Scantron	More info needed	C (Letha)		C (Christina)
Cashnet	More info needed	C (Letha / Greg)		C (Letha)
SLO Database-TracDat	More info needed	C (Letha / Greg)		C (FH & DA)
Unified Messaging	nc C	nc C (Kevin)		nc C (Kurt)
Universal ID		↑ C (Letha / Greg)	↑ C (Pam)	↑ C (Letha)
Upgrade Middlefield Network Connection			↑ C	
User Data Storage		↑ C (faculty)		
Asset Management				↑ C (Kevin / Judy)
Banner Workflow	nc I			↑ C (Dorene)
Middlefield WAN (New)				C (Denise)
Curriculum Mgmt System Integration	nc C[15]			
Single Sign On	↓ I			↓ I (Christina /Judy)
Student Email		↓ N (Marty / students)		
L7 / L8 Gig Connection	N			I (Christina)
Ride Sharing Portal	N			
Student Tracking Automation			↓ X (Peter) nc I (Pat)[16]	
Foothill GIS			↓ N	↓ N (Judy)
KJ's Satellite Cafe				↓ X (Judy)
Video Production (FH)				↓ X (Judy)

Symbol	Rating
C	Critical
I	Important
N	Nice to have
X	Not needed
↑	**Increased in priority**
↓	**Decreased in priority**
nc	**No Change in priority**

Members noted

Gregory Anderson	Marty Kahn
Christina Espinosa-Pieb	Kevin McElroy
Kurt Hueg	Judy Miner
Pat Hyland	Dorene Novotny
Letha Jean-Pierre	Denise Swett

[15] Study possible move to CurricUNet?

[16] Global solution across both colleges is important

APPENDIX J
MEASURE C TECHNOLOGY PROJECTS SHORTFALL

Table 41: Measure C Funding Shortfall for Technology Projects

Project #	Item	Measure C Plan Objectives	Project Funding[17]	Shortfall to Meet Objectives	New Scope Using Existing Funds
301	Phone equipment	Replace telephone system every 10 years Two buys envisioned in 2012 & 2021	$2,978,797	$685,000	Eliminate replacement of the telephone system in 2021
310	Network and security	Replace network equipment twice, now and in 2020 Purchase security equipment (hardware and software)	$3,707,924	$1,000,000	Eliminate replacement of network equipment in 2020 Will reduce the installation of equipment and systems to monitor, manage, and secure the network (and associated services)
320	Consultants spec network routers	Hire consultants to assist with bid specifications for network equipment and telephone system bids	$262,642	$30,000	Reduce scope of consultant's work on technical bid specification. (Consultants will not complete bid specification alone)
330	Labor to refresh computers	Hire temporary staff to support the increased in volume of computer and multimedia acquisitions by Colleges	$1,764,013	$8,848,411[18]	Reduce the hiring of external staff to deploy computers necessitating increased use of existing staff. (Reduces ability of existing staff to service other requests.) Refer to Appendix L for more details
340	Labor to install network equipment / routers, etc	Hire temporary staff to support the replacement of network equipment Hire professional services from equipment vendors	$705,605	$195,000	Reduce the hiring of external staff to deploy network components necessitating increased use of existing staff. Reduces ability of existing staff to service other requests
350	Replace ERP	Implement all major modules of Banner ERP system, which have been purchased	$11,964,758	$600,000[19]	No change. Additional funds to be provided by colleges
360	Server refresh	Replace servers (hardware) on a **four**-year replacement cycle	$2,022,970	$1,271,030	Replace servers on a **five**-year replacement cycle. Reduce number of servers through virtualization. May not update to latest technology
370	Server growth	Purchase servers (hardware)	$156,801	$51,839	The number of servers will be reduced through virtualization. See note above
202	Renovation of data center (L7)		$1,395,557	Under review	Under review. Detailed planning on project has not been initiated

[17] As of June 1, 2009
[18] ($1,282,120 - $477,719) *(15-4 yrs); Cost of hiring staff to fully deploy all computers. See Appendix L on page 69
[19] Request from colleges for additional backfill

