SJECCD Strategic Information Technology Plan

October, 2012

Updated June 2014
# Table of Contents

**Executive Summary** .................................................................................................................. 1

**Introduction** ................................................................................................................................. 3

- **Student Scenario** .......................................................................................................................... 4
- **Instructor Scenario** ....................................................................................................................... 5
- **Staff Scenario** ............................................................................................................................... 6
- **Administrator Scenario** ................................................................................................................ 7

**Background** .................................................................................................................................. 10

- **Purpose** ......................................................................................................................................... 10
- **Planning Methodology** .................................................................................................................. 10
  - Strategic and Tactical IT Planning ................................................................................................. 12
  - Strategic Planning Approach ......................................................................................................... 13
    - Information Systems Philosophy ................................................................................................. 14
    - Information Systems Vision ........................................................................................................ 14
    - Information Systems Principles .................................................................................................. 15
    - Best Practices .............................................................................................................................. 17
  - Process Analysis, Improvement, and Reengineering ....................................................................... 17
    - Best Practices .............................................................................................................................. 19

**Information Technology Plan** ....................................................................................................... 20

- **Information Systems Architecture** ............................................................................................ 20
- **Network Infrastructure** ................................................................................................................ 21
  - Network Backbone ....................................................................................................................... 21
  - Network Wiring Closets and Switches .......................................................................................... 22
  - Wireless Network Infrastructure ................................................................................................ 22
  - Communication and Collaboration Systems ................................................................................ 23
  - Network Monitoring ..................................................................................................................... 23
  - Network and Telephone Acquisition Policies .............................................................................. 24
    - Life Cycle Planning .................................................................................................................... 24
- **Hardware Platform Infrastructure** .............................................................................................. 24
  - Server Environment ...................................................................................................................... 25
  - File Storage Systems ...................................................................................................................... 26
  - Personal Computer Environment .................................................................................................. 27
  - Mobile Computing Environment .................................................................................................. 27
  - Assistive Technologies ................................................................................................................. 27
  - Printing and Scanning Systems ..................................................................................................... 28
  - Hardware Acquisition Policies ..................................................................................................... 28
    - Life Cycle Planning .................................................................................................................... 29
- **Data and Document Infrastructure** ............................................................................................ 30
  - Database Management Systems .................................................................................................... 30
  - Data Warehouse ............................................................................................................................ 30
Best Practices ............................................................................................................................................... 65
Support for Distance Education .................................................................................................................... 66
Support for College Web Presence .................................................................................................................. 68
Support for College Portal ................................................................................................................................ 68

IT STRATEGIC INITIATIVES ............................................................................................................................ 70

INSTITUTIONAL AND IT ALIGNMENT ............................................................................................................. 74
MISSION ALIGNMENT .................................................................................................................................... 74
VISION ALIGNMENT ....................................................................................................................................... 74
STRATEGIC INITIATIVES ALIGNMENT ........................................................................................................... 74

SUMMARY AND NEXT STEPS .......................................................................................................................... 76
GLOSSARY .......................................................................................................................................................... 78
REFERENCES ..................................................................................................................................................... 82
ACKNOWLEDGEMENTS ................................................................................................................................... 83
This document reports on the development of a district-wide strategic information technology plan for San José Evergreen Community College District (SJECCD). The plan has been developed in collaboration with faculty, staff, administrators, students, and consultants at the district and college levels. It is the district’s first comprehensive long-term IT plan, informed by the strategic visions of the district and colleges.

Note: This document represents an update to the original District IT strategic plan approved in October, 2012. This update is based on performance on the combined FY 2013/2014 tactical/operational IT plan. Updates will be indented and highlighted in yellow; new or revised strategic initiatives will be similarly marked.

The purpose of the plan is to chart the direction for the development and evolution of information technology infrastructure, services, and support at SJECCD. The plan provides a snapshot of the current state of information technology at SJECCD and an outline of where the district aspires to be. The plan documents the district’s information systems architecture and its supporting IT philosophy, vision, and guiding principles. It does not dictate specific operational solutions, but rather, provides a strategic context within which operational IT decisions can be made. This formally-articulated information systems architecture serves as a set of guidelines (a “blueprint”) for making informed decisions about information systems issues, acquisitions, implementations, and ongoing support and maintenance.

The introduction to the plan provides a series of scenarios, in story form, that illustrate how the information systems architecture will impact work at the district and colleges. The background section addresses the purpose of the plan as well as the planning methodology. The approach of the planning team was to engage the district and college communities in a collaborative effort to articulate a set of shared principles that will guide information systems decision making.
The strategic information technology plan provides a snapshot of the institution’s current technology environment within the framework of an information systems architecture. The plan delineates the institution’s system components across multiple inter-related layers of systems. These architectural layers are buttressed by the institution’s articulated information systems philosophy, vision, and guiding IT principles as well as by IT best practices.

The plan concludes by listing a set of strategic initiatives that will serve to guide detailed derivative tactical/operational plans, all of which are aligned with the institutional mission and vision.

This initial strategic information technology plan should not be viewed as an end to IT planning but rather as a beginning. The experiences gained during the implementation of operational plans provide feedback to further inform and shape the long-term strategic plan. The strategic plan can therefore be adjusted annually and revisited in detail every five years. It is thus intended to be a “living document,” responsive to the needs and aspirations of its constituents.

Note: The strategic IT plan spawned a fourteen-month tactical/operational plan to guide IT acquisitions and decisions for fiscal years 2013 and 2014, as well as a one-year tactical plan for FY 2015.
INTRODUCTION

The development of an information technology strategic plan presents an opportunity to create a vision of where and how the institution wishes its IT systems to evolve. San José Evergreen Community College District’s (SJECCD) envisioned information system will provide the technological infrastructure to support the evolving academic and administrative information requirements for students, faculty, staff and other stakeholders. It will be capable of integrating information from multiple applications and multiple sources into a single coherent presentation. Systems will provide the user with a consistent interface based on a set of guidelines and principles so that learning to use one system will transfer to other systems. Information will be acquired in a timely fashion and made available for access to all with the need and right to use it.

The envisioned information system will provide widespread and secure access from anywhere in the world to district and college information. It will provide functionality for all authorized persons in a manner that is flexible and easy to use. Users will have the capability to manipulate the available information to satisfy their particular needs without requiring a specially trained intermediary. Information creation, access, retention, ownership, and associated responsibilities will be well defined and a mechanism to settle disputes will be established.

The separation between and among the district’s campuses will disappear as the telecommunications and network-based applications will create a virtual institution that appears as a single unit to users. Faculty, students, staff, and administrators will have the ability to quickly and easily access, from on-campus locations or remotely, the information and tools they need to accomplish their goals. SJECCD employees will be involved in making decisions about what systems are implemented, how systems behave, and how they are integrated. Systems will be evaluated on a continuous basis and will be replaced, enhanced, or eliminated based upon the results of the evaluation. The district’s systems will be built using industry standards so moving information or functionality from one set of hardware and software to another can be done with relative ease.

The remainder of this section provides a series of scenarios, in story form, that illustrate how the information systems architecture will impact work at the district and colleges. These concrete illustrations show how the proposed information architecture will function and what it can do for individuals and units within the institution when fully implemented. They are intended to show some of the functional capabilities of the information systems architecture as well as the relationships among various components.
**Student Scenario**

Maria arrived on campus early, as she usually did on Wednesday evenings, having driven directly from work. She has grown to appreciate the extra 90 minutes on campus, usually spending it in the library for some quiet study. Today, however, she takes a seat at one of the many group work stations located around the campus to reserve a place to meet with her classmates and complete their group project. Because she is early, she decides to get some personal work done, and accesses the College’s wireless network with her new mobile tablet device.

She immediately proceeds to the College portal page and checks for announcements and calendar items. She sees that the deadline for registration for next term is approaching and that her history instructor has published a new online feedback quiz (the course management system is seamlessly integrated with the portal). She has already read the assigned material, so she quickly reviews the online notes and takes the quiz. The quiz gives her immediate feedback and she realizes that she needs to work on a few concepts, so she prints the online notes to a nearby networked printer so she can bring them to class.

She still has some time to check her desired class schedule for next term. Through the portal, she accesses the degree audit program, her academic record, and the schedule of classes. Unfortunately, the section she really wanted to take is only offered during the day, and is already closed. She notices another offering of the course as an online section, so she jumps to the course management system and reviews the course syllabus and instructor information. She has never taken an online course before, but has always been curious about them and is intimately familiar with all of the technologies as most of her instructors routinely use them in their face-to-face sections. She decides to take the online course along with another Wednesday night class, and completes the registration process.

The other members of her project group arrive and they all plug into the network and large-screen computer display to incorporate their individual changes to their in-class PowerPoint document and rehearse their roles in the presentation. They just finish up as her tablet rings a soft alarm to remind her to head for class. She doesn’t want to be late today, as the instructor is bringing in a guest lecturer via a Web conferencing tool. The guest is the instructor’s old professor, invited to speak about her special research area. Maria has heard so much about her that she wouldn’t miss this class for anything, even though her instructor will post a video recording of the session on the College’s streaming media server. Maria quickly closes her tablet, plugs her earphones into her smart phone, and replays the instructor’s weekly podcast as she runs off to class.
INSTRUCTOR SCENARIO

Ken wakes up at around 6:30, makes some coffee, grabs a roll and immediately turns on his laptop and checks his iPhone. Last night he had sent brief messages through Moodle to his classes; this morning he sees seven responses, and quickly answers student questions (which they will access through the campus portal). On his way to work, he decides to listen to a draft of his podcast of a brief presentation on plagiarism he’s recorded; it isn’t bad, but he notes two or three places to add examples and tighten the delivery. And perhaps a little humor wouldn’t be a bad thing?

Ken arrives on campus and meets with a student for twenty minutes; she had signed up for a slot and wrote a brief note on the course element she was struggling with, and they’ve had a brief interchange on this. When the student arrives, she brings a revised document she had already prepared, and so the conference is brief and effective. Ken then turns to his office computer, logs in and uploads a quiz to his online composition class; news of this will turn up on the Campus Portal immediately, but he decides to tweet it as well, and 30 students get the news in seconds.

Now it is time for committee work. In the past this meant searching through e-mails for minutes and conversation threads; now, with a dedicated page on the portal, it takes only a few seconds to check in and see the most recent news. Ken is on the Campus Technology Committee, and chimes in on a revision of the technology plan, and on the question of updating smart classrooms to allow for video conferencing. He plans to link one of his English 1A composition units with two other colleges, Stanford and Monterey Peninsula, and so he advocates for upgrading at least one classroom that could then be shared between different faculty.

Off to class! The first class is an English 1C class that Ken has “flipped.” This is a reversed teaching model that delivers instruction at home and moves some of the “homework” to the classroom. The students have not only read the textbook on logical fallacies, but have watched a short lecture by Ken, including a whiteboard moment where Ken revised a statement to correct a fallacy. This allows Ken to re-deliver a radically shortened version of the lecture, and move quickly to groups working through exercises designed to help them master the concepts. He pulls students aside for one on one instruction, moving between groups to answer questions, and notes that as usual, a lot of teaching is going on peer to peer. The sense of collaboration has really helped energize the class.

Ken then enters his “flipped” literature classroom. In this class, students have watched a short video and “pen cast” on the Irish writer William Butler Yeats, in addition to reading several poems. The pen cast is an audio version of his lecture, made with a smart pen. Students who have not listened to the pen cast often come early to school and prepare in the library, so that when class starts, they are ready. In class Ken uses his pen to explain a complex diagram of
Yeats’ vision of history. Ken has one student taking notes for the rest of the class on the lecture and discussion; that student holds the second smart pen, and her notes will typically be better because she is responsible not just to herself but to those who are absent.

Now Ken has a break so he goes off campus to lunch; afterwards, he sits in a park and uses his laptop to access the committee files and the classroom prep material, all of which are stored securely on the cloud; when he logs in, the documents from his e-mail, his laptop, his office computer and even his phone all “resolve” so that he is working with the latest version of a document. This means he can look at the Technology Plan revision and see all the most recent comments from others, and it means he can work on a document he edited first from home and then at the office. He smiles at the memory of all that time wasted checking through versions of documents and merging them, and feeds the last of his cinnamon bun to a squirrel.

**Staff Scenario**

Tyrone, a member of the Admissions and Financial Aid service team for the last two years, has dealt with many parents, applicants, students, high school counselors, faculty, and staff in the performance of his duties. Today is no different. Tyrone begins each day by grabbing a cup of coffee while scanning the district’s intranet site for the latest news. Half a cup of coffee later, Tyrone turns to his workstation to check his messages. He notices that he has two new e-mail messages and two voice mail messages.

His first e-mail message is from Liz from student records. Liz, Tyrone, and Julia have been working on a new student publication for the last several weeks. Liz is notifying Tyrone that the latest draft, graphics included, is available on their shared workspace for his edits. Liz is also reminding him that the draft needs to be presented next week to an ad hoc working group for their review. He clicks on the link in Liz’s e-mail and begins to edit the shared document. This project has been on his mind and he had already posted some notes on his iPad last night. He accesses the synced notes from his workstation, copies his work, pastes it into the shared document, and continues to edit the document. As he had turned on “track changes,” when Liz and Julia receive the automatically-generated workflow notice, they’ll be able to see exactly what he changed.

Returning to his e-mail, the second message is from Mike, Tyrone's old boss from UC Berkley. Mike heard from his higher education contacts that SJECCD had initiated some BPR and TQM projects several months ago and is looking for some indication of how things are going. He is especially interested to find out if SJECCD has reengineered its enrollment management process because Berkley is about to embark in a process reengineering project as well. Tyrone responds, including some statistics showing some early results of the new work processes.
The two voice mail messages are then accessed by Tyrone. The first message is from Ed, a junior at James Lick High School. Ed is trying to plan his course of studies for next year and is not sure if there is a high school foreign language requirement for his desired program at EVC. Ed leaves his name, address, and phone number with the message. Tyrone receives many calls similar to Ed’s. Tyrone clicks on an icon on one of his windows and finds himself in the recruitment application. He uses the phonetic searching capabilities of the system and identifies that Ed has an existing recruitment record. Tyrone displays a log of all the contacts that SJECCD has had with Ed for the last six months. He decides to send Ed some literature with a letter inviting Ed to campus. Tyrone clicks on a word processing icon and constructs the letter easily using some boilerplate text available for correspondence such as this. Once the letter is completed, Ed’s name and address are automatically placed appropriately on the letter and the recruitment system log updated immediately. The letter is printed, packaged, and on the way to the mailroom within minutes. Tyrone now reviews his calendar and decides to try to call Ed late this afternoon. Personal contact is a high priority for Tyrone as well as quick turnaround to any inquiry related to admissions.

The second voice message is from a frantic high school counselor. The mail at this high school was inadvertently missed yesterday, and a teacher’s letter of recommendation is still sitting in the counselor’s out basket. The counselor is concerned that this mistake may jeopardize this student’s candidacy for a desirable student worker position. Tyrone decides to return the call on the spot. Tyrone knows immediately that the high school counselor is still very upset. Tyrone assures the counselor that the student will not be penalized. While on the phone with the counselor, Tyrone finds the contact for the position and posts a comment summarizing the conversation and holding action on the hiring decision until the letter of recommendation is received.

Tyrone realizes that it’s time for a second cup of coffee. He chuckles to himself as he walks to the coffee machine thinking that two years ago it would be time for lunch given the amount of work he accomplished already.

**Administrator Scenario**

Tabitha, an associate dean at SJCC, arrives at her office, docks her laptop, and checks her calendar for the day. She sees that her first meeting is at 10:00 to discuss a personnel issue. Her screen has a number of windows that have been tailored for her personal work style. She sees that she has 25 electronic messages waiting for her. Ten are e-mail messages sent by individuals within and outside of SJECCD, six are documents waiting for her approval and signature that were routed to her by the rules included in the work flow system, four are voice mail messages that arrived via the computerized system, and five are letters that were scanned in by her assistant. Receipt of these communications have been acknowledged by the messaging system.
and prioritized, sorted and integrated into a single display based on a set of rules she provided earlier.

The electronic messaging window shows a header for each message indicating who the sender was, time of delivery, and the reason for the message. These are highlighted and colored-coded according to priority. She notices an e-mail message from the college president, and selects that for an immediate response. The message asks her to provide justification for her request for additional student worker positions. She routes this message to her assistant with a note to get a profile of student workers at the campus. She then decides to process the requests for approvals. She clicks on the first request and is shown a purchase order from a full-time instructor requesting an Android tablet to explore mobile access to his Second Life virtual classroom. The digital signature of the department chair is attached, IT has checked it against the district standards, and, knowing the instructor to be of sound mind and good character, she clicks on the “OK” button, attaching her digital signature to the document. The work flow software records this event, transmits the purchase request to the purchasing department for subsequent processing, and sends a message to the chair and instructor that she has acted on the request (this is a rule specified by her for a purchase request document).

Tabitha continues to process the other approval requests in a similar manner. If she questions or rejects a request, she can attach a note on the request and return it to the originator or direct the work flow software that it be returned by the authorization path over which it came.

Tabitha decides to get ready for the 10:00 a.m. meeting with an employee concerning a personnel issue they will be discussing. She clicks on the 10:00 a.m. meeting line in her calendar and is shown the notes she made when the meeting was scheduled. She decides she must review the personnel data on the employee in question. She points and clicks on the “Human Resources” choice in the application window and is shown a menu of choices for finding data on personnel. She enters the last name of the employee and is shown a window in which all employees with that last name are shown along with department, birth date and address. See inadvertently points and clicks on the wrong employee and a message is displayed that informs her that she does not have the right to view data about that employee and what she must do to request such a privilege. Realizing her mistake, she clicks on the intended employee and is shown basic demographic data about the employee and a set of buttons labeled with other types of data that are available.

