



Enterprise Systems in the Contra Costa Community College District

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Preface

The EDUCAUSE Center for Applied Research (ECAR) produces research to promote effective decisions related to the selection, development, deployment, management, socialization, and use of information technologies in higher education. ECAR research includes (1) research bulletins—short summary analyses of key information technology (IT) issues; (2) research studies—in-depth applied research on complex and consequential technologies and practices; and (3) case studies—institution-specific reports designed to exemplify important themes, trends, and experiences in the management of IT investments and activities.

ECAR investigated the state of enterprise systems in higher education and issued *The Promise and Performance of Enterprise Systems in Higher Education*.¹ This research was conducted by a team of researchers from ECAR and from Cap Gemini Ernst & Young. It was undertaken in the five phases described below.

Consultation

Researchers consulted with administrative information systems leaders and enterprise resource planning (ERP) provider officials to identify and validate the most

interesting research questions and hypotheses for framing the construction of a quantitative survey instrument. In particular, the EDUCAUSE Advisory Group on Administrative Information Systems and Services (AGAISS) was consulted. These discussions resulted in a research framework, finalized in March 2002, that allowed development of an online survey to begin.

Online Survey

An online survey of 480 colleges and universities was conducted to establish their motivations, expectations, insights—and ultimately their satisfaction—concerning the use of institutional student, financial, and human resources systems over the past seven years. The populations surveyed included 1,473 EDUCAUSE member institutions, 219 institutional members of the Council of Independent Colleges, and 1,288 institutional members of the American Association of Community Colleges.

Telephone Interviews

Researchers conducted intensive telephone interviews with more than 40 IT and functional executives and managers at 23 selected institutions. Those institutions participating in this research phase had either

implemented ERP systems within the past seven years or were currently in the late planning or implementation stages of these projects. All subject institutions are members of EDUCAUSE.

Discussion

Researchers organized a discussion “summit” involving 25 participants from 18 comprehensive or research-intensive institutions, as well as participants from ECAR and Cap Gemini Ernst & Young. Invited participants were senior executives known for having sponsored and led major enterprise system implementations at some of the most complex institutions in the world. Participants were asked to validate, refute, clarify, and extend preliminary descriptive statistics from the online survey. In addition, they were asked to summarize key implementation lessons, describe their institutions’ visions and goals for enterprise systems, and discuss the possible future of enterprise systems in higher education.

Case Studies

Researchers conducted in-depth studies involving six institutions that have undertaken enterprise system implementations noteworthy for their scope or success and from whom others may learn effective practices. Additional research—most of which involved on-site visits—covered four institutions that chose to defer or eschew packaged ERP solutions, preferring instead to focus on alternative enterprise strategies. Such strategies include Web enablement of information, transactions and services, data warehousing, and workflow management.

The present case study, conducted as part of the fifth phase of the research, was undertaken to draw on the direct experience of those able to provide insights into what has—or, as appropriate, what hasn’t—

worked in enterprise system implementations. It is assumed that readers of this case study will also read the primary study, which provides a general context for the individual case study findings.

ECAR wishes to thank the leadership of the Contra Costa Community College District (CCCCD) for sharing their time, thoughts, insights, and records with us. In particular, ECAR thanks Chuck Spence, chancellor; Mojdeh Mehdizadeh, vice chancellor of technology; Doug Roberts, controller; Les Littman, purchasing director; and Linda Rosales, payroll director. Leaders of the CCCC colleges also shared their time generously with us: At Contra Costa College, Helen Carr, president; Jeanette Moore, director of admissions and records; and Mariles Magalong, director of business services; at Diablo Valley College, Chris Levias, director of business services; and Carol Maga, assistant dean of instruction; and at Los Medanos College, Peter Garcia, interim president; and Gail Newman, interim executive dean.

Executive Summary

This case study focuses on the selection and implementation of new financial, student, and human resources information systems at the Contra Costa Community College District. The CCCC was established by the Contra Costa County Board of Supervisors on December 27, 1948, and headquartered in Martinez, California, the county seat. The CCCC comprises three colleges:

- ◆ Contra Costa College in San Pablo (West County, about 8,500 students),
- ◆ Diablo Valley College in Pleasant Hill (Central County, about 22,000 students), and
- ◆ Los Medanos College in Pittsburg/Antioch (East County, about 9,000 students).²

A district technology planning committee developed a master plan in 1994 that called for the replacement of the district's information system, which had been in use since 1974. Groundwork for the replacement of this district-developed system was completed in the 1995–96 academic year, and in August 1997 the five-member Governing Board approved the purchase of a new system to be built around Datatel's Colleague software suite.