Project #	Item	Measure C Plan Objectives	Project Funding[17]	Shortfall to Meet Objectives	New Scope Using Existing Funds
403	District office / data ctr / renovation		$11,088,131	$2,000,000[20]	Data Center building plan reduced in scope. Current planned status is N+1 except that there is no second (backup) UPS. Currently under discussion. No capacity to expand (grow) staff in building. District Office Building scope is reduced to minor renovation, with no expansion.
151 - FH 209 - DA	Wireless		$882,741 $889,004	None	
430 - CS 611 - FH 711 - DA	Desktops	Refresh every four years	$1,094,500 $11,066,606 $14,971,179	$5,254,909[21]	Set a 5 year replacement cycle; remaining shortfall to be made up by college provided funds Refer to Appendix L for details
431 - CS 612 - FH 712 - DA	Printers	Refresh	$52,973 $535,620 $1,881,026	None	
613 - FH 713 - DA	Refresh multimedia rooms		$1,152,489 $1,999,215	None	
614 - FH 714 - DA	New multimedia, then refresh		$3,034,102 $2,116,816	None	
				$19,936,189	Total shortfall

[20] Rough estimate; building is still being designed

[21] Total for all three organizations; $477,719*(15-4 yrs); See Appendix L on page 69

APPENDIX K
PROJECT EVALUATION TOOL

ETS adapted a tool initially developed by Butte College for technology project prioritization, which displays scores for project impact versus project effort for each project so that comparisons can be made. The tool is used by completing a questionnaire on each project covering 19 factors, three of which are shown in Figure 7 as an example.[22]

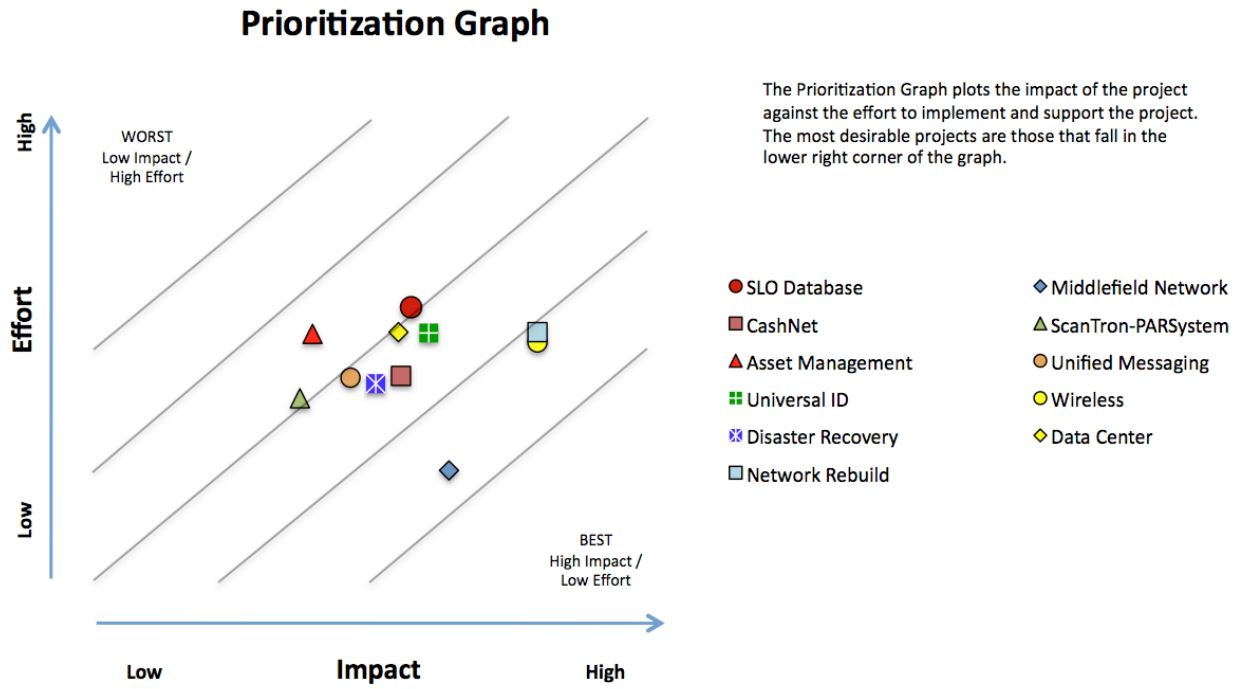
Figure 7: Project Evaluation Tool Factors for Evaluating Projects (3 shown)

