**Kern Community College District**

**TECHNOLOGY MASTER PLAN**

# A REPORT AND RECOMMENDATIONS

# TO THE CHANCELLORS CABINET

**KCCD STRATEGIC TECHNOLOGY REVIEW**

**[Date]**

Purpose Statement

The purposes of the Technology Master Plan are two-fold. First, develop a process/template that KCCD can utilize in the future for developing technology goals and initiatives to meet strategic needs in support of the Educational master Plan. Second, take the high priority initiatives developed in this process and identify (or clarify) the technology and resources needed to successfully implement these initiatives.

The primary goal of IT is to move to a service organization from a maintenance organization. This will allow us to focus on customer service and provide the agility needed to support the district.

The hunger for technology continues to grow and as we expand or change we need to answer a couple of key questions as we progress through this plan: What is the purpose of technology in supporting our mission? Why do we need it?

The result is the ability for the campus community to clearly understand the significant impact that key initiatives will have on technology resources and what technology requirements exist in order for these initiatives to be implemented successfully. This understanding will be critical in the strategic decision making process for the district.

This plan was developed to be strategic in nature (as opposed to operational) and therefore, many of the initiatives involve performing a feasibility study or further research and formation of detailed initiatives.

Planning Assumptions

Without question 24x7x365 access and availability are the expectation and remains a daunting challenge.

All initiatives contained in this plan were developed to support the Strategic Goals of KCCD, and work in support of the Educational Master Plan and in conjunction with the other Master Plans for the district.

The development and implementation of the Technology Master Plan is one of the district’s key strategic plans and plays a critical role in the success of the district’s mission. Due to the current expectations resources will be severely constrained while demand for technology innovation and support continue to increase within the district.

The value of technology planning is achieved through the information gained by participation in the process as much as it is conveyed through the final report.

As the detailed design and planning phases are implemented through the various Master Plans, the district Information Technology division is continuously working to integrate information technology into the district strategic plans.

A significant number of demands for technology-related support will compete for limited resources. Consequently, the use of resources allocated to technology will be driven by needs, which are identified in this plan as the first step of a selection method involving a collaborative selection process at KCCD and the Information Technology Department.

Throughout the ongoing process of collaborating with our colleges they have expressed a keen interest in increasing the use of technology in their departments.

There is little doubt that students, faculty and staff will continue to demand ever increasing levels of technology support and services. The expectation is to engage technology systems that are interactive, real-time, authentic, intuitive, and always available. Their expectations of technology can be summarized by three phrases: on-time, real-time, and all the time.

**KCCD**

**TECHNOLOGY MASTER PLAN**

# A REPORT AND RECOMMENDATIONS

# TO THE CHANCELLORS CABINET

**KCCD STRATEGIC TECHNOLOGY REVIEW**

**[Date]**

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FOREWORD

This plan represents the hard work of KCCD IT Directors and managers over a period of time.

KCCD can be rightfully proud of its technology heritage. As noted in the plan, many aspects of the technology environment at KCCD need updating, but this in no way detracts from the exemplary efforts of KCCD faculty, staff, and administration who utilize technology to improve instructional delivery in the classroom, provide streamlined services and support to our students, and to our employees who support our colleges.

I wish to especially acknowledge the efforts of the Information Technology staff across the district, which has provided and continues to provide our community with creative, effective, and relevant solutions to its technology needs.

Gary Moser

Chief Information Officer

District IT Steering committee

District and College IT Directors

Gary Moser Chief Information Officer Chairperson

Michal Campbell IT Director – Cerro Coso College

Todd Coston IT Director – Bakersfield College

Jay Navarrette IT Director – Porterville College

Steven Alexander Director of IT – Security

Eddie Alvarado Director of IT – Infrastructure

Dave Barnette Director of Enterprise Applications

Stephen Kegley Associate Director of Enterprise Applications

Hernando Mondragon Customer Service Manager

**Technology Master Plan**

This plan is divided into the Executive Summary, Previous TMP plan status, and Overview with several major sub sections including: Infrastructure, System and Data Security, System and Data Backups and Disaster Recovery, Support and Training, Banner/ERP, Document Management, Operational Considerations, Instructional Technology Considerations, Facilities, Hardware & Software Lifecycle, Budget, and Appendices.

The mission of the Information Technology (IT) Division is to support, encourage and enhance the use of Information Technology for students, faculty, and staff by providing planning, leadership, solutions for technology, and administering the College's technical support services . The services that we provide district-wide include the ERP system, Email systems, Networking and Server infrastructure, Telephone services, Video Conferencing, desktop support, computer labs, smart classrooms, technology consulting, IT security, and leadership for technology.

Technology Planning Process

KCCD’s Technology Master Plan addresses both administrative and instructional technology issues and is being written in support of the Educational Master Plan. Review of this plan will follow KCCD’s governance structure and the necessary and desired opportunities for faculty, staff, and student input afforded by our collaborative structure.

The Chief Information Officer will facilitate this process and consolidate this report in preparation for submission to the Chancellors Cabinet, and eventually the Governing Board. Consequently, the process will be to meet and develop the plan utilizing the College IT Directors and DO IT Directors.

Each focus group has broad campus representation with particular emphasis placed on each of their respective areas (administrative and instructional). The CIO and\or college IT Directors will work with the represented groups including the below entities and submit information through them:

Consultation Council

Admin Council

Chancellors Cabinet

Educational Services Vice Presidents meeting

College’s technology committee’s

Associated Students

Academic Senate

Classified Senate

Once the focus groups give final recommendations for the Technology Master Plan it will be updated and shared with the District IT Directors for final review. The District IT Directors will then provide recommendations as needed.

The Technology Master Plan will then be presented to the Chancellors Cabinet for final comment. The Technology Master Plan will be reviewed by Chancellors Cabinet for final recommendations prior to going to the Board of Trustees. The final version of the Technology Plan will be presented to the Board of Trustees on [Date].

Significant milestones in completing the Technology Master Plan

Date: Event:

June 2017 College IT Directors and District IT formed as primary Focus Group to recommend proposed Technology Master Plan (TMP) topics, overview, and timetable. IT will provide recommendations and analysis to include technical recommendations due to expertise

July 2017 CIO will brief Chancellors cabinet on initial plan for IT vision over the next 3 years and request feedback and update the plan as needed

Aug 2017 College IT Directors and District IT meets to discuss cabinet recommendations, topics, and planning.

Fall 2017 College IT Directors and CIO will share plan with district constituencies for recommendations and planning.

Fall 2017 Representative Group recommendations are compiled as needed and through their college IT Directors are presented to College IT Directors and District IT for approval

Winter 2018 The College IT Directors and District IT compile the final draft plan and present to the Chancellors cabinet for discussion.

Winter 2018 Recommendations are reviewed and any edits completed as needed

Spring 2018 Technology Master Plan presented to Chancellors cabinet for second reading, discussion, and approval.

Spring 2018 2018-2021 Technology Master Plan presented to KCCD Board of Trustees.

**Executive Summary**

KCCD’s technology systems have served the college well over many, many years. The college’s faculty, classified personnel, managers, and the Information Technology (IT) staff have employed a myriad of innovative techniques and solutions that have provided a consistently high quality of technology services for students, faculty, and staff.

The mission of Information Technology is to support, encourage and enhance the use of Information Technology (IT) for faculty, staff and students by providing planning, leadership, solutions for technology, and administering the Districts enterprise technology services.

KCCD’s Technology Master Plan has three primary goals:

1. Complete and full disclosure of the district offices’ existing technology environment.
2. Clear and accurate descriptions of recommended solutions to meet current and future needs
3. Prioritize and implement solutions based on district need and resources availability.

The services that we provide district-wide include the Banner ERP system and associated 3rd party application interfaces and customizations, the portal, email systems, network and server infrastructure, telephone systems, , video conferencing , project management, technology consulting , IT security, and leadership for technology.

There is little doubt that students and faculty will continue to demand ever increasing levels of technology support and services, including the continuously growing demand of having the newest technology within KCCD. This is brought upon us through the consumerization of technology, where it has become so affordable and pervasive for anyone to have one or more Internet capable device and expect it to be connected to the Internet from anywhere at anytime.

