

This document provides a detailed description of Delta College's Information Technology plan for the next three to five years. Strategic initiatives are presented and specific projects are included, along with timelines and work plan outlines.

SAN JOAQUIN DELTA COLLEGE

Information Technology Strategic Plan

2011 – 2014

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Executive Summary

In order to respond to the rapidly changing needs of San Joaquin Delta College, the College's Information Services leadership team engaged in a strategic planning process in the summer of 2011. The 2011-2014 Information Technology (IT) Strategic Plan is intended to serve as a foundation for the department's initiatives and guide for project plans in the next three to five years. This plan provides a detailed plan for the department that centers on several key themes, including **improved service, lowering future costs, sustainability, and protecting existing investments in software and hardware.** The following pages provide a summary of the plan's guiding principles and proposed strategies.

The Information Services department provides the operational support for the College's enterprise technology, fosters institutional renewal through innovative technology, and collaborates with internal and external groups to advance instructional and business intelligence technology for the College and the higher education sector. The overarching goals of these efforts are to improve the College's operational efficiency and provide progressive, responsive technology and technical services to the campus community. The IT Strategic Plan aims to maintain Delta College's role as a technology leader among community colleges while supporting the College's efforts to "provide excellent postsecondary education that serves the needs of students, the College district and the community."

Technology plays a vital role in higher education, and the Information Services department is committed to developing and supporting solutions to enhance teaching and learning and improve operational efficiency. During the IT strategic planning process, several objectives were identified, ranging from administrative system enhancements, finishing the new data center with network electronics and migration of many mission critical systems, and the development of a "cloud based desktops" for users. Given the current budgetary climate in the California Community Colleges, the *Information Services department is dedicated to preserving and improving technologies and services while making the best possible use of College resources.*

Efficient utilization of information technology resources requires the participation and support of not just Information Services staff but the entire campus community. With that in mind, the IT Strategic Plan relies primarily on the collective talent of the Information Services Team and campus community to develop and enhance the College's instructional and administrative systems and implement open-source solutions for college operations.

The IT leadership feels strongly that Delta College should continue the open source direction for administrative applications and not reverse course and move to a proprietary commercial package for administrative software. It would be a tremendous strategic and financial mistake (please see attached table for comparisons of open source and proprietary software) to abandon development that has already occurred and is continuing. The idea is to stabilize and enhance existing software so it will support the college for the next seven to ten years while allowing other colleges to develop open source software such as the Quali Student System. *Open Source software will allow the college to continue to implement license free software built for higher education by higher education!*

Strategic Initiatives

- Migrate from Munis Human Resources and Payroll back to an enhanced System 2000 (System 2020). When the Kualu Human Resources System (currently under development) is available, the College will consider a graceful transition from System 2020 HR to Kualu Human Resources.
- Support the Business Services division with continued implementation and enhancement of the Kualu Financial System. This means dedicating additional programmer/analysts to this important project.
- Upgrade to Cognos 10 to support data-driven decision making at the College by engaging users with information on-demand.
- Enhance the College's student information system, System 2000, to better meet faculty, staff, administrator, and student needs. The redesigned system will be called System 2020 (Twenty Twenty) and will serve as the bridge between the current System 2000 and the open-source Kualu Student system when it is available for implementation and is a proven stable system.
- Install new communications software and hardware and migrate key systems and applications from the Cunningham Center to the new Data Center.
- Pilot a decentralized "cloud based virtual desktop" computing system to improve access and personalization of services via the central data center. The virtual desktop will eventually replace the current single-access-point or desktop system.
- Support Academic Computing by maintaining and installing (when directed) *smart classrooms and computer labs*.
- Provide assistance with instructional computing and the professional development center as requested.
- Provide support and assistance as directed for the planned on-line Virtual Campus. IT recommends strongly that the College consider utilizing *Open Course Content (objects)* when developing new classes for the Virtual Campus.
- Consider a new student portal system using the open-source LifeRay system to integrate online student services.
- Seek potential sources of revenue by offering hosting and other technology-related services to non-profit organizations and other institutions of higher education.

Introduction

Information Services Vision

The Information Services Department will provide technology solutions that focus on the needs of the faculty, staff, and students which will enable more efficient business processes and more advanced teaching and learning. Using Open Source software, the IS Department will save on licensing and maintenance fees on commercial administrative software. The money saved can then be invested in our main product – teaching and learning.

Information Services Mission

Information Services will provide the highest quality of services based on modern technologies, utilizing standards based methodologies while maintaining a cost effective approach to achieve the goal of the College Mission as it pertains to instruction, delivery of curriculum, and performing daily business services.

Presently, Delta College is faced with many challenges, including increasing budget reductions, staff turnover, and a particularly high demand for services. At the same time, there is a significant industry-wide push for new technology, more integrated online services, and increased automation of organizational processes. With these factors in mind, starting in summer 2011, the Information Services team engaged in a strategic planning process to improve technology infrastructure and services for Delta College. During the strategic planning process, several key principles or themes were identified, including the following:

- Provide technology leadership to the College by identifying and interpreting trends, and identifying viable opportunities and directions.
- Strengthen sustainability of services via low-cost open source system development and implementation.
- Improve user interfaces and support services, and collaborative efforts to develop efficient systems and approaches.
- Reduce reliance on outside vendors for specific services by reconfiguring existing systems to meet current user needs.
- Foster a culture of efficiency and collaboration by working with users to develop solutions and identify best practices related to the utilization of technology.
- Improve faculty and student engagement via integrated student, learning management, and portal systems.
- Promote data-driven decision making through increased utilization of business intelligence tools and reporting.
- Enable seamless integration of technology services by streamlining interfaces across different instructional and administrative systems.

This document provides a five-year plan for the College's information services department, information technology infrastructure, and technology-related services. Included in the following sections are recommendations for approaches or strategies aimed at improving services to campus users, increasing sustainability of technology at the College, and enhancing utilization of technology to meet College-wide goals and initiatives, including the College's Institutional Learning Outcomes (ILOs).

Current System Status

Within the past year, Information Services has completed the relocation of department staff, servers, and work spaces to the College's new data center, implemented the Quali Finance System in production, begun work on data center server virtualization, which will launch in summer 2012, and started modeling data for college-wide reporting in Cognos 10. These projects will enhance the College's reporting capabilities, supporting data-driven decision making, improve the College's distance education capabilities by providing increased access via wireless devices, and create personalized, virtualized environments for staff and students. In addition, these enhancements will allow the College to offer revenue-generating services, including hosting for other California Community Colleges.

Information Services staff, along with other staff at the College, have assisted in the development of several open-source systems, including the Quali Finance System and the Quali Student System. The College's involvement in the Quali projects will ensure that these systems meet the College's needs in the future. A full description of Quali projects with respect to Delta College involvement, system development and implementation timelines is provided in Appendix A.

Major Information Services Initiatives

In order to improve services to students and the campus community, future Information Services projects must address needed improvements in the College's student information system, currently System 2000, and conversion from the human resources/payroll system, MUNIS. In addition, the Information Services department must continue to support and update the Quali Finance System, and complete work on the communication electronics and move all systems to the new data center. A detailed timeline for all major Information Services projects is provided in Appendix B.

Strengthen the Sustainability of the College's Technology

Information technology initiatives aim to improve organizational processes or services through the use of new or existing technology and automation. New technology can be internally developed or acquired from an external source. Acquired technology comes in two forms: purchase of a system or technology from a vendor or contribute to the collective development of open-source systems.

In order to be effective, development or acquisition of new technology should meet the following criteria:

- Be cost justified
- Enhance manageability of information
- Improve existing processes
- Create technical and functional efficiencies
- Increase service capacity while reducing costs

Purchasing Technology from an Existing Vendor

Each of these factors should be considered in the acquisition of new technology, and different approaches may be better suited for specific organizational departments and processes. For example, when an experienced vendor with a good track record exists, and the cost of the original purchase, updates, and support are reasonable, it may be in the organization's best interest to acquire technology from a vendor. However, there are disadvantages and risks associated with this approach. Product

specifications and features may change, and updates and support service costs may increase rapidly, based on target market demands.