Software selection at CCCCDCD entailed a highly successful and inclusive committee process that included the development of requirements, a gap-fit analysis, and on-site reviews of other community college implementations of software from Datatel and competitor Systems and Computer Technology (SCT) Corporation. Because of its success and commitment, the selection committee was reassigned to oversee the project's implementation. Chancellor Chuck Spence provided funding for the project and was its executive champion. Marygrace Salyers, then director of IT, was the project leader. She was supported by project manager Jim Ply. Reporting to the steering committee were as many as 11 standing implementation teams and a number of ad hoc working groups. Implementation teams and working groups represented district and college functional offices, and membership was diverse. Inclusion was a major design element of project governance.

Communication and training at CCCCDCD were highly formalized, and the institution made an early commitment to minimize changes to both the existing legacy system and the code of the new system. In addition, the project unfolded under a formal statement of vision and goals.

All systems at CCCCDCD were successfully implemented and went live in 1999. The project was effectively delivered on time and on budget. The district office in particular

reported a significant increase in system functionality, especially the ad hoc query capabilities missing in the legacy system. These capabilities met the increasing need for sophisticated planning as well as helping CCCCDCD comply with the additional reporting requirements facing all public institutions.

The experience for the Colleges of Contra Costa is more equivocal. Campus presidents and other senior campus officials expressed varying degrees of disappointment that expectations for the system have not yet been met. Most ascribed these disappointments more to end users' unfamiliarity with the systems than to actual system deficiencies. Project officials agreed that the training associated with the project was both insufficient and too early in the project to have been most effective. As a result, all colleges reported a loss in key institutional functionality, particularly in the delivery of key reports. Some college officials reported the proliferation of shadow systems to compensate for these perceived losses.

Although this enterprise implementation has failed to meet all of its objectives, it is clearly an overall success. More important, the institution's leaders are aware of the need for more work on socializing the new information systems and are moving ahead with initiatives in data warehousing, decision support, process reengineering, and educational return on investment. Combined, these initiatives paint a very different picture of the CCCCDCD from the one Chancellor Spence faced in 1996 when he was appointed to head the district. Today, the CCCCDCD operates a technically sound and modern IT infrastructure that is supporting the rapid rise in student enrollments. Students have access to transcript and financial information via the Web, and nearly half use the telephone or the Web to register. College officials no longer need

to work around batch processing schedules or depend on the district's IT staff for reports. With continued investment, the CCCCD's enterprise systems will enable the institution to accomplish its mission.

Institutional Background

The Contra Costa Community College District was created by plebiscite in 1948 and covers 686 square miles in the East Bay Area of northern California. The district serves 879,200 county residents through three colleges: Contra Costa College, established in 1948; Diablo Valley College, founded in 1951; and Los Medanos College, founded in 1974. The three colleges are administered by Chancellor Spence and a district office and are governed by a five-member Governing Board elected from local wards for four-year terms. Chancellor Spence, appointed in January 1996, recommends policy to the board and supervises the administration of policy as determined by the board. See Figure 1.

Contra Costa College has nearly 100 departments of instruction and offers AA and AS degrees as well as a variety of certificate and nondegree offerings. It was first known as "Shipyards Tech," having been first located at the vacant World War II Kaiser Shipyards III in Point Richmond, California.

The college now serves about 8,500 students in the West County area of Contra Costa County.

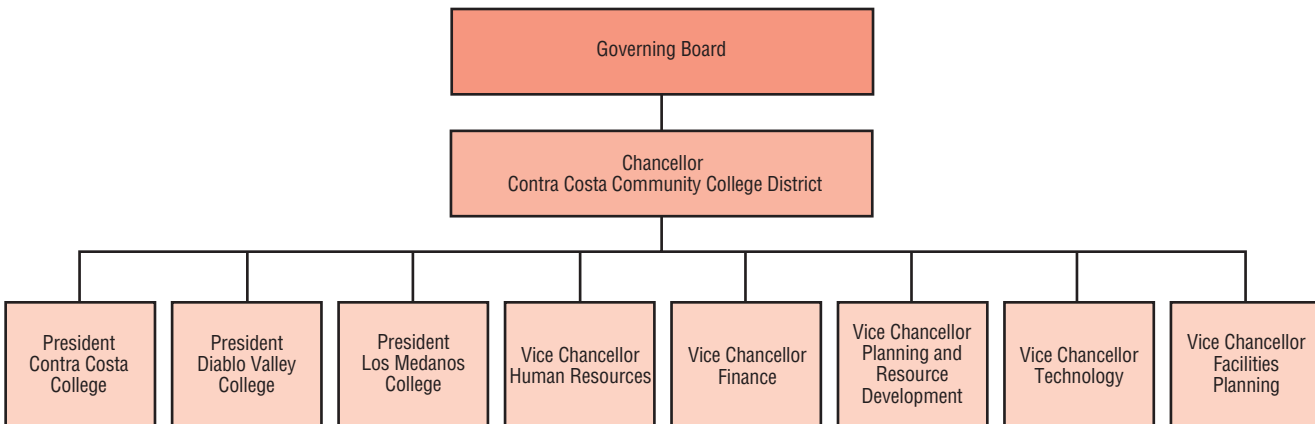
Diablo Valley College serves more than 22,000 students at its Pleasant Hill, California, campus and at satellite centers in San Ramon and Walnut Creek. It leads California community colleges in the number of graduates who transfer to four-year institutions. The college has more than 300 full-time and nearly 400 part-time faculty members, offering more than 2,600 courses in 50-plus occupational specialties.