The growing demand for technology and related support services is reflected in Accreditation Standard III (C). Many standards in the report reference technology and underline the criticality of this function throughout the district. The standard and sub-sections that pertain directly to technology are noted below:

Standard III C, Technological Resources:

Technology resources are used to support student learning programs and services and to improve institutional effectiveness. Technology planning is integrated with institutional planning.

III.C.1 – Technology services, professional support, facilities, hardware, and software are appropriate and adequate to support the institution's management and operational functions, academic programs, teaching and learning, and support services.

III.C.2 – The institution continuously plans for, updates and replaces technology to ensure its technological infrastructure, quality and capacity are adequate to support its mission, operations, programs, and services.

III.C.3. - The institution assures that technology resources at all locations where it offers courses, programs, and services are implemented and maintained to assure reliable access, safety, and security.

III.C.4 – The institution provides appropriate instruction and support for faculty, staff, students, and administrators, in the effective use of technology and technology systems related to its programs, services, and institutional operations.

III.C.5 – The institution has policies and procedures that guide the appropriate use of technology in the teaching and learning processes

This plan makes several recommendations, the most salient of which are discussed and prioritized in the Executive Summary section. By far, the most pressing technology issues facing the college involves IT staffing to support growth of the new\expanded systems, governance processes, Banner 9, Document imaging, systems upgrades, Disaster Recovery, security, 3rd party applications, etc. In addition growth of new applications has exacerbated the situation due to new technology and some systems not being upgraded.

Following this executive summary of our highest priorities we will then include major technology issues that are addressed in detail in the plan overview section followed by the appendices which include a cost analysis of options and additional recommendations.

The Technology Master Plan is a living document that will be reviewed and updated periodically through the work of the College IT Directors and District IT with review and comments provided to the Chancellors cabinet. This is pending a proposed IT governance process.

**Information Technology Staff Recommendations**

The staffing level for the districts IT Division is currently below industry levels in key positions and not effectively able to support current needs, growth in systems, applications, and new requirements being addressed or identified in this plan. Growth continues at a frantic pace and staffing levels in critical positions are lower than other comparable districts and even much smaller ones. This condition is only amplified by expectations for 24x7 access to IT services.

The lack of appropriate staffing levels has resulted in long delays in upgrading, implementing and maintaining various software applications, systems, and hardware. These delays have also reduced the responsiveness of day-to-day technical support that District IT can provide to the end-user community. By eliminating or reducing these delays, the colleges would see an immediate and direct improvement in their ability to help students, faculty, and staff.

The IT Division supports numerous systems and associated applications in an effort to keep up with frequent change due to new technology and college requests. The challenges include time for maintenance, testing, research and development, implementing new features and solutions, and innovation to meet our current and future district needs.

The district is continually asking technology to provide solutions and while this is the right approach resources are needed to meet this increasing demand. To simply meet our existing base support requirements staffing levels need to match growth and expectations.

Our goal is to move toward a service-focused organization from a maintenance-focused organization. With this approach, we would streamline or reduce time spent on day-today maintenance and reassign and/or retrain some of our current staff with an emphasis on identifying and delivering innovative solutions. Along these same lines, the move to a “Cloud First” methodology will provide District IT with the opportunity to be more agile and progressive in how it provides IT services.

There is another aspect of staffing that needs to be addressed and this is referred to as the “Great Technology Divide” – The gap of technical work needed between the functional positions and IT technical staff. There is a significant amount of work that can be done locally rather than using DO IT. If implemented this would provide local control and direction speeding up college solutions. This would also reduce the demand on ERP Analysts time to focus on high level technical tasks. This position is traditionally called a Business Analyst and this recommendation is for each of the Banner modules.

This plan recommends the following staff additions:

* 3 ERP Analyst/Programmers
* 2 Cloud Analysts\Architects (retraining options)
* 1 IT Project manager (restore previously approved position)
* Business Analysts at each College (located at and reporting to the colleges)

1. **Banner 9 Systems Upgrades**

The Banner ERP system provides users with direct access to appropriate information and the ability to make online self-service applications available to students, faculty and staff. College operations has also benefited from the availability of a single integrated information system. More complete and reliable data has been made available for making day-to-day management and strategic planning decisions.

This system upgrade is required to keep it viable from a vendor support standpoint and is part of an extensive process that involves many people. To meet federal, state, and vendor mandates, our technology must be upgraded to support these educational and business requirements. This upgrade project includes multiple application implementations, increasing our system capacity, providing proper test and development environments, and integration of our Banner ERP systems with several 3rd party applications

This project will also include the redesign and upgrade of our Identity Management\Single Sign On environment. This is crucial to future technology as we utilize the cloud, integrate with state sponsored systems, new technology, etc.

This system has provided many opportunities to get needed efficiencies and information to any user that needs it. With these opportunities there is also increased ongoing demand for technology services to use these features to their fullest. Our functional areas have worked with this system and are requiring the features be put to use to assist and enhance their capabilities to do their jobs. We are currently using minimal capabilities of these systems and need to move to the next level to have it work for us. Implementing key features and enhancements is essential to our district.

This plan recommends the following:

* Migration of Banner to the cloud
* Reduction of Banner customizations (bolt-ons)
* Implement a redesigned Identity Management\Single Sign On environment
* Prepare and implement Banner 9 which will require utilization of new technologies
* Banner integration with imaging system
* Workflow software implementation
* Implement currently owned features (i.e. HR benefits package)

1. **Security Program**

The risk to the district from a security incident such as a data breach, loss of data, denial of service, or infection by malicious software is significant. Other districts have suffered losses as high as several million dollars resulting from the loss of confidential information. Perpetrators of “ransomware” have demanded tens of thousands of dollars to restore data. And, KCCD suffered from a denial of service attacks several years ago that resulted in students being unable to register for more than a day.

The goal of the district’s security program is to develop a strategy for prioritizing these risks and reducing them to acceptable levels. Because the district’s technology needs, technology infrastructure, business processes, and personnel change over time, the effort to reduce risk must be an ongoing program rather than a one-time activity. The security program has four key components:

1. Use threat modeling and risk assessment processes to identify and prioritize security risks and needs.
2. Develop technology standards and processes for securing KCCD’s systems.
3. Select and deploy security technologies that can help the district prevent, detect and/or respond to security events.
4. User awareness program including to train users to identify and react to security risks (e.g. phishing emails).

In order to support this program, we need to hire a Security Engineer who can assist the Director of IT Security in assessing risks and work alongside other IT staff to implement security standards and security technology.

The California Community College Technology Center (CCCTC) provides security recommendations and services to colleges throughout the CCC system. Where appropriate, we will leverage CCCTC resources to enhance our security program.

This plan recommends the following:

* Annual external audits of all facets of our IT environments
* Security programs are prioritized and implemented so the District can enhance its security posture against cyber criminals and computer viruses.
* Implement a district security committee.
* The modernization of our districts hardware and software to address new security standards.
* Coordinate with the CCC Security Officer for recommendations

1. **State Initiatives (EPI/OEI/OER)**

State sponsored initiatives are an essential part of our district strategic goals for student success. There is an ongoing increase in demand for integration with ERP data, and between platforms. To achieve these goals effective and efficient use of technology will be essential in supporting this direction.

This plan recommends the following:

* Increased IT service to our customers
* Functional and IT staffing levels to support these increased technology requirements
* Business process analysis and review
* Develop systems integration solutions to support district projects
* Staying up to date with current technological approaches
* Coordination with and between colleges

1. **Cloud First - Enterprise Systems**

We are in a new period where there is a significant shift in technology occurring: “Cloud solutions” This new technology follows on the heels of the “Bring your own device” revolution of a few years ago. What is driving this evolution is the complexity and resource costs of current systems in order to meet our customers’ expectations of agility and reliability.

One of our primary goals in IT is to move from a maintenance to a service organization. This will allow us to be responsive to our districts technology needs in a timely manner. In order to provide this level of service we will need to implement solutions to reduce our ongoing maintenance time so we can turn our expertise to providing proactive customer solutions and support.