In addition, the vendor may decide to stop offering support for the technology if the demand for the product decreases. Oracle Financials is a good example of this point. Oracle is widely known as a stable vendor with a positive track record of great technology. Oracle's success with financial systems in corporations was expected to translate well to higher education. However, in reality, Oracle purchased PeopleSoft and stopped improving Oracle Financials. The costs of required technology and ongoing support was substantial, a significant limitation, particularly in the current economic climate for institutions of higher education.

In this scenario, the more sustainable approach would be to build or collectively develop technology with other institutions.

Building or Developing Technology Internally

Seventeen years ago, System 2000 was an ambitious plan to put Delta College in the driver's seat for serving campus needs. The goal was to develop a system to meet various client specifications, ensure the system would include continuous support, and allow the system to be useful to the College for many years to come. System 2000 could be customized and could evolve with no interference from vendor limitations or threats of non-support. However, like the purchasing new technology model, this approach came with a number of limitations. This custom-build, comprehensive system came at a cost: months of development and commitment of developers and user resource (college leaders, faculty, and staff).

Collectively Building and Providing Support for New Technology

A more resource-efficient alternative to building a custom system internally is to collaborate with other institutions to develop open source technology. Open Source communities have proven successful on a large scale, as evidenced by uPortal, Moodle, Sakai, and Linux. Given the resource constraints that many institutions of higher education are facing, open source communities are gaining in popularity and providing some competition to their proprietary counterparts. Not only do open source solutions provide a lower-cost, more sustainable alternative to proprietary systems, they also provide participation institutions with generations of support and help.

At present, open source administrative solutions (Kuali) exist or are being developed to provide "core" functionality. In general, these systems can easily interface with each other systems. Given the advantages of open source solutions, this approach is well suited to Delta College's needs and serves as a major theme of the Information Technology Strategic Plan.

The Case for Open Source Software

The open source approach offers many advantages over the proprietary approach to technology. Open source products are more flexible, rely on collaboration across different organizations, provide more stability due to shared investment in the system, and are generally more secure than proprietary systems. At the same time, open source solutions often come at a significantly lower cost than proprietary solutions. Table 1 compares open source and proprietary solutions on several key features.

Table 1. Open Source and Proprietary Solutions

Attribute	Open Source	Proprietary
Licensing	Licensed to provide freedom to use for any purpose, modify, and redistribute.	Licensed to restrict use to “acceptable uses”, protect against modification and redistribution.
Control	Balanced. Consumers and providers of commercial offerings have equal access.	Vendor is in control. Often large up-front investments in the software, training, and other implementation costs create a lock-in situation that strips the consumer of control.
Innovation	Rapid and diverse. Leverages a very large community of users and developers working in parallel.	Limited to vendor investments. Typically caters to the features sought by the largest audience. Low levels of innovation.
Longevity/ Risk of Abandonment	Software will always be available as long as it serves a useful purpose. The larger the adoption the safer the investment. No single point of failure.	Dependent on the success of the vendor. Single point of failure.
Security and Reliability	As the great tradition of peer review produces high quality academic and scientific works, open source projects produce software that is generally more secure and reliable. Like peer reviewed papers, open source software is subject to greater scrutiny and leverages a larger collective intelligence than proprietary software.	
Total Cost of Ownership (TCO)		
Acquisition Cost	Low or no initial license cost.	License costs on the rise in education.
Implementation and Support costs	OS community support and competition for commercial support keeps costs low. Choice allows consumer to bear costs internally which may further decrease cost.	Costs determined by and coupled to vendor. Lack of choice. Alternative service organizations often lead to higher costs.
Costs of Scale	No additional license cost with additional users, servers, etc.	License costs generally rise with increased use.

Because open source solutions do not yet exist for all Delta College’s administrative needs, “best of breed” solutions will fill in the gaps. In the long term, more and more open source solutions will be available for the College to utilize, however, in the short term, adjustments must be made to current systems to improve service to users and better support the College’s mission.

Improve User Interfaces and Support Services

Over the last few years, Delta College has contributed significantly to the development of open-source Quali systems. In summer 2010, the College successfully implemented the Quali Finance System (KFS). College programmer/analysts and key users have also helped develop the Quali Student System, which is still in the development phase. Each of these systems has been developed specifically for the higher education sector, driven by the needs and input of actual users and system developers.

Additional open-source Kuali systems will become available in the future, including Kuali Ready, an administrative service continuity system, and Kuali People Management, a comprehensive human resources/payroll system. Each of these systems is expected to improve services to Delta College users, including students, faculty, and staff. However, given that only KFS is ready for complete implementation at Delta College; short-term solutions must be adopted for the College's student information system and human resources/payroll system.

Human Resources/Payroll

Since 2009, the College has utilized the proprietary MUNIS system for human resources/payroll operations. However, the MUNIS system implementation has been a continuous challenge due to system interface limitations, ongoing system costs, and lack of functionality such as position control. In order to improve human resources and payroll services while reducing costs, the Information Services department will redesign the College's previous human resources/payroll system, System 2000 HR, to better meet the College's needs. The new system will be called System 2020 and will be developed by the College's Information Services staff and two of the original developers of System 2000. The cost for this migration will be approximately one hundred and ten thousand dollars which has already been budgeted.

System 2020 will require some infrastructure upgrades, training, and contracting of system experts to help develop the new system. Conversion of human resources/payroll from MUNIS to System 2020 will begin in September 2011, with testing scheduled for January 2012 thru September 2012 with full implementation in October 2012. Additional programming will be required for time, attendance, and leave accounting, and additional modules, including evaluation tracking, benefits, and step increases. An outline of System 2020 HR project tasks can be found below.

Human Resources Conversion from MUNIS to System 2020 Project Outline

- **September 2011 through October 2012**
 1. Visual Works Upgrade to version 7
 - a. Upgrade Visual Works Smalltalk to the latest version
 - b. Two months (September 15th – October 31st) to add our custom classes and then rewrite our common classes to use the standard code for features that are now provided (e.g. http://, web services)
 - c. Consultant Rames Creel, Consultant Matt Rosen, Aubrey Lewman 10%, Chris MacDannald 10%, and Jeff Regalia 10%
 - d. Must be done before any HR/Payroll enhancements
 2. Visual Works Smalltalk Training
 - a. Training on the new features of Visual Works
 - b. Two weeks (January 2012)
 - c. All developers
 3. HR/Payroll Phase I
 - a. Implement HR
 - b. Three months (October 1st – December 31st)
 - c. Matt Rosen and Rames Creel
 - d. Parallel development
 - e. Required functionality
 - i. Self-sealing paychecks and direct deposit pay stubs
 - ii. Benefit account numbers (similar to MUNIS)