Now that she’s ready for her meeting, she decides to take a quick check on the status of some budget items, especially travel expenses. She chooses the “Finances” option from the applications window and is shown a set of choices. She scrolls down to the travel accounts and examines the budgeted, expended, encumbered, and forecast amounts. She makes some notes on her electronic notepad to discuss this with several of her department chairs. She is about to
perform a more detailed look at the travel expenditures by department and faculty member using the data when a knock at her door signifies her 10:00 appointment has arrived.
BACKGROUND

The San José Evergreen Community College District (SJECCD) serves an area of more than 300 square miles, including part of the city of San José and all of the city of Milpitas. SJECCD is composed of Evergreen Valley College (EVC), San José City College (SJCC), the Workforce Institute, and the District Office (DO). The SJECCD mission is:

> With student learning as its primary focus, the San José/Evergreen Community College District provides continuous access to a wide range of comprehensive and flexible post-secondary academic and occupational programs that prepare Silicon Valley residents of all ages for balanced and productive lives and successful careers. To reach these educational goals, the district provides the appropriate support services to meet the needs of an increasingly diverse student population.

The Information Technology infrastructure at SJECCD is supported at the district level by the Information Technology Support Services (ITSS) group and at the college level by the SJCC and EVC Campus Technology Support Services (CTSS) groups.

In July 2012, SJECCD retained CampusWorks, Inc. (CWI) to provide senior information technology (IT) management services for the district. One of CampusWorks’ initial priorities was to facilitate the development of a district-wide strategic information technology plan. This report, developed in collaboration with faculty, staff, administrators, students, and consultants at the district and college levels, represents an initiative to create a long-term IT plan, informed by the strategic visions of the district and colleges.

PURPOSE

The purpose of this plan is to chart the direction for the development and evolution of information technology infrastructure, services, and support at San José Evergreen Community College District. This strategic IT plan provides a snapshot of the current status of information technology at SJECCD and an outline of where the district aspires to be. The plan explains the district’s information systems architecture and its supporting IT philosophy, vision, and guiding principles. While not dictating specific operational solutions, the plan is intended to provide a strategic context within which operational IT decisions can be made. The plan should be reviewed annually to drive one-year tactical/operational IT plans, and revised every three-to-five years for accuracy and relevance and to ensure that it aligns with the district and college mission, vision, and espoused values.

PLANNING METHODOLOGY

The CampusWorks strategic IT planning approach analyzes an institution’s information technology infrastructure in relation to the components typically found in an enterprise...
information systems architecture. These components define a framework for decision making and a structure for ongoing strategic and tactical planning. This formally-articulated information systems architecture will serve as a valuable set of guidelines (a “blueprint”) for making informed decisions about information systems issues, acquisitions, implementations, and ongoing management.

To create the SJECCD strategic IT plan, staff reviewed existing district, college, accreditation, and assessment reports and incorporated them into a draft document. This draft document was reviewed and edited by a core authoring team (see “Acknowledgements”).

Figure 3: Illustration of IT Planning Approach

During the process of creating this plan, the core authoring team presented drafts to key college and district groups for discussion, input, and feedback before revising the draft and vetting it through the institutional governance process (see “Acknowledgements”). As illustrated in the figure below, construction of the plan took an iterative approach, involving successive drafts shared with a wide range of constituents.
Strategic and Tactical IT Planning

Strategic IT planning is intended to provide the “big picture” of information technology at an institution. That is, it provides a high-level set of guidelines for IT decision making and tactical planning. Strategic plans typically look up to five years ahead to lay the foundations to fill anticipated IT needs. The view is high-level, without sufficient detail to deal with every nuance of the future, yet with enough detail to clarify intent.

MIT researcher Michael Hammer, in explaining the role of technology in business process reengineering, called technology the “essential enabler” that allows us to perform work at levels of efficiency and effectiveness that would be otherwise impossible. Technology should not be the driver of change, dictating how we work, nor should it be an afterthought, automating our traditional manual processes. Rather, information technology must be incorporated as an integral collaborative partner in work decisions toward the goal of optimizing their efficiency and effectiveness. Consequently, strategic IT plans should align with institutional strategic plans.

A strategic IT plan should:

- Delineate the status of information technology at the inception of the planning period (where are we now?),
- Delineate the range of possible directions across the domain of information technology (where can we go?),
- Select a path for the planning period (where do we want to go?), and,
- Outline the steps to achieve the planning goals (how will we get there?).
The five-year strategic plan should align closely with the institutional strategic vision, mission, and goals and should drive similarly-aligned annual tactical/operational plans. These one-year tactical/operational plans contain the implementation details required to realize the goals of the strategic plan. They also inform and update the directions outlined in the strategic plan.

In addition to strategic and tactical IT plans, a technology planning best practice generates at least two additional specific plans:

- **Disaster recovery and business continuity plans** are essential for protecting institutional data assets and ensuring that the business of the District can continue in the event of unforeseen circumstances. These plans deal with questions like: What if a fire or earthquake destroys the data center? What if a pandemic strikes?

- **Data and information security plans** that ensure compliance with FERPA, HIPPA, PCI and PII legislation, and other state, federal, and data security requirements. Central IT is responsible for guardianship of the digital data while other areas of the college are responsible for proper handling of paper documents.

### Strategic Planning Approach

Most institutions plan for their information systems in much the same fashion that they plan for their physical architecture, using the facilities “Master Plan” approach. The master plan attempts to foresee five, ten, or twenty years into the future and make short-term decisions based on their expected conformity with the envisioned future. Unfortunately, such an approach is fraught with challenges as the pace of change in information technology far outpaces that of buildings and physical plant. Since 1965 Moore’s “law” has accurately predicted that the processing power of VLSI circuitry doubles every 18 months, resulting in a twofold improvement in computer performance over that period. This high rate of change makes exclusive reliance on the master plan approach risky at best.
An alternative/supplemental approach to IT strategic planning is to articulate a set of principles to guide information systems planning and decision making. Information systems principles remain relevant longer than any particular technology and therefore form a superior basis for long range planning. The principles should conform to the stated information systems philosophy. They should be determined through a process that engages the District and College communities, seeks consensus, and is regularly reviewed and updated for appropriateness and relevance.

**Information Systems Philosophy**

Several issues have emerged that raised questions about what the District and College’s guidelines, rules, policies, and practices related to technology are or ought to be. These are essentially questions of information systems philosophy. An institution’s information systems decisions and services should be driven by an information system vision and based on a well-communicated and commonly accepted information systems philosophy.

**Information Systems Vision**

The vision of San José Evergreen Community College District is to become the premier institution for advancing opportunity, equity, and social justice for everyone through educational excellence. To succeed in this vision, SJECCD must aggressively use information technology as an essential enabler to accomplish its mission. To guide its efforts along this path, the District needs to articulate a shared information systems vision. In the near future, SJECCD should have the following characteristics:
Students have full, easy, and secure electronic access, from anywhere, to information about themselves, their academic and administrative status, and learning resources.

Faculty and staff have full, easy, and secure access, from anywhere, to the operational information resources they need to fulfill their responsibilities.

Faculty and academic support staff have information resources to both project and proactively-intervene to improve students’ likelihood for success.

Administrators and managers have information at their fingertips to support their planning and decision-making. The information systems support user-friendly ad hoc reporting, longitudinal reporting, and data modeling.

All students, faculty and staff have easy, ubiquitous access to network computing resources, anytime, from anywhere.

All information systems present an intuitive, easy-to-learn, and easy-to-use interface to information.

Technology is seamlessly integrated into the classroom, coursework, and curriculum.

All SJECCD learning, information, and support services are available on-line.

All members of the SJECCD community operate at a high level of computer literacy, seamlessly employing information technology in their day-to-day work.

The District and Colleges’ Web presences are quickly and easily adaptable to their changing informational, technological, and cultural needs.

Information users and IT staff work in close partnership in an open on-going collaborative process to facilitate IT-related decision making.

Work processes are documented and fully-supported online.

Support services include self-instructional programs for just-in-time and continuous learning activities.

Support services include rich online collaborative interactions for all interested staff and faculty.

Through an open collaborative process, the District and Colleges should achieve consensus on an information systems philosophy and vision.

**Information Systems Principles**

The IS philosophy is best articulated through a set of well-defined information systems principles. The principles should be determined through a process that engages the District and College communities, seeks consensus, and is regularly reviewed and updated for appropriateness and relevance. Some example information systems principles relevant to SJECCD are:

- **Ubiquitous Access to Information Resources**: Access to computing and information resources should be as ubiquitous as access to telephones and the telephone system. Faculty and staff should have direct and easy access to all of
the information they require to perform their duties. Students should have access to computer equipment, instructional resources, course information, and to their own academic information.

- **Effective Use of Information Technology**: Investing in technology without investing in the people who use the technology is not cost effective. The District and Colleges must educate and train their users to enable them to become technologically literate.

- **Visibility of Data and Documents**: The ability to access, send and receive data and documents without regard to physical location is possible via networking capabilities and a highly integrated information systems environment. The District’s and Colleges’ information systems must provide a means for easily determining and identifying, from any geographical location, what data, documents, services, people, equipment, buildings and other resources are available across the institution using information processing technologies.

- **Data Sources**: Acquiring data in a digital form at the time it is made available and storing it in a standard database that can be accessed by all who are authorized to utilize it will eliminate costly redundancy and time-consuming reconciliation efforts. It will also reduce the creation of paper documents and reduce the physical flow of paper within the organization.

- **Data and Document Integrity**: A data and document administration function is responsible for proposing and implementing policies and procedures related to all aspects of the data and document management activity. Primary among these responsibilities are:
  - Maintaining institution-wide data and document standards,
  - Identifying and defining data and document sources,
  - Analyzing documents and defining Document Type Definitions (DTDs),
  - Standardizing naming conventions,
  - Resolving data and document ownership/stewardship issues,
  - Tracking the content of databases and data repositories,
  - Designing and implementing training and informational programs, and,
  - Evaluating and recommending data and document management hardware and software.

- **Data Ownership and Stewardship**: The ownership of information is an issue for all organizations that strive to manage and eliminate the duplication of information. In nearly all cases, the District owns the information, but the main question is who should have the responsibility for its creation, modification, accuracy, reliability, consistency, security, and timeliness. In many cases, information is duplicated because multiple units in the institution believe they have ownership of information and are responsible for it in attempting to service their customers (students, faculty, administrators, agencies, etc.), when they should typically be considered data stewards. The stewards of data and documents should have a voice in their identification, creation, indexing, storage, retrieval, reporting, and security as long as it is congruent with institution-wide information policy. A data and document administration function should be responsible for ownership and stewardship policy and procedures.
These examples illustrate the kind of principles that can form the basis for informed information systems decisions. They have a longevity and relevance significantly beyond the life of any particular technological solution. The long-range plan for information systems should be based on articulated information systems principles. The effort should begin with a dialogue among the institution’s constituents to articulate an information systems philosophy and a set of guiding principles.

**Best Practices**

CampusWorks’ experience and practice suggests that community college technology service provision and return on investment is maximized when the following best practices are in evidence:

- Mature technology governance and seasoned executive-level leadership.
- Integrated administrative system with a continuous process improvement approach.
- Documented policies and procedures reflecting compliance and system utilization.
- Widely adopted course management system and standards for usage.
- Regular, predictable, funded life cycle replacement strategy.
- Robust, stable, secured network environment.
- Integrated e-mail and calendaring system for all constituents.
- Comprehensive storage, backup, identity and information security.
- Solid technology plans, with budget support, linked to institutional and instructional strategic plans and priorities.

**Process Analysis, Improvement, and Reengineering**

A process is a series of steps designed to produce a product or service. More precisely, a process is a logical and finite set of observable, interrelated (or hierarchical) work activities utilizing input, that, when performed in a pre-defined series, produces output (Laudato and DeSantis, 2008). Processes have internal and external customers, and are independent of an organization’s functional boundaries. Output is generated by a transformation of the input(s). All of the productive work performed in the District and colleges, both academic, student services, and administrative, is the result of work processes.

In a typical hierarchical organization, work processes are organized and managed in a series of functional areas, each responsible for optimizing the performance of their job function, and held accountable for the functional area’s efficiency and effectiveness.
All of the steps in a given work process may be contained within one functional area (e.g., a financial aid analyst) but most work processes are cross-functional, spanning the horizontal white spaces between the boxes on a hierarchical organization chart (e.g., the procurement process). Because each functional area is typically optimized for efficiency, productivity, and effectiveness within its limited area, most problems tend to occur at the point where outputs from one functional area are “handed-off” to become inputs to another functional area.

Process analysis involves an in-depth review of existing work processes in functional offices with an aim toward improving or re-inventing those processes to improve their efficiency, effectiveness, accuracy, and performance, typically using technology as an enabler.

Often, processes that once made sense in relation to manual or legacy information systems are discovered to still be in use at institutions despite new capabilities offered by their administrative ERP systems. This can cause duplication of effort, unnecessary manual procedures, and unreasonable dependencies upon particular staff. The process analysis effort involves identifying and delineating these processes and improving or reengineering those in need of remediation, along with creating appropriate documentation of new standard operating procedures.

Process analysis and review is necessary to understand how things are or should be done. Business Process Reengineering (BPR) seeks to re-invent processes to achieve dramatic improvements. It is not driven by technology, but technology is often essential for a successful implementation. In its absence, software acquisitions often are relegated to the bottom of a long project list as users and technicians don’t understand desired outcomes.
**Best Practices**

A best practice review of processes is essential to stewarding resources, elevating service delivery, and leveraging institutional investments. The greatest benefit from work process review, continuous process improvement, and BPR is achieved when the approach is comprehensive and the methodology becomes integrated into the institutional fabric.

Process analysis and mapping are usually implemented through multiple, facilitated sessions with a group of individuals who understand and participate in the process. The facilitator works with the group to create a shared understanding and description of each step in the process and identifies every possible thing that may go wrong throughout the process. These “disconnects,” are then analyzed for their causes and for their impact on the process. Finally, solutions are developed and implemented that will eliminate the disconnects and improve the process. In the case of business process reengineering efforts, the original process may be completely abandoned and replaced with an entirely new process.
The strategic information technology plan provides a snapshot of the institution’s technology environment at the start of the planning period within the framework of an information systems architecture. The plan delineates the institution’s system components across multiple interrelated layers of systems architecture:

- Network and collaboration systems
- Hardware and operating systems
- Data and knowledge systems
- Software application environment
- Organization, people, and processes

These layers are buttressed by the institution’s articulated information systems philosophy, vision, and guiding IT principles as well as by IT best practices. Within this context, a set of strategic initiatives will serve to guide detailed derivative tactical/operations plans, all of which are aligned with the institutional mission and vision.

**INFORMATION SYSTEMS ARCHITECTURE**

The CampusWorks approach analyzes an institution’s information technology infrastructure in relation to the components typically found in an enterprise information systems architecture. These components define a framework for decision making and a structure for ongoing strategic and tactical planning. The information systems architecture serves as a valuable set of guidelines (a “blueprint”) for making informed decisions about information systems issues, acquisitions, and implementations.

The information systems architecture is layered and interrelated. It delineates the network, hardware, software, data, and people components of the institution’s information systems, within
the context of the institution’s information systems philosophy and guiding IT principles and is informed by industry standards and best practices.

The remainder of this section of the strategic IT plan defines the layered information systems architecture of the District from the bottom up, delineating the information systems installed within each technology niche.

**Network Infrastructure**

This component of the information systems architecture addresses the network and communications hardware and software.

<table>
<thead>
<tr>
<th>Network Infrastructure</th>
<th>Backbone</th>
<th>Closets and Switches</th>
<th>Cabling Infrastructure</th>
<th>Wireless Infrastructure</th>
<th>Communications and Collaboration</th>
</tr>
</thead>
</table>

**Network Backbone**

SJECCD supports three sites: the District Office, the Evergreen Valley College campus, and the San José City College campus. SJCC and the Workforce Institute are located in downtown San José and both the District Office and EVC are located in the eastern foothills of San José, about 11 miles from SJCC.

The District Office and EVC are interconnected with one 10GB single-mode fiber as a primary connection and one 1GB Single-mode fiber as a backup connection. SJCC is connected to the DO with one 10MB Opte-man connection as primary and two T-1 lines as a backup connection.

Internet service is provided by two 1GB single-mode fiber connections to CENIC. One is located at SJCC and the other is located at the District Office, serving both EVC and the District Office.

SJECCD has a fiber backbone to all buildings throughout the campuses. The fiber backbone consists of a mix of multi-mode and single-mode fiber. With this fiber infrastructure the network communications between buildings is able to be maintained at 1GB speed. This is consistent throughout Evergreen Valley College and San José City College with the exception of the San José City College Main Gym, Aux Gym and 100 Building at 100MB.
Update: In order to realize several of the District’s strategic IT initiatives, significant improvements had to be made to the data bandwidth between the campuses and the District office. As of June 2014, a current ad hoc project (N-AH-02) seeks to redesign and implement high-speed (at least 1 GBPS) data lines between the campuses and the new data center.

<table>
<thead>
<tr>
<th>Strategic Initiative</th>
<th>Network-02: Perform a detailed network performance assessment and recommend improvements.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status as of June 2014</td>
<td>Completed.</td>
</tr>
</tbody>
</table>

**Network Wiring Closets and Switches**

Cisco network equipment is used for all switches, routers, and firewalls throughout the District. EVC and SJCC each manage their own student networks, each physically separate from the District-managed administrative network.

At EVC, backup uninterruptible power supplies (UPS) exist for network equipment in individual buildings. These UPS devices provide power for approximately 60 minutes, condition power, and protect equipment during spikes and outages.

Update: Because of planned changes to the District office, the MDF (main distribution frame) has to be relocated to the EVC campus. The MDF is a physical location within a campus where telecommunications wiring is received from the outside and distributed to locations within the campus. This is a major design/build project (N-AH-04) and includes the redesign of the EVC fiber plant.