Our Cloud First strategy focuses the value of limited IT resources on delivering the most business value to the District. By using cloud services to deliver technology we free up our staff to focus on developing and supporting technical, differentiated services built upon those platforms in a more customer centric environment.

### The staffing requested in this plan includes recommendations to support this new and complex technology. The Cloud Analysts\Architects needed can be addressed with retraining of some existing staff to meet the changes in requirements that new cloud technology creates.

This new technology will provide many opportunities to get needed efficiencies and information to our users that need it. This will also be a factor about new technologies that could enhance this effort with efficient technology support. This project will be an immediate focus of effort for the IT division over the next three to five years as our systems portfolio is extensive and growing.

There are many new benefits, features and enhancements this recommendation will provide, namely:

* Delivery of more IT services to our customers
* Faster turnaround time for new IT initiatives/projects
* Scale up and Scale down IT capacity to handle seasonal demands such as student registration
* Increased uptime of IT services due to Cloud Computing characteristics
* Modern hardware to include servers, storage systems, etc.
* Assistance from Cloud Computing providers in managing risks related to security, compliance, privacy, and disaster recovery
* Develop systems integration solutions to support district projects
* Staying up to date with current technological approaches
* Key component to Banner 9 upgrade and utilization of new technologies
* Technology direction of vendors for future systems

1. **Disaster Recovery/Business Continuity Planning**

The district recently implemented a part (Banner DR) of a Disaster Recovery (DR) with a business continuity solution pending. However, a constant evolutionary process is needed to grow, update, test and ensure the plan is meeting the district’s Administrative and Instructional operational requirements.

This will help ensure that the District’s operational areas reliant on IT can function at a reasonable but minimal level during a Disaster event. If not addressed, the time to enact, recover, and maintain in an optimal state during a Disaster event are in jeopardy.

We have implemented an alternate server room location, also known as “DR hot-site” at Porterville College to keep our ERP system “Banner” operational in the event of a Disaster event at the District Office. In the future, we plan to leverage Cloud computing to provide this same capability and eventually phase out the Potterville DR hot-site. We plan to continue evolving our DR initiative to continually assess and where needed add key IT services/applications to our DR portfolio.

We have a good start to the planning process by identifying all IT services, categorizing the IT services and will prioritize the recoverability of those services with the district and establish target recovery times that are deemed as acceptable for business continuity. Although this is a great start, the plan needs to be extended to involving all aspects of business continuity planning (BCP) including functional users, emergency response teams, executive and management teams, communications protocols, and testing. Additionally, the plan requires procedures to assure plan maintenance and testing are formalized.

We have a responsibility to address this issue with a BCP solution to bring the district back online in a timely way should a disaster occur. The question that we must answer is how long can we afford to be without access to our key IT systems?

This plan recommends the following:

* Ensure adequate time windows are available for systems maintenance
* Use the cloud in planning and providing our DR\BCP solutions.
* Provide on-going training and testing opportunities to ensure reliability
* Engage all required business constituents to expand the scope of the current IT Disaster Recovery steps to a full business continuity plan (BCP)
* Include the need for Network (access) redundancy and resiliency (i.e. backup power) at the colleges and DO for business continuity

1. **Document Imaging Management**

The current document imaging system that we have is Hershey and Laser fiche which are now at end of support and a significant upgrade is immediately needed. These systems allow the college A&R section to scan documents and index them as needed. Functional and technical staff will help ensure that the systems are implemented, tested, upgraded, maintained and working efficiently. If not upgraded the current Document Imaging solution reliability and stability are at high risk.

The upgrade should be done in two phases. The first phase is to upgrade to the current version as the current system is no longer supported by the vendor as of June 2017. This would also include converting the Laser fiche product to the upgraded system.

The next phase should expand to other departments to provide business process efficiencies. The recommended departments include Financial Aid, HR, and Finance with analysis done to determine other areas of the district to include.

The system should be able to pull information from the Banner database or from a database updated daily from the Banner database once the ERP system is integrated. The man-power that is used for paper management is extensive and creates significant efficiency issues throughout the district.

Any office that is paper intensive would benefit from using a document imaging\management system. It is recommended that the district explore expanding the document imaging\management system and integrate this system with Banner to the greatest extent possible. Other options will need to be evaluated to address our document management needs.

**Recommendations**

* Upgrade our current Hershey and Laser fiche systems immediately
* Explore options for moving documents to a modern technology solution
* Provide training to support the new system
* Develop a project plan and implement a solution
* Integrate new system with our Banner ERP system, active directory, and possibly use workflow

1. **IT Training and Support: Immediate Needs**

The type of training delivered to IT staff varies depending on their job responsibility. Training has been delivered through traditional classroom models, occurred informally, and on-the-job. Investment in training for all IT staff will be essential to meet the changing technology needs in the next three years and beyond.

Students, faculty, and staff are currently asking for the newest products and services to meet the demanding needs of the institution. Training is an essential piece of any technology related plan and is crucial to our districts success.

Training will address not only new systems support as they are implemented\requested but most importantly to address technology changes as a normal part of the business and systems support needs of today. Technology changes very quickly and ensuring we are prepared for the future is critical.

Products used should be thoroughly tested prior to deployment across the district. Information is shared in-house as the staff becomes familiar with the software however this process doesn’t meet the timely needs of the district as the learning curve is much longer.

Due to the ever-changing technology landscape formal training is essential to meet the needs of current requirements. All staff, regardless of their position, should be trained to the greatest extent possible just to keep up with current demand for new technology.

This presents many challenges in supporting the district systems in various critical areas changing technology, new systems and applications, as well as staff turnover. We are not as efficient as we need to be to address today’s needs, especially as change occurs we need to be able to efficiently adapt.

This plan recommends the following:

* Send staff to the annual Ellucian Live and to the CISOA\California Community College Banner Group (3CBG) meetings, both of which are essentially training sessions.
* Send staff to appropriate technical training.
* Create and maintain a regular annual training budget for all IT areas.
* Utilize cross training opportunities and on-the-job training (OJT) options for staff, especially with the remote centers.
* Explore training via Computer Based Training (CBT) courses, books, etc. when appropriate.
* Training for IT management to maintain awareness of technology advancements and trends for strategic planning for KCCD.
* Develop and implement a comprehensive plan for delivering relevant and timely IT training to Faculty and Staff on existing KCCD IT services and any new IT applications.
* Invest in the people, process and technology components utilized to deliver day-to-day customer support to make improvements in IT Customer Support

Budget

This report is divided into sections that address differing aspects of technology at KCCD College. Capital budget expenditures are reflected in the budget section and in several appendices where discussed in detail. Recommended budget expenditures reflect the district’s needs for fiscal years 2018 through 2021.

The budget items that are presented in this plan are provided with estimated costs which are pending further review and analysis of the systems, scope, and situation at KCCD. The items may not be all inclusive at this time pending feedback from the strategic planning process that will outline detailed criteria.

Costs and quantities have been gathered and included as this plan has evolved through the process outlined in the overview, milestones, and review. Technology costs change quickly and may require further analysis for any estimates outlined in this plan.

The priority order for the technology recommendations will be established by a proposed District IT Advisory Group and process. The primary focus groups contributing to the prioritization process are the Colleges IT Directors and District IT and the proposed District IT Advisory Group.

The following chart summarizes the specific capital budgets associated with the recommendations in this plan and the recommended priorities for consideration are provided.

Chart below needs to be updated\inserted

Insert Chart for expense projections for the above section

**Technology Master Plan Gap**

The district office does not have a recent existing technology master plan. The new Chief Information Officer has made this a top goal to complete one this year. This section of the TMP will review known information, successes, and concerns.

The plan for integrating technology into Kern Community College District is based on the district's educational vision and is part of our overall Educational Master plan. As one component of the districts Educational Master plan the Technology Master Plan is annually reviewed and updated on a 3 year cycle.

Participation in the process of planning for technology in education is by working with the Colleges\District office and asking appropriate questions, such as: How will the technology be used? How will technology affect the role of instruction and business in a cost effective manner? How can technology benefit all students?