- iii. Retirement (PERS/STRS)
 - iv. Leave accruals
 - v. Database change from Pseudo account numbers to Account/Object/Sub-Account numbers
 - vi. Use of the new KFS account fields
 - vii. S2K Master File Improvements
 - viii. Position Control/Budget
4. HR/Payroll Data Conversion (February 2012)
- a. From MUNIS to System 2000
 - i. Employee (master file)
 - ii. Assignments (employee job salary)
 - iii. Positions (positions)
 - iv. Account Distributions (account)
 - v. Historical Payments??
 - vi. Historical Assignments
 - b. Chris MacDannald, Jeff Regalia, Alan Hitt, and Terri Todd
5. Testing January 1, 2012 – September 30, 2012
- a. Parallel System 2020 and Munis Payroll
 - b. Chris MacDannald, Alan Hitt, Rames Creel, Matt Rosen, and campus users
6. Go Live System 2020 on October 1, 2012
7. Time and Attendance and Leave Accounting
- a. Implement Quali HR Time and Attendance (timecards) and Leave Accounting
 - b. Five months
 - i. One month to set up test area
 - ii. Two months for data conversion and services implemented
 - iii. Two months to test
 - iv. Two weeks to implement into production
 - v. Two weeks to get timecard or leave data into new System 2000 (System 2020)
 - c. Chris MacDannald, Chris Kirschenman, David Elyea, and John Azzaro
8. HR/Payroll Phase 1.5
- a. Seniority List and W2 Reporting
 - b. Three weeks
 - c. Chris MacDannald and Jeff Regalia
9. HR/Payroll Phase 2
- a. Later projects
 - b. 12-18 months
 - c. Chris MacDannald, Jeff Regalia, and Consultant - Rames Creel
 - d. Details:
 - i. Evaluation Tracking
 - ii. Adjunct Faculty Step Increases
 - iii. Benefits Plan Selection
 - iv. Online Open Enrollment (bigger)
 - v. Personnel Action Forms (medium)
 - vi. Workflow (Electronic forms) (medium)
 - vii. Active/Inactive Employees Separated
 - viii. Access Control
 - ix. I-9 Reporting
 - x. Org Chart tied to position control (bigger)

- xi. Life Insurance and Supplemental/Dependent Coverage
 - 1. Keenan Benefit Bridge (package interface)
- xii. Retiree medical plan selection

Business Services Finance System

In summer 2010, the College implemented the Quali Finance System to improve services to campus users and the community. Additional programming will take place in fall 2011 to update codes, set up database tables, setup the RICE production server, and upgrade from Cognos 8 to Cognos 10, and prepare KFS for integration with the future Quali People Management System. An outline of KFS project tasks is provided below.

Quali Finance System Project Outline

- **September 2011 through December 2011**
 - 1. KFS 4.1 code merge
 - a. Get code updated to newest version
 - b. One week (August 22nd to August 26th)
 - c. Chris Kirschenman
 - d. Must be done before any other KFS 4.1 work
 - 2. Standalone RICE split
 - a. Split RICE from KFS setup in test server
 - b. 1 week (September 6th to September 9th)
 - c. David Elyea, Chris Kirschenman, and John Azzaro (database) 25%
 - d. Main tasks
 - i. Setup database
 - ii. Identify tables
 - iii. Move rice tables from KFS to RICE
 - iv. Update code on KFS and RICE servers
 - v. Users will test in KFS-test fix any resultant bugs
 - 3. Production upgrade
 - a. Upgrade and split RICE
 - b. Two weeks (November 1st to November 11th)
 - c. David Elyea, Chris Kirschenman, and John Azzaro (database) 25%
 - d. Main tasks
 - i. Setup RICE production server
 - ii. Copy RICE tables to RICE db
 - iii. Upgrade KFS code and point KFS production server to RICE server
 - 4. Cognos upgrade from 8 to 10 and KFS Reports (September 2011 through September 2012)
 - a. Financial data model re-design (now-October)
 - b. Student data model development (now-October)
 - c. HR data model development (now-October)
 - d. Migrate old KFS reports to new environment (three to four months)
 - e. Test newly migrated KFS reports
 - f. Retire Cognos 8 system
 - g. Create new student reports
 - h. Test student reports
 - i. Financial Aid model development
 - j. Create new Financial Aid reports

- k. Test Financial Aid reports
- l. Offer campus wide training on Cognos as a reporting tool

Student Systems

For the past seventeen years, the College has used the custom-designed System 2000 student information system, which was developed specifically for Delta College. However, additional functionality is needed to improve services to users, including students, faculty, staff members, and administrators. As a short-term five plus year solution (until Quali Student is ready for full implementation at Delta College) the Information Services department will redesign the current System 2000 student system. The new system will be called System 2020 Student, and will feature an improved user interface. As with the HR system, the new system will require an infrastructure (Visual Works) upgrade. The new system will be developed by the College's Information Services staff and two of the original developers of System 2000. The cost for this migration will be approximately eighty to one hundred thousand dollars. The college should use a portion of the budget allocated for Quali Student to fund this important project. The timeline for System 2020 implementation is tentative, dependent on many factors, but is expected to be implemented in 2013.

The long-term goal of the Information Services department is to implement the Quali Student System, including curriculum management, enrollment, and student financials modules. A timeline for the Quali Student project is provided below.

Quali Student System Projects

- **Timelines not committed**
 1. Curriculum Management (CurricUNET replacement)
 - a. Waiting for RICE stand alone split work to be completed in mid-September
 - b. Deploy CM test server in November (after KFS and RICE upgrade)
 - c. Test deployment connected to System 2000
 - d. Migrate content January-February
 - e. Test deployment for two to three months
 - f. Deploy production instance as a copy of test
 - g. Test production for 30 days
 - h. Dr. Charles Jennings/Instruction Office uses CM to build catalog
 2. Enrollment
 - a. KRAD/UI Development
 - i. Brian Smith leads KS UI team to build out enrollment screens as defined by the analysts and supported by the development team
 - ii. 18 months development for V 1.0. Will include basic enrollment capabilities. Subsequent versions will follow this single KS module.
 - b. KS/RICE Development
 - i. David Elyea contributes to KRAD, RICE, and Quali Student development efforts moving both the middleware RICE platform, but also KS specifically.
 - ii. 18 months development for V 1.0. Will include basic enrollment capabilities. Subsequent versions will follow for this single KS module.
 - iii. New enrollment module will be available 18 months from now
 - iv. Deploy test instance on our RICE platform (one to two weeks)
 - v. Test deployment two to three months
 - vi. Migrate data from SYS2000

- vii. Deploy production instance in preparation for 2013-14 school year
- 3. Student Financials
 - a. Funding Sigma Systems to develop module by a subset of KS schools to provide student financials, but will result in open source code in three years
 - i. Deploy test instance on our RICE platform (one to two weeks)
 - ii. Test deployment two to three months
 - iii. Migrate data from SYS2000
 - iv. Deploy production instance in preparation for 2015-16 school year

In addition to improving the College's student information system, the Information Services department aims to improve student services by introducing a new and enhanced student portal using the open-source LifeRay platform. The LifeRay portal features improved integration with Microsoft Office and will allow for additional collaboration and enhanced social networking capabilities. The Information Services team will begin working on the LifeRay portal project in 2012, with full implementation expected in 2014. An outline of the LifeRay project is provided below.

Student Portal Project Outline

- 1. LifeRay portal implementation (January 2012)
 - a. Needs two developers, webmaster, and project manager
 - b. Create cross-functional committee
 - c. Gather requirements/major initiatives
 - d. Set priorities
 - e. Create deployment timeline
 - f. Install development instance (one week)
 - g. Install and configure CAS
 - h. Migrate users and roles/configure (three weeks)
 - i. Develop channels (two to six weeks per channel)
 - j. Migrate content and security (one week)
 - k. Integrate with key administrative systems/databases
 - l. Build single sign-on connections
 - m. Deploy production environment
 - n. Train users
 - o. Unveil to campus September 2013-14

Improve Operational Efficiency through Integration and Virtualization

The College is committed to continuous improvement and lifelong learning, and the Information Services department aims to enhance these processes by providing high-quality technology-related services.

Administrative Services Continuity System

If the College chooses, it can implement an Administrative Services Continuity System. The Information Services department can assist with the implementation of an open-source business services continuity system, Quali Ready, and an entirely new, Smart Campus information access system. The first system, Quali Ready, is intended to provide the College with a means of operating and continuing to provide services during disruptive events, such as natural disasters, technological disasters, and human-caused disasters. The Quali Ready system will allow campus departments to initiate contingency plans and

ensure that Delta College information technology, instructional, and student services continue even in these events.