**Wireless Network Infrastructure**

The student networks at each campus support wireless by Meru 802.11n, installed during the summer of 2008. Coverage is weak and spotty in some areas. The wireless network is open, not requiring authentication to access it.
<table>
<thead>
<tr>
<th>Strategic Initiative</th>
<th>Network-03: Develop and implement a network security plan. *</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status as of June 2014</td>
<td>In progress (95% complete). Final completion is dependent on N-01 (Data center move), schedule for late 2014.</td>
</tr>
</tbody>
</table>

### Communication and Collaboration Systems

The phone system at SJECCD is a mix of legacy equipment (Avaya PBX) in conjunction with a Cisco VoIP (Voice over IP) phone system. The Cisco VoIP phone system utilizes Cisco Call Manager 7.1 and Cisco Unity Connection 7.0.

The VoIP phone system was implemented during 2009, but a few buildings were not included due to wiring infrastructure issues. Those buildings include the EVC Acacia and Roble buildings, the SJCC Main Gym, Aux Gym, 100, 200, and 300 buildings, as well as part of the District Office. Since its original implementation, the VoIP phone system has been expanded to include all of the District Office and parts of Roble, Acacia, and 300.

<table>
<thead>
<tr>
<th>Strategic Initiative</th>
<th>Network-04: Plan and complete the roll-out of VOIP at the district and colleges.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status as of June 2014</td>
<td>In progress (85% complete).</td>
</tr>
</tbody>
</table>

### Network Monitoring

The district uses Cisco Operations Manager to monitor all Cisco equipment on the administrative network and to send notifications via e-mail of any alerts. AdvantNet OpManager 7 is used to monitor servers, including the servers used to support Moodle, Ellucian Colleague, MyWeb, the Web servers (www.sjeccd.edu, www.evc.edu, and www.sjcc.edu), Exchange, the network domain controllers, and the Millennium library server. Notifications are sent via e-mail if any server is not reachable according to the configured rules.

The district supports two Cisco firewalls (ASA 5520 and AS 5540) for use at the district office and EVC campus, and a Cisco ASA 5540 at the SJCC campus.

In an effort to help control illegal file sharing activity on the student network, a TippingPoint IPS T210E appliance has been installed at each campus to block peer-to-peer (P2P) network traffic.
Network and Telephone Acquisition Policies

Network and telecommunications procurement activities at SJECCD are the responsibility of the Purchasing Department. The Purchasing Department will initiate a request for proposal (RFP) when requested (informally) or when the purchase exceeds the current bid limit (formally). As of 01/01/2012, the current bid limit is $81,000.

Purchases are approved through the Ellucian (Datatel) application. Purchases are processed as requisitions and approved through a local approval path (from SJCC or EVC to the district office ITSS) and then routed to Purchasing for final approval to be converted into a purchase order (PO). If purchases exceed the bid limit, the request is first presented to the Board as an agenda item to be approved before initiating the purchase order.

Life Cycle Planning

Network and telephone life cycle planning recognizes the importance of telecommunications-related hardware to work processes, the excessive costs of supporting obsolete equipment, and the need to carefully plan timely upgrades and replacements. Life cycle planning does not simply aspire to replace network switched every N years, but also provides for budgeting, monitoring, and implementing the plans.

Hardware Platform Infrastructure

The hardware platform infrastructure component of the information systems architecture addresses the physical hardware platforms in use for application support, database support, file repositories, web support, desktop support, and mobile computing support.
Server Environment

The central ITSS supports server virtualization using VMware vSphere 4.1 in the District Office data center. Virtualization enables a single physical computer server to offer multiple virtual servers to its users. The VMware environment was implemented in 2009 and has continued to expand, reducing the number of physical computers in the datacenter. The benefits of virtualization are increased power efficiency in the data center, ease of server management and reduced time for provisioning a new server. As of 2011, SJECCD supported 27 virtual servers and 73 physical servers. As applications allow, the virtual environment will be expanded. All servers run with some variation of Windows Server 2003/2008, Red Hat Enterprise Linux 5/6, HP-UX 11.11/11.23, or Sun Solaris 9. All the servers that are not part of the HP-UX/Ellucian or the Sun-Solaris/Millennium environment are Intel based servers and their average age is four years.

Update: In 2012, the virtual hosting environment had critical memory constraints and was beyond its capacity. A special ad hoc project (H-AH-01) replaced the existing virtual servers with a new solution to allow for migration of existing systems and future growth.

SJECCD’s ERP system, Ellucian (Datatel) Colleague, operates on HP 9000 PA RISC Series servers running a mix of HP-UX 11.11 or 11.23. The average age of the HP servers is over six years and it has been at least six years since any hardware upgrades were done to any of the servers.

<table>
<thead>
<tr>
<th>Strategic Initiative</th>
<th>Hardware-01: Upgrade hardware supporting the Ellucian ERP software and database.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status as of June 2014</td>
<td>Completed.</td>
</tr>
</tbody>
</table>

| Updated |

SJECCD’s course management system, Moodle, operates on Dual Xeon processors at 2.33GHz with 8GB Memory and 400GB Hard Drive usable storage (RAID 5 configuration). The servers were purchased in late 2007. The district’s implementation of Moodle runs under the Red Hat Linux operating system (v6.2 64bit) and uses the MySQL database.

Update: After an investigation (initiative S-03: Assess Moodle), operation of the Moodle service was outsourced for remote hosting by Remote-Learner.

A Microsoft Exchange environment is implemented on seven district-owned and -operated servers. Five of the servers control the information stores and two handle the transit and Outlook Web Access functions, one of which is a standby-failover server. All are Intel-based servers running Microsoft Windows 2008 64-bit and Microsoft Exchange v. 8.03.0279.002.
Update: As part of initiative S-04, Office 365 was implemented for student e-mail and may be extended to obviate the need for local exchange servers.

The Library’s Millennium integrated library system is implemented on a Sun V240 server running Solaris 9 and managed by ITSS with the assistance of the vendor, Innovative Interfaces Inc. Data is backed-up onto an external 40 GB DAT tape drive.

<table>
<thead>
<tr>
<th>Strategic Initiative</th>
<th>Hardware-02: Plan and complete an upgrade of the Millennium integrated library system.</th>
<th>Updated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status as of June 2014</td>
<td>Completed.</td>
<td></td>
</tr>
</tbody>
</table>

At EVC, servers were replaced and consolidated from sixteen to ten and run on Windows 2008 to improve access speed, reliability, storage capacity, and backup capability. EVC CTSS staff plan to use virtualization technology when practical to achieve sustainability. EVC’s server room has a backup generator, able to provide power to core systems.

### File Storage Systems

Several systems at the district support servers for system and user file storage:

- **Ellucian Colleague:** The Colleague system stores its production data on a centrally-managed EMC CX3-40 SAN (storage area network) that is replicated to an EMC CX4-120 SAN housed at EVC’s Roble Hall main distribution frame (MDF) for disaster recovery purposes.

- **Exchange:** All permanent employees have a district-based mailbox with the e-mail addresses based upon assigned location, namely, firstname.lastname@sjeccd.edu (District Office); firstname.lastname@evc.edu (Evergreen Valley College); firstname.lastname@sjcc.edu (San José City College). The entire environment has approximately three TB of total disk storage. The public folder function within Exchange has been used fairly extensively to post committee agendas, minutes and pertinent data files for anyone with security to review and/or edit.

- **SharePoint Initiative:** The district office ITSS staff are in the process of testing and configuring the Microsoft SharePoint-based Ellucian Colleague Portal. SharePoint runs on five Intel-based servers running Windows 2008 server 64-bit. Total disk capacity/storage is approximately two TB. The intent is to implement the portal into the production environment with integrated authentication to the SJECCD domain for employees and SJECCD.STU for students. Once accomplished, each employee and each student will have a personalized “My SJECCD Portal.”

- **Student Files:** Limited student file storage is provided to serve a few courses at both colleges to allow for temporary file storage during a single semester. The storage is not persistent, but rather is erased at the end of the semester. The file
storage is provided on a Microsoft server connected to the EVC student/academic network.

- **Moodle**: The Moodle course management system provides a “My Private Files” area for each individual with an SJECCD account. The individual user quota is set to 300 MB. Moodle is implemented on a Linux server running MySQL (V 5.1.61) and provides a 400GB Hard Drive (RAID 5 configuration) for storage.

Neither the district nor the colleges currently provide streaming media services, although all three networks have the bandwidth to support them.

**Personal Computer Environment**

District wide, SJECCD supports over 3,300 computers (desktops, laptops, and iPads) used by faculty, staff, and students. The majority of personal computers are Windows devices. The relatively large percentage of computers still running the Windows XP operating system is due to the physical memory limitations of many of the District’s computers.

**Mobile Computing Environment**

The District’s Moodle course management system is enabled for access via mobile devices. Mobile applications such as My Moodle by Moodle Pty Ltd (free on the iPad and iPhone/iPod Touch platforms), can allow the user to download course resources, upload files, view participants, send Moodle messages, work offline with the ability to synchronize the work, and so on. Mobile Moodle applications are also under development for the Android platform.

At EVC, mobile computing use is rising with the availability of Wi-Fi access. More and more students are making use of smart phones, iPods, iPads, netbooks, etc. to create learning opportunities anywhere and anytime. Out-of-class learning can now take place during multiple spare moments throughout the day, such as while waiting for a doctor appointment or using public transportation.

**Assistive Technologies**

Accommodating students, faculty, and staff with disabilities and special needs is an important service area within IT.

At EVC, the following assistive technology platforms are in use:

- **Optelec Enlarger**: This device allows visually-impaired students to enlarge reading materials. It has an adjustable platform to hold the book, handout or other item to be enlarged and a display above to show the enlarged image.

- **Victor Reader Wave**: This is a portable CD player that will play “talking book” CDs. It has special features that makes it easy to use by blind or visually impaired students.
- **Braille Note**: This device provides a refreshable Braille display that shows a line of Braille text up to 32 characters long. The line of text changes under control of the user so that a long document can be shown in Braille one line at a time. It also has a Braille keypad that allows the user to enter text.

- **Sorenson Video Relay**: This is a video telephone system designed to allow deaf persons to communicate with each other. It includes a service that allows deaf persons to communicate with hearing individuals through a sign language interpreter.

### Printing and Scanning Systems

District wide, SJECCD supports over 500 copiers, printers, and multi-function devices. During the summer of 2012, the district issued a request for proposal (RFP) to identify a single-source vendor to supply the District Office, SJCC, EVC, and Workforce Institute with printers, copiers, multifunction devices, maintenance, and supplies.

<table>
<thead>
<tr>
<th>Strategic Initiative</th>
<th>Hardware-03: Plan and implement an upgrade/consolidation of printing systems.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status as of June 2014</td>
<td>Completed</td>
</tr>
</tbody>
</table>

### Hardware Acquisition Policies

As was the case with network purchases, hardware procurement activities at SJECCD are the responsibility of the Purchasing Department. The Purchasing Department will initiate a request for proposal (RFP) upon request (formally) or when the purchase exceeds the current bid limit (formally). As of 01/01/2012, the current bid limit is $81,000. The district has selected Dell as a single-source provider for all microcomputer purchases.

Purchases are approved through the Ellucian (Datatel) application. Purchases are processed as requisitions and approved through a local approval path (from SJCC or EVC to the district office ITSS) and then routed to Purchasing for final approval to be converted into a purchase order (PO). If purchases exceed the bid limit, the request is first presented to the Board as an agenda item to be approved before initiating the purchase order.

The district does not have any formal process to repurpose older but not yet obsolete hardware (“trickle down” plans) but individual departments may do so at their discretion. There is also no formal policy in favor of purchasing “green” (environmentally friendly) hardware.
**Strategic Initiative** Hardware-04: Manage and implement the District’s technology projects funded by Proposition 39 General Obligation Bonds.

**Status as of June 2014** In progress (75% complete). This initiative requires ongoing review of bond issues and will therefore continue through FY 2017.

**Strategic Initiative** Hardware-05: Develop a formal process for assessing and acquiring hardware and software throughout the District.

**Status as of June 2014** Completed.

**Life Cycle Planning**

Hardware life cycle planning recognizes the importance of computer-related hardware to work processes, the excessive costs of supporting obsolete equipment, and the need to carefully plan timely upgrades and replacements. Life cycle planning is not simply aspiring to replace computers every three to five years, but budgeting, monitoring, and implementing the plans.

SJECCD has taken a first critical step in life cycle planning, that of articulating a policy. By stated policy (but not always enforced in practice) the district has consolidated and centralized technology purchases and controlled the distribution of technology across the district. Although these functions are centralized, the managers and deans continue to be involved in decisions regarding the placement of technology throughout the district.

**Strategic Initiative** Hardware-06: Complete a system inventory and associated life cycle replacement plan and budget.

**Status as of June 2014** Completed.

Further, by centralizing and consolidating the purchase of technology in the district to one or two vendors for each type of product, the Purchasing Department can negotiate larger discounts, reducing the cost per unit and stretching buying power. For example, Dell has offered a 25% to 30% discount for a district plan versus a 10% to 15% discount for the colleges individually. Similar discounts are available from other vendors used by the district. Purchasing technology equipment from a single vendor has the added benefit of reducing the number of different types of products that IT technicians must support, making them more efficient and requiring lower training expenses.

The district aspires to replace personal computer technology on a four or five year cycle and subsequently has begun to purchase warranties that will cover it for the useful life of the product.
Four to five years is also the useful life of most of the software and within the compatibility range for the main programs in use in the district. Not only will this replacement cycle ensure that technology will be supported by the vendor, it will relieve technical staff of routine repairs, thus allowing the district to make better use of technical staff.

**DATA AND DOCUMENT INFRASTRUCTURE**

This component of the information systems architecture addresses the policies, repositories, and tools to store and manage the institution’s data and document resources.

<table>
<thead>
<tr>
<th>Data and Document Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Database Management</td>
</tr>
</tbody>
</table>

**Database Management Systems**

Database management systems (DBMS) are software applications that enable the creation, maintenance, and use of databases, which, in turn, are integrated collections of data objects and values. Databases store all of the electronic data and information resources that the District and colleges use in their work.

SJECCD currently supports the following database management systems:

- Oracle
- Microsoft SQL Server
- Microsoft Access
- Microsoft Excel (spreadsheets used as tables)
- MySQL

**Strategic Initiative**

<table>
<thead>
<tr>
<th>Data-01: Review the use of Oracle versus MS SQL Server as the operational database for Ellucian applications.</th>
<th>Updated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status as of June 2014</td>
<td>Completed.</td>
</tr>
</tbody>
</table>

**Strategic Initiative**

<table>
<thead>
<tr>
<th>Data-01-01 Migrate from Oracle to Microsoft SQL Server for the underlying Colleague database.</th>
<th>New</th>
</tr>
</thead>
</table>
Data Warehouse

Building a data warehouse requires a deep understanding of all of the data as well as a thoughtful design of the warehouse and its intended uses, especially for longitudinal reporting. Management report administrators must be involved in the data mapping, data dictionary definitions, table building, and rules definitions that are the underpinning of query and reporting capabilities. In conjunction with this capability there is a need to identify census dates and to be sure that census data is captured and made available to users who analyze ‘point in time’ trend data.

The district implemented a limited data warehouse that was designed by an IT team from another community college in California. The data warehouse is implemented under an Oracle database running on a Windows server using Oracle Applications Server (AS). The Oracle AS relational database is populated with primarily student data extracted from Colleague that is supplemented by some faculty and human resources data as need to contribute to calculated fields. Tables may be added to the data warehouse by the applications group as needed.

The reporting portal provides a set of programmed procedures to populate specific reports using data from either the data warehouse (EM Mart) or straight from the Ellucian Colleague database. Procedures update nightly and the database manager trouble shoots the system to ensure data accuracy and integrity.

To date, the district has not discussed plans to build a longitudinal database. The office of Research and Institutional Effectiveness is in discussions with the Student Success Committee to operationalize measure of student success. These measures include outcomes such as degree attainment, retention, and time-to-graduation. In addition, measures that track students’ progress through the basic skills pipeline as well as tracking student progress at different points throughout their years of study. This will necessitate a database that can capture student data in cohorts.

<table>
<thead>
<tr>
<th>Strategic Initiative</th>
<th>Data-02: Investigate and implement a data warehouse to support longitudinal and ad hoc reporting.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status as of June 2014</td>
<td>In progress (20% complete). Efforts are focusing on implementing Ellucian ODS (operational data store) and CROA (Colleague Reporting and Operating Analytics), which contain the core of a data element dictionary.</td>
</tr>
</tbody>
</table>

Content/Document Management

Document management systems store and manage the institution’s electronic files and documents, allowing them to be organized, searched, shared, and securely accessed by
authorized users. Enterprise content/document management systems typically support facilities for document storage, tagging and searching with metadata (descriptive data about the documents), secure access, versioning, publishing, and so on.

SJECCD has not yet committed to enterprise content or document management systems but does support several systems for user file storage and management:

- **Exchange**: The public folder function within Exchange has been used fairly extensively to post committee agendas, minutes and pertinent data files for anyone with the proper security credentials to review and/or edit. The use of public folders within Exchange has allowed all employees to have shared access to documents from anywhere. Many district and college committees posted agendas, minutes and pertinent data files. While many of these folders have gone unused for several years, a few are updated on a regular basis.

- **SharePoint Initiative**: The district office staff are in the process of testing and configuring the Microsoft SharePoint-based Ellucian Colleague Portal. The intent is to implement the portal into the production environment with integrated authentication to the SJECCD domain for employees and SJECCD.STU for students. Once accomplished, each employee and each student will have a personalized “My SJECCD Portal”.

- **Moodle**: The Moodle course management system provides a “My Private Files” area for each individual with a Moodle account, typically all faculty and students. Instructors use Moodle to add an online component to their courses. Some academic departments (for example, SJCC English and ESL) use Moodle to support their own departmental use.

- **Student Files**: In addition to Moodle, some limited student file storage is provided to serve a few courses at both colleges to allow for temporary file storage during a single semester (erased at the end of the semester).