Los Medanos College, serving about 9,000 students, is a public community college that provides quality educational opportunities for those within the changing and diverse community it serves. Its name is derived from Rancho Los Medanos, one of the great land-grant rancheros created by the Mexican government during its sovereignty over California. Los Medanos College serves both high school graduates and a very large adult population in the central and eastern portions of Contra Costa County.

Drivers of Enterprise Systems Renewal

Spence made two observations early in his chancellorship. First, he found a three-college system with a very weak mission.

Figure 1. Contra Costa Community College District Administration



“When I arrived, I found three very autonomous colleges. The board wanted to create a system [because] resources were very tight and there appeared to be little internal cooperation.” Second, having come to the CCCCD from a very technologically advanced community college district, Spence concluded early that the CCCCD was far behind in its use of technology.

A relentless optimist, Spence saw the district’s lack of marketing, weakness in technology, history of collegiate autonomy, and absence of coordinated planning or facilities development as a “blank slate of opportunity.” He faced a risky environment and knew he wanted to bolster the institution’s IT infrastructure. “We needed a new part for our mainframe computer. The only part that could be found was in a junkyard in Norway. The district had used the same software for 25 years, and the only person who knew that code was near retirement age.” Further, Spence and his district colleagues did not have easy access to the kind of information they needed to be effective. “Vice presidents could not tell you about revenues or enrollments. We needed to open up the information environment.”

Spence spoke eloquently about the potentially liberating effect of opening the environment. “When you give data to people, it changes their behavior. This will begin, in a very fast way, to change the system. For example, when we were finally able to [determine the] percentage of CCCCD faculty and staff that would retire in the next five years, the answer set a number of important changes in motion.”

Spence created a stir by publicly setting aside \$300,000 toward the renewal of the CCCCD’s student, financial, and human resources systems. He understood that this was not sufficient capitalization but would be viewed symbolically as seed money.

Finally, the institution in general and

Spence in particular took note of the Y2K problem. During 1997–98, Spence was convinced—as was the Governing Board—that “the Contra Costa Community College District needed to begin a major change effort.” Spence used this risk to the institution as a spur to change the entire system. He and the CCCCD’s board members concluded that the district would undertake replacement of the student, financial, and human resources systems at once.

The chancellor’s vision for the institution also complemented the master plan developed in 1994 by the District Technology Planning Committee. This committee consisted of senior district and college representatives, many of whom now occupy the senior-most leadership positions with the CCCCD and its colleges. This group also recommended—for more tactical reasons—replacement of the district’s enterprise systems and oversaw some of the complementary preparatory work (infrastructure and standards) for this eventuality. They clearly saw the need to modernize the institution’s technology base. CCCCD’s legacy stand-alone systems were integrated by batch processes; there was no data integration across colleges or across functional systems.

The District Technology Planning Committee developed the process and protocols that would eventually guide the selection and purchase of a new suite of systems.

Procurement Process and Governance

In April 1997, a request for proposals (RFP) was developed and circulated for review by functional groups. In May, this RFP was sent out for bid, and in June the chancellor’s cabinet appointed a selection committee. This committee, comprising professionals from the district, the colleges, and functional offices such as purchasing, admissions and records, financial aid, payroll,

research, comptroller, student services, and IT, oversaw the procurement effort.

Proposals were received from Datatel, PeopleSoft, and SCT. After evaluation, the committee selected Datatel and SCT as finalists. The PeopleSoft solution was rejected at that time because its perceived complexity didn't seem to fit the mission of this two-year institution and because its student information systems were relatively new. The committee believed these factors would place the project's most important goal—completion in 1999—at risk. In July, 11 members of the selection committee visited the Portland Community College District, in Portland, Oregon, and the North Harris Montgomery Community College District, in Houston, Texas.

Owing largely to its observations and conclusions about ease of installation and maintenance, user-friendly ad hoc reporting capabilities, the potential for lower total cost of ownership and greater user control of the upgrade timetable, and the possible smaller need for outside training and consulting, the selection committee recommended that the district acquire the Datatel Colleague system. In fact, in August the committee recommended to the Governing Board an entire solution proposed by Datatel. This solution included

- ◆ Colleague software,
- ◆ a Unidata database,
- ◆ third-party software,
- ◆ Hewlett-Packard hardware,
- ◆ project management, and
- ◆ implementation support and training.

Purchase of this system was approved in August 1997 at a special Governing Board meeting.