Kuali Ready Project Outline

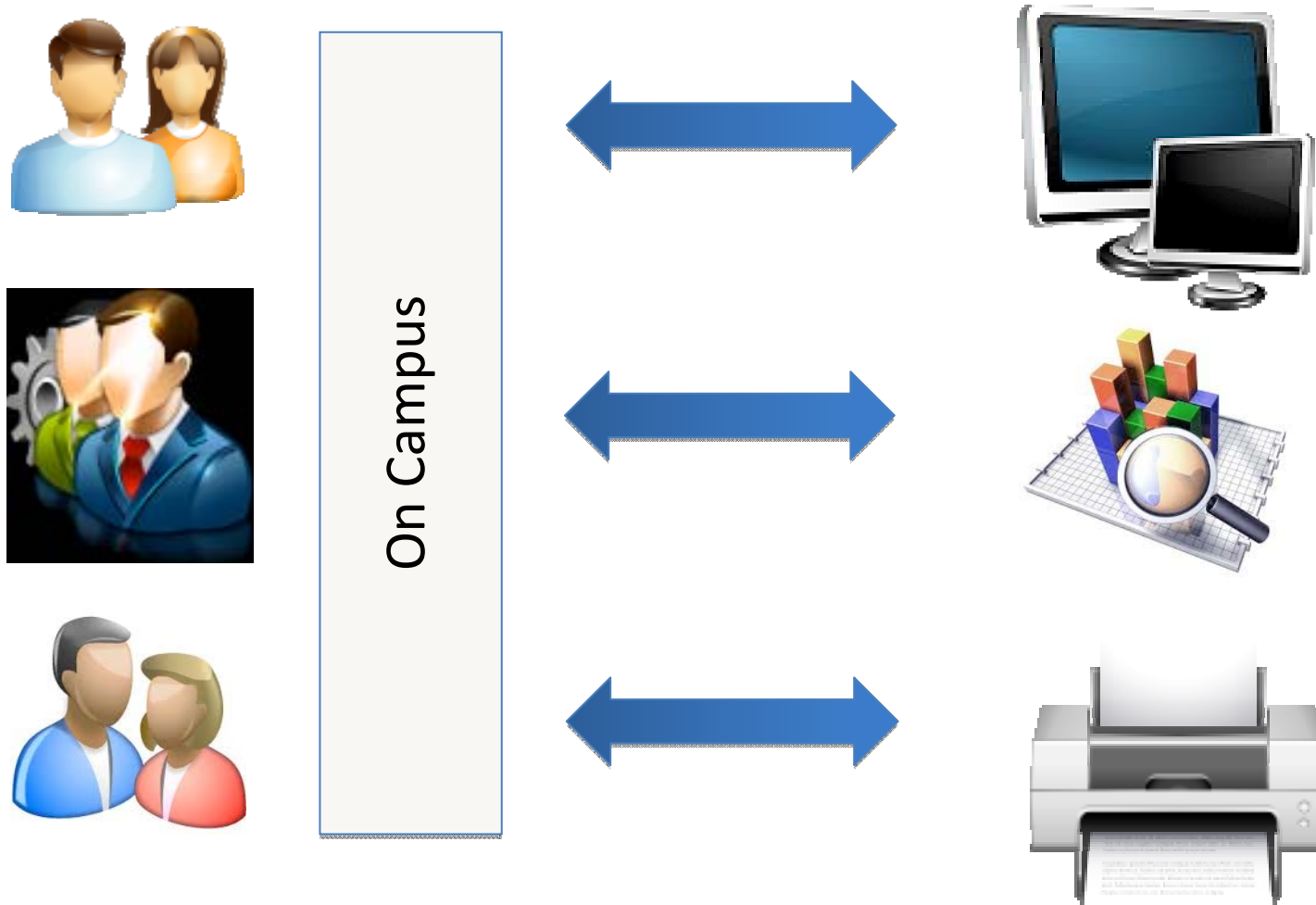
1. Create full emergency plan example
2. Introduce KR to campus managers and other leadership
 - a. Demo
 - b. Distribute example plan
 - c. Involve campus security to create real-life scenarios illustrating the value of the plans
 - d. Make training available for filling out a plan
 - e. Turn over to public safety

Cloud Based *Virtual Desktop*

In addition, the Information Services department will create a *Virtual Desktops* to create personalized, secure access to College information from any wireless device (with a registered account).

This *Virtual Desktop* will increase security and information tracking capabilities while allowing users to access documents and information remotely. The following pages illustrate current and proposed functionality of the current and proposed system access models.

Current System Access Model



New System Access Model – Smart Campus through Virtualization (*Virtual Desktops*)



- PERSONALIZED DESKTOP
- PERSONALIZED SERVICES
- PERSONALIZED APPLICATIONS
- 24/7 ACCESS TO CLASS MATERIALS
- PERSONALIZED BACKUPS
- ACCESS TO HELP DESK
- ACCESS TO DATA
- ACCESS TO APPLICATIONS
- ACCESS TO SERVICES
- ACCESS TO PRINTERS



Work on the *Virtual Desktop* project will begin in fall 2011 and is expected to go live in 2012. Below is an outline of project tasks.

New Data Center Project

- **September 2011 through December 2011**
 1. Hardware purchase
 - a. On order waiting for delivery dates
 - b. 25 days (August 10th – September 7th)
 - c. Bear Data Solutions, Inc. (Bear Data)
 - d. Delivered directly to Bear Data for pre-configuration
 - i. Delivery date based upon Cisco availability
 - ii. Bear Data to set equipment up in their facility
 2. Network hardware base configuration
 - a. Hardware setup at Bears Data's Lab
 - b. 15 days (September 8th – September 22nd)
 - c. Bear Data
 - d. Pre-configuration based on data supplied by Delta Staff – David Origer/Jeff Sears
 - i. Configuration of VLANs (campus, phone, academic, etc.)
 - ii. Configuration of test firewalls
 3. Network hardware signoff
 - a. Signoff of base configuration
 - b. One day (September 23rd – September 24th)
 - c. Dave Sartain, David Origer, Jeff Sears/Angus Hamer/Cisco
 - d. Required for delivery to Delta's Data Center
 - i. Signoff after site visit to Bear Data
 4. Network hardware delivered/installed
 - a. Physical hardware installation
 - b. 13 days (September 26th – October 10th)
 - c. Bear Data/Cisco/NetApps
 - d. Hardware powered up, base configuration tested
 5. UCS configuration
 - a. Virtual machine software installed
 - b. Five days (October 10th - October 14th)
 - c. Bear Data/Cisco/David Origer, Aubrey Lewman, and Jeff Sears
 - d. VMWare Ready for Delta's VMWare Farm
 - i. Non-production VM's can be configured to test functionality
 6. Wireless configuration
 - a. Wireless Controllers configured for Delta's Network
 - b. Four days (October 17th – October 20th)
 - c. Bear Data/Cisco
 - d. Defined SSID's and Network Security for Wifi network
 - i. Test configuration via WIFI connections at the Data Center
 7. Campus connectivity
 - a. Connect installed hardware to campus network
 - b. Six days (October 20th – October 25th)
 - c. Bear Data/Cisco/Delta Staff-David Origer, Jeff Sears, Gary Yee
 - d. Network Services can be Accessed via New network
 - i. Test connections back to legacy services
 8. Network management
 - a. Network routing rules/firewall rules

- b. Six days (October 25th – October 31st)
 - c. Bear Data/Cisco/Delta Staff-David Origer, Jeff Sears, and Gary Yee
 - d. Access rules defined
 - i. Allow traffic to Internet and intranet
9. Network storage
- a. Network storage configured
 - b. Four days (November 1st - November 4th)
 - c. Bear Data/Cisco/NetApps
 - d. Storage available to UCS/servers
 - i. Define storage for backups and VM servers
 - ii. Install test legato license and test backups
10. Network storage backup data center (Mt. House)
- a. Network storage configure for offsite storage
 - b. Four days (November 7th – November 10th)
 - c. Bear Data/Cisco/NetApps
 - d. Off Site Storage available to VMWare servers
 - i. Test connections between sites
 - ii. Test snap shot file storage to MH
11. Disaster recovery replication
- a. Data replication configured
 - b. Three days (November 10th – November 14th)
 - c. Bear Data/Cisco/NetApps
 - d. Disaster recovery data stored at Mt. House DC
 - i. Test backups to MH storage

Infrastructure Enhancement Projects

Along with the enhancements already described, the Information Services team will complete three other major infrastructure projects, including the migration of telecommunication lines, VMWare servers, connection of the College's legacy buildings to the new system, and relocation of the business services division from an off-campus site to the College's Cunningham Center. The migration of telecommunications systems and VMWare to the new data center will begin in fall 2011, with expected completion in spring 2012. The Business Services relocation project will take place in the fall 2011 term. Outlines of these two projects are provided below.