# Scope

This section provides an overview of what the scope would be in the Technology Master Plan for the district. Technology has continued to grow and evolve in use at KCCD and IT is constantly being asked to provide solutions and features to the instructional and business communities of this district. Technology use and support needs have grown dramatically in recent years to include the following major components:

1. Systems upgrades and new functionality
2. Applications and new functionality
3. Cloud systems
4. Project Management
5. Wireless network
6. Helpdesk support
7. Support Expectations of 24x7
8. Network infrastructure

This also must include the continuous change in technology such as new equipment and software versions, training requirements, and customer support requirements. New technology comes at a very fast pace. A key requirement and need is IT project management for the district.

## Staffing

IT has been very productive however vacant positions have impacted efficiency in the past and some positions need to be changed due to new technology such as the cloud. In the recent past there have been several positions vacant however IT has now filled all approved vacancies. The growth, demand, and expectations of technology have been significant and increasing. Staffing levels in IT need to be reassessed as new systems and applications are continuously being asked for with the workload constantly growing.

## Successes

Sharing District IT project information affecting our customers had been minimal. To correct this District IT created an intranet site to share project status information so the district would have information about our key projects. We also started a quarterly newsletter sharing key information about what District IT was doing. This enhanced our communications and provided a proactive approach to meet informational needs.

Frequent meetings with College IT Directors to discuss plans and address operational issues allows us to proactively support our customers. Utilizing this committee to facilitate communications regarding planning, goals, and strategies to support instruction, student services, and operations department enhances our ability to gather information from the colleges. Below are some of the successes achieved.

* Canvas Learning Management System
* OpenCCCApply Implementation
* EAB Navigate Implementation
* Banner Integrations (SARS, AccuSQL, Accuplacer, Card Integrators, etc.)
* Interim Portal Implementation
* TD Client Implementation
* Electronic Billing
* ASAP Noncredit Registration
* SARS Alert
* Website Redesign (Drupal Implementation)
* AcademicWorks
* Upgraded BC and PC (WAN) Newark links from 50M to 1G
* Upgraded CC Ridgecrest, Bishop, Mammoth Network links to 100M
* Upgraded BC-Delano Network link from 50m to 500M
* Refreshed of District Firewalls
* Refreshed of Network Routers at all College sites
* Refreshed Storage Area Network systems at the District Office and Porterville College
* Replaced Legacy phone and voicemail system with modernized Voice-over-IP (VOIP) telephony system
* Implemented a Disaster Recovery site at Porterville College for Banner
* Implemented Office 365 SharePoint online services to replace group functionality in retired Luminis portal system.
* Hired Director of IT Security to bring much needed and critical focus to IT Security.
* Implemented On-premise Security infrastructure and Cloud Services to protect against Denial-of-Service attacks
* Implemented services for Security event monitoring, alerting and incident response.
* Hired CIO (Chief Information Office) to provide vision and leadership for district wide IT operations
* Began providing security awareness training to employees.
* Upgraded Ellucian EIS software used for single sign-on.
* Implemented a more secure method for password storage.
* Implemented vulnerability scanning to detect security flaws on our network.
* Developed security standards for Cisco network devices and SSL.

**Concerns**

Technology changes constantly. There is a need for the district to plan when this frequent change occurs as the impact can be dramatic. The effect of this causes applications to be upgraded, integrations to be tested, and functional staff to adjust processes to adapt to the new technology. This is not an IT issue alone as this influences the functional staff and how they do business.

A Technology Advisory committee is an area that needs to be implemented to ensure technology gathers input from appropriate stakeholders. Key concepts include policies and procedures, what systems are to be implemented, the priority, strategic direction, and technology transparency.

Technology project management needs to be utilized in this district to define realistic requirements, set schedules, determine resource allocations, provide communications plans, etc. This is essentially the same need as facilities project planning and if done incorrectly will cost the district hundreds of thousands of dollars. Proper project planning will allow efficient and effective systems implementation with the goal to be on time and on budget. The lack of project management for district wide technology has created challenges to provide effective and timely solutions for the district.

# Budget

The goal is to maintain our budget and operate within these limited resources. The challenge is we are experiencing continuing cost increase in several areas. Many of these relate to obsolete systems placing increased demand on parts replacement and staff support. New technology and features that are in demand by the district have also been limited due to resource constraints. Increased costs for licensing and maintenance contracts have also been experienced.

# Summary

There have been a great many successes over the past few years. There also have been many challenges to address and progress is continuing to move forward. We are continuing to explore ways to reduce delays and implement solutions that provide long term reductions in costs and staff work load. This is a slow process due to technology change and continued technology growth within the district.

There is new technology being requested consistently by the colleges, business operations, etc. and we will need to continue to find ways to support our customers within the resources available. Setting realistic expectations will be needed to assist our planning in response to requests.

The newest technology impact has been the increased speed of change with new systems, and current systems upgrades. This includes the training and testing impact on our staff for both IT and functional areas.

Our major challenge in the next couple of years is planning what we can’t do because of our resource constraints. More importantly is helping our customers with resolving their workload concerns so they can do more with less.

**Summary of the Technology Master Plan Items Pending**

**Overview 2018 - 2021**

## Planning Process & Leadership

A district wide technology advisory committee that is currently in place is the District IT Directors advisory group. Currently the college and district IT Directors meet regularly to discuss and provide recommendation to the Chief Information Officer.

Another group that provides input to the CIO are at the Educational Services Vice Presidents meetings. This group is focused on student success issues and planning and provides information to the CIO.

The CIO will then brief the Chancellor and Cabinet on strategic recommendations and any items of interest to get feedback and direction as needed.

## Chancellors Cabinet

The role of the Cabinet is to:

* Approve overall strategic direction
* Address system resource concerns and planning.
* Respond to policy and philosophy questions.

District IT Directors Steering Committee

The role of the Steering Committee is to provide senior level leadership for overall operational systems and strategic planning. This committee is responsible for instituting the procedures, practices and organizational changes necessary to successfully operate our integrated applications and other enterprise systems.

**Recommendations:**

This plan recommends the following:

* Explore alternatives to the current model, to include looking at a combination of the two primary groups to streamline planning and decision processes
* Update the documentation for the technology planning processes and procedures.
* Include further discussion on policies and security in the technology planning process.

### **Project Management**

Project management for technology needs to be used consistently and follow recognized business standards and processes. Project requests have historically been submitted to IT in a variety of informal ways, depending on the type and complexity of the request.

To whom and how requests have been submitted varies depending upon the functional area involved, for example whether or not it is a request for a new application versus an infrastructure support project. Other factors have included the size of the project and resources needed to do it. Requests for major projects need to be instituted into a formal process to ensure costs are managed, resources are used effectively, and realistic schedules can be setup.

A concern is duplication of effort and systems creating inefficient solutions and increased workload for redundant systems. With limited resources in the functional areas as well as college and district IT staffs a professional process will increase user satisfaction and reduce workload.

The need to follow industry lifecycle standards and best practices will result in a successful cost effective solution that can deliver projects on time and on budget. To this end part of any project would be the including end user training to ensure adoption and expertise is included in the planning processes.

Project Prioritization

To enhance the project management and prioritization structure for incoming requests, it is recommended that projects be submitted into a formal process through their respective divisions and colleges in consultation with their IT Department and if it has a district impact submitted through the appropriate College IT Director. This is due to a typically large resource requirement needed or district impact.

IT will continue to schedule projects into the overall schedules for all technology services. This will allow effective and efficient utilization of staff and systems resources. This will also enhance institutional planning and effective use of resources via a formalized processes.

Research and Development

The change in technology is frequent and continuous that places an enormous burden on existing systems and resources to meet the needs of students, faculty, and staff. We must continue to allow time to explore and research new technology and options that can create efficiencies and capabilities for KCCD.

**Recommendations**

* Implement a district wide project management process.
* Any formal projects of any size that would require the customization of major systems such as the Banner ERP system requires the approval of the CIO for KCCD.
* The District IT Advisory Committee should be consulted in any case where new information technology is considered or implemented prior to implementation.
* Reduce duplication of effort and redundant systems.
* Follow project management lifecycle industry standards and processes

**Network Infrastructure Upgrades**

The district needs to plan for the upgrade and life cycle replacement of our network infrastructure to include WAN links, switches, routers, firewalls, storage systems, UPS’s, servers, and data center equipment (HVAC ,etc.). The cost to upgrade existing systems is very expensive and we will continue exploring cost-saving options. In the interim there is an urgent need to upgrade these systems to ensure compatibility, capacity, reliability, and maintainability at cost effective levels and provide systems availability.

