



# **Enterprise Systems at Three University Systems: California State University, University System of Georgia, University of Wisconsin System**

**ECAR Case Study 12, 2002**

Judith Caruso, University of Wisconsin–Madison and  
EDUCAUSE Center for Applied Research  
Paula King, EDUCAUSE Center for Applied Research

Case Study from the  
EDUCAUSE Center for Applied Research



**EDUCAUSE**

4772 Walnut Street, Suite 206  
Boulder, Colorado 80301  
[www.educause.edu/ecar/](http://www.educause.edu/ecar/)

Enterprise Systems at  
Three University Systems:  
California State University,  
University System of Georgia,  
University of Wisconsin System



EDUCAUSE is a nonprofit association whose mission is to advance higher education by promoting the intelligent use of information technology.

The mission of the EDUCAUSE Center for Applied Research is to foster better decision making by conducting and disseminating research and analysis about the role and implications of information technology in higher education. ECAR will systematically address many of the challenges brought more sharply into focus by information technologies.

Copyright 2002 EDUCAUSE. All rights reserved. This ECAR Research Study is proprietary and intended for use only by subscribers and those who have purchased this study. Reproduction, or distribution of ECAR Research Studies to those not formally affiliated with the subscribing organization, is strictly prohibited unless prior written permission is granted by EDUCAUSE. Requests for permission to reprint or distribute should be sent to [ecar@edUCAUSE.edu](mailto:ecar@edUCAUSE.edu).

# Enterprise Systems at Three University Systems: California State University, University System of Georgia, University of Wisconsin System

## 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*.<sup>1</sup> 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 par-

ticipating 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 California State University System, the University System of Georgia, and the University of Wisconsin System for sharing their time, thoughts, insights, and records with us. In particular, ECAR thanks Common Management Systems Senior Director Hilary Baker, Hardware Operations and Support Director Sheila Bickham, Chief Information Officer David Ernst, Executive Vice Chancellor and Chief Financial Officer Richard West, and Software Operations and Support Services Director Blaine Wright of the California State University; Vice Chancellor for Fiscal Affairs William Bowes, Assistant Vice Chancellor of Enterprise Systems and Services Beth Brigdon, Associate Vice Chancellor of Student Services Barry Fullerton, Senior Advisor for Student Enrollment and Information Services Tonya Lam, Team Lead for Financial Aid/Accounts Receivable Richard Loftus, and Vice Chancellor for Information and Instructional Technology and Chief Information Officer Randall Thursby of the University System of Georgia; Vice President for Finance Deborah Durcan, Project Manager for University of Wisconsin System Collaterals Group David Hart, Project Manager for Shared Financial System George Ketterer, and Associate Vice President and Chief Information Officer Edward Meachen of the University of Wisconsin System.

Leaders of the California State University campuses and the University System of Georgia and University of Wisconsin institutions also shared their time generously with us: Budget Director Mark Gerspacher

and Vice President of Business and Finance William Gauthier of the State University of West Georgia; Project Manager for Online Access Student Information System Bruce Maas of the University of Wisconsin–Milwaukee; Vice President for Administration and Chief Financial Officer Benjamin F. Quillian of the California State University, Fresno; Chief Information Officer James Wolfgang and Director of Admissions Marylis Wolfgang of Georgia College & State University.

## Introduction

ERP implementations at individual institutions can be challenging and complex. These challenges include business process change versus system customization, change resistance, communication, and project management. Now imagine planning an ERP implementation across multiple institutions at once. A system-wide ERP implementation greatly increases the complexity of project management, change management, and communication.

ECAR interviewed ERP implementation participants at three university systems—the California State University (CSU), the University System of Georgia (USG), and the University of Wisconsin System (UW System), hereafter referred to collectively as systems—to learn more about the particular challenges and benefits that confront a system-wide implementation.

Some primary system implementation drivers resemble those of an individual institution, for example, to improve services to students, faculty, and staff, and to replace inadequate legacy systems. Just as often, these system implementations seek to reduce costs, increase knowledge sharing, and improve data accountability and access. The system implementations, however, vary from their institution-only counterparts in several ways:

- ◆ shared funding and governance,
- ◆ frequently mandated rather than voluntary implementation,
- ◆ central control rather than institution-level control,
- ◆ shared hardware/software and human resources,
- ◆ knowledge sharing between