The institution is exceptionally proud of its selection process and in retrospect judges it to have been both analytically rigorous and community building in nature. The committee met regularly under a formal charter and

was highly representative of both the district and the colleges. Committee members adopted clear norms that would guide and discipline their interactions and communications so that project deadlines would be met. In fact, the knowledge and esprit de corps developed among selection committee members led to a recommendation that this group be re-charged as a steering committee to oversee the project.

Managing the Implementation

The implementation was guided by a concrete vision, endorsed by the chancellor's cabinet in August 1997: "... we will provide easy access to meaningful information and will reengineer our processes/procedures to create a work environment characterized by

- ◆ greater student success and satisfaction,
- ◆ more-informed employees,
- ◆ informed decision making, and
- ◆ greater cooperation and communication."³

Broad strategic planning goals included meeting customers' needs, improving and expanding educational delivery, managing enrollments, enhancing staff development, maximizing funding, and increasing the diversity of students, staff, and advisory committees. Specific project implementation goals included

- ◆ providing direct student access to appropriate information;
- ◆ improving services to customers;
- ◆ enhancing decision-making capabilities;
- ◆ increasing staff access to reliable, consistent, and timely data;
- ◆ improving all processes affected by the project; and
- ◆ meeting state and federal reporting requirements.

The steering committee also developed concrete performance indicators to determine whether the project's high-level goals

had been achieved. These indicators included achieving full operational status of human resources, financial, and student systems; reducing, to zero, all costs associated with the legacy system; educating all employees about the new system's capabilities; implementing ad hoc reporting capabilities; meeting all mandated reporting requirements; and providing direct student Internet access to appropriate academic and financial information.

Project implementation was the responsibility of the vice chancellor for technology systems planning and support (and predecessor positions). A project leader was also dedicated to provide day-to-day project management. The chancellor's belief in bringing many people together was reflected in the project's governance structure, which included a 20-member steering committee, nine standing implementation teams, and a variety of ad hoc teams representing functional areas affected by the new

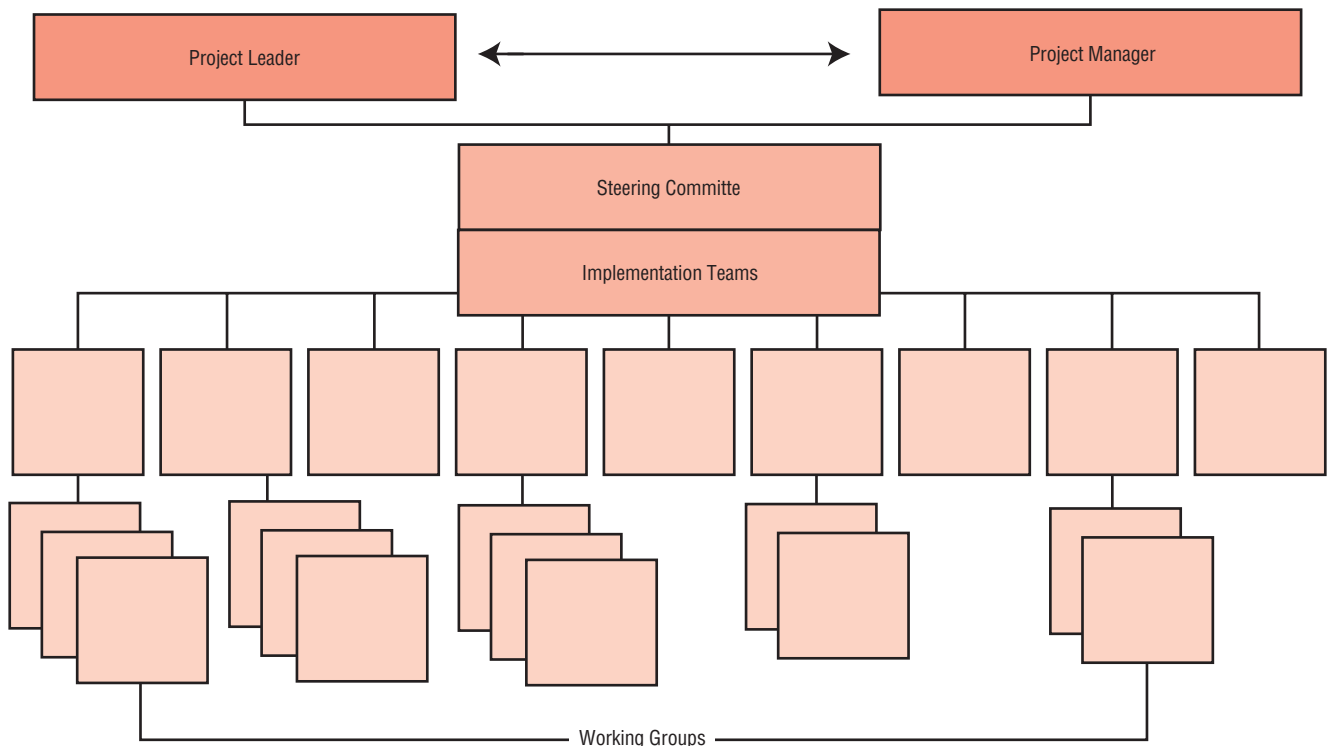
system. Initially, implementation teams of 14–20 members were constituted in the following areas:

- ◆ admissions, records, registration, grading, and transcripts;
- ◆ curriculum management, faculty information, and degree audit;
- ◆ financial aid, student billing, and accounts receivable;
- ◆ core operations;
- ◆ core reporting;
- ◆ human resources and payroll;
- ◆ fundraising;
- ◆ general ledger and budgeting; and
- ◆ purchasing, accounts payable, accounts receivable, inventory, and fixed assets.