- **File Servers**: Each site (DO, EVC, SJCC, and WI) has a file server that is used to save an individual user’s “My Documents” folder, accessible only to that user. This is to protect the user’s data against computer failures and provide better accessibility of their data from elsewhere on campus. These file servers also have site specific departmental and project folders. The departmental folders are used for saving information that needs to be shared among users in the department. The projects folder is for sharing files with many users across multiple departments for a specific purpose, such as a project or committee. The district office file server also has a public folder that is shared among SJECCD so that a file could easily be shared with all of SJECCD without having to attach it to an e-mail.

- **ImageNow**: The ImageNow document imaging (archiving) solution has been implemented in the admissions and records department at EVC (shared with the EVC counseling office) and SJCC, and in the human resources office for student and employee documents.
Data Administration

The data dictionary capability in the Ellucian Colleague systems provides an opportunity for users to participate in table building and data definition. One of the benchmarks of a well-designed database is the ability to maintain the data and data relationships needed to produce reports with total data integrity at any point in time. An important component of data administration is the existence of a centralized data element dictionary that precisely defines the purpose, format, usage, ownership, stewardship, and relationships of every data element. It is critical that such a data element dictionary be made visible to those who need to access and use the data.

Other than the default data definitions provided as part of the Colleague implementation, the district has not formally created a data dictionary. Instead, end-users have maintained informal dictionaries to meet their operational needs. For example, the Research and Institutional Effectiveness (RIE) group maintains a number of dictionaries pertaining to student data that are used primarily for mandated reports. One document entitled, “RIE Data Reports and Definitions” provides a list of fields such as “student ethnicity,” “units attempted,” “day/evening” and describes in detail the meanings associated with each code. This data dictionary is housed on a secure network folder that is available only to RIE staff.

The current systems contain over 100,000 data elements and 7,000 tables, so building a central, visible data element dictionary will be challenging. Pragmatically, end-users who work with the data all of the time have come to know the data very well, but cannot easily orient new employees or new users to the data definitions. Consequently, there is currently no centralized data administration function; data definitions are maintained by data owners and end-users.

Institutional Reporting Systems

The District supports the following reporting tools:

- Oracle Discoverer (Business Intelligent Reports)
Oracle Report Portal (Enrollment Reports and Program Review Reports)
Hyperion Interactive Reporting (Student Trend and HR); Financial Reports tools are being investigated.
ROC Software (Report Spooler)

The reporting systems are deployed on an as-needed basis to end users based on security classes set up when Colleague was first implemented. The data base manager (DBM) has authority to give clearances to users based upon security classes. When new employees are introduced or a new security class is established, the DBM confirms with the applications manager that clearance is authorized. At the college level, the vice president of each functional unit must provide approval before the applications manager will confirm an employee or security class for clearance. At the district level, the final approval must come from the executive team member in charge of the function. The senior manager in each functional area is responsible for maintaining the list of individuals in each security class.

Ellucian consultants provide training and consulting when needed. End-users who have security clearance have been provided training as a part of implementation and on an ongoing basis as needed.

The district is considering full-scale implementations of one or both of the following:

Oracle Hyperion is an analytic reporting tool capable of using multiple databases and to build tables for use in creating reports. SJECCD has been evaluating Hyperion in the RIE office with a 15-user license.

Zogotech is a technology that will enable the district to deploy dashboard type reports to end-users using the Hyperion platform. The intent of investigating the Zogotech data warehouse solution it to create a systematic, integrated solution to institutional reporting that end-users can access in order to make data-informed decisions.

Data Stewardship

An important aspect of the data component of the information systems architecture is the need to clearly define who owns data, who has stewardship of data, and who is authorized to have access to data, as well as what the specific responsibilities of ownership, stewardship and access are. Policies regarding these issues must be carefully reviewed and amended as necessary.

The owners of data and documents typically delegate stewardship of data and documents to units or individuals within the organization. Data stewards then have the responsibility to ensure the implementation of procedures to manage the data in accordance with the information policies of the organization. This does not transfer ultimate responsibility for the data from the owner. The joint responsibility of the owners and stewards of data and documents must guarantee its creation, accuracy, integrity, reliability, security, accessibility, etc.
At SJECCD, the DBM maintains the accuracy of the data by doing checks and installing patches and updates as needed. If an error in the data comes to her attention from either an end-user or from Ellucian, the DBM will update the system and then cross-check.

Metadata are stored in a Local Product Repository (LPR) where patches are stored and applied as software needs updating. The DBM installs patches as modules are updated by Ellucian, for example, when a federal requirements change necessitates a change in data definition or data structure.

The DBM is responsible for system process integrity and efficiency. For example, if a process is run on the Oracle database at the same time as a system update, the system might crash. The DBM has the responsibility to recover the data and refresh/reset the system after the crash. The DBM has the responsibility to troubleshoot the system. This troubleshooting includes contacting Ellucian technical support as needed.

**Data Policies**

The data and document administration function is responsible for proposing and implementing policies and procedures related to all aspects of the data and document management activity. Primary among these responsibilities are identifying and defining data and document sources, creation of an institution-wide data and document model, maintaining enterprise-wide data and document standards, analyzing documents and defining Document Type Definitions (DTD), standardizing data and document naming conventions, defining a data model in conjunction with users, resolving data and document ownership issues, tracking the content of the institution’s databases and information repository, designing and implementing training and informational programs, and evaluating and recommending data and document management software.

The data and document administration function should be separate from the database administration function for security administration purposes. Database administration is responsible for designing and developing databases in conjunction with programmers and analysts, monitoring and improving database performance, enforcing standards and protocols, managing information repositories, implementing database security, implementing database backup and recovery procedures and supporting the operational aspects of database management systems.

At SJECCD, the Technology Leadership Group (TLG) is a task force made up of managers from the dean level and above from both campuses and the district office. These managers have immediate line responsibility for staff in functional areas who are power-users of the Ellucian Colleague system. If issues arise in the area of data and data management, the TLG discusses and makes recommendations for changes in policies or procedures. These recommendations go to the managers in ITSS, where they are implemented.
**Shadow Systems**

Shadow systems are databases and their related applications that are built on and expand upon copies of data that have been extracted from centrally-managed enterprise systems. For example, a student service office might download student bio/demo data from Colleague into a local Access database and add additional data fields that are relevant only to their idiosyncratic function. As a result, student data exists in two places: the original in Colleague and the copy in the local shadow system.

The presence of shadow systems indicates gaps in existing system data stores. The problem with shadow systems is that they may contain data more recent, or more pertinent to the institutional mission than the original. When the college’s records are audited, the auditors look to the systems of record – the systems supported by central IT – rather than the shadow systems. Therefore, users who develop shadow systems can unwittingly cause audit exceptions for the institution. Finally, shadow systems are not subject to the data and system security provided in the Colleague environment.

Shadow systems must be documented and examined to determine how they are to be handled. There are several alternatives in dealing with shadow systems:

- The capability provided by the shadow system may be fully covered in Colleague, and as such, the shadow system can be scheduled for a conversion process and ultimately planned for discontinuance;
- The functionality provided by the shadow system is not fully covered in Colleague, but reengineering processes can resolve the differences, allowing the shadow system owner to operate in the Colleague systems environment with no loss of service, resulting in the discontinuance of the shadow system;
- The functionality provided by the shadow system is not covered at all in Colleague and systems reengineering processes cannot resolve the differences, requiring that the shadow system remain in operation. The system processes should be reviewed to determine how best to handle the shadow system interface/integration requirements with Colleague.

Shadow systems can inadvertently create serious problems for an organization, but they are at times necessary creations. They need to exist only with full disclosure and compliance by all affected parties. Examples of existing shadow systems include:

- At the campus level, categorical programs (such as Extended Opportunity Programs and Services - EOPS) have created shadow databases in order to capture data about small populations identified based on specific and unique criterion. For example, there is a need to track a small program of about 200 students who receive mentoring and tutoring in math and science that includes signing up for a small classroom set up as a learning environment. These students are generally seen as “at risk” because of their scores on the placement test that qualifies them for Basic Skills classes. They are tracked each time they receive...
tutoring using Google Docs. Data from their class rosters are downloaded from Colleague and housed in an Excel spreadsheet that is later merged with the information from Google Docs.

- In the area of curriculum management, RIE has developed two databases that hold information about the curriculum and scheduling. Both databases run on Microsoft Access 2003 and Total Access Memo 2000, which support the text fields in both databases. Neither program is currently supported by ITSS. The Curriculum database produces the catalogue report, course outlines of record, and catalogue queries. The Schedule database produces the course schedule. The Schedule database tables are linked to Colleague. The Curriculum database is independent and not linked to Colleague.

- The Human Resources department has a series of Excel spreadsheets that are used for managing employee data, including position listing, employee appointment, employee separation, and employee evaluations. These databases are kept because the information is sensitive and contains data that has not yet been keyed into the Colleague system.

- The Purchasing and Accounting departments recently purchased a database to track assets and inventory called Real Asset Management. The plan is to eventually automate this database further to feed the data warehouse.

- The Payroll department generates reports straight from Colleague that are converted to Excel format and used for data management.

<table>
<thead>
<tr>
<th>Strategic Initiative</th>
<th>Data-05: Identify shadow systems and investigate options for resolving the underlying data access needs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status as of June 2014</td>
<td>Will commence in FY 2015 in association with business process review efforts associated with S-02</td>
</tr>
</tbody>
</table>

**System and Application Software**

This component of the information systems architecture addresses the array of system, communication, and application software that the institution uses to address its goals.

<table>
<thead>
<tr>
<th>System and Application Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Software</td>
</tr>
</tbody>
</table>

Computer applications are acquired and developed to satisfy the service and business requirements of the institution. Applications acquire, process, store, and report data about events both inside and outside of the institution. Computer applications not only automate operations, but they have the potential to "informate," that is, information produced by these applications can help assess whether the District and Colleges are achieving their missions and help formulate strategies for achieving those missions.
System Software

System software is a specialized software application that acts as intermediary between the physical hardware and the software applications (such as a word processing program or the Ellucian Colleague system) that run on the hardware. At SJECCD, servers run under either the Windows operating system (a mix of Windows 2008 and 2003) or the Unix operating system. The “flavors” of Unix supported include HP-UX 11.11/11.23, Red Hat Linux (v6.2 64bit), and Sun/Solaris 9.

At the microcomputer level, SJECCD supports Windows (mostly version 7 and XP SP3, but some Windows 2000) and the Macintosh OS-X Version 10.5 (“Leopard”) and 10.6 (“Snow Leopard”).

Identity Management System

An identity management system manages the identity information of individuals and groups that are authorized to access institutional systems. Identity management systems are used to authenticate user access to systems, to authorize their access to data resources, to identify and manage their institutional roles and to determine their access privileges.

SJECCD has implemented Microsoft’s Active Directory service to authenticate and authorize users. The ITSS group is considering implementing Ellucian’s ActiveCampus Portal, based on Microsoft SharePoint, to enable faculty, students and staff to use a single sign-on to access their e-mails, network/institutional resources, and conduct web self-service function. Currently, the following systems require separate identities (separate username/password stores, though usernames may be consistent by practice):

- Active Directory
- Ellucian Colleague system
- MyWeb (Web Self Service Application)
- Oracle
- Unix (HP-UX)
- SARS
- Moodle Course Management System
- Millennium Library System
- Hyperion

<table>
<thead>
<tr>
<th>Strategic Initiative</th>
<th>Software-01</th>
<th>Select and implement a federated identity management system.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status as of June 2014</td>
<td>Completed.</td>
<td></td>
</tr>
</tbody>
</table>
Enterprise Planning Resource (ERP) Systems

An institution’s enterprise resource planning (ERP) systems hold repositories of work transactions, provide the basis for data-driven decision-making, and are central to all constituent service delivery. ERP systems manage the data that tells the institution what it knows about itself, and reflects the policies, practices and management of the institution.

An ERP implementation in the best of circumstances is a challenge. A high degree of collaboration between administrative and academic staff and leadership with the appropriate technology resources is essential. The technology staff members provide the technical foundation – servers, databases, software applications, backups, and network. The functional office staff members provide the direction, functional rule setting, and assessment of the success of the implementation.

<table>
<thead>
<tr>
<th>Enterprise Resource Planning (ERP) Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Management System</td>
</tr>
<tr>
<td>Curriculum Management System</td>
</tr>
<tr>
<td>Student Information System</td>
</tr>
<tr>
<td>Financial Information System</td>
</tr>
<tr>
<td>Human Resources Information System</td>
</tr>
<tr>
<td>Facilities Information System</td>
</tr>
<tr>
<td>Library Information System</td>
</tr>
<tr>
<td>Customer Relationship Management System</td>
</tr>
</tbody>
</table>

Core ERP Components

In June 2000, SJECCD implemented the Datatel (now Ellucian) Colleague higher education integrated software system for administrative use in the district and colleges.

Colleague applications are fully integrated. Colleague Core is at the center of this integration, providing a central location for information and processing rules used throughout the system. Data is entered only once, and is then shared with all modules and authorized users.

Colleague Core is comprised of the following modules:

- Activities and Events
- Communications Management
- Demographics
- Electronic File Transfers
- Facilities Profile
- Scheduling
- Staff/Volunteer Information
WebAdvisor Base Software
Workflow Management System

Student Information System

The District relies on Colleague as its integrated student information system and currently runs version R18. The system helps manage student enrollments, academic records, class offerings, student accounts, and financial aid. SJECCD has customized some of the generic Ellucian programs and developed some new reports based on identified district needs.

For the Fall of 2001, the WebAdvisor module was implemented, giving students the ability to register online. Since its initial adoption, the percentage of students using the Web to register has increased steadily to about 77% in the fall 2012.

The District has implemented the following student modules:

- Academic Records
- California MIS Matriculation
- Campus Organization
- Curriculum Management
- Faculty Information
- Financial Aid
- Grade Book
- Recruitment/Admission Management
- Registration
- Retention Alert
Telephone Registration Interface
WebAdvisor-Student Education Plan

The Degree Audit and the Student Education Plan modules could not be fully implemented due to lack of up-to-date program requirements. In the summer of 2012 the program requirements were coded up to the catalog year 2011/12 for SJCC. EVC’s data is already current to 2011/12. By aligning the academic program requirements of both colleges, both degree audit and the student education plan can soon be made available to counseling staff and to students via web self-service (MyWeb).

During the course of vetting the strategic IT plan with the SJECCD community, several faculty members and advisors identified operational problems with the Colleague student information system, suggesting that Colleague-related strategic initiatives be give high priority:

- During the registration process, students at SJCC were erroneously placed into EVC course sections even though they intended to select SJCC sections.
- Advisors complained of poor application performance and registration time-outs, serious enough to prevent students from registering for more than an hour.
- Faculty commented that the Colleague interface was difficult to learn, difficult to use, and generally cumbersome.

<table>
<thead>
<tr>
<th>Strategic Initiative</th>
<th>Software-02: Maximize the Ellucian Colleague administrative system.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status as of June 2014</td>
<td>In progress (5% complete).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Strategic Initiative</th>
<th>Software-02-01 Perform business process reviews of all Colleague-related processes.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Strategic Initiative</th>
<th>Software-02-02 Analyze, revise, and implement degree audit functions within Colleague.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Strategic Initiative</th>
<th>Software-AH-02 Implement an online student educational plan function.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status as of June 2014</td>
<td>In progress (2% complete). This project is dependent on S-02-02 (Degree audit).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Strategic Initiative</th>
<th>Software-AH-01 Implement the CurricUNET curriculum planning system District-wide.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status as of June 2014</td>
<td>In progress (70% complete).</td>
</tr>
</tbody>
</table>
Financial Information System

The District uses the Ellucian Colleague system as its primary financial management system. This includes:

- Accounts Payable
- Accounts Receivable
- Budget Management
- Cash Receipts
- Fixed Assets (not yet implemented)
- General Ledger
- Purchasing

The District uses other ancillary systems that specialize in certain functions. This includes the following:

- Real Asset Management is used to track fixed assets
- QuickBooks is used to manage the financials of the District’s Foundation and Associated Student Body accounts
- Analytic is used to develop the District’s budget and interfaces with Colleague by importing the adopted budget

Human Resources Information System

The District uses the Ellucian Colleague system as its primary human resources system. This includes:

- Human Resources
- Payroll
- California STRS/PERS
- HR Position Budgeting (not yet implemented)
- Human Resources System

Update: A priority ad hoc project (S-AH-03) enabled Web-based data entry for time and attendance. The HR department identified this project to improve functionality and significantly reduce workload.

Customer Relationship Management Systems

Administrators in the District have considered how a Constituent Relationship Management (CRM) system can be used to improve and track communication with students throughout the student life cycle, from prospective student through graduated student. In the absence of a formal CRM solution, SJECCD relies on the help desk and several Web-based services.
The help desk provides first level support to students and staff throughout the SJECCD system. When a user submits a problem, it is logged to a new ticket into the Track-It help requests database. The help desk staff will attempt to resolve the issue, if possible, and escalate the call if appropriate. They also will monitor and track open tickets, and provide basic troubleshooting over the phone until resolved. A problem that cannot be resolved by first level support is escalated to the appropriate person via the call tracking system.

The institution’s “My Web” information center implements content in English, Spanish and Vietnamese. There is a “Moodle Quick Start Guide for Students” at the Moodle website and videos are posted at the website for MyWeb password resets and registration as well as Moodle password resets.

Course Management System

The district used the WebCT course management system and its Blackboard-acquired successors for approximately a decade. In 2009, SJECCD converted to the open-source Moodle solution, running it concurrently with WebCT until discontinuing WebCT in 2010.

Moodle is hosted on a microcomputer with dual Xeon CPUs running the Linux operating system. Moodle has gone through several upgrades from SJECCD’s original version 1.7 implementation to the current version 2.2.3, installed in August 2012. Moodle runs PHP 5.3.3 and the MySQL 5.1.61 relational database. A development version of Moodle is installed inside the firewall for internal testing and development.

Moodle has been partially integrated with Ellucian Colleague through a set of programs that take Colleague data extracts and create course shells within Moodle, load user accounts for all relevant students in Colleague, and enroll students into specific Moodle course sections. For example, three times a day, a batch program runs against Colleague that creates a flat text file of student information in comma separated values (CSV) format on a shared network folder. A separate batch job that runs on the Moodle server accesses that CSV file and uses it as input data to the routines that enroll students into Moodle sections.