Migration of Critical Systems Project Outline

- **September 2011 – April 2012**
- 1. Relocate telecommunication lines (Cenic, AT&T)
 - a. Request has to be done at 45 days before move.
 - b. Run in parallel for at least ten days
 - c. Gary Yee, Jeff Sears, and Randy Millsop
- 2. Migrate existing virtual machines to the VMWare servers
 - a. Create new Virtual servers on new UCS servers
 - i. Define Storage for new Virtual Machines
 - ii. Migrate individual Servers
 - iii. Test Migrated VM
 - iv. Go live

- b. 30 days (November 15th – December 14th)
- c. Aubrey Lewman, , David Origer, Gary Yee, and Angus Hamer
3. Relocate non-virtual server hardware to data center
 - a. Shutdown and uninstall hardware
 - b. Install hardware in define rack space in data center server room
 - c. Power up and make all needed network changes (IP address, Vlan)
 - d. Test before going live
 - e. 90 days (November 15th – February 15th)

Business Services Relocation Project Outline

- **August 2011–December 2011**
1. Move ESL Lab from Cunningham to H201
 - a. CAD draw the room space
 - i. Define the room layout
 - ii. Clear room of hardware and tables
 - iii. Rewire and locate new jacks
 - iv. Prep room – clean/paint/carpet
 - v. Move carrels from Cunningham to H201
 - vi. Install equipment and terminate network and special connections
 - b. 45 days (August 29th – October 15th)
 - c. Delta staff (TBD)
 2. Move C220 computer lab to DeRicco 201
 - a. Locate network jacks in DeRicco
 - b. Purchase new switch equipment for Danner project (to be used in DeRicco until Danner is completed)
 - c. Layout computer/table locations based on existing jacks
 - d. Install new switch and patch
 - e. Put signage up for students notifying them of the move
 - f. Move computers and tables from C220 to DeRicco
 - g. 45 days (TBD)

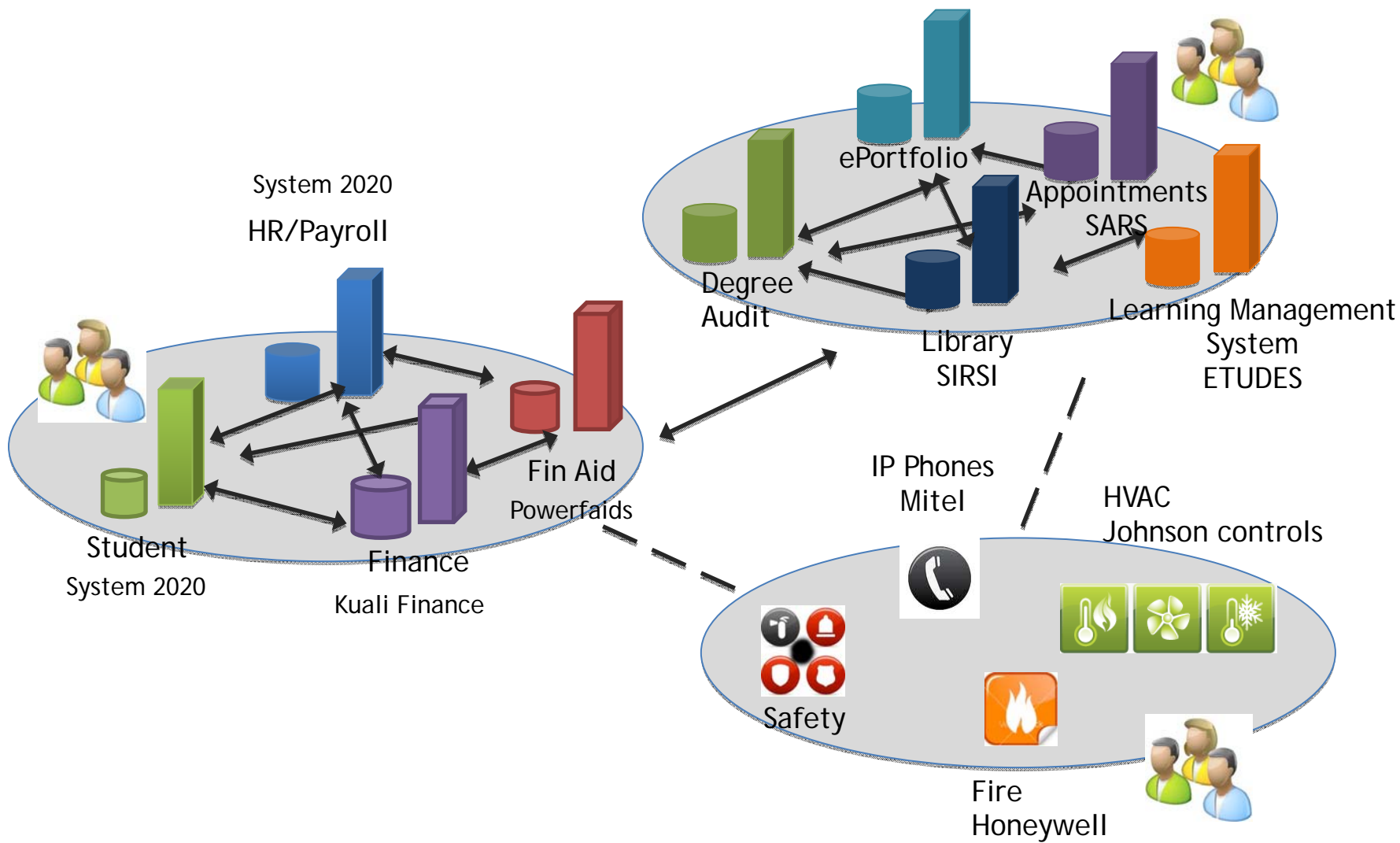
Summary and Next Steps

The Information Technology Strategic Plan includes projects that will help Delta College maintain or improve current services to the campus and the community, despite present and projected resource limitations. The College has a strong reputation for collaborating with other institutions, many of them four-year universities, to develop innovative, open-source solutions to meet the needs of the higher education sector. In addition, the College has a long history as an Information Technology leader among the California Community Colleges. The College is on track to continue this trend with its pioneering work on the *Virtual Desktop* cloud computing system and support of several Quali open source systems.