Factors	Score	Weight	Max Value	Percentage Impact
PROJECT IMPACT				
Section 2: Project Objectives and Criticality (affects Impact axis)				
Relationship to Strategic Plan Elements (Goals, Commitments, Objectives & SLOs)				
Not Aligned With Any	0			
Supports / Enhances Achievement of a few	5			
Supports / Enhances Achievement of several	7			
Critical to Achievement of one or more	10	1	10	9%
Enhancement				
Will not enhance business, student, or instructional services	0			
Will moderately enhance business, student, or instructional services	3			
Will significantly enhance business, student, or instructional services	5			
Is critical for infrastructure improvement	9			
Is critical for Health, Life, or Safety	10			
Is necessary to comply with Regulatory / legal mandate	10	2	20	18%
Sponsor's Priority				
Low	0			
Medium	5			
High	10	1	10	9%

The tool automatically calculates scores for *Project Impact* and *Project Effort*. When several projects have been evaluated using the 19 factors, the summary is a graph that plots project impact versus project effort, which clearly depicts the relationship among them. See Figure 8 on the following page.

[22] Model adapted with permission of Andy Miller, Butte College, 2010

Figure 8: Project Evaluation Tool Graph Showing Project Distribution



The tool can be used in the initial ranking of projects as well as to compare a new project with an existing portfolio of projects to determine if the new project should replace an existing project in priority. **Please note that the factors for the Project Evaluation Tool, as depicted in the examples above, have not been fully adjusted for Foothill-De Anza Community College District. As such, project distribution may be different when the factors are adjusted.**

The Project Evaluation Tool is only a starting point for determining projects prioritization and should be used in conjunction with collaborative discussion in finalizing project priorities.

APPENDIX L
MEASURE C COMPUTER REFRESH PROGRAM ANALYSIS

Executive Summary

In September 2009, ETS conducted an analysis of Measure C expenditures and deployment rates for computers to determine:

- What is the average cost of computers being replaced on Measure C refresh funds?
- Will existing Measure C funds for computer refresh allow computer replacement to continue through the end of the 15-year Measure C bond project timeframe?
- What Measure C budget shortfalls exist to achieving the stated computer refresh program objective of a four-year refresh cycle?
- What options exist for managing the computer refresh cycle?

Each of these questions is addressed below.

What is the average cost of computers being replaced on Measure C refresh funds?

The average cost of acquisition for a computer purchased under Measure C funding for Foothill is $1,433 as compared to the planned cost of $1,800. The average cost of a computer purchased for the district (colleges and Central Services) overall is $1,438. The total cost for acquisition and labor to install and dispose of computers is $2,039 for Foothill College and $2,040 for the district overall.

Will existing Measure C funds for computer refresh allow computer replacement to continue through the end of the 15-year Measure C bond project timeframe?

Yes and No.

When looking at the district as a whole there are enough acquisition and labor funds to support the current average rate at which we are replacing computers considering all known costs.[23] However, when looking at the numbers for Foothill College alone, Foothill College's current average replacement rate exceeds the maximum sustainable rate possible through Measure C. Foothill funds will be exhausted in 11 more years if the two colleges continue with the same annual replacement rate.

This is good news considering that the computer inventory for the district has grown from the 5,127 computers used in Measure C project planning to the current inventory of 6,082 computers. Foothill College / Central Services' inventory has grown by 20% and De Anza College's inventory has grown by 18%. (Central Services' inventory cannot be broken out separately from Foothill College with the data available, but we believe that the most if not all of the 20% growth is due to Foothill College.) Further expansion of the inventory may reduce our capability to provide timely replacements of older computers.

However, if some acquisition funds are not used to supplement labor funding, the Measure C funding dedicated to providing labor for replacing and disposing of obsolete computers is insufficient to sustain the current replacement rate. Measure C bond funds for labor will support only 185 computer replacements per year district-wide versus the current rate of 436 computers per year for Foothill College.