This will help ensure that the systems are tested, upgraded, maintained and work efficiently. If not addressed the systems reliability and stability for current and newer systems and technologies are at risk. We will continue to work with the CENIC to address our network connectivity between colleges and internet.

The integration of modern technology greatly enhances access to district services and applications. Students, faculty, and staff expect to have efficient and reliable access at any time. Maintaining a formal refresh cycle for end of life systems would increase efficiency and lead to reduced support costs, especially in terms of man-power needed to support older systems.

We have seen extensive growth and demand on our network and services. The systems needed to support this are critical and must be maintained to support the mission of the district.

This plan recommends the following:

* Ensure connectivity to the colleges and DO are upgraded to address growth
* Ensure systems are upgraded to support current and future technologies
* Provide training to ensure stable and efficient use of our network
* Provide adequate maintenance windows to support systems
* Switches\Routers\Firewall\UPS\HVAC upgrades

**Cable Infrastructure**

### **WAN, LAN, Wireless, and Telephone System**

There’s an environment of increasing demand for support and services from the Instructional, Student Services, and Business Departments, and the increasing expectation from the college’s student body that the infrastructure be able to support access to needed systems on a 24x7x365 basis. We have experienced extensive growth on our wireless network over the past few years due primarily to the “bring your own device” (BYOD) phenomenon and streaming applications growth of the end users. The need for expanded coverage in many geographic areas and buildings has created upgrade requirements to meet instructional needs. As the demand for network access around the district grows, and more instructional applications can be delivered to BYOD devices, the District’s wireless network will have to scale accordingly.

It is recommended that the district continue to support an infrastructure modernization process that provides expansion, scalability, and agility to meet changing technology. Such a solution provides: new equipment refresh cycles that will accommodate the increased demands that our students and faculty will place on the network; increased network and data security and reliability; a system that is robust and flexible and staff can easily manage; the capacity to deliver video over the network; the ability to support wireless networking throughout the campus; and the ability to provide telephony over the network.

This solution also recommends our IDF’s be upgraded to include HVAC, wiring, and labeling all fiber and copper runs in the district to ensure all technology wiring closets are up to standard.

Wide Area Network (WAN)

The WAN provides the inter-connections for data network services between the college campuses. It also provides Internet access, and consists of one 1GB and one newly upgraded 1GB failover circuit for the main campus. The WAN capacity supports, a 50MB line to the NCC campus and a 20 MB line to RG and the Truckee Center. Our equipment is at midlife and supports the current needs of these centers. Future considerations need to address WAN redundancy to the remote campuses as it pertains to the DR/BCP for the college and evolving technology requirements.

The KCCD data network should be assessed for supporting the IP video technology and its impact on the college’s network with regard to capacity and standards, and to support video distribution and distance learning initiatives that will leverage the WAN, LAN, and Internet. This is especially critical due to the wide geographic service area of the district. Although the recent network improvements have helped to support total capacity and prioritization of network traffic, the district needs to assess the viability of a video content distribution system. Such a system would include servers/controllers for storage and distribution of content that help to avoid saturation in specific network segments and assure full-motion video qualify for quality education content vaulting, streaming, and management.

Our connection to the internet is through CENIC which is a managed ISP in support of educational institutions primarily in California in coordination with the Chancellors Office. Our connections to colleges and our remote centers is supported through our CENIC agreement and has provided us a cost effective options to support remote centers.

Local-Area-Network (LAN)

Each colleges LAN facilitates electronic communication between buildings on its campus; it is the “network”. KCCD’s LAN carries both administrative and instructional traffic.

The LAN is comprised of physical fiber and copper wiring, electronic components, servers, and physical spaces (usually wiring closets). The LAN has a Main Distribution Facility, or MDF. MDFs function as distribution points to Intermediate Distribution Facilities, or IDFs. IDFs typically feed one building or floor of a multi-floor building. The IDFs consist of electronic components and physical copper cabling runs to the network jacks that are in the offices, classrooms, and labs.

The continued growth of the district over the years, a recent bond passing, coupled with the many changes in networking technology, has resulted in a need to review and upgrade our network. There is a need for a consistent configuration and standard equipment in these rooms.

The remainder of the buildings need to be rewired to current (category 6a) cabling standards with dedicated wiring spaces. The upgrade\replacement of much of this is an absolute priority since all systems use this to communicate; including to the internet, Banner, Distance Education, telephone, Canvas, etc.

Inter-Building Fiber-Optic Cabling

Update needed

### Telephone System

The telephone system is a VOIP solution and meets our needs with several features installed to include site survivability, voice recognition paging capabilities, and phones in each class room. There are several items remaining that need to be implemented to address newer technology that could be of use to the college.

The district will also explore other alternatives to using the current environment to include cloud and cellular technologies. This is due in part to newer technologies and high cost of telecommunications systems in general.

### **Systems Life Cycle**

Servers

We currently have over 200 servers supporting district operations and includes our ERP system (Banner). Typically, server refresh cycles average 4-5 years as an industry average and IT targets server refresh cycles every four years. Server replacement cycles are essential to providing a platform that can handle the newest software, especially as software is updated through routine maintenance and application updates require it.

Storage Area Network (SAN)

The current server storage requirements are best addressed by the use of a SAN solution to support the growing needs of the district. A recent consultant performed an assessment of the current SAN and determined we have 81 terabytes (TB) of required capacity. Based on usage trends this number is growing at about 40% annually. To cost-effectively manage data growth and backup capabilities a SAN solution can provide a shared disk resource for multiple servers, consolidating the management of disk capacity and backup services. Advanced technologies such as SAN replication and snapshots can be used to reduce the labor hours associated with system backup and restoral services.

Cloud impact

A cloud solution will incorporate the hardware refresh cycle for servers and other infrastructure components. This will allow us to remain current and provide the needed agility and efficiencies that will provide significant benefit to our district.

**Recommendations:**

Regarding infrastructure, this plan recommends the following:

* Continue with our Cloud First approach to systems and applications to address this issue
* Support the bond project for infrastructure, cabling, etc.
* Provide a cabling and infrastructure audit and analysis to evaluate our current status..
* Follow industry cabling standards and requirements
* Continue to replace\upgrade needed existing low voltage fiber and copper wiring.
* Include infrastructure to address Disaster Recovery/Business Continuity Planning at alternate locations.
* Implement an infrastructure refresh plan.
* Update district infrastructure to handle new and additional technology requirements and services.
* Explore and implement unified communications options and solutions.

### **Technology Security Status**

Although much progress has been made with regards to Information Security in the past 3 years, we have identified several areas that need continued focus.

The Security Advisory Group was formed to define and support a Security Program for KCCD College, and to make policy recommendations to the Educational Technology Committee and the District Information Security Officer role carried by the District’s Chief Information Officer. A program plan was developed, internal audits and security posture assessments were performed, but continued efforts need to be resourced to address security gaps and end-user awareness campaigns.

Network Security Upgrades – The internal district Firewall is obsolete with regard to its security capabilities and needs to be replaced. This firewall protects specific sensitive data “zones” such as Banner, Exchange email, and should also include other services such as VoIP Telephony services. Our network also has no Intrusion Prevention Systems (IPS) in place on servers other than basic anti-virus and anti-malware. IPS systems are essential components of enterprise network security in today’s Internet community and should be no surprise considering all the publicized attacks on retail stores such as Target, or other schools such as Arizona State. The District needs to identify and implement an IPS that will improve its security posture against malicious and criminal activity.

Physical Security - The District’s Data Centers and wiring closets are secured by key or FOB controls and restricted to appropriate personnel. Data Center FOB access lists are reviewed at least annually to assure only appropriate staff have access. In some cases wiring closets have environmental issues and is being addressed through the Campus Infrastructure planning and budgeting process.