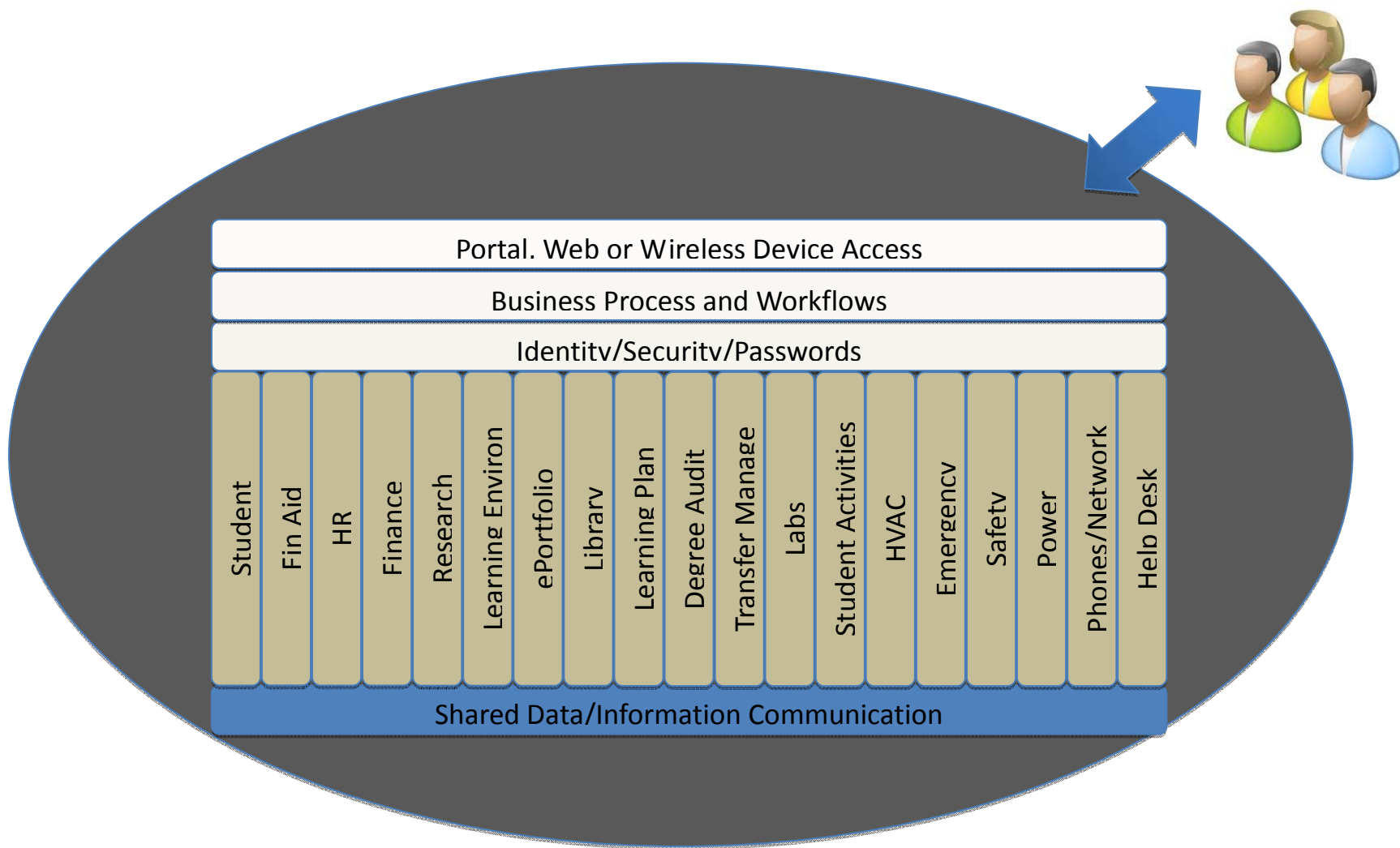
Over the next five years, the Information Services department will make significant changes to the human resources/payroll system, student information system, and student portal. Department staff will also continue to provide support and updates for the Quali Finance System. Immediate efforts will be directed toward System 2000 enhancements (System 2020) for the human resources/payroll and student components, and long-term efforts will directed at implementation of the Quali Student and Quali People Management systems. The College's target system architecture is illustrated on the following pages. Substantial efforts will also be required to enhance the campus telecommunications

infrastructure and complete the department's server migration. Each of these projects could begin within the next fiscal year and will require input and support from many other College departments and units.

Target System Architecture



New System Architecture



Appendix A: Status of Kualo Projects at San Joaquin Delta College

KUALI FINANCE SYSTEM

Annual Investment: \$0 (\$30,000 per year to be an associate partner a.k.a. no board seat)

Investment to date: \$425,000

Cost to implement: \$1,600,000

Status: Live; Most Modules Implemented

Community: Healthy – 20+ active members, many other less active schools kicking the tires

SJDC Personnel Involved: Locally Chris Kirschenman
Brian Smith
David Elyea
Christina Snedden

Benefits Derived

Hard Cost Savings: \$125,000 Annually from Oracle Financials support fees

Soft Costs Savings: \$3-4 million Saved cost of vendor software, implementation, and support to replace Oracle Financials

- Streamlined Processes:
- More efficient processing and tracking of all cash receipts for the campus
 - New ability to create summary posts all Financial Aid checks – approx. 30,000 per year
 - New ability to create electronic approval of checks issued on County account
 - Immediate tracking of purchases: from requisition to receiving to payment
 - Easily attach invoices and backup documentation
 - Full vendor maintenance capabilities – includes 1099 processing
 - Maintains the campus budget – including General Funds, etc.

- Financial processing flexibility (journal entries)
- Monitors sufficient funds to prevent overspending
- Transparent detailed access to all account transactions
- Generates detailed financial reports by: Organization, Account, Source, Program
- Validates documents by routing to the proper approvers
- Distributed financial responsibility to campus users

Summary: **OVERVIEW**

The Kualu Financial System (KFS) is a comprehensive suite of functionality that will serve all higher education institutions' financial business needs. Kualu Financial System's design is based upon the proven functionality of Indiana University's Financial Information System (FIS) and Electronic Procurement and Invoicing Center (EPIC).

After receiving a substantial grant from the Andrew W. Mellon Foundation, Kualu turned its teams of functional experts and developers drawn from participating institutions to building KFS. There have been four releases to date: Kualu Test Drive demonstration in March 2006, Release 1.0 in October 2006, Release 2.0 in November 2007, and Release 3.0 in October 2009 providing the last of the baseline functionality. The project team is currently releasing version 4.0.

KFS has evolved into a best of breed offering that is currently being installed at over a dozen schools and successfully running at Delta, University of Arizona, University of California Davis, and Colorado State University. University of Hawaii, University of Connecticut and University of Southern California will be among the next batch of implementers.

KFS is made up of 10 modules: Chart of Accounts, Financial Transactions / General Ledger, Purchasing / Accounts Payable, Labor Ledger, Contracts & Grants, Accounts Receivable, Budget Construction, Capital Assets, Effort Certification, Endowment Management.

KFS also takes full advantage of Kualu RICE. The Kualu Rice effort provides an enterprise class middleware suite of integrated products that allows both Kualu and non-Kualu applications to be built in an agile fashion, such that developers are able to react to end-user business requirements in an efficient and productive manner, so that they can produce high quality business applications.

LOCAL STATUS

Locally, Delta has implemented all relevant modules except for Capital Asset Management. The college has processed its first “Year End”, clearing out all budgetary items and transactions from one year and starting a new one. We have streamlined processes that support software testing, feedback to our IT folks, campus training, and help desk. The system has not been without its critics, but the benefits of decentralized fiscal responsibility, transparency, and efficiency far outweigh the pain of transitioning from one system to the other. We plan to move the version 4.0 after completing the year-end process after which we will implement the last remaining module (CAMS). Users are taking ownership of their budgets, getting trained on KFS features and functionality, and utilizing new advanced reporting features to draw better intelligence from our finances better than ever before.

RISKS

There are still risks with the path that we have chosen. The community remains strong and builds in support every quarter with more schools implementing and including KFS in their RFP processes. There is always the risk that the system falls behind vendor options available or that it would languish locally due to our attentions turned elsewhere. To mitigate this risk, it is recommended that Delta remain active in the KFS community at a functional level and maintain the voice we have been in the project so far for 2-year schools. It is also recommended that a resource within Information Systems remain relatively focused on the product to ensure customer satisfaction and compliance with the community’s advances.

One other risk is related to the decommissioning of the legacy Oracle System. This system contains years of historical information. The planned end of life for this system is May 31, 2011. While we have vigorously planned for and executed the migration of key Oracle data to a data warehouse environment, there is always the remote chance that we may face a situation of missing data that was not retained after the software is turned off and hardware repurposed. .