Although course shells are programmatically-built for all course sections, administrators estimate that approximately 24% of the institution’s courses during any given term are actually used by the course instructors. Usage ranges from using Moodle to post the course syllabus to complex interactive courses. Although this CMS adoption rate is rather low compared to that of peer institutions, the change from 169 sections adopting Moodle in the spring of 2011 to 422 in the spring of 2012 represents significant growth (150%).

<table>
<thead>
<tr>
<th></th>
<th>Spring 2012 Sections Using Moodle</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sections using Moodle</td>
</tr>
<tr>
<td>EVC</td>
<td>145</td>
</tr>
</tbody>
</table>
The SJECCD implementation of Moodle is supported by the ITSS network manager and lead application analyst and by a faculty member (Nasreen Rahim) at the EVC campus. The implementation includes several add-on applications, such as LimeSurvey, OU Wiki, Elluminate Live!, and Poodll.

<table>
<thead>
<tr>
<th>Strategic Initiative</th>
<th>Software-03: Assess the adoption and use of Moodle and explore alternative course management systems.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status as of June 2014</td>
<td>Completed. Moodle was retained and moved off-site to a hosted environment (hosted by Remote-Learner).</td>
</tr>
</tbody>
</table>

**Curriculum Management System**

While course management systems deliver courses, curriculum management systems help define them. The colleges have developed in-house systems that use an electronic form to propose new and review existing courses. The course approval process uses a series of folders housed in a shared network folder. After courses additions or changes are approved, data are entered into Ellucian by the college curriculum specialists and course information is manually entered into one of two databases.

RIE developed two Access databases to hold information about the curriculum and scheduling. Both databases use Microsoft Access 2003 and Total Access Memo 2000, which support the text fields in both databases. Neither program is currently supported by ITSS. Both databases reside on a shared network folder.

- The Curriculum database generates the Catalog Report and Course Outlines of Record for both colleges. Catalog queries are also exported from the Curriculum database for use with the Schedule Planner tool that is used by students. The Curriculum database is currently maintained by one user, the District Curriculum Coordinator. The Curriculum database is independent and not linked to Colleague.
- The Schedule database processes the class schedules and is used by the college Schedules Technicians. The Schedules database tables are linked to the Section Roster reports that are uploaded by ITSS on a weekly basis. The Schedules Technicians generate print ready schedule reports (PDF format) that are used to produce the class schedules. The Schedules Technicians maintain their respective college databases with some support from the District Curriculum Coordinator.

Update: The District has begun the implementation of CurricUNET, a product of Governet that provides a curriculum management system supporting the processes...
of defining and documenting the institution’s courses, programs, and degrees. This product was originally purchased by EVC to implement student learning objectives and curriculum design, subsets of what the package can perform, such as scheduling and producing a catalog. Implementation of this hosted solution is complex, requiring significant training and configuration.

Library Information System

The Library’s primary information system is the Millennium Integrated Library System (ILS) by Innovative Interfaces Inc. of Emeryville, California. SJECCD’s implementation is a turnkey one, installed on the district’s hardware (a Sun V240 Server running Solaris 9) and supported by Innovative Interfaces. Millennium uses a proprietary flat-file database structure. SJECCD is running Millennium release 2009B 1.4. The following Millennium modules have been implemented:

- Acquisitions
- Cataloging
- Circulation
- Circulation Course Reserves
- Circulation e-mail notices
- Serials

Additional products acquired from Innovation Interfaces Inc. include:

- Advanced Keyword Searching
- Authority Control
- Automatic Authority Processing
- Content Cafe
- File Transfer Software
- INNView LC Authority access
- Inventory Control
- OCLC Interface VIA the network
- Web Reports, Web Access Management (WAM), Web Management Reports
- WebOPAC, Export bibliographies, Refresher
- WebPAC PRO

SJECCD’s version of Millennium is not the most current available version (SJECCD is running 2009b 1.4 versus 2011 1.2), as the system cannot be updated due to memory limitations on the current hardware. The turnkey vendor has recommended a server upgrade.

Update: Millennium has been updated to the most recent version (Sierra).
The library also utilizes OCLC to import records into the Millennium system and both the EVC and SJCC libraries have purchased collections of electronic books from various vendors and "link to" the actual content of the e-books, which resides with the vendors. Both libraries also have subscriptions to many electronic research databases, but they are not integrated into the Millennium library system and must therefore be searched independently.

**ERP Best Practices**

Successful ERP implementations blend the subject matter expertise of the user community with the technical expertise of programmers, analysts, database managers, project managers, and technology directors. Direction is set jointly by a knowledgeable group that understands how the system is used, what its functionality is or could be, how releases are managed, how user acceptance testing is managed, and how the decisions in one area of the system affect the performance in another. For example, the relationship between financial aid, student accounts and the general ledger is a critical one. If the financial rules are not configured properly for disbursement of aid to the student and the subsequent update to the general ledger, a college would face significant compliance issues.

ERP implementations are complicated. Successful implementations often begin with a comprehensive process analysis that identifies fit/gap (what the system does compared with what the institution needs) and a roadmap for systematically amending processes to gain the most benefit from a new implementation. Maturing an ERP implementation is even more complex, as early, less informed decisions may need to be revisited and potentially undone. A best practice ERP implementation ensures:

- Integrated systems supporting the work practices of the District
- Compliance with external requirements
- Maximized service delivery
- Minimized manual processing
- Minimized local staff overhead
- Well architected reporting infrastructure

**Communication and Collaboration Systems**

The district supports e-mail services for faculty and staff through a locally-hosted Microsoft Exchange server. E-mail service is not currently provided to students.

Web conferencing services are provisioned through CCC Confer, offering access for faculty and staff to the Elluminate Web conferencing system in support of instructional and administrative work. The district and colleges also support a video conferencing capability with video conferencing facilities at each site using Tandberg hardware and software and provisioned through the Corporation for Education Network Initiatives in California (CENIC).
**Strategic Initiative**

**Software-04:**
Develop and implement a student email system that incorporates tools for collaboration.

**Status as of June 2014**
Completed.

---

**Instructional Technologies**

An ever widening range of instructional technologies are available to support distributed learning, whether in-class or out-of-class, in real-time or asynchronously. Within each instructional technology niche, there are typically many vendors offering competing and incompatible solutions. Some examples include:

- Instructional technologies can help faculty engage students in classroom discussions, learning activities, and concurrent collaborative activities. For example, student response systems, commonly referred to as “clicker” systems, are a popular technology used to engage students. Clickers are hand-held devices that students can use to respond to faculty questions in the classroom. If they wish, faculty can then display their responses in an easy-to-interpret graph. Vendors in this market niche include eInstruction, SMART Technologies, Turning Technologies, iRespond, and iClicker, among many others.

- Lecture capture technology can be used to make a rich media recording of a classroom presentation that synchronizes audio and video of the instructor, the display screen (usually a PowerPoint presentation), and pen-based annotations. Captured recordings can typically be streamed live and/or archived for subsequent viewing by students. Some lecture capture applications allow subsequent editing to facilitate repurposing the recordings for use in distant learning initiatives. Commercial rich media lecture capture solution vendors include Tegrity, Mediasite, Echo 360, and Panopto Focus, among others.

- Screen capture applications enable faculty to quickly and easily create their own multimedia content without having to be a media expert. Applications such as Adobe Captivate, TechSmith Camtasia, SoftChalk, and Articulate Presenter take a video capture of the computer screen and allow faculty to narrate their actions. Some of these screen capture applications can also be used to create interactive applications with branching and evaluation.

- Computer Classroom Management software allows instructors to control computers in a classroom, share their computer screen with the students, and enable collaboration between groups of students. Some leading computer classroom management systems, also known as computer lab control systems, include offerings from NetOps, SMART Sync, Insight, and Impero.
Personal Productivity Systems

The District has standardized the personal productivity application suite that is used by all administrative and academic staff members, namely Microsoft Office XP, which includes Word (word processing), Excel (spreadsheet), PowerPoint (presentations), Outlook (Exchange e-mail client), and Access (database).

The selection of this application suite minimizes the time required for new staff members to learn each of the products, since all Microsoft products have a similar look and feel and most people experienced with desktop computers are knowledgeable of these products. Microsoft applications are able to span multiple hardware platforms and operating systems, including PCs and Macintosh, providing interoperability between users of dissimilar desktop environments.

Increasingly, institutions are investigating cloud-based services to supplement or replace traditional client-based systems. Popular solutions include Microsoft’s Office 365 offering, with excellent compatibility with their desktop applications, and Google’s Drive and Docs applications.

Each desktop computer is protected from viruses with Sophos software, which is updated regularly as new virus signatures are created and pushed to the desktop.

Assistive Technologies

At EVC, the Disabilities Support Program (DSP) office utilizes the following assistive software to assist students in their academic endeavors:

- **Dragon Naturally Speaking**: This program recognizes speech and transcribes it to text, allowing the individual to speak computer commands or dictate documents instead of using the mouse and keyboard. Usually the individual has to use the keyboard occasionally but can get by without any use of the mouse. It is used most by persons who have some sort of hand injury or who have disabilities affecting motor control such as muscular dystrophy. The person using this program must spend some time and effort to train the program. Once the program is trained, it can have very good accuracy in recognizing the individual’s speech.

- **JAWS**: This is a computer screen reading program used primarily by blind or visually impaired individuals to generate audio from information on the computer display. A proficient user can do most computer functions without seeing the display. For example, a blind student can use it with Microsoft Word to create
a paper for a class. It substitutes keyboard commands for all mouse functions. A person using it must receive some training on it to become familiar with how it works and should be able to touch type.

- **Kurzweil 3000**: This program will recognize text from computer files or from documents scanned by a scanner attached to the computer and will synthesize audio to speak the text to the person using the program. This program is used by many DSP students who have learning disabilities. Such students benefit from hearing material such as textbooks or class handouts as well as reading the printed material. DSP students with proper accommodation authorization may receive a CD-ROM that contains computer files of their textbooks. This allows the student to have this program read the textbooks to them.

- **Read & Write Gold**: This program works with Microsoft Word to generate audio from whatever text is typed. It has several other features that help in the preparation of Word documents and is used by DSP students with learning disabilities who have trouble composing Word documents.

- **ZoomText**: This is a screen magnification program that can be used by visually impaired persons to enlarge the image on a computer display. The degree of enlargement is adjustable to fit the particular user. All enlargements are done in software so that no special hardware is required.

### Document Imaging

SJECCD utilizes ImageNow as a document imaging solution that works in conjunction with the Ellucian Colleague system. ImageNow has been implemented in human resources and both the admissions and records offices at each campus. The colleges are working to expand the use of ImageNow to be able to share the admissions and records data and to utilize imaging capabilities in other departments throughout the District, as funding allows, particularly the fiscal services office.

### Auxiliary Systems

Ellucian Colleague is the largest and most complex administrative system at the District. Additional systems exist, such as those listed here, to support other administrative requirements. The level of systems integration of these systems should be high, but some challenges exist in the delivery of timely systems integration.

- Active Campus Portal (licensed, but not yet implemented)
- Analytic (Budget Management)
- BeneTrac (EE Benefit Tracking System)
- CCCApply (Electronic Admission Application System)
- CCCTran
- COMPASS (Placement Tests)
- COTOP
- Credential Online Parking Permit Purchase
- DOE Software for F/A (FAFSA and Disbursement Process)
- Donor Perfect (Foundation Office)
- e TranscriptCA (Electronic Transcript System)
- HigherOne (Financial Aid Disbursement)
- Maintenance Work Order (Tracking the district Maintenance Work Orders)
- MBT (Medical Billing)
- MediCat
- Multiplan (Student Credit Card Activity)
- People Admin (Employee Online Application Management)
- Prompt (Fund Management for Bonds)
- Re-Group (Student Emergency Notification System)
- SARS Call (Automated Phone Contact Application)
- SARS Grid (Appointment Management)
- SARS Trak (Student Self-Serve Check-in/Check-out System)
- SSS-TRIO (FasTrack for tracking the performance of TRIO students at EVC)
- Student Parking Permit system
- TA2COURIN (MBS Books)
- Tier Technologies (Telephone Registration System)

**Bookstore System**

The Bookstore uses the Missouri Book Systems (MBS) to manage the financials for the District’s bookstores.

**Software Acquisition Policies**

As was the case with hardware and network purchases, software procurement activities at SJECCD are the responsibility of the Purchasing Department. The Purchasing Department will initiate a formal request for proposal (RFP) upon request or when the purchase exceeds the current bid limit (formally). As of 01/01/2012, the current bid limit is $81,000.

Purchases are approved through the Ellucian (Datatel) application. Purchases are processed as requisitions and approved through a local approval path (from SJCC or EVC to the district office ITSS) and then routed to Purchasing for final approval to be converted into a purchase order (PO). If purchases exceed the bid limit, the request is first presented to the Board as an agenda item to be approved before initiating the purchase order.

The district does not currently have resources available to review licenses from a legal perspective. Software licenses are tracked by ITSS, assuming the end-user uses the proper
procurement process. There is no formal process for ensuring software licenses go through the proper channels.

Software purchases are approved through Colleague. The purchase is processed as a requisition and approved through a local approval path (from SJCC and EVC to the district office ITSS) and then routed to Purchasing for final approval to be converted into a PO. If purchases exceed the bid limit, it is first presented to Board as agenda item to be approved before initiating a requisition.

**Life Cycle Planning**

Software life cycle planning recognizes the importance of computer-related software to work processes, the excessive costs of supporting obsolete software, and the need to carefully plan timely upgrades and replacements. Life cycle planning is not simply aspiring to purchase every available software upgrade, but budgeting, monitoring, and implementing the plans.

**Organizational Structure**

This section addresses the supporting organizational structure and services related to information technology, including governance, policies, security, IT support, and application development. The section also addresses the special support requirements for teaching and learning spaces, distance education, the District’s and Colleges’ Web presence and the portal.

<table>
<thead>
<tr>
<th><strong>Strategic Initiative</strong></th>
<th><strong>Organizational-01:</strong> Review the IT organizational structure and recommend improvements.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Status as of June 2014</strong></td>
<td>Completed.</td>
</tr>
</tbody>
</table>

**IT Governance**

Governance provides structure and philosophic foundations upon which decision-making is based. Technology leadership is responsible for collaboratively establishing and articulating the institutional vision and for maintaining forward momentum within the framework that governance provides. At the district level, SJECCD has appointed a Chief Information Systems Officer (CIO) to fill this role as a member of the Chancellor’s Executive Team.
At SJCC, a Dean of Technology and Learning Resources and an instructional technologist provided instructional technology leadership, training and support to instructors. In 2004 these positions were eliminated and SJCC has lacked supervision and direction regarding technology and online learning. These lost roles provided planning, maintained and oversaw quality standards, and provided solid leadership and direction in current and future technology. There is also a strong need for leadership that understands differences and distinctions between online and classroom learning in order to provide the same high quality standards and expectations in our online courses as our traditional classroom courses.

At EVC, the CTSS Supervisor works collaboratively with the Campus Technology Committee (CTC) and the District Technology Committee (DTC) to provide technology leadership for Evergreen Valley College.
**Best Practices**

The goals of effective, best practice technology governance include “providing strategic direction, ensuring that plans and objectives are achieved, assessing that risks are proactively managed, and assuring the enterprise’s resources are used responsibly” (Selig). Best practice technology governance provides oversight and direction to ensure that technology management is aligned with the strategic direction of the institution. Technology governance also ensures that:

- Information technology policy and procedure is fairly and openly debated and ratified by the District.
- All constituencies within the District have appropriate input into technology strategy.
- Areas of deficiency are identified and made known in an open and collaborative forum.
- Risks associated with technology implementations are identified and the institutional leadership provides guidance to the level of risk the District is willing to accept.
- The Information technology departments receive appropriate guidance and direction on priorities.
- There is an effective process for decision making on product acquisition. Product acquisition includes the critical issue of buy-versus-build, ensuring that custom development is limited to those narrow business requirements that are truly unique to the District.

- There is an effective process for management of the technology portfolio. This includes the issue of in-source versus out-source of application development and support. The inevitable turnover of the development staff through retirement and resignation coupled with inadequate system documentation can put an institution at risk with an applications portfolio supported by external resources.
- Instructional technology and classroom configuration issues are addressed in a manner that conforms to the academic schedule and requirements.
- Accountability for service delivery is established.

Technology governance includes a structure for effective decision-making and the associated policies and practices that emerge from the governance process. Communicating the results of the governance process is an important outcome of the process.

<table>
<thead>
<tr>
<th>Strategic Initiative</th>
<th>Organizational-9: Develop and implement a long-term District Technology Plan aligned with the District’s strategic objectives and needs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status as of June 2014</td>
<td>In progress (75% complete). The District strategic IT plan was approved in October, 2012, but, by design, is intended to be updated annually on the basis of performance on the annual tactical plans.</td>
</tr>
</tbody>
</table>

**IT Support**

An institution’s IT support model addresses the relationship between its information technology systems and its community of users. The technology support model determines the quality of support users receive and impacts how successfully they can learn about and interact with their systems. In short, the effective and efficient use of all information technology resources is dependent upon the structure of the technology support model used by the institution.

The centralized district IT staff (ITSS) supports the following:

- Ellucian Colleague services, including system administration, management, support, report generation, on-line inquiries, and input to specific files
- Custom reports and applications
- Database maintenance and design
- Mass e-mails to specified groups
- General support for Moodle, MyWeb, and Webmail
- Web site hosting for both Internet and intranet
- Network LAN and WLAN maintenance and support
- Telecommunications – Phone systems, voice-mail, and cell phones
- Computer systems analysis and design
- General problem solving, systems programming and documentation
- District-wide general technical consulting

At EVC, staff at the Technology Resource Center (TRC) train faculty and staff in technology and software usage. Training activities are provided during Flex and other days throughout the academic year. Moodle, an open source Course Management system is gradually being accepted by more and more faculty since its implementation in 2009. The Adjunct Faculty Center
provides adjunct faculty a location to work on computers to develop course materials, check their e-mail, and access web based resources.