Soon after the project was launched, teams to support training and communications were formed (see Figure 2).

The steering committee gave each team a concrete charter and a written set of responsibilities. The charters included responsibility for integrating disparate points of

Figure 2. Project Organization



view and resolving conflicts, and for coordinating decisions that spanned different offices. Each team was empowered to make decisions without prior approval of the steering committee, but any decision affecting college policy was escalated to the steering committee for handling. Conflicts that could not be resolved at the team level were also escalated to the steering committee. The project teams and steering committee agreed early that a simple two-thirds agreement of those present at a given meeting would constitute consensus, thereby accelerating decision making.

The steering committee and implementation teams also developed and enforced a communications protocol and a set of administrative guidelines for the project. A communications team was created to coordinate broad communications related to the project throughout the college community. All formal communication between the steering committee and the implementation teams went through designated leaders or their designees. All teams maintained minutes of their meetings in a common format and shared these minutes with all team members, the project manager, the steering committee, the cabinet, and the leadership of constituent groups. Communication between CCCC and Datatel went through the project manager. The project leader reported regularly to the cabinet and through the cabinet to the Governing Board.

The project's administrative guidelines put members of the college community on notice that the current software would not be modified except in cases of significant errors or external mandates. These guidelines also stipulated that Datatel software would be installed in "its original form" throughout the implementation period of November 1997 to May 1999. No changes were to be made except those deemed essential by the steering committee.

The CCCC understood the importance of training. According to Chancellor Spence, "We invested hugely in training." The district contracted with Datatel to provide training to project teams and end users at resource centers at each district location. Training was conducted in a team-teaching fashion by both a functional supervisor and a Datatel trainer. Prior to system implementation, employees were to be given the opportunity to test their knowledge on practice modules, with additional training to be provided as needed.

Project Contours and Issues

While implementation went smoothly, there were some operational difficulties and unanticipated effects to cope with.

Implementation Phases

Implementation of these systems involved four phases.

Phase I—This phase, described as planning, analysis, and learning, was characterized by deployment and training of project teams, translation of then-current procedures to the new software, development of a detailed implementation plan, and planning for the data conversion.

Phase II—All preliminary plans and decisions were to be formalized and implemented within a testing environment. This phase also included creation of plans for testing new hardware and software, writing and testing conversion programs, specifying the system's default reports, and creating end-user training programs.

Phase III—Final decisions and programs made in the test environment were integrated into production systems and processes.

Phase IV—This post-implementation phase focused on socialization of the new software and processes by the institutional community. During this phase, prior and

ongoing suggestions for customization would take place “as resources, schedules, and priorities permit.”

Implementation of the new enterprise systems at the CCCCD went well. According to Spence, the district put up all systems (four, including development) within months of each other. And those systems ran. The payroll system, which had been operated by the Contra Costa County Office of Education, issued checks. Students were enrolled and registered for classes via the Colleague system. The project steering committee and the numerous functional teams celebrated. In fact, the implementation had gone so far in meeting its timelines and budgets that Chancellor Spence published an article showcasing “a flawless implementation.” Such bold pronouncements almost inevitably invite trouble.

Operational Issues

In fact, the new system experienced great performance problems. According to Spence, “The system slowed way down,” reflecting the failure to stress test the system under peak load conditions. One college couldn’t produce transcripts. The IT and functional office staff pulled together and collaborated with their colleagues at Datatel to resolve a complex set of problems involving hardware and telephone capacity, software tuning, and related problems that surface under heavy usage.

The situation today at the district office and colleges is complex. Chancellor Spence and his senior team take well-deserved pride in implementing a complex suite of hardware and software solutions in a multicollege community college district that had little experience with projects this large and complex. The system has gone far toward meeting the district’s needs for district-wide information, creating the technical capacity for colleges to perform ad hoc re-

porting and accommodating the enrollment growth that the district has witnessed since implementing Colleague.

On the other hand, officials of all three colleges report that they are trying to succeed “within the limitations of the system.” While all agree with Interim President Peter Garcia that the old system was “very difficult to query and to change in real time,” they are to some extent discouraged regarding the changes demanded by the new system and a perceived loss of operational capabilities. All of the colleges particularly lament the loss of standardized reports that had accrued during 20 years with the legacy system. Each reported the proliferation of new, shadow systems to supplement the perceived limitations of the new system and in some cases to restore processes to the way they were before its implementation.