[23] Based on the amount of remaining (unexpended) Measure C funds for both acquisition and labor. Assumes both funding accounts are combined to jointly fund purchase and implementation costs.

What Measure C budget shortfalls exist to achieving the stated computer refresh program objective of a four-year refresh cycle[24]?

Using only the existing Measure C funds over the life of the bond to refresh all 6,082 computers in the inventory will extend the original desired replacement cycle of four years to more than six years.

The Measure C budget is short $578,514 for acquisition and labor costs on an annual basis to provide a four-year refresh cycle for Foothill College. The Measure C budget is short $1,282,120 annually for the whole district.[25]

If we extend the original replacement cycle from four to five years, then the Measure C budget is only short $313,901 for acquisition and labor costs to allow a five-year refresh cycle for Foothill College and $661,641 for the whole district (annual costs). To provide a five-year refresh cycle, we would also need to add an additional .9 FTE of an ETS technician to the staff who are already assigned to Measure C deployments.

Any further increase in the computer inventory will exacerbate the budget problem.

What options exist for managing the computer refresh cycle?

CONTINUE AS IS (E.G. CHANGE NOTHING)

Measure C funding available for computer purchase will be sufficient to sustain current replacement rates for most of the duration of the Measure C bond term. However, It is likely that De Anza College will increase the number of computers replaced per year because its replacement rate (as used in this analysis) has been lower than Foothill's while De Anza College has more computers in its inventory. Increasing the rate of replacement will expend Measure C funds faster.

Notwithstanding, Measure C funding for labor is insufficient to fund all associated costs with the purchase and disposal of computers through the Measure C bond. We will need to continue to use non-Measure C funds for labor costs in addition to designated Measure C funds.

We will have a refresh cycle of more than six years for computers and this cycle time will grow if the amount in inventory continues to increase.

Finally, if computer purchases are not evenly spread across the refresh cycle, we may create peaks and valleys in funding requirements for future computer replacements, as well as uneven demands on technicians involved in installation and disposal.

SPREAD COMPUTER PURCHASES OVER THE REFRESH CYCLE

The intent is to spread the purchases of computers across the term of the refresh cycle so that an equal number of computers is replaced at each college and Central Services per year.

One method of doing this is to divide the Measure C computer acquisition funds into equal annual amounts that can only be spent in designated years.

This also ensures that Measure C funds for replacing computers will be available on a consistent basis throughout the life of the bond program.

[24] Another assumption in the bond planning was to have three refresh cycles in the 15 years of the bond term. Note that this assumption is consistent with a five-year refresh cycle.

[25] Considering just acquisition costs alone, the Measure C budget is short $232,736 annually for Foothill College and $477,719 annually for the whole district.

FULLY FUND ALL ASSOCIATED LABOR COSTS THROUGH MEASURE C FUNDS

To fully fund labor costs, we would combine the assets of acquisition and labor project funding for the replacement of computers to fund the purchase, disposition, and installation of replacement computers. Some acquisition funds will be used for labor costs. At Foothill College, maximizing the replacement rate while paying for all costs through Measure C funding (without augmentation) would result in 25% of acquisition funds being used for labor costs. The replacement rate would drop 16% from the current rate of replacement.

FULLY FUND ALL LABOR COSTS AND IMPLEMENT A FIVE-YEAR REFRESH CYCLE

To implement a five-year refresh cycle, we would dedicate approximately $662,000[26] annually in new funds to the existing Measure C bond project for the replacement of computers and acquire an additional FTE in ETS to handle replacement / disposal tasks.[27] The additional FTE can be acquired either through the hiring of an additional technician or through the reassignment of an existing technician (which would slow down work in other areas.)

[26] If Measure C bond funds are shifted from another project then this number will be approximately 5 to 6% higher due to the need to deduct project management costs associated with Gilbane – Maas' management of the contract.

[27] A nominal amount of funding would be provided to other departments (purchasing, facilities, etc.) to pay for their labor costs.

APPENDIX M
TECHNOLOGY SCAN REFERENCES

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