At EVC, the CTSS group helps its local constituents acquire and install technology products. CTSS also provides support and maintenance for equipment in the classroom, the labs, the staff offices, and on-campus events, including:

- Desktop and laptop computers, both Windows and Macintosh
- Printers (networked and standalone)
- Local Area Network (LAN) and Wireless Local Area network (WLAN)
- Audio and video system (AV)
- Data/video projectors
- Videoconferencing

Each campus computer lab has an assistant to provide daily basic support for students.

Information technology assets are registered and tracked in an inventory system (iTrak).

At SJCC, the local CTSS advertises its help services via local telephone (extension 3770) and e-mail (SJCCTech@sjcc.edu). Online forms are available for:

- Software requests
- Equipment requests
- E-mail-blast requests
- Record/duplicate requests
- Repair/work requests
- Video Conference requests
- Webmaster assistance

Help Desk

At SJECCD, technology support is done in partnership between the district and the campuses technical staffs. All student, faculty, and staff help requests are directed to the centralized help desk either at (408) 270-6411 or via e-mail at helpdesk@sjeccd.org. If unable to resolve the problem immediately, the help desk analyst will forward the help request to the appropriate individual within the central ITSS group or one of the campus-based CTSS groups.

The central help desk services support day-to-day activities in the administrative offices at the district and both campuses to assist in meeting federal, state and local mandated reporting requirements. The help desk is located in the district office complex and provides online, interactive services and telephone support Monday through Friday from 7 a.m. to 5:30 p.m.
Best Practices

The growth and proliferation of technology in institutions of higher education has placed unprecedented demands on IT organizations. Much of the technology in common use is available at commodity prices, including desktop computers, laptops, data/video projectors, printers, wireless technology, etc. Institutions see technology as a pathway to becoming and remaining competitive. Faculty require a variety of technology resources to enhance teaching and assist in achieving learning outcomes. Students use technology to enhance the learning experience and to assimilate marketable skills for the workplace. Institutions use technology as a marketing tool and resource to business partners and community groups. Administrators use technology to enable distance education initiatives and workforce development efforts and to build and maintain lifelong relationships with alumni.

All of these drivers, and more, define the need for robust and well-supported technology. The challenge for institutions of higher education is to construct a robust, effective and affordable support model for technology. Without an effective support model, the investment in technology cannot be fully leveraged. An ineffective support model may result in faculty abandoning technology altogether and may drive an institution into a diminished competitive position in the higher education marketplace.

The CampusWorks Community College Best Practice Technology Support Model relies on an interrelated and integrated set of components (technologies and services) accessed seamlessly through a single “front door,” that is, the help desk. The help desk should include institutional professionals, virtual resources, and outsourced business partners. The successful technology support model includes:

- **Standards**: The key to cost-effective technology is standardization. Support staffs are more effective when they can develop a deep understanding of a limited set of
support requirements rather than a shallow understanding of a broad set. Commodity purchases of desktop equipment from industry leading vendors provide the lowest total cost of ownership. Standardizing on hardware configurations enables standard software configurations, including a single release of desktop operating systems, office productivity suites, and other standard software products.

- **Robust Network**: Any technology-related work that is done on behalf of the institution will eventually be communicated, deployed, or used on the college network. An effective support model must begin with a well-functioning network. If the network is unstable or slow, an effective support model is not possible.

- **Solid Technology Infrastructure**: Infrastructure includes the servers, network operating systems, printers, wireless networks, e-mail systems, anti-virus, anti-spam, firewalls, etc. That is, infrastructure is a collective term for all of the pieces of technology that are provided to and used by the community. The role of infrastructure in the context of the support model is to provide stability, reliability, availability, performance, and ease of use. From the perspective of the client, the infrastructure is good if one is unaware that there is anything wrong; it is bad if something that should work does not. The goal of a high quality IT organization is to provide good infrastructure.

- **Robust Classroom Infrastructure**: The historical model of supporting classroom technology involves delivery of equipment on a demand basis. This model derives from the historically high unit cost of equipment and the historically low training and adoption levels of technology in teaching and learning. Both of these business drivers are now out of date. There is no budget model that can justify paying staff to deliver low-unit-cost equipment. CampusWorks strongly recommends establishing classroom design standards and installing equipment in all classrooms. Technology must be present and functioning when the faculty member enters the classroom. Reliability is greatly enhanced by permanent installation of technology in classrooms.

- **Universal e-Mail**: CampusWorks strongly recommends providing reliable electronic communications to all members of the college community, including students, faculty, and staff, and encourages institutions to standardize on a single e-mail product and collaboration suite.

- **Identity Management**: Identity management is a technology and infrastructure framework for managing information about people, namely, students, faculty, staff, and various supporting entities such as vendors, partners, and consultants. The goal of identity management is the implementation of a single and authoritative source of information about people and their relationship to the technologies that they use. Industry data show us that roughly 70% of the cost of the support model is in the management of user IDs and passwords. Identity Management implements a single user ID/password file for authentication and provides a single authentication point so if a password is changed, the new password is immediately available for all of the applications that the student uses.
- **Centralized Desktop Support**: CampusWorks strongly recommends implementation of standard software using a centrally-managed software image product. An outcome of this activity is that staff need to make “house calls” only on very rare occasions.

- **Life Cycle Approach**: Industry data demonstrate that the cost of using technology increases with the age of the equipment. The highest cost for old equipment is in the support model. CampusWorks recommends that institutions adopt a life cycle management strategy for all technology equipment, with desktop computers and classroom technology as the highest priorities. The life cycle management assigns a specific life span to a piece of technology based on industry-standard data of the cost per year of ownership. The life cycle approach begins with a complete centralized inventory management system. The system should also embrace software, including strategies for managing licenses and keeping software products up to date.

- **24 x 7 Support**: Technology support needs to be present during the academic service delivery hours of the institution. Faculty using technology in classrooms need a support model that includes professional on-site presence, typically requiring the help desk to be staffed about 72 hours per week. However, in an age of 24x7 Internet access and asynchronous teaching and learning, institutions need a 24x7 support model (168 hours per week). This is especially true for distance learning programs and courses, but increasingly true for hybrid and traditional face-to-face course offerings. The following figure shows time-of-day access by students to the course management system for a traditional face-to-face course. Access is literally “around the clock.”

![Figure 12: Time-of-Day Usage Stats for a Face-to-Face Course in 2006](image)

Because few institutions can afford to provide 168 hours of on-site support, CampusWorks strongly recommends that institutions supplement their on-site support
with an outsourced 24x7 help desk by partnering with service providers in this marketplace, such as Presidium Learning, who focus on higher education.

- **Knowledgebase**: The knowledgebase is an electronic repository of best practice solutions to common problems. A knowledgebase is an invaluable tool as a component of an effective support model, enabling the help desk staff to provide the same high quality answer each time the question is asked and independent of the particular staff member who fields the call. The knowledgebase can serve as a rich repository of useful information that is unique to the institution.

- **Help desk management system**: A help desk management system provides management and tracking tools for IT support staff and self-service tools for end users (students, faculty, and staff). Along with a knowledgebase, the help desk management system provides support staff with clear, common information.

- **Staffing**: The heart of an effective support model is a well-trained staff that has the tools necessary to do their jobs. IT departments in higher education often have a poor reputation in the institution, with complaints revolving around lack of responsiveness, timeliness, and effectiveness. An effective support model begins with creating a technology environment that can be supported. The other components of the CampusWorks-recommended support model are all necessary to achieve the starting point of an effective support model, defining a scope of responsibility that a trained and motivated professional staff can support effectively. All members of the IT staff should have a documented training plan derived from the requirements of the job description and the skill level of the staff member and monitored by supervisors as a part of the performance review process.

<table>
<thead>
<tr>
<th>Strategic Initiative</th>
<th>Data-01-02</th>
<th>Articulate hardware and software standards for desktop and mobile platforms.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status as of June 2014</td>
<td>In progress (20% complete).</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Strategic Initiative</th>
<th>Data-01-03</th>
<th>Implement 24 X 7 help desk support for faculty and students.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Strategic Initiative</th>
<th>Data-01-04</th>
<th>Implement a help desk knowledgebase available to all SJECCD users.</th>
</tr>
</thead>
</table>
Application Development

Within ITSS the district retains a professional staff of programmer/analysts to support and enhance the institution’s software applications. Historically, for over two decades in the IBM mainframe era, all applications were developed in-house and tailored to district-specific needs. At that time, ITSS had a very large staff for software development, testing, and support. In June 2000 SJECCD migrated from its legacy mainframe systems and implemented the Datatel (Ellucian) Colleague ERP system. Consequently, the ITSS department size was reduced and its mission changed from program development to user support and Colleague system administration.

As institutional requirements have demanded, the remaining ITSS applications development group has had to re-invent itself to support the customization and extension of applications in support of Ellucian Colleague. Through staff turnover and in-house training, the ITSS group has been developing expertise with Envision programming and Oracle PL/SQL development tools to support Colleague. Additional skillsets are needed for Java, Microsoft SQL Server, Microsoft .NET and C#, Web development, and mobile development (Android and iOS). The group also aspires to return to a strong applications development infrastructure by developing programming standards, a program library, a quality assurance team, and software test environments.

<table>
<thead>
<tr>
<th>Strategic Initiative</th>
<th>Organizational-11: Institute a project management methodology and function.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status as of June 2014</td>
<td>In progress (10% complete).</td>
</tr>
</tbody>
</table>

Currently the ITSS programming group has expertise in the following application development tools:

- Colleague Studio
- Discoverer Plus and Administrator
- Envision Toolkit
- Hyperion Interactive Reporting tool
- Komodo
- PERL and PHP
- Report Builder
- SQL Developer
- SQL Plus
- SQL Worksheets
- TOAD
- Visual Studio
Business Continuity and Disaster Recovery

The focus of the current SJECCD business continuity plan is campus closure, but not closure of the data center. The plan assumes that all data center resources will be available. This is appropriate for things like a pandemic but not for a flood or other situation where there is no power and no network availability.

Data from Ellucian Colleague is backed up to tape. The EMC CX3-40 SAN that stores the production Ellucian data is replicated to an EMC CX4-120 SAN housed at EVC’s Roble Hall main distribution frame (MDF). All other servers at the district office are backed up to disk, then to tape, and stored both on-site and off-site at EVC’s Campus Police vault.

The District leadership must engage in a process that prioritizes the applications that must be available if the data center becomes offline. This prioritization, which typically yields communication (web site, e-mail, and phone) and academic environment as the top priorities with administrative systems later, assists both in the implementation as well as the budgeting for this service. The District should fully assess opportunities to externally host applications in order to reduce its disaster recovery vulnerabilities.

<table>
<thead>
<tr>
<th>Strategic Initiative</th>
<th>Organizational-12: Develop, implement, and test business continuity and disaster recovery plans.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status as of June 2014</td>
<td>In progress (40% complete).</td>
</tr>
</tbody>
</table>

Network and Access Policies

The District Board of Trustees established computer and network use policies in administrative procedure AP 3720 Computer and Network Use. The policy covers acceptable and non-acceptable use of the district and college’s information resources, e-mail usage, software licensing, data and network security, privacy, vandalism, and access to data.

The CampusWorks 2011 assessment found that the network was well configured and supported the current requirements of the District. However, that assessment also found that the network had security vulnerabilities that require attention. These include, but are not limited to:

- Vulnerability to intrusion through wireless or unsecured port access.
- Limited intrusion detection
- Limited intrusion protection

The District should build a remediation plan for these security vulnerabilities and identify any additional ones along with a risk assessment so that resources are properly applied to ensuring a secure network environment.
Security

The District must perform a detailed security assessment addressing network access, log-in and password systems, data protection, physical vulnerability, and other security considerations at the institution. The assessment should include a detailed inspection of the institution’s data centers, servers, network switch closets, staff work spaces, computer labs, classrooms, and public kiosks, as well as general vulnerability testing and programmatic-probing of the servers and network equipment for known security weaknesses using industry standard analysis tools. The security assessment must include an evaluation of training efforts directed at members of the community regarding security awareness. Often, organizations diligently work to secure their electronic doors only to have them left open by employees who are not fully aware of how intruders might exploit their security behaviors (or lack thereof).

---

<table>
<thead>
<tr>
<th>Strategic Initiative</th>
<th>Organizational-13: Develop, implement, and test data and information security plans.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status as of June 2014</td>
<td>In progress (20% complete).</td>
</tr>
</tbody>
</table>

---

Firewalls

The district supports three Cisco firewalls at the district office, EVC campus, and SJCC campus. Firewalls are administered by the network manager and by system administrators at ITSS and at the SJCC CTSS. Any of these three individuals can configure the firewalls or make exceptions to the firewall rules. Virtual Private Networks (VPNs) have been implemented to grant remote access to resources behind SJECCD firewalls for individuals authorized in the “VPNUse” Active Directory group. No one actively monitors or audits this access.

Network Management Tools

The Cisco Operations Manager application is used to manage and monitor the SJECCD network. Security alerts are sent via e-mail to the network manager and to two senior network administrators within ITSS, as well as to the DBA and CIO. The network manager and senior network administrators have full access to the network logs.

Support for Work Processes

The overall missions of the District and the Colleges require activities involving teaching, providing community service, and disseminating knowledge. An administrative infrastructure exists within the District for the sole purpose of providing the support necessary to accomplish this mission. These administrative support areas perform a variety of work activities such as payroll, purchasing, etc. that require support from IT.
The major work activities of the district and colleges include:

- Financial Support Processes
- Instructional Support Processes
- Student Support Processes
- Human Resources Processes
- Technology Support Processes

**Best Practices**

A best practice approach to addressing the challenges evidenced within the District’s ERP implementations is to complete a comprehensive process analysis to identify areas where either the system rules or the business process should be changed in order to meet institutional goals. A comprehensive post-implementation ERP review is often coupled with this effort, using experts in the ERP system to identify and correct configurations that can improve the service delivery to all of the ERP system’s constituents. This type of review must, by definition, review policies and procedures in order to identify what may be driving the current system configuration or answer the question “why do we do it this way?”

Where a gap exists between functionality and practice the District has several choices:

1. Examine its work processes to determine if process and software can be aligned.
2. Work with the ERP vendors, e.g., Ellucian, to add the necessary functionality to the baseline product.
3. Develop a local solution, following the vendor recommendations for adding such customization.
4. Determine if a report would provide the needed data.

Ideally, the ERP systems are fully implemented and well integrated with other systems, such as the student system with the course management system. Major barriers to improving productivity might include fragmented data systems as well as the silos created by tradition, interest groups, and funding programs. When those responsible for a given function are isolated from others within the same organization, they tend to develop practices and procedures that are optimal only from their own perspective. In addition, decisions made in one portion of an organization may create tension with decisions made in another.

To ensure better alignment in decision making, the District should develop process-redesign teams that cut across functions and follow the process rather than looking at work flow only within a given office. In addition, federal and state policies and regulations should be reviewed to identify and remove barriers to more efficient use of resources. Policies also should be
reviewed to remove practices that keep technology functions isolated from the functions of teaching, learning, and assessment. These include separate funding streams and restrictions on the use of funds that reinforce the isolation of the educational technology function.

<table>
<thead>
<tr>
<th>Strategic Initiative</th>
<th>Organizational-14: Review the institution’s PCI compliance.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status as of June 2014</td>
<td>Targeted for FY 2015.</td>
</tr>
</tbody>
</table>

Support for Teaching and Learning Facilities

The Colleges’ teaching and learning facilities are mission critical to their success, and consequently should be a high priority for IT support. This importance translates to the need to provide current, reliable, well-maintained, documented, and supported technologies in all of the spaces where teaching and learning occurs.

Classrooms

The 2011 CampusWorks assessment identified some issues:

- Aging computers with insufficient resources to run Windows 7 and generally poor performance.
- Inconsistent setup from room to room
- Unclear processes for decision-making about computer lab software
- Concerns about open computing availability for students, particularly since there is a universal belief that many students do not have broad access to technology at their homes.

At EVC, seventy-four percent of classrooms are considered “smart,” housing a media switch with a pushbutton interface to turn on the ceiling mounted data/video projector and control its inputs from VCR, DVD, and PC. All instructional labs have similar capabilities in addition to up-to-date computers and monitors for each seat. EVC also maintains specialized facilities:

- Technology enhanced labs for automotive, business, language arts, mathematics, science, nursing, and other departments.
- Technology-enhanced theater space in the performing arts program.
- Four of the smart classrooms in the Learning Resource Center have computers and monitors at each seat.
- The Library’s Electronic Research Area may be used as a smart classroom with individual student computers to train students in research techniques utilizing technology, or used as an open-access research area depending on need.
- The Tutoring Center has implemented online training and is working to expand online access.
Non-classroom Learning Spaces

Institutions of higher education are increasingly realizing that learning does not take place exclusively in the classroom, but can be effectively encouraged and supported in well-designed non-classroom learning spaces. These include quiet study carrels, group work areas, and technology-support social spaces.

At EVC, the Library has online catalog and web based database access, as well as 24 laptops for student checkout.

Best Practices

Several factors contribute to the successful classroom technology and learning space implementations:

- Clarity on what constitutes the default classroom technology configuration. The decision-making process on classroom standards is collaborative, combining the faculty and programmatic requirements with the technical knowledge.
- Agreement on what classrooms need to be configured to support specific specialized content requirements, such as graphic arts, CAD, or network engineering, and how those classrooms will be supported.
- Opportunities to test and adopt different technologies to enhance the teaching and learning environment, including document cameras, clickers, smart boards, tablets and other emerging technologies.
- Software decisions made through the appropriate governance process and implemented through careful license management.
- Classroom technology support that is understood to be production-critical, with coverage provided during all or most class times.
- Regular replacement of technology through a well-defined and understood life cycle replacement practice.
- Professional development opportunities and incentives for faculty to explore, learn, and adapt their teaching to include technologies appropriate for their disciplines.