Data Breaches - Information and Data Security is a top concern for Security and Security Awareness. The Security Advisory Group must make a concerted effort to focus on data classification and policy around the data classes defined, to include mobile devices, thumb drives, CD’s/DVD’s, remote access, hard copy reports and shredding. Incident procedures should be written and adopted to specify necessary actions should a data breach occur.

Spam\Malware

The college has been using a product called Barracuda. The volume of SPAM that the District receives has been increasing over time and started increasing dramatically in recent years. At this time our Barracuda appliance is reporting receiving over 56,000 emails per day of which 89% on average are detected as spam and blocked. Daily attention by the System Administrators is required to keep the Barracuda appliance operating efficiently, and malicious spam attacks impact our email system and require hours of remediation several times monthly on average.

**Recommendations**

* Conduct annual security audit of the districts systems, etc.
* Continue to develop and implement our security program through the IT Security Advisory Group.
* Create a training plan to educate the user community about the importance of the use of user security best practices, etc.
* Engage a firm to conduct a security audit of the college’s network regularly.
* Implement desktop configuration management to address security best practices.
* Address the lack of Security-specific policies and procedures around Security Incident handling and data protection.

### **Policies and Procedures**

KCCD’s Acceptable Use Policy (AUP) was approved by the Governing Board as defined in the board policy (BP 3720). KCCD has Administrative Procedures (AP 3720) providing further information on technology procedures.

There are many cases where procedures and guidelines are not published that would include providing clear guidance and most importantly outline expectations with regard to security. Specifically, standards and procedures for perimeter network security, Wi-Fi, Cloud, Social Networking, mobile devices and encryption, data classification and information privacy, and computer security incident management need to be documented and ratified.

Many of the requirements of the policy and procedures are based on legal requirements that are relatively new. These laws are at both the federal and state levels. Further reference to some of the more pertinent laws can be found in appendix.

Additional standards with regard to shared storage and file management, email use and email retention, and new system provisioning, etc. need to be documented and communicated to the college to assure proper expectations are set with regard to IT and customer roles and responsibilities.

There are some well-defined support processes and procedures in place to provide information on how KCCD College IT operates. Several new procedures are being developed to provide information on service metrics, acceptable use, and business operations. These new procedures will help the district understand the workload and support requirements that are the responsibility of IT as it relates to technology support.

New processes and procedures need to be clearly defined to outline support requirements, set expectations, and compete for resources, especially as the district continues to demand more technology support and solutions. Many faculty and staff feel that the campus should increase resources to improve the services, access, and response times for computer/network support and repair.

The CNU is based on several laws, policies, procedures, and best practices. The modifications being made to the CNU are reflected in the Information Technology and Electronics Communications Procedure and reviewed as part of the Banner implementation process. See in Appendix.

**Recommendations**

* Update procedures as required (AP 3720 and 3721).
* Communicate the CNU and other procedures to employees via the college’s committees, website, e-mail, and other appropriate modes.
* Require all employees to acknowledge the college’s CNU at login and as part of the new hire process.
* Require anyone logging into a district system to acknowledge acceptance of district technology policies and procedures.
* Update technical support processes and procedures, and communicate these to the campus community to set expectations, some recommended are in appendix.
* Regular systems maintenance times need to be provided by the district

### **System and Data Backups**

Backups are being performed for over 200 servers in the district’s primary data center. This includes our Banner ERP systems as well as our VM (virtual server) environment. The backup process has data retention of 6 months after which the backups are no longer kept. There are exceptions as derived from the data stewards for certain applications and data files, or for non-critical data (test systems, etc).

General Backup process:

Nightly –

Incremental backup to disk, critical data redundant off-site.

Incremental backup on any file changes to disk, critical data redundant off-site.

Weekly –

Full backup on Friday to disk.

Full backup on Sunday off-site.

Windows Servers backup process:

Full backups of the Windows servers occur weekly and monthly with nightly incremental backups to disk. Backup retention periods are set for one full month of weekly backups, and six months of monthly backups. All disk backups are replicated off-site at NCC or backed up redundantly to tape and stored with an off-site vaulting service provider.

Banner backup process:

RMAN is used as a backup tool for Banner Production data and is copied to disk in an alternate building approximately every 10 minutes. Full backups of the production servers occur nightly to tape with a 6 month retention period. Transaction logs and database control files are archived to disk in an alternate location every 10 minutes to allow for recovery times of 10 minute intervals. The tapes are sent off-site weekly to an off-site vaulting service provider.

Disaster Recovery

The college has recently upgraded key parts of a technology disaster recovery/business continuity solution however this is a constant evolutionary process for keeping current.

IT has positioned itself to have much more flexibility when it comes to recovering systems by way of server virtualization and storage networking. Our virtual server infrastructure can quickly restore entire servers with applications and data sets on other virtual server infrastructures located anywhere. We have implemented an alternate server room location for a “hot-site” in LRC and are planning for NCC providing this capability for our critical systems in a limited way.

We have a responsibility to address this issue with a business continuity solution to bring the district back online in a timely way should a disaster occur. The question that we must answer is how long can we afford to be without access to our key systems?

The following is a graphic depiction of our current backup strategy:

#### Email System

We are using two different email systems and currently have staff email on premise and student email in the cloud. This creates incompatibilities and inconsistences with communications throughout the district.

The solution should be to move all email to the Cloud and standardize on one system. This will accomplish several enhancements to include efficient communications, calendaring, integration with our Windows based systems, and reduced support costs.

#### Recommendations

* Standardize on one email platform.
* Move all email to the Cloud.

Support and Training

#### Helpdesk Plan

In the chaotic world of IT, all roads eventually lead to the help desk. This primary technology focal point for the district is the first response center for problems, and help desk efficiency is often the pivotal ingredient in IT customer satisfaction. End-user perceptions typically live and die based on how quickly, efficiently, and thoroughly the help desk performs.

We have a formal centralized helpdesk to address some key concerns to include a, remote control support for customers, user accessible incident tracking and status system, self-service student password reset tool, and limited off hour support for priority issues. There is a vacancy as we have one helpdesk person for the entire district and currently average a 600 work order backlog. .

“A help desk is effective if it delivers high customer satisfaction at a low cost,” says David Coyle, a Gartner research director covering IT operational management. “Best practices state that 54% to 75% of all IT service requests should be managed by the first-level technician at the first point of contact by the end user—known as the first call resolution rate. Calls managed by the first-level support analyst typically should cost an average of $20 per call. So if customer satisfaction is low or if a help desk isn’t able to close approximately 54% to 75% of calls at a cost of about $20 per call, then there are opportunities to upgrade the help desk.”

#### Recommendations

* Training for Helpdesk staff to enhance first call resolution.
* Provide resources to support first call resolution.
* Fill the vacant Help Desk Specialist position.
* Provide additional training for supported applications.
* Plan for evening and Saturday support realizing this is a resource issue.
* Publish FAQs (provided by Divisions) on a central help page.

### **User Technology Training**

In general, the training opportunities are provided to meet basic needs. Since a well-trained user community minimizes the need for additional support, it is important to deliver effective training that meets the user’s needs in current and future technology.

The lack of a training program for new applications, programs, etc. dramatically reduces the effectiveness of staff and creates long delays in keeping technology current in our district. This includes systems upgrades and new applications that are implemented, etc.

**Recommendations**

* Provide resources to implement a technical training staff on updated and new systems.
* Develop a plan to address new user technology training needs.
* Use group training and self-paced methods whenever feasible.
* Use the train-the-trainer model whenever possible.
* Explore a variety of training options and modalities, webinar’s, books, CBT’s, etc.

Technology training goes hand in hand with technology support, since the better trained the users are, the less ongoing support they will need.   
  
We should look at a wide variety of training options to include: scheduled, drop-in, and online. For the most cost-effective use of KCCD’s training and support resources, however, group training and self-paced training methods should be promoted and expanded.

Technology training is by necessity a distributed affair. It is reasonable to expect a department to provide their own staff training for specialized hardware or software used only or largely by that individual department. By the same token, training on the college’s shared or standard hardware or software should continue to originate from a centralized source.