KUALI STUDENT SYSTEM

Annual Investment: 0

Investment to date: \$800,000 (four years of involvement)

Cost to implement: \$0 (yet)

Status: In development, 1.1 Curriculum Management available to implement; 1.2 available late fall, 2.0 Enrollment available early 2014

Community: Small, Unproven; Dedicated 8 schools; Looking to add 2-3 more partners; we have a partner relationship with the Naval Post Graduate School with which we share resources effort.

Delta College has withdrawn as a developing partner because of state budget crisis and will evaluate product as it is delivered by participating colleges.

SJDC Personnel Involved: Locally 0 FTE
Community

Benefits Derived

Hard Cost Savings: \$0 (yet)

Soft Costs Savings: \$3-4 million Saved cost of vendor software, implementation, and support of SIS

Streamlined Processes:

Summary: **OVERVIEW**

In 2008, the Delta College's Board of Trustees approved the investment in Kuali Student, with a commitment of \$200,000 annually for five years. This investment supports the Kuali Student Consortium, Kuali Rice, and local operations associated with managing our participation in the project and preparing for replacement.

The original drivers behind the investment in Kuali Student include the opportunity to:

- Steer outcomes in the development of a next-generation student system with other leading higher education institutions
- Leverage consortium resources
- Substantially improve student experience
- Implement a flexible technology environment
- Pursue a high value, strategic path with low risk to the institution
- Design and deliver solutions next generation functionality not available in any packaged software product

System 2000, the system Kuali Student is intended to replace, was created by Delta College Information Systems to manage our campus student services and administrative needs. The system was created in the early nineties and is supported only by our small staff. The plan is to migrate System 2000 to the latest modern platform (Smalltalk 7.7) and protect this investment until Kuali Student becomes a viable alternative.

Kuali Student represents an opportunity to create a modern system, using recent technology advances, and have the same benefits of control of the source code, but with added help in maintain and progressing the system long into the future. Delta staff and SIS governance teams had been participating in the following activities to ensure appropriate due diligence and risk mitigation of our investment in the Kuali Student project:

- Active participation in Kuali Student Governance teams to influence direction and outcomes
- Ongoing communication with Delta executive sponsors and business partners
- Formal annual review and confirmation of approach with Delta Board of Trustees

The project is currently behind schedule, but making measureable and moderate progress toward delivering a Curriculum Management Module that is planned to replace our current CurricUNET system as soon as Winter 2012. This initial Kuali Student module aligns strategically with accreditation

initiatives to properly plan appropriate curricula in a collaborative way, matching learning objectives to learning outcomes, and ensure the planning process feed efficiently into the student system. The next module, Enrollment, is in development preparation phases with demonstrable and useable code due in summer 2012 for basic features, full system capabilities due in spring 2013. Enrollment represents the lion share of functionality needed in a student system. It will include modules of learning plan, enrollment, registration, student financials, degree audit, graduation clearance, and transfer articulation.

RISKS

From the start, Delta recognized that investing in Kuali Student carries significantly different risks than taking a traditional vendor product approach to SIS replacement. The following provides an overview of current risks and mitigating factors.

Partnership changes: There have been several changes in investing partners in the past two years. Economic challenges and changes in leadership resulted in Florida State University, MIT, and the University of British Columbia re-allocating resources to local development efforts. New partners have joined, including Indiana University, Boston College, and Northwest University from South Africa. Other institutions are following with interest, including one of significant size and resourcing. Current investing partners remain committed, particularly to the development and delivery of Kuali Student's enrollment module, and all indications are that they will maintain or even increase their current level of investment to achieve this.

Novelty of architectural approach: Kuali Student's SOA architecture, flexible and reusable technology stack, and abstracted entity services like 'Learning Unit' posed a particular challenge to the development team. Difficulties encountered in the original architecture led to significant delays in the development and delivery of the Curriculum Module. Based on lessons learned and outside consultation, the team has significantly simplified the architecture to improve development velocity, while maintaining critical elements that support flexibility and extensibility to meet emergent academic needs.

Difficulty of building from the ground up: Unlike other Kuali solutions, which were adopted from an existing, homegrown solution, Kuali Student started from the ground up to allow for a complete re-envisioning of a next-generation student system. In the past year Kuali Student has made some significant shifts in that strategy. The consortium has been partnering with

vendors to implement commodity functions that are available and stable in the marketplace (such as DARS for degree audit) and is considering existing systems as the basis for future modules. This strategy of investing more heavily in strategic components and less in commodity components aligns well with Delta's strategic framework for replacing legacy systems.

Geographical distribution: The geographical distribution of the team over several institutions and time zones has increased the complexity of executing on the planned scope and timeline. This is further exacerbated by the addition of international partners not located in North America. To address this issue, the project is actively gearing up to re-organize into multiple regional teams supported by a core team that manages standards, design review, quality assurance, and integration. This will allow the project to benefit from productivity gains resulting from increased co-location. Investing partners are expecting that this organizational model will improve development velocity, while maintaining appropriate governance to ensure that a coherent Enrollment Module is developed.

KUALI PEOPLE AND ENTERPRISE MANAGEMENT

Annual Investment: \$8,000

Investment to date: \$8,000

Cost to implement: \$0 (yet)

Status: Test implementation of time and attendance locally, leave balance will follow, Position control due out Spring 2012

Community: Slim, Unproven; Growing – five+ active members, seeking five additional partners

SJDC Personnel Involved: Locally 0 FTE
Community

Benefits Derived

Hard Cost Savings: \$100,000 Potential savings from MUNIS costs

Soft Costs Savings: \$3-4 million Saved cost of vendor software, implementation, and support HR system

Streamlined Processes:

- Time and Attendance will move off of paper forms and onto a fully managed online system that will feed into Payroll System
- Position control module will fill a huge gap in capability and help in Delta College budgeting and planning
- Eliminates hundreds of hours each payroll to hand enter employee time and attendance
- Leave balances will be calculated automatically and made available to community more readily

Summary: **OVERVIEW**

Numerous schools have expressed a desire to swap out all three of the major administrative systems, creating a need for an enterprise-wide HR/Payroll system. Many vended systems don't provide functionality

specific to higher education, and many home-grown systems are increasingly unsustainable. Expectations are growing for updated and effective systems that are more usable for end users, that are more flexible for administrative, regulatory, and policy changes and that provide the necessary functionality required by higher education.

Since Fall 2008, some institutions have explored human resources and payroll needs, and the idea of a Quali People Management project was developed. Delta has joined this project as a peripheral contributing partner which does not require as large of a commitment in money or human resources, but allows us to be part of the planning, functional roadmap creation, and project guidance. Our interest in joining this project is to replace a relatively new system at Delta, but one that was not fully compliant with other enterprise systems on campus making it hard to share payroll information with most importantly the finance system as well as other key systems such as System 2000 and Financial Aid.

The project is being developed in two phases. This approach enables schools to implement the time and attendance or leave accrual pieces of a human resource and payroll system prior to the completion of the project.

Phase 1 includes:

- Electronic Core HR Transactions including:
 - Personnel transactions
 - Position management transactions
 - Employee activities and demographics data
- Time and Attendance
- Leave Management

Phase 2 includes:

- Payroll & Financial processing
- Benefits Administration

Future phases include:

- Self-Service Functionality
- COBRA Administration
- Other Needs as Identified

Phase 1 work has begun on Time and Attendance. It is being built on Rice 1.0.1 and is integrated with other Quali Systems. Development on Time and Attendance is scheduled to be complete by the end of 2010, with QA to be completed in Spring 2011. After completing the Time and Attendance

module, work on Leave Management and / or electronic core HR transactions will begin once detailed business requirements are defined.

RISKS

Because we have a Human Resources system in place, and the commitments we have made to this project are relatively low, our risk profile on this project is very low. For very little investment, we will be able to acutely aware and even influence a far better HR system that we currently have in place over time. The timeline for development matches our needs very closely. Time and attendance will become available as we start to settle in a new fiscal year using KFS.