Some of this behavior probably reflects an unwillingness to adapt to new processes and procedures. Nevertheless, much of the problem can be attributed to a training deficiency and a lack of knowledge about the system’s real capabilities. Chancellor Spence is aware of these shortcomings: “While we invested hugely in training, we should have spent 10 times the amount.” Further, the college leaders all agreed with Vice Chancellor of Technology Mojdeh Mehdizadeh that “training investments were made prematurely in the project. By the time we went live with the system, most of the people who needed to take full advantage of the system’s potential had forgotten much of their training. Given the added complexity of the new system, this has led inevitably to frustration.”

Interim President Garcia summed it up well: “While there are gaps between what the system can provide and the emerging needs that [enrollment] growth presents, we have clearly outstripped what the old system could have provided. We now know

that going around the system is a waste of time, and we are past the illusion that the new technologies are effortless and organic. These systems are not quasi-biological systems. They take a lot of time.”

Everyone agrees that the new systems are more complex, with more layers of screens, and that they require staff skills of a different kind. Further, there is a clear sense that even with a great training plan and adequate training resources, it takes a minimum of one year—perhaps even two years—for the staff to develop the necessary skills and comfort with the new systems. Many of the new users had been accustomed to working on Apple Macintosh platforms, and the move to Colleague required a concurrent shift to Wintel machines. This compounded the problem for staff at the CCCCD colleges.

A major part of the challenge for the colleges relates to culture change. As Interim Executive Dean Gail Newman explained, “We were naïve. We thought, ‘you get a new system, you plug it in . . . and things are better.’ None of our managers had training or expertise in reengineering. Creative thinking about what the new system means and how we will do business differently just didn’t happen.” Chancellor Spence agrees: “We had too great an expectation of people who had never implemented a new system. By putting ourselves on too tight a timeline, we did not leave sufficient time for creative thinking.”

System Impact on Operations

When the new system was implemented, it was unable to accept payment via the telephone-based registration system. This was a major issue for at least one of the colleges. At Diablo Valley College, the largest college in the district, this limitation meant that thousands of registrants appeared on campus. According to an official from the insti-

tution, students waiting in line to register had to be supplied with umbrellas and drinking water due to especially hot temperatures that week. To make matters worse, the new system was paperless. Because no electronic notifications were at first delivered, students received no verification of course registration. This, naturally, created confusion and frustration for both students and instructors. However, by fall 2002, more than 12,000 students registered by phone at Diablo Valley College. In addition, more than 4,000 registered over the Web using the district-wide WebAdvisor system.⁴

The human resources system implementation suffered from turnover of project staff and from an incomplete implementation. For a time, payroll was processed in both the new Datatel system and the legacy system, resulting in the generation of two W-2 forms for each employee, until employment data was completed in the new system. Student employee data was added last. The payroll system also was unable to meet all required reporting related to the CCCCD’s participation in state retirement systems, and certain payroll processes had to be handled manually while payroll staff were still in training. The ambitious project schedule created a significant overtime workload in the payroll operation to meet mandated reporting requirements.

In a more positive light, Comptroller Doug Roberts provided an example of how creativity and culture change collide: “The Colleague system offered us tremendously great capacity to manage information on the district’s vendors. Limitations in the old system restricted vendor information to names and phone numbers. To take advantage of these new capabilities, we had to manually convert 10,000 vendor records to the new system and add the new information allowed by the system. In the short run, this required new thinking and new operational

investments. In the longer run, we now manage our procurement function more effectively. Now, vendor information is entered only one time, on an enterprise basis.”

Although the purchasing cycle times in the first six months of the new system’s operations were extended, the processes are now much smoother, and the district has been able to effectively delegate \$1,000-per-transaction purchasing authority to the campuses, without the loss of needed internal controls.

Project Benefits

The CCCCD’s implementation of Datatel’s Colleague system is clearly benefiting the institution in significant ways. Perhaps the least heralded and yet most important benefit is risk management. The CCCCD has moved away from its dependence on a home-grown system tied to an aged and obsolete hardware environment and a small number of soon-to-be-retiring employees. While avoiding the risks of unscheduled interruptions of key institutional services may not be glamorous, the chancellor and board members see it as a major benefit. The new system is also one of the primary vehicles for implementing Spence’s vision of one college in three locations. It has been implemented to capture common data from all colleges and thus facilitate the flow of students, dollars, purchases, staff, and other key resources across the district and the constituent colleges.

At the functional level, the system met many of its original goals:

- ◆ *Greater student success and satisfaction.* By all accounts, Datatel’s WebAdvisor is a big success, providing students with profiles of their financial activity with the college. It helps them manage individualized academic plans, receive grades and transcripts, monitor financial aid status, and register for classes.