Sometimes the scale of the training needed overwhelms the centralized department, as when the campus rolls out the Banner ERP system or a new network operating system.

#### Banner/ERP Management

**Overview**

KCCD utilizes Banner Administrative Software. This also includes a pending upgrade from Banner 8 to Banner 9, interfaces, 3rd party applications, ODS, DegreeWorks, etc.

# System personnel and organization -

For a system of this magnitude, the oversight and governance structure is vital. The outcome has far-reaching consequences and will affect every aspect of the institution. In this regard, it is important that this system be viewed as an “institutional” effort and not an “IT effort.”

The Banner® system will continue to have a major impact on College operations and the delivery of student services. The integrated system will serve as a “single system of record” for decision support, managing operations, and delivering services. Departmental processes have changed as the College moved from a functional orientation organized by domains of responsibility toward a process orientation defined by desired outcomes. As a result, the College must be prepared to anticipate and guide the necessary changes in organizational structure, responsibilities, reporting relationships, and communication channels.

This system provides a continuous opportunity for the College to improve its processes. Individuals will need to adopt new ways of performing functions in conjunction with the changes of the Banner® system. The full extent of the impact will need to be accounted for within the context of district planning and in conjunction with future strategic planning at an institutional level.

## Planning Process & Leadership

## Functional Leads

The Functional Leads are the data stewards for their respective modules and are responsible for their Banner® application modules and associated data from selected ancillary software in their overall functional areas. These leads will be equally responsible for ensuring the success of their particular updates and changes.

Specifically, the Functional Team Leaders will:

* Plan and discuss operational systems issues to meet district needs
* Make recommendations to IT to support those operational issues
* Identify and understand, in-depth, the business objectives to be attained as well as the preferred manner to achieve objectives.
* Develop an in-depth knowledge of the software product and of current and preferred operating methodologies.
* Develop and ensure appropriate testing of any changes that affect their modules.
* Set standards and manage quality of their modules as data stewards.
* Coordinate effectively with other Team Leaders and Cross Functional Teams.
* Adhere and manage to the agreed upon management methods.
* Help develop training and user procedure materials and conduct training as required.

## Business Process Improvement

Specific tasks include, but are not limited to:

* Analyze and document selected current business processes.
* Work with colleagues to identify opportunities for improving processes and efficiencies.
* Document recommendations for achieving business process improvements.
* Assist the project teams with developing effective change management strategies required to support the implementation of specific process improvements.
* Assist the project teams with identifying and understanding the greatest business value available in Ellucian Banner modules and related applications.
* Identify where existing functionality can be used to avoid customizations.
* Recommend business process changes required to take advantage of baseline product functionality.
* Provide expert advice on business process best practice.

## Reporting Strategy

KCCD has adopted Cognos as the standard reporting tool for the District. Reports are created by designated “report writers” and “data block designers” as defined by Argos permissions. If there is a need to have a report created by IT personnel a Service Request needs to be completed and submitted.

# Communications

Clear and consistent communication will be critical to successfully maintaining the Banner® system solutions. All those serving on the various teams should consider it a primary responsibility to share information with colleagues in their areas. Frequent informal updates on progress will be extremely helpful in keeping everyone informed.

The functional areas meet regularly to review the status of the system, etc. This committee will be kept informed and will maintain communication with the Functional Teams.

# System Modifications and Tailoring

There is a subtle but important distinction between configuring and customizing. Configuration does not involve making changes to the underlying software programs. Adding data fields, screen modifications, and report formatting are a few examples of ways to tailor the system without making custom changes to the underlying software.

Customization involves the modification of the underlying software programs being used by the system in order to somehow change it for some intended purpose. All departments are encouraged to work within the existing system parameters to meet their needs. The resource cost of these customizations it extensive as we have seen as upgrades have occurred. We should also work to remove the changes that are currently in place and avoid the ongoing cost as we move to Banner 9.

All customization of the system must be coordinated and approved by the Appropriate IT Director prior to the tailoring being performed. The CIO will have final approval authority.

**Recommendations**

Continue as planned with the following goals:

* Improved information services for students, faculty, and staff through an integrated software system providing sharing of common data.
* Streamline business processes to provide improved efficiency through the reduction of manual and paper based systems and the implementation of automated systems that monitor, track, and trigger processes
* Improved collection of data, information, and transaction processing – reporting capabilities to proceed to the next level of information analysis
* Responsiveness to Board, management, state, federal, research and local reporting requirements
* Security and integrity of data important to confidentiality and providing accurate data necessary for good decision making in the future
* Stay current with the latest releases of software
* Ensure hardware refresh cycles are observed.

#### Operational Considerations

**System Maintenance and Downtime**

Automation has reduced the frequency of user downtime for most system maintenance. Downtime associated with planned maintenance, however, will continue due to the proliferation of key systems in our Data Center such as Banner. There is a need for non-emergency maintenance and upgrades on a regular basis for all production systems and some ERP test systems and this has been addressed with an agreed upon and posted maintenance schedule. This remains a significant challenge due to competing priorities.

### **Maintenance, Repairs, and Total Cost of Ownership**

Maintenance expectations continue to be a concern as systems continue to see sustained growth in the district. This also places increasing demand for daily and after hours support creating strain on budgets and delays in support

One of the primary concerns is many systems are purchased without regard to total cost of ownership. This places an immense burden on the college’s budget and IT Division manpower.

Occasionally IT staff are asked to support privately owned computers, smart phones, etc. This is not authorized for a variety of reasons to include limited resources, liability, etc.

While the IT Division has a small repair budget, in most cases, a replacement would be charged to the appropriate department/division based on their decision to fix versus replace with a new purchase. The standard practice is if the repair cost exceeds 50% of the replacement value it is recommended that new equipment be purchased. Long term warranties will help defray this cost.

A formal testing lab needs to be implemented in the IT Division to properly test prior to release of software\hardware into the production environment. This process will help ensure that new hardware, software, updates, patches, security configurations, etc. work prior to release. This will help minimize changes that can adversely affect our employees and students educational and technology experience.

There is continued progress on providing an integrated PC/Mac centralized network managed tools that provide automatic real-time asset management. There are tools for integrated solutions for management of client devices; including desktops, notebooks, and handheld computers, throughout their lifecycle. This is from initial configuration and deployment through software packaging, delivery, patch management, and backup and recovery; increases protection from human, network, and system-level threats and vulnerabilities.

Resource limitations are inhibiting upgrade and migrations to the current software and hardware needed and is adversely affecting instructional and business efficiency in some cases.

Hardware and network standards are set by the IT Division in consultation primarily through the Educational Technology council. Minimum standards for hardware and software are established and revised as needed.

Standardizing on as few various hardware and software platforms as possible across the district will greatly improve reliability and flexibility for faculty and staff. This will allow employee’s, primarily faculty, to move between locations as efficiently as possible and reduce training needs. This will also allow us to utilize volume discounts, reduce training needs to specific platforms, and enhance the user’s technology experience.

**Recommendations**

* Require that a three-year warranty be purchased with every new computer.
* Implement test labs for formal testing and implementation of new hardware and software.
* Ensure total cost of ownership is addressed for new technology prior to purchase.
* Technology purchases must include funding for total cost of ownership for the life of the system.
* Increase the IT Division repair budget with on-going funding.
* Increase the IT Division training budget with on-going funding.
* Adequate staffing to decrease response times for maintenance.
* Support only district owned systems.
* Continue the use of incorporating new technology for automated desktop support.
* Evaluate leasing options for computer systems.
* Evaluate Virtual Desktop technology

**Staff Technology Training for Future Needs**

An ongoing Training program is needed within the Information & Instructional Technology Division to ensure that staff members stay abreast of current technological trends, new hardware and software developments, and issues pertinent to their job responsibilities.

There are approximately 32 technical support staff within IT who are responsible for supporting and maintaining numerous aspects of district technology at various levels of expertise. They, therefore, require different kinds and levels of on-going training. While it will be ideal for all staff to be able to obtain annual professional training for the systems supported, due to financial limitations it is not believed this is feasible. An implementation plan should address training for various staff members per year on a priority needs schedule. IT staff will remain current in critical areas of their job responsibilities, and provide a better service to the campus community.