Position Management is the first module delivered out of phase two. While we have need of this functionality now due to shortcomings in the current MUNIS HR system, we will be able to conservatively implement Kualiti People Management Position Management module this time next year.

KUALI READY

Annual Investment: \$10,000

Investment to date: \$10,000

Cost to implement: \$0 (SAS model)

Status: Live; Community needs to build emergency plans

Community: Healthy – 40+ active members, many others to follow; 200 are projected in 24 months

SJDC Personnel Involved: Locally

Mario Vasquez – Functional Expert

Community 0 FTE

Benefits Derived

Hard Cost Savings: \$125,000 Typical cost of Continuity Management Software

Soft Costs Savings: \$500,000 Saved cost of vendor software, implementation, and support

Streamlined Processes:

Summary: **OVERVIEW**

Kuali Ready is a business continuity planning tool that is specific to institutions of higher education. Its aim is to increase the institution's ability to keep operating in the face of disruptive events.

The "business" of higher education is teaching, research, and public service. For higher education, these four functions are the "business" in business continuity planning.

Departmental Focus

The Kuali Ready tool helps institutions produce departmental continuity plans, and can be used by any type of department – instructional, research, support, administrative, collections (libraries, museums) and clinical.

The departmental continuity plan can be printed as a document and contains –

- Prioritized list of the department’s critical functions, with details of each
- Specific section on continuity of IT
- Specific section on continuity of instruction (if applicable)
- Lists of 10 types of key resources, with details
- Repository of key documents
- High-level recovery strategies for all functions
- Action items to achieve a better state of readiness. These action items embody the central premise of continuity planning: that the most effective way to cope with disaster is to get ready ahead of time – by putting in place NOW the information, processes & resources that we will need THEN.

All-Hazards

The tool uses an all-hazards approach. This means that it aims to increase the organization’s readiness for all types & sizes of disaster events –

- Natural disasters (regional earthquake, fire in your offices, infectious disease epidemic, unexpected death of a key employee, etc.)
- Technological disasters (data loss, connectivity loss, equipment failure, etc.)
- Human-caused disasters (terrorism, theft, civil disturbance, cyber attack, etc.)

Structure of the Tool

- Focused at the department level - The typical campus is highly decentralized, with operational control exercised to a large extent at the department level. Since business continuity planning is operational-level planning, it must focus on departments. The product of the Kuali Ready tool is a departmental continuity plan.
- Do-it-yourself - Because campuses may contain hundreds of departments, the planning process must be self-operated. The Kuali Ready tool contains all the information & guidance needed for its use. On the Berkeley campus, for example, more than half of the current 260 departmental plans were created without any contact with the campus planning office.
- Easy to use, no training required - Users must be able to pick up the tool and use it. The Kuali Ready tool is a straightforward questionnaire with clear guidance text and intuitive navigation.
- Lean content, clear purpose - The tool is oriented to stimulate

departmental preparedness (via its action items). It collects only that data that is essential to its purpose. It avoids overly-detailed recovery strategies (more on this below). Hence the tool remains lean and do-able.

- Final outcome: a campus-level continuity plan - The department-level plans identify both action items that can be accomplished by the department, and action items that belong to higher levels of the institution. These higher-level action items, taken together, comprise a powerfully-focused campus continuity plan.

This product has yet to be rolled out to the campus as we were waiting for NIMS training to be completed first. The software is available 24/7 online and anyone can set up an account and start developing emergency plans for their department. I have created a sample plan and made available a couple other examples.

We also need to identify and commit a functional representative to participate in product enhancement meetings as well as influence product direction. It is recommended that this person be someone involved with campus security or safety services. Mario Vasquez has been unofficially approached, but he has yet to attend any meetings virtually or otherwise.

RISKS

Similar to the KPME project, the annual investment is low. This project is the first Quali Software as a Service (SAS) project, so we have no additional costs related to hardware or maintenance. Our only risk is stating we have a tool like this in place and then do nothing to push it through the campus departments requiring them to develop their own continuity plans in the event of a disaster or emergency.

KUALI RICE

Annual Investment: \$0

Investment to date: \$0

Cost to implement: \$0

Status: Live; RICE is the middleware running under KFS; We have a standalone version ready to develop new applications and integration around.

Community: Healthy – 20+ active members, many other less active schools kicking the tires

SJDC Personnel Involved: Locally 0 FTE
Community

Benefits Derived

Hard Cost Savings: \$125,000 Annually from Oracle Enterprise Database License

Soft Costs Savings: \$600k -1 million Saved cost of vendor middleware, implementation, and support to establish middleware pieces

Streamlined Processes:

Summary: **OVERVIEW**

The Kuali Rice software provides an enterprise class middleware suite of integrated products that allows for applications to be built in an agile fashion. This enables developers to react to end-user business requirements in an efficient and productive manner, so that they can produce high quality business applications.

Kuali Rice is leveraged heavily by the Kuali applications but is also designed to be used in non-Kuali applications. Its services and framework pieces are designed in such a way to be applicable to multiple business domains.

Rice is built with Service Oriented Architecture (SOA) concepts in mind. Specifically, end developers are able to build robust systems with common

enterprise workflow functionality, customizable and configurable user interfaces with a clean and universal look and feel, and general notification features to allow for a consolidated list of work "action items." Additionally, there are a set of services in Rice that provide identity and access management capabilities and can be used to abstract away from underlying institution-specific identity services. All of this adds up to a re-usable development framework that encourages a simplified approach to developing true business functionality as modular applications.

By using RICE, we do not need to purchase expensive middleware software from vendors such as Oracle or IBM. We can leverage the technology pieces such as workflow and security to benefit our own independent software projects.

RISKS

By using RICE and RICE only we are putting our middleware future in the hands of an open source community that is relatively small in size compared to Apache, JBOSS or OpenMiddleware. These options have their downsides as well. It is recommended that we stay on the RICE path as it supports our current ERP initiatives and stay aware of market trends to know other options if we feel RICE is lagging in support or capabilities relative to our needs and market options.

DELTA KUALI LEADERSHIP AND INVOLVEMENT

Chris Kirschenman KFS, RICE

Chris is a leader and key contributor to both the Kualu Finance System and the Kualu RICE projects. Both KFS and RICE are maturing well and are entering critical phases as significant improvements are being made in the infrastructure to support all projects. Two of these improvements directly affect Delta's implementation of KFS locally and Delta's planned upgrade to KFS 4.0 in November after fiscal year end and user experience for future Kualu Student functionality.

Chris MacDannald KPME/HR

Chris is our sole representative from Delta on the Kualu KPME (HR) project and is quickly being recognized for her attention to detail and domain expertise in key functional areas related to the burgeoning KPME project. Chris' knowledge of both MUNIS and System 2000 HR and Payroll make her an excellent choice to guide into a new more open and flexible HR system. KPME sees great value to have representation from a non-university school as certain key functional choices are being made each week.

Brian Smith KS, RICE

Brian is a team leader on the user interface team for the Kualu Student project. He is in charge of multiple development resources. He and his team are working to help the RICE team with the Kualu Rapid Application Development (KRAD) module of RICE - this directly affects how fast and how powerful user interface elements can be that are running on the RICE middleware. Brian's ability to continue in this role and provides great benefit to Delta by developing the expertise we are going to need locally not to mention the influence he will have on functionality friendly to Delta College requirements.

David Elyea KS, RICE

David is one of the most respected RICE developers on all the projects. He is tasked with directing workshop activities and is also part of the key KRAD work mentioned above. He has more RICE experience than most involved in any Kualu project and has proven to be a leader and a developer with an incredible work ethic.

Melissa Green KS

Melissa is a prolific and detail oriented analyst on the Kualu Student project. She does the work of three people as she gathers, articulates, and protects Delta College's functional requirements to ensure the finished product meets the needs of 2-year institutions and Delta specifically. Melissa works closely with other partner resources on a cross functional development team that is proven to be the most productive at outputting demonstrable code for the Kualu Student project.

Appendix B: Information Services Projects Timeline