- ◆ *More-informed employees.* Results on this performance dimension are mixed. While Colleague unquestionably demonstrates greater ad hoc query capabilities than the legacy system, incomplete training in conjunction with the decision to omit many of the customary reports some consider critical has led to the development of shadow systems.
- ◆ *More-informed decision making.* Chancellor Spence and his colleagues in the district office report significant improvements in the availability and format of information produced by the system to support decision making. College officials, while less sanguine about these capabilities, universally acknowledge the benefits of ad hoc reporting capabilities compared with their prior reliance on the district’s IT organization to supply all information.
- ◆ *Greater cooperation and communication.* The project itself created mechanisms and processes for managing district-wide initiatives. Now these mechanisms and processes are supporting current efforts in decision warehousing and support, and in business process reengineering.

Lessons Learned

The CCCCD’s implementation of Datatel’s Colleague system is by all accounts a qualified success. More accurately, it is a work in progress. Several key lessons were learned from this analysis.

- ◆ *Where you stand reflects where you sit.* From the perspective of the board members, chancellor, district office leadership, and software provider Datatel, the CCCCD’s implementation has been an important success. The new system is indeed running, and the old system has long been in disuse—two of the primary goals articulated in 1997. The system was implemented on time and

on budget. A great many leaders and staff of the district and colleges were “brought along” through the processes of system selection and implementation. The system has made it possible to provide more responsive and complex district-wide reporting, thus supporting new planning capabilities demanded by the chancellor and board members. The system has also been the agent of standardization for a number of processes and procedures across the three colleges—another district goal.

Viewed from a college perspective, many of these goals go right to the sharp end of culture change. The three colleges of Contra Costa have proud and independent histories of service to their students and alumni. They are not always eager to embrace the benefits of standardization, particularly when such benefits threaten to erode perceived independence of action. This tension between the poles of “one institution with many locations” and “multicollege systems” defines the relationships within most college and university systems. While such tension is natural, it suggests the need for continued investment in culture change and business reengineering programs.

Additionally, perspectives differ from one college to another. While one college laments the loss of a wait-list management function performed by the old system (because it imposes new burdens on their faculty members), another college prefers to delegate responsibility for managing course wait-list processes to their faculty.

Yet another element of this lesson is not to underestimate the differences in perspective between providers of IT solutions and their users. Information technologists are accountable for delivering robust and reliable working systems on budget and on schedule. At CCCCD, this function was performed

very successfully. Users of information technologies, on the other hand, “have a business to run” and are appropriately concerned with high functionality. Users also want their systems to perform in ways that make sense in the local context. The trade-off between standardization—as embodied in decisions not to modify vendor code—and operational accountability for local departmental performance, college performance, and overall student satisfaction should not be underestimated.

◆ *Bring people along and keep communicating.*

The CCCCD appears to have done an exceptional job with the software selection process. A meaningful cross section of the district and its three colleges participated in this process and reached a strong consensus about their task. Moreover, participants achieved a broad understanding of enterprise systems and made a firm commitment to implementing them at CCCCD. The group’s knowledge, esprit de corps, and commitment to the project’s success were effective and even indispensable. Looking back, Chancellor Spence said, “We did observe that different colleges were having different issues associated with making the needed changes. In retrospect, when we saw [a problem], we should have assumed the worst, surrounded it, sent in a posse, and gotten a lot of conversation going.”

◆ *Empowerment requires training.*

The CCCCD acknowledges under-investing in training and also providing the lion’s share of the training at a less than optimal time. As a result, there are clear differences of opinion about the new system’s performance, based largely on different understandings of what the system is capable of. Ongoing education about system capabilities, along with training in these areas, will

go far in helping staff at all levels socialize these new capabilities and incorporate the new systems into their daily activities.

◆ *Stay the course.*

Many institutions appropriately breathe easier when the new system is turned on and works and the legacy system is turned off. The temptation is to pour champagne and celebrate a job well done. In many cases, the IT organization's major work is complete; that organization can turn to other projects and to plans for upgrading and maintaining the new systems. At this juncture, institutional and project leaders may forget that expectations of project performance were often based on assumptions of end-user training, local modifications and customizations, process improvement, and tuning of the system's capabilities to the needs of the ultimate stakeholders—particularly students and employees. Failure to invest in ongoing leadership engagement or to provide the resources needed to maintain the institution's visions and goals can result in projects that win battles but lose wars.

◆ *Leadership engagement is essential.*

The CCCCD enjoyed considerable leadership support. According to Chancellor Spence, "... the board has been hugely and consistently supportive [of this project]." Spence himself was an active and knowledgeable sponsor of the project and took early risks in setting aside an unprecedented amount of investment capital to improve the district's IT infrastructure and systems. The selection committee and subsequent steering committee remained engaged and active throughout the project, developing and enforcing behavioral norms and decision-making protocols that balanced the need for consensus with the need to keep the project on schedule.

An often unheralded aspect of leadership is discipline. The CCCCD implementation was well planned, well structured, and highly disciplined. Areas of discipline included the management of technical modifications and enhancements, and the delimitation and enforcement of clear roles and lines of communication. These attributes contributed greatly to the project's success.