Training of this nature serves to increase staff morale and provide for a more productive workforce. The staff will then utilize train-the-trainer formats, OJT, etc. to share knowledge and experiences.

Further, this budget would provide other professional growth opportunities in such areas as customer relations, written and verbal communications, and software analysis. IT staff will also take advantage of no or low-cost vendor workshops in the area as well as attend appropriate courses.

Essential benefits are improved response and support to faculty, staff, and student demands, integration with future technologies, and teaching requirements met in preparation for new technologies and strategies.

**Recommendation**

* Develop a plan to increase the training opportunities for IT staff by using various training techniques to support our systems.
* Provide cross training opportunities for technical staff; train the trainer, etc.
* Allocate funding to be used for technical professional development.

**Assistive Technology**

The ADA requires that access to communications for individuals with disabilities be as effective as that for their non-disabled peers.

Section 508 of the 1973 Rehabilitation Act requires that electronic and print media be made accessible to people with disabilities in all entities receiving federal funding. This was codified in Section 11135 of California’s Education Code to make this requirement explicit.

A committee to review existing plans for providing this level of access. Specifically, the committee should be charged with addressing student access in websites, applications, etc. establishing assistive software and hardware standards, and recommendations for future direction.

The result of this committees work is a goal to encompass all Assistive Computer Technology (ACT) initiatives for KCCD. This initiative contains the recommendations for on-going Educational Technology committee support for providing ACT-based accommodations to students with disabilities, hardware and software standards for Assistive Computer Technologies, computer-to- student ratios, and installation, maintenance, and improvement issues.

**Recommendations**

* Ensure upgrades for hardware and software are coordinated and accomplished at the same time to eliminate compatibility and training issues.
* Implement a process to provide a timely solution to assistive technology requests.
* Implement a process to ensure that online courses are ADA compliant and Section 508 conformant.

**IT Department Staffing**

By any measure, KCCD’s IT Division is understaffed to meet the needs of the district. The lack of appropriate staffing levels in a few key positions has resulted in long delays in implementing and updating hardware and software systems that could directly and immediately improve a student’s experience in the district. This issue also directly effects faculty and staff rendering them less productive due to delays in implementations and updates of these systems. Opportunities for implementing new features, etc. are greatly reduced by delays.

While the successes speak to the creativity, innovation, and motivation of KCCD’s IT Department staff to fashion workable solutions to existing problems, a limited number of employee resources will present critical challenges. This will be exacerbated as demand for technology solutions continues to grow.

The ability to address changing technology and growth in the district will limit what can be done to support the need to address ever increasing technology requests. As solutions to district staffing continue to be delayed ever changing instructional and business requirements will suffer.

KCCD has never stood for mediocrity. If KCCD simply aspires to address most of our current critical requirements we would need to employ additional staff in the IT Division. This is simply to address the growth in equipment that has occurred throughout the district.

In addition to staffing levels, a key challenge includes it has been very difficult to attract, hire and retain qualified IT personnel in a few key positions. The personnel in IT support all mission critical systems for KCCD often being required to work weekends and off hours.

#### Budget

Technology resources should be planned for and purchased after a need is established based on our mission. This plan due to scope and the numerous needs identified will have resource needs and will be challenging from that perspective.

Our focus is to design our goals with the best plan in mind for the district to achieve our mission and learning objectives. Please keep in mind that due to resource limitations please ask: “What is the purpose and why do we need it?” so resources can be justified in support of our mission.

This report is divided into sections that address differing aspects of the technology implementation at KCCD College. Capital budget expenditures are reflected in the following sections.

The projected budgets needs for key resources are presented “cafeteria style.” Some sections of the plan that have capital budget expenditures and are presented with multiple levels of service and based on quality.

It should be noted that the proposed budget items are a point in time cost analysis and does not mean that it would also have the highest cost, as may be seen in the appendices listed below.

With any technology we also need to account for total cost of ownership and what impact this has to our on-going costs. This includes addressing considerations regarding growth, licensing, and most importantly impact based on staffing levels.

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**Appendix H**

**Family Educational Rights and Privacy Act (FERPA)**

The Family Educational Rights and Privacy Act (FERPA) (20 U.S.C. § 1232g; 34 CFR Part 99) is a Federal law that protects the privacy of student education records. The law applies to all schools that receive funds under an applicable program of the U.S. Department of Education.

FERPA gives parents certain rights with respect to their children's education records. These rights transfer to the student when he or she reaches the age of 18 or attends a school beyond the high school level. Students to whom the rights have transferred are "eligible students."

* Parents or eligible students have the right to inspect and review the student's education records maintained by the school. Schools are not required to provide copies of records unless, for reasons such as great distance, it is impossible for parents or eligible students to review the records. Schools may charge a fee for copies.
* Parents or eligible students have the right to request that a school correct records which they believe to be inaccurate or misleading. If the school decides not to amend the record, the parent or eligible student then has the right to a formal hearing. After the hearing, if the school still decides not to amend the record, the parent or eligible student has the right to place a statement with the record setting forth his or her view about the contested information.
* Generally, schools must have written permission from the parent or eligible student in order to release any information from a student's education record. However, FERPA allows schools to disclose those records, without consent, to the following parties or under the following conditions (34 CFR § 99.31):
  + School officials with legitimate educational interest;
  + Other schools to which a student is transferring;
  + Specified officials for audit or evaluation purposes;
  + Appropriate parties in connection with financial aid to a student;
  + Organizations conducting certain studies for or on behalf of the school;
  + Accrediting organizations;
  + To comply with a judicial order or lawfully issued subpoena;
  + Appropriate officials in cases of health and safety emergencies; and
  + State and local authorities, within a juvenile justice system, pursuant to specific State law.

Schools may disclose, without consent, "directory" information such as a student's name, address, telephone number, date and place of birth, honors and awards, and dates of attendance. However, schools must tell parents and eligible students about directory information and allow parents and eligible students a reasonable amount of time to request that the school not disclose directory information about them. Schools must notify parents and eligible students annually of their rights under FERPA. The actual means of notification (special letter, inclusion in a PTA bulletin, student handbook, or newspaper article) is left to the discretion of each school.

**Protecting the Privacy of Student Education Records at KCCD**

The Family Educational Rights and Privacy Act (FERPA) (20 U.S.C. § 1232g; 34 CFR Part 99) is a Federal law that protects the privacy of student education records. The law applies to all schools that receive funds under an applicable program of the U.S. Department of Education.

FERPA gives colleges the right to disclose information from a student’s education record to school officials with legitimate educational interest.

* Members of the teaching faculty of KCCD are school officials with legitimate educational interest in portions of the education records of students enrolled in their classes.
* Counselors and/or academic advisors at KCCD are school officials with legitimate educational interest in the education records of students whom they counsel and advise.
* Academic administrators and support staff at KCCD are school officials who may have legitimate educational interest in portions of the education records of students depending on their scope of responsibilities and work assignments.
* It is the responsibility of every school official at KCCD with access to student records to carefully protect the privacy of those records. In particular, they may not share information from student records with third parties who are not themselves school officials with legitimate education interest in those records.
* KCCD and its school officials must take every precaution to safeguard student records from theft, loss, or unauthorized access or dissemination by any means, including electronic media.
* KCCD has the obligation to ensure that all of its school officials with access to the education records of students are made aware of their obligations to protect the privacy of these records.

#### Appendix I Policies\Procedures\Guidelines - Examples

**Ref Title**

BP 3720 Computer and Network Use

AP 3720 Computer and Network Use

AP 3721 Electronic Information Security and Backup Procedures

AP 3300 Public Records

AP 3310 Records Retention and Destruction

IT Server Standards

TBD Copyrights

TBD Student Record Documentation

TBD Unauthorized Use of Commercial and Copyrighted Software

TBD Use of Laptops, PDAs, and Cellphones

TBD Assistive Technologies

TBD Use of Email

TBD Purchasing Policy

TBD Standard Software Load for Computers

TBD Desktop Configuration management

TDB IT Project Management

TDB Server Standards

TBD IT Security Manual

TBD IT Network Security Standards