EDUCAUSE reports that community colleges typically equip 80% of classrooms with basic technology including a wired internet connection, a computer, and a data projector. Nearly 70% of AA institutions have 4-year or less computer replacement cycles (EDUCAUSE, 2009).
Support for Distance Education

The infrastructure required to support distance education initiatives parallels the infrastructure in place at physical campuses for face-to-face instruction. With few exceptions, all of the student, faculty, and administrative services offered in support of face-to-face instruction should have analogs in distance instruction. This distance education infrastructure consists of the following components:

- **Instructional Design Model and Process:** Distance education implies that the teacher and learner are not present in the same location and/or time. This basic fact implies that instructional sequences and materials must be developed in advance, as they cannot effectively be created remotely in an ad hoc manner. This development, in turn, implies the need for a course development process that can be best facilitated and informed by instructional design expertise. An instructional designer is a professional trained in learning and instructional theory and practice, and expert in the process of course development.

- **Student Support Services:** Students studying at a distance have unique needs and at some institutions the existing face-to-face student services do not translate well to distance education. Each of the services that have been created to serve the on-campus student must be examined to determine if it can adequately serve the student studying at a distance, namely, admissions, financial aid, billing, scholarships, veteran services, academic advising, counseling, tutoring, career services, grade and transcript services, disability services, diversity services, wellness and fitness activities, technology support, supervised testing services, etc.

- **Faculty Support Services:** As is the case with students, instructors who teach at a distance have unique support needs. For successful distance education initiatives, an institution must:
  - Provide access to easy-to-use instructional management system software to render online content, create and administer quizzes and surveys, etc.
  - Provide secure online grade books and tools to facilitate the grading process for non-objective evaluation measures.
  - Facilitate communications between faculty and students by providing faculty (and students) with group and individual student e-mail addresses and tools.
  - Provide copyright clearance advice and services to faculty members.
  - Provide technical training and support for content and test authoring tools.

- **Administrative Support Services:** An effective distance education program requires a supporting organizational structure to manage distance education needs assessment, program planning and development, funding, marketing, course development and course delivery support services.

- **Access to Academic Resources:** To be effective, a distance education program must provide students with access to online library resources including encyclopedias, dictionaries, thesaurus, articles, journals, etc. Students studying at a distance should not be at a disadvantage to those with regular access to campus academic resources.
- **Academic Community**: A successful distance education program should also provide opportunities for students studying at a distance to participate in the academic community, including student groups, clubs, events, memberships, and governance.

- **Enabling Technologies**: Many institutions make the mistake of equating distance education with a particular technology, such as mail, television, video tape, video conferencing, or the Internet. Instead, distance education should be viewed as a method of serving students who cannot be in the same room at the same time as the instructor. Distance education is enabled by whatever technologies can allow the instructor and students to achieve the instructional goals and objectives of the course. The primary enabling technologies for distance education at SJECCD include the Moodle course management system, the Elluminate Web conferencing system (delivered by CCC Confer) and other plug-ins.

The degree to which these components must fully support students studying at a distance depends on the distance education aspirations of the institution. Institutions that seek to reach new populations beyond its county, state, or regional boundaries must design solutions that will work for students who will never physically visit campus. Those who use distance education to provide their existing constituencies with scheduling options can often implement less robust systems that depend upon the students’ occasional presence on campus.

<table>
<thead>
<tr>
<th>Strategic Initiative</th>
<th>Data-16-01: Hire professional instructional designers at each campus and articulate and implement an instructional design process.</th>
<th>New</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data-16-02: Create faculty instructional development labs, staffed by instructional designers and technologists, at each campus.</td>
<td>New</td>
<td></td>
</tr>
<tr>
<td>Data-16-03: Create online interactive collaborative work spaces for all advisors and their advisees.</td>
<td>New</td>
<td></td>
</tr>
<tr>
<td>Data-16-04: Create online interactive collaborative work spaces for all student and academic groups.</td>
<td>New</td>
<td></td>
</tr>
</tbody>
</table>

---

**Updated Status as of June 2014**

- **In progress (25% complete).**

---

**Strategic Initiative Organizational-16: Improve the District’s distance and distributed learning infrastructure.**

**New**

**Strategic Initiative Data-16-01**

- **Hire professional instructional designers at each campus and articulate and implement an instructional design process.**

---

**Data-16-02**

- **Create faculty instructional development labs, staffed by instructional designers and technologists, at each campus.**

---

**Data-16-03**

- **Create online interactive collaborative work spaces for all advisors and their advisees.**

---

**Data-16-04**

- **Create online interactive collaborative work spaces for all student and academic groups.**
Support for College Web Presence

The District’s web site provides information to external audiences and helps to market the District and the colleges. The recent investigation of a content management system sets the stage for improving content delivery. The District should work to develop a comprehensive and integrated strategy for delivering content, communicating with all constituents, and providing services to students, faculty and staff. This will include:

- Full implementation of a content management system to enable a consistent web interface with a best-practice approach to distributed content management.
- Full implementation of a best-practice service delivery platform through a modern portal interface for students, faculty and staff. This effort will consider the Ellucian options as well as other portal products that can interface with Ellucian Colleague.
- Evaluation and development of recommendations associated with a CRM implementation, with a focus on strategies to address specific communication requirements throughout the student life cycle and beyond with SJECCD alumni. Associated product selection and implementation will follow, if the District chooses to move to a CRM approach and tool.
- Evaluation and development of strategies associated with the use of social media.

<table>
<thead>
<tr>
<th>Strategic Initiative</th>
<th>Organizational-17: Improve the District’s web presence. *</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status as of June 2014</td>
<td>Completed.</td>
</tr>
</tbody>
</table>

Support for College Portal

The District currently provides portal services through the Colleague WebAdvisor product, branded at the institution as MyWeb. Options for alternative portal products and implementations that provide a more modern service delivery interface can be considered. This includes consideration of alignment with Ellucian’s corporate strategy using a SharePoint-based portal and the service delivery expansion possible through that tool.

A well-constructed intranet can be used by the District to foster communication, collaboration and sharing. ITSS must explore the District’s requirements, determine the appropriate technology platform, and collaborate with key users and stakeholders throughout the district to implement a secure intranet environment. The choices of technology will be based on the requirements, costs, sustainability and support required to maintain the chosen solution.

Online service delivery is an expectation of nearly all District constituents. Students, faculty and staff expect to be able to perform most transactions through the online services of the District. Community constituents, prospective students, employers, alumni and donors all expect to
interact with the District through its online presence. In many cases these requirements can be addressed through the implementation of an industry standard portal, implemented in close collaboration with the District’s many constituencies.

Typically such a solution would begin with the implementation of services for current students. These services would include many already in the Web Advisor portfolio, but presented in a more modern and approachable way. These services should consolidate both the typical student services – grades, bills, financial aid, registration – as well as emerging best practices associated with early alerts, educational planning and e-advising.

Faculty and staff services would include the typical human resource and payroll services expected by most employees, and can be expanded to include interfaces into other State systems of interest. Faculty and advisors should have access to the appropriate student information to support advising, as well as to post their office hours, review their teaching schedules, and request services.

Integrated service delivery to all constituents is feasible as the District aligns its software implementations, integrates its thinking about service delivery, and considers its service delivery from the point of view of its constituents.

<table>
<thead>
<tr>
<th>Strategic Initiative</th>
<th>Organizational-18: Improve online service delivery. *</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status as of June 2014</td>
<td>In progress (5% complete).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Strategic Initiative</th>
<th>Data-19 Perform business process reviews of all Colleague-related processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Updated</td>
<td>New</td>
</tr>
</tbody>
</table>
Every institution of higher education has IT needs beyond their available resources, requiring detailed planning and prioritization of IT initiatives and careful stewardship of IT resources. This section delineates important IT initiatives for the District and projects when they might be addressed during the five-year planning cycle. The annual tactical/operational plans will contain details of effort, costs, benefits, and schedules for their implementation. Initiatives marked with an asterisk indicate priority items articulated in the District’s contract with CampusWorks.

Strategic initiatives related to the network infrastructure include:

<table>
<thead>
<tr>
<th>Network Strategic Initiatives</th>
<th>FY 2013</th>
<th>FY 2014</th>
<th>FY 2015</th>
<th>FY 2016</th>
<th>FY 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-01 Plan and implement the data center move.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N-02 DONE Perform a detailed network performance assessment and recommend improvements.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N-03 Develop and implement a network security plan. *</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N-04 Plan and complete the roll-out of VOIP at the district and colleges</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N-05 Evaluate and adopt network monitoring solutions.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N-06 Develop and implement a District intranet. *</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Strategic initiatives related to the hardware platform infrastructure include:

<table>
<thead>
<tr>
<th>Hardware Strategic Initiatives</th>
<th>FY 2013</th>
<th>FY 2014</th>
<th>FY 2015</th>
<th>FY 2016</th>
<th>FY 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>H-01 DONE Upgrade hardware supporting the Ellucian ERP software and database.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H-02 DONE Plan and complete an upgrade of the Millennium library information system</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H-03 DONE Plan and implement an upgrade/consolidation of printing systems</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H-04 Manage and implement the District’s technology projects funded by Proposition 39 General Obligation Bonds. *</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H-05 DONE Develop a formal process for assessing and acquiring hardware and software throughout the District.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H-06 DONE Complete a system inventory and associated life cycle replacement plan and budget. *</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Strategic initiatives related to the data and document infrastructure include:
### Data/Document Strategic Initiatives

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Description</th>
<th>FY 2013</th>
<th>FY 2014</th>
<th>FY 2015</th>
<th>FY 2016</th>
<th>FY 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>D-01</td>
<td>Review the use of Oracle versus MS SQL Server as the operational database for Ellucian applications.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D-02</td>
<td>Investigate and implement a data warehouse to support longitudinal and ad hoc reporting.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D-03</td>
<td>Investigate, analyze, and develop a document management solution to serve students, faculty and staff.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D-04</td>
<td>Create and populate a data element dictionary; determine responsibilities for maintenance and access.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D-05</td>
<td>Identify shadow systems and investigate options for resolving the underlying data access needs.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D-01-01</td>
<td>Migrate from Oracle to Microsoft SQL Server for the underlying Colleague database.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><em><strong>NEW</strong></em></td>
</tr>
</tbody>
</table>

Strategic initiatives related to the systems and applications software infrastructure include:

### Software Strategic Initiatives

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Description</th>
<th>FY 2013</th>
<th>FY 2014</th>
<th>FY 2015</th>
<th>FY 2016</th>
<th>FY 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>S-01</td>
<td>Select and implement a federated identity management system.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S-02</td>
<td>Maximize the Ellucian Colleague administrative system. *</td>
<td></td>
<td></td>
<td><em><strong>DONE</strong></em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S-03</td>
<td>Assess the adoption and use of Moodle and explore alternative course management systems.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S-04</td>
<td>Develop and implement a student e-mail system that incorporates tools for collaboration. *</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S-05</td>
<td>Investigate systemic implementations of new and emerging instructional technologies.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><em><strong>DONE</strong></em></td>
</tr>
<tr>
<td>S-01-01</td>
<td>Implement single sign-on functionality across the range of centrally-supported enterprise applications.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><em><strong>NEW</strong></em></td>
</tr>
<tr>
<td>S-02-03</td>
<td>Implement Synoptix for Ellucian financial reporting</td>
<td></td>
<td></td>
<td><em><strong>DONE</strong></em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S-02-04</td>
<td>Analyze, revise, and implement degree audit functions within Colleague.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><em><strong>NEW</strong></em></td>
</tr>
<tr>
<td>S-AH-01</td>
<td>Implement the CurricUNET curriculum planning system District-wide.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><em><strong>NEW</strong></em></td>
</tr>
<tr>
<td>S-AH-02</td>
<td>Implement an online student educational plan (SEP) function.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><em><strong>NEW</strong></em></td>
</tr>
</tbody>
</table>

Strategic initiatives related to the organizational structure include:

### Organizational Strategic Initiatives

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Description</th>
<th>FY 2013</th>
<th>FY 2014</th>
<th>FY 2015</th>
<th>FY 2016</th>
<th>FY 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>O-01</td>
<td>Review the IT organizational structure and recommend improvements.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organizational Strategic Initiatives</td>
<td>FY 2013</td>
<td>FY 2014</td>
<td>FY 2015</td>
<td>FY 2016</td>
<td>FY 2017</td>
<td></td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
<td></td>
</tr>
<tr>
<td>O-02 DEFER</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Articulate an institutional information systems philosophy and set of guiding IT principles.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O-03 DONE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop and implement a one-year tactical/operational IT plan for FY 2013, aligned with the strategic plan.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O-04 DONE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop and implement a one-year tactical/operational IT plan for FY 2014, aligned with the strategic plan.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O-05 DONE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop and implement a one-year tactical/operational IT plan for FY 2015, aligned with the strategic plan.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O-06</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop and implement a one-year tactical/operational IT plan for FY 2016, aligned with the strategic plan.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O-07</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop and implement a one-year tactical/operational IT plan for FY 2017, aligned with the strategic plan.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O-08</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Review all technology-related contracts to identify potential cost savings and vulnerabilities. *</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O-09</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop and implement a long-term District IT Plan aligned with strategic objectives and needs. *</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O-10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop and implement a best practice technology support model for all technology support. *</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O-10-02 NEW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Articulate hardware and software standards for desktop and mobile platforms.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O-10-03 NEW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implement 24 X 7 help desk support for faculty and students.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O-10-04 NEW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implement a help desk knowledgebase available to all SJEECD users.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O-11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Institute a project management methodology and function.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O-12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop, implement, and test business continuity and disaster recovery plans.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O-13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop, implement, and test data and information security plans.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O-14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Review the institution’s PCI compliance.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O-15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop, in collaboration with faculty users, a set of standards to guide the design of classroom space.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O-16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improve the District’s distance and distributed learning infrastructure.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O-16-01 NEW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hire professional instructional designers at each campus and articulate and implement an instructional design process.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O-16-02 NEW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Create faculty instructional development labs, staffed by instructional designers and technologists, at each campus.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organizational Strategic Initiatives</td>
<td>FY 2013</td>
<td>FY 2014</td>
<td>FY 2015</td>
<td>FY 2016</td>
<td>FY 2017</td>
<td></td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
<td></td>
</tr>
<tr>
<td>O-16-03 NEW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Create online interactive collaborative work spaces for all advisors and their advisees.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O-16-04 NEW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Create online interactive collaborative work spaces for all student and academic groups.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O-17 DONE</td>
<td></td>
<td></td>
<td>✔️</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improve the District's web presence. *</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O-18</td>
<td></td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td></td>
</tr>
<tr>
<td>Improve online service delivery. *</td>
<td></td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td></td>
</tr>
<tr>
<td>O-19 NEW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perform business process reviews of all Colleague-related processes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The strategic information technology plan must align closely with the institutional strategic vision, mission, and goals and should drive similarly-aligned annual tactical/operational plans.

**MISSION ALIGNMENT**

<table>
<thead>
<tr>
<th>District Mission</th>
<th>District IT Mission</th>
</tr>
</thead>
<tbody>
<tr>
<td>As a leading educational institution, the mission of SJECCD is to meet the diverse educational and workforce needs of our community (by empowering our students to become agents for socio-economic change).</td>
<td>The mission of IT at SJECCD is to provide an information technology infrastructure and well-supported services that enable the core missions and operational processes of the district and its colleges.</td>
</tr>
</tbody>
</table>

**VISION ALIGNMENT**

<table>
<thead>
<tr>
<th>District Vision</th>
<th>District IT Vision</th>
</tr>
</thead>
<tbody>
<tr>
<td>By the year 2017 SJECCD becomes the premier institution for advancing opportunity, equity and social justice for everyone through educational excellence</td>
<td>We apply technology to enable success! The District’s information technology units will emerge as a clear leader in supporting instructional, administrative, and office needs of the district community in their endeavors to support student success, superior services, and informed decision making.</td>
</tr>
</tbody>
</table>

**STRATEGIC INITIATIVES ALIGNMENT**

Many of the district’s strategic IT initiatives address on-going operational issues of organizational performance, effectiveness, and efficiency, enabling the district and college constituencies to address the institutions core mission. The following table illustrates how the current IT strategic initiatives also address SJECCD’s current strategic initiatives.