There's a fine line between leadership engagement and an enthusiastic project steering committee on the one hand, and overselling on the other. Projects of this kind are put at risk by creating expectations of the new system that can rarely, if ever, be met.

◆ *Personnel turnover must be managed.*

The continuous involvement of Vice Chancellor of Technology Mehdizadeh and others on the steering committee was essential, particularly because staff turnover and imperfect team formulations dogged the CCCCD project. The district had two project leaders between 1997 and 2000 and suffered significant turnover in the human resources arena during critical junctures in the project. Key college leadership positions also turned over during the project implementation, creating losses of continuity and varying levels of college leadership engagement in the project's goals.

Because turnover almost certainly will occur, it is critical that it be managed. More important, project leaders must understand that new leaders must also be brought along. In addition, the quest to be inclusive—always an imperative in collegiate environments—resulted in the appointment of many people to implementation teams and working groups who were not engaged in or committed to the project. This became evident through spotty meeting attendance and high rates of attrition in working groups, leaving

perhaps just an illusion of engagement and inclusion that continues to dog the system's acceptance today at the colleges.

- ◆ *Leaders drive change, systems enable change.*

The goal of modernizing IT at the Colleges of Contra Costa is a tactical goal and one that can be accomplished largely through wise investments and solid project management. Effecting a shift from a loosely organized confederation of three independent colleges to one college in three locations is a profound strategic goal that the institution's systems can enable only within limits. At CCCCD, the institution has at best prepared the ground for strategic change and provided some new tools. Remaining are the very hard and absolutely essential investments and activities that fall under the broad banner of change management.

- ◆ *What you measure is what you get.*

Although the steering committee articulated clear indicators of performance, it is not clear that measures were ever developed to track performance against these indicators. As a result, indicators of success, such as making a successful cut-over and discontinuing investments in the legacy system, were clearly achieved. Other concrete indicators, such as meeting external reporting requirements and providing online student access to grades and financial information, have also been largely achieved, through ad hoc reporting and WebAdvisor, respectively. The more complex indicators relating to ubiquitous training and external and internal customer satisfaction appear not to have been measured. Not surprisingly, their achievement is incomplete. Colleges and universities that engage in enterprise systems implementation efforts with a public commitment to enhancing service quality must be prepared to measure customer satisfaction on an ongoing basis and let the information obtained guide their actions.

What's Next for the CCCCD?

All community colleges in California are facing the twin perils of sharply rising enrollments and dwindling state budgets. Chancellor Spence and the presidents of the three colleges are exploring and developing entrepreneurial initiatives designed to further embed the institution's mission into the fabric of the Contra Costa County community.

With respect to information technologies and process innovation, the district is now implementing a data warehouse and decision-support environment to increase access to information and to foster more sophisticated planning and analysis of district resources. In particular, district and college executives intend to use these new capabilities to review all of the institution's academic programs. To this end, Chancellor Spence wants to look at productivity, student and staff FTE, cost per unit of instruction, and how the district is using its educational capacity. Again, at stake is the opportunity to "change people's behavior by giving them better access to better information and tools for decision making."

The district and colleges just spent 14–15 months reengineering their financial aid and admissions processes. They laid out a systematic program of process reengineering across many institutional activity areas and created a schedule for effecting change. According to Chancellor Spence, "We could not have done the process reengineering work back in the late 1990s with either the technology or the people."

Chancellor Spence is beginning to communicate with district and college groups regarding return on investment. He wants to understand and help others understand the return on the institution's financial investment and to talk about a return on the "learning investment." The CCCCD will embark on a "very long, hard road," to use the Malcolm

Baldrige Award criteria, to evaluate its effectiveness as an educational institution.

The future for the colleges holds more pragmatic challenges. According to Interim President Peter Garcia, “We have raised hopes, and now the question is how we deal with the reality of the limitations. Said another way, the challenge is to continue the transition while recalibrating our expectations. The truth is, we need to invest more, and this is a hot issue.”

The challenge, then, at the Contra Costa Community College District—one that is common among educational institutions—is to continue moving forward while consolidating the changes of the past five years. Educational institutions in California and elsewhere require bold leadership and change initiatives that are discontinuous in

nature. To prosper, organizations must adapt to changed conditions before assimilating new shocks to their organizational, technical, and cultural systems. Balancing discontinuous change with the investments needed to consolidate change will lead to continued successes in this college district.

Endnotes

1. The scope of the ERP investigation included the primary administrative applications: human resource, financial, and student.
2. Contra Costa College, “Student Outcome Data and College Facts,” 2002 (Martinez: Contra Costa Community College District), p. 9.
3. The Colleges of Contra Costa, “Student/Administrative Information System Implementation Plan,” Dec. 5, 1997, p. 8.
4. Contra Costa Community College District enrollment report, Monday, Aug. 26, 2002.