<table>
<thead>
<tr>
<th>District Strategic Initiatives</th>
<th>Related IT Strategic Initiatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: Create a Structurally Balanced Budget</td>
<td>Hardware 4 – Bonds &lt;br&gt; Hardware 5 – Acquisition Process &lt;br&gt; Hardware 6 – Inventory &lt;br&gt; Data 3 – Shadow Systems &lt;br&gt; Software 2 – Maximize Colleague &lt;br&gt; Organizational 8 – Contracts</td>
</tr>
<tr>
<td>2: Reinvigorate SJECCD Giving Foundation</td>
<td>Organizational 17 – Web Presence</td>
</tr>
<tr>
<td>3: Bond Oversight Management and Accountability Process</td>
<td>Hardware 4 – Bonds &lt;br&gt; Hardware 5 – Acquisition Process</td>
</tr>
<tr>
<td>District Strategic Initiatives</td>
<td>Related IT Strategic Initiatives</td>
</tr>
<tr>
<td>--------------------------------------------------------</td>
<td>-----------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Organizational 3-7 – Tactical IT Plans</td>
</tr>
<tr>
<td></td>
<td>Organizational 9 – Strategic IT Plan</td>
</tr>
<tr>
<td></td>
<td>Organizational 11 – Project Management</td>
</tr>
<tr>
<td>4a: Public Relations (PR) / Media Plan</td>
<td>Organizational 17 – Web Presence</td>
</tr>
<tr>
<td>4b: Marketing Plan</td>
<td>Organizational 17 – Web Presence</td>
</tr>
<tr>
<td>4c: Communications Plan</td>
<td>Network 6 – Intranet</td>
</tr>
<tr>
<td></td>
<td>Software 4 – Student e-mail</td>
</tr>
<tr>
<td>5: Develop and Implement Organizational Analysis and Staffing Plan</td>
<td>Organizational 1 – IT Organization Structure</td>
</tr>
<tr>
<td></td>
<td>Organizational 11 – Project Management</td>
</tr>
<tr>
<td>6: Develop Enrollment Management Strategy</td>
<td>Data 2 – Data Warehouse</td>
</tr>
<tr>
<td></td>
<td>Data 4 – Data Element Dictionary</td>
</tr>
<tr>
<td>7: Emergency Preparedness / Response Procedures</td>
<td>Organizational 12 – Business Continuity</td>
</tr>
<tr>
<td>8: Accountability and Compliance Structures</td>
<td>Network 2 – Performance Assessment</td>
</tr>
<tr>
<td></td>
<td>Network 3 – Security Plan</td>
</tr>
<tr>
<td></td>
<td>Network 5 – Monitoring</td>
</tr>
<tr>
<td></td>
<td>Organizational 3-7 – Tactical IT Plans</td>
</tr>
<tr>
<td></td>
<td>Organizational 9 – Strategic IT Plan</td>
</tr>
<tr>
<td></td>
<td>Organizational 13 – Information Security</td>
</tr>
<tr>
<td></td>
<td>Organizational 14 – PCI Compliance</td>
</tr>
</tbody>
</table>
This strategic information technology plan, created in collaboration with faculty, staff, administrators, students, and consultants at the district and college levels, is intended to chart the direction for the development and evolution of information technology infrastructure, services, and support at SJECCD. The plan was not intended to dictate specific operational solutions, but rather, provides a strategic context within which operational IT decisions can be made, that is, to serve as a set of guidelines (a “blueprint”) for making informed decisions about information systems issues, acquisitions, implementations, and ongoing support.

This initial strategic information technology plan should not be viewed as an end to IT planning but rather as a beginning. It will immediately generate a one-year tactical/operation plan to guide IT acquisitions and decisions for fiscal year 2013. The experiences gained during the implementation of that one-year operational plan will provide feedback to further inform and shape the long-term strategic plan. The strategic plan can therefore be “tweaked” annually and revisited in detail every five years.

**Update:** The original strategic IT plan spawned a fourteen-month tactical/operational plan to guide IT acquisitions and decisions for fiscal years 2013 and 2014, as well as a one-year tactical plan for FY 2015.

After this plan has been thoroughly vetted with the district community and approved through governance, the next steps are to operationalize its initiatives:

1. Review, revise, and gain consensus on an institutional information systems philosophy and set of guiding IT principles; revise the strategic IT plan as needed.
2. Review the strategic IT initiatives, determine priorities, and propose FY 2013 tactical initiatives.
3. Estimate the costs and benefits, both tangible and intangible, of each of the proposed FY 2013 tactical initiatives.
4. Determine the feasibility of each of the proposed FY 2013 tactical initiatives from an operational, technical, economic, and organizational perspective.
5. Set priorities among the selected feasible FY 2013 tactical initiatives.
6. Create detailed project plans and schedules for the prioritized FY 2013 tactical initiatives.
7. Set project milestones and completion dates for the prioritized FY 2013 tactical initiatives.
8. Create the FY 2013 Tactical/Operational Plan; revise the strategic IT plan as needed.
9. Monitor the completion of FY 2013 tactical initiatives and tactical plan performance; revise the strategic IT plan as necessary.

**Update:** Of the 40 strategic initiatives articulated in the original District IT strategic plan, 20 were prioritized for the combined fiscal years 2014 and 2014.
(10 were one-year initiatives and 10 were multi-year). By the end of that planning period, 15 of the initiatives had been completed and an additional 17 were partially addressed. For FY 2015, the 17 in-progress initiatives, plus an additional six of the original 40 initiatives were scheduled to be addressed.

The SJECCD IT strategic plan is intended to be a “living document,” responsive to the needs and aspirations of its constituents. All members of the SJECCD community are invited to participate in its creation and ongoing refinement and maintenance.

Update: The June 2014 update to this District strategic IT plan adds 15 new strategic initiatives, enabled and derived from the originally-articulated 40 strategic initiatives.
Glossary

Academic Senate: A committee of faculty that is part of the shared governance structure and decision making process of the college with responsibility for making recommendations regarding academic and professional matters.

AS (Associated Students): The student government bodies at SJCC and EVC.

Bit: An acronym for “binary digit,” a bit is a fundamental unit of electronic computer storage, capable of representing two different states (“on” or “off”).

Blackboard: The industry leading commercial online learning platform (course management system); SJECCD used the WebCT version of Blackboard until Fall 2010.

BPR (Business Process Reengineering): BPR is defined by Michael Hammer as the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance, such as cost, quality, service and speed.

Byte: A unit of electronic computer storage capable of storing one character of information. A byte is typically composed of eight bits.

CC (College Council): At EVC, a representative council composed of administration, faculty, classified staff, and students that advises the college president.

Colleague: An ERP system for higher education with components encompassing student information systems, financial aid, finance, human resources, advancement, and portals. Colleague is a product of Ellucian.

CPC (College Planning Council): At SJCC, a representative council composed of administration, faculty, classified staff, and students that advises the college president.

CTC (Campus Technology Committee): A committee composed of faculty, staff, students, and administrators charged with making recommendations to the CPC/CC on the acquisition and use of technology campus wide.

CTSS (Campus Technology Support and Services): A department that provides local IT services at San José City College and at Evergreen Valley College.

Data Administrator: The person responsible for managing data at a logical level, specifically maintaining data definitions, policies, and security.

Database: A collection of data in a consistently organized form.

Datatel: A leading vendor of integrated administrative software applications (ERPs) serving the higher education marketplace; In 2012, Datatel merged with SunGard to form Ellucian.

Data Warehouse: A non-production database built from regularly-refreshed extracts from operational systems, used for reporting and analysis; data warehouses usually host longitudinal reporting data.

DBA (Database Administrator): The person responsible for the logical and physical design of databases.

DBMS (Database Management System): A software application for building, maintaining and generating reports from a database. Most databases today are “relational,” in which records are logically held in tables, similar in concept to a spreadsheet. At SJECCD, Colleague is implemented using the Oracle DBMS.
DED (Data Element Dictionary): A repository of information about data, including its meaning, its relationships to other data, and its origin, usage and format. The DED is crucial to management, database administrators, systems analysts and application programmers in planning, controlling and evaluating the collection, storage and use of data.

Distance Education Committee: A faculty sub-committee of the Academic Senate

Document Management: An application that performs management tasks tailored for unstructured documents such as Word documents, images, and PDFs. Document management systems may also manage the flow of documents through their life cycles.

DO: An abbreviation for “District Office” at SJECCD.

Ellucian: A leading vendor of integrated administrative software applications (ERPs) serving the higher education marketplace; In 2012, Datatel and SunGard merged to form Ellucian.

ERP (Enterprise Resource Planning): Complex software application suites that support the business operations of an institution. SJECCD uses the Ellucian (formerly Datatel) Colleague ERP.

EVC: An abbreviation for Evergreen Valley College.

Firewall: A hardware- and/or software-based system designed to keep a network secure by blocking or restricting specified types of network traffic.

GB: A measure of electronic computer storage capacity, a gigabyte is approximately one billion bytes or eight billion bits.

Green Technology: Technologies that are environmentally friendly, that is, they have minimal negative impact on the environment.

HP: An abbreviation for Hewlett Packard, an America computer company with headquarters in Palo Alto, California.

HP-UX: A proprietary version of the Unix operating system created and owned by Hewlett Packard.

Hybrid: Courses in which the amount of face-to-face contact hours are reduced and replaced with online work, typically using a course management system to support the online portion.

IPCC: Instructional Policies and Curriculum Committee

Information System (IS): A set of software, hardware, network and data components required to process the data for a process or sub-process.

Information Systems Architecture: A specification of how a technology based solution will be organized, including an assessment of the problem to be addressed, decomposition of the solution to components with clearly assigned responsibilities, and definition of relationships and behavior of the components.

Innovative Interfaces Inc: An America software company headquartered in Emeryville, California, focusing on library information systems; SJECCD’s library systems uses III’s Millennium product.

IP: An abbreviation for “Internet Protocol,” a communications standards at the core of Internet technology.

IT: An abbreviation for “Information Technology.”

ITSS: An abbreviation for the “Information Technology Services and Support” department, a district office-based unit servicing SJECCD’s IT-related needs.

Millennium: The Millennium Integrated Library System is a software suite designed to manage most of the requirements of a modern library. Millennium is a product of Innovative Interfaces Inc.
Moodle: An open-source online learning platform adopted at SJECCD in 2009 and used exclusively since Summer 2010.

Moore’s Law: The prediction by Intel co-founder Gordon Moore that advances in integrated circuit design and manufacture will increase computer performance two-fold every 18-24 months.

Network Management: Administrative services performed in managing a network, for example, its topology and software configuration, performance, maintenance, diagnostics, and troubleshooting.

MySQL: An open-source relational database management system.

Online: Online classes are taught completely online, although some online classes have an orientation at the beginning of the term, and some require a final exam or other exams on campus.

Operating System: A critical piece of systems software that controls the hardware and provides the environment within which software applications and utilities run. Operating systems in use at SJECCD include Windows 7, Windows XP, Macintosh OSX, Solaris, Red Hat Linux, and HP-UX.

Oracle: An American computer company offering database management systems, ERP software and computer hardware. At SJECCD, the Colleague database is implemented in Oracle and the Library’s Millennium system is implemented on Sun servers (an Oracle company).

PBX: An abbreviation for “Private Branch Exchange,” a PBX is a telephone switch located on premise that establishes voice-grade circuits within the customer premises local area and between individual users and the public-switched telephone network.

Process: A logical set of observable, interrelated work activities utilizing input, that, when performed in a pre-defined series, produces measurable outcomes or outputs. A process may be divided into sub-processes which are processes in their own right.

SAN: An acronym for “Storage Area Network,” a mass storage device that can be shared by multiple servers.

Shadow Systems: Databases and their related applications that are built on and expand upon copies of data that has been extracted from centrally-managed enterprise systems. For example, a student service office might download student bio/demo data from Colleague into a local Access database and add additional data fields that are relevant only to their idiosyncratic function. As a result, student data exists in two places: the original in Colleague and the copy in the local shadow system.

SJCC: An abbreviation for “San José City College.”

SJECCD: An abbreviation for “San José Evergreen Community College District.”

Solaris: A proprietary version of the Unix operating system created and owned by Sun Microsystems, and Oracle company.

SQL (Structured Query Language): A relational data language that provides a consistent, English keyword-oriented set of facilities for query, data definition, data manipulation and data control. It is a programming interface to a relational database management system.

SQL Server: Microsoft’s Structured Query Language database management system. A competitor to Oracle’s relational database management system, it was based on a system originally created by Sybase and purchased by Microsoft.

Standards: Specifications or styles that are widely accepted by users and adopted by several vendors.

Standards, Formal: Specifications approved by vendor-independent standards bodies, such as the American National Standards Institute, the International Standards Organization, the Institute of Electrical and Electronic Engineers, and the National Institute for Standards and Technology.
**Sun Microsystems:** An American software and computer manufacturing company based in Santa Clara, California and acquired by Oracle Corporation. SJECCD’s library information system runs on Sun’s hardware and Solaris operating system.

**TCP/IP:** An abbreviation for “Transmission Control Protocol/Internet Protocol,” the core standard protocol suite driving the Internet and Internet-based technologies.

**Unix:** A family of operating systems known for relative hardware independence and portable applications interface. This time-sharing operating system is widely used for technical and scientific computing applications. SJECCD uses an open source version of Unix (Red Hat Linux) and two proprietary versions of Unix, namely HP-UX and Solaris.

**UPS:** An abbreviation for “Uninterruptible Power Supply,” a device that provides clean backup battery-based power to run computers and peripheral devices for a short time in the event of power loss.

**VOIP:** An acronym for “Voice over IP,” a technology that uses the Internet protocol to deliver voice communications services.

**VMware:** A California-based company providing virtualization software allowing, among other things, one physical server to provide the services of multiple virtual servers, thereby reducing hardware expenses and physical space requirements.

**VPN:** An acronym for “Virtual Private Network,” a technology to create a trusted relationship between two networks or one device and a protected network.

**Windows:** Microsoft’s operating system used to manage Intel-based personal computers.

**Work Flow:** The automation of work among users where the system is intelligent enough to act based on the definition of work types, users, tasks and the recognition of dynamic processing conditions.
REFERENCES


San José Evergreen Community College District. (2011, April 12). Strategic Directions.
ACKNOWLEDGEMENTS

This district technology plan builds on the prior work of faculty and staff at the San José Evergreen Community College District, San José City College, Evergreen College, and CampusWorks, Inc. In particular, the following documents were incorporated into the plan:

- Evergreen College Technology Plan 2011
- Information Technology Second Opinion Assessment, 2011 (CampusWorks)
- San José City College Master Technology Plan 2010-2015
- SJECCD District Technology Plan – 2011 (Pre-Rough Draft)
- SJECCD Strategic Directions – 2011

The core authoring team shared primary responsibility for creating and editing this plan:

- Eugenio Canoy, CTSS Supervisor
- Henry Gee, VP of Administration
- Dan Hawkins, IT UNIX Systems Administrator
- Tamela Hawley, Executive Director of RIE
- Nick Laudato, Consultant, CampusWorks
- David Lo, IT Lead Application Analyst
- Clem Lundie, Computer Information Systems Instructor
- Steve Mentor, English Instructor, EVC
- Cres Nolasco, Senior Network Technician, Workforce Institute
- Nasreen Rahim, Instructor, EVC
- Mike Russel, Interim CIO, CampusWorks
- Dolly Zen, IT Applications Manager

The following standing committees and public meetings advised and contributed to the creation and review of this plan:

- Board of Trustees (10/12/2012)
- District Council (9/20/2012)
- District Office Open Forums (9/11/2012 and 9/13/2012)
- District Technology Leadership Group (9/13/2012)
- EVC Academic Senate (9/4/2012 and 9/18/2012)
- EVC Associated Student Government (9/13/2012)
- EVC Campus Technology Committee (CTC) (9/19/2012)
- EVC College Council (9/10/2012)
- EVC Open Forums (9/11/2012, 9/12/2012, and 9/13/2012)
- EVC Professional Development Day (PDD)
- SJCC Academic Senate (9/19/2012)
SJCC Campus Technology Committee (CTC)
SJCC College Planning Council
SJCC Open Forums (9/11/2012, 9/12/2012, 9/13/2012)
SJCC Professional Development Day (PDD)
SJECCD Executive Team

The following individuals contributed to the creation of this plan, by authoring portions of the text, reviewing drafts and providing feedback, and/or attending committee meetings and forums where the plan was discussed.

Irma Archuleta, VP Student Affairs
Keith Aytch, VP Academic Affairs
Ernesto Bermudez, ITSS
Timothy Bubbee, Associated Student Government
Elaine Burns, VP Student Affairs
Vanessa Calvo, Health Services
Michael Casas, Associated Student Government
Rita Cepeda, Chancellor
Marjorie Clark, Service Learning
Carol Coen, Vice Chancellor Workforce, Economic Resource Development
David Corley, Network Manager, Ferrelli Consultant
Octavio Cruz, Dean, Enrollment Services, EVC
Sandy DeWolfe, Dean, Nursing
Tammy Do, Associated Student Government
David Eisenberg
Aivaro Espinoza, Enlace Student Association
Peter Fitzsimmons, Director of Fiscal Affairs
Barbara Fregona, ITSS
Edwin Gaitan, CTSS
Kim Garcia, Vice Chancellor of Human Resources
Victor Garza, Student Life
Henry Gee, EVC VP Administrative Services
Bruce Geer, CTSS
Emmanuel Gurrola, Student Regeneration Club
Robert Gutierrez, Director, METAS Program
Irene Gutierrez, ITSS
Sandra Guzman, Associated Student Government
Robin Hahn, Language Arts
Sam Ho, Human Resources
Alejandro Hernandez, Associated Student Government
Delma Hernandez, Enlace Student Association
Erik Hernandez, Associated Student Government
Lisa Herrington, Political Science
Michael Highers, Dean, Math, Science and Engineering
Lisa Kalenda, VP Academic Affairs
Chidinma Kalu, Associated Student Government
Barbara Kavalier, President of San José City College
Joseph King, Library
Remi Kloth, Student LGBT Club
Takeo Kubo, Dean, Enrollment Services
Frances Lau, Language Arts
Rosalie Ledesma, Executive Director of Government and External Affairs
Eileen Luna, Human Resource Specialist
Renee Lyons, Database Administrator
Uyen Mai, EPOS
Linda Meyer, Librarian
David Micetich, Assessment Center
Elizabeth Murphy, President, CampusWorks
Eric Narveson, History, Academic Senate
Julie Ngo, Student
Eric Nguyen, Associated Student Government
Anthony Oum, Assistant Director of Fiscal Services
Wendy Pio, Dental Assisting
Kara Potter, Nursing Education
Karen Pullen, DSP
Dianna Rodriguez, Associated Student Government
Nancy Rodriguez, Enlace Student Association
Paulette Romano, EVC President’s Office
Monica Sanchez, Associated Student Government
Johnny Sendejo, Student Racket Club
William Silver, Language Arts
Shawn Sieu-Nguyen, Associated Student Government
Doug Smith, Vice Chancellor of Administrative Services
Jennifer Sweeney, Student Life
Carol Thomas, General Manager, CampusWorks
John Thompson, CTSS
Chung To, Vietnamese Student Association
Jan Tomisaka, Affirm
Elvira Valderrama, HR
Joshua Valencia, Student Regeneration Club
Ruth Villasenor, Curriculum Coordinator, RIE
Leslie Williams, Counseling
Bob Wing, Librarian
Henry Yong, President of Evergreen Valley College
Bekki Zarco, Associated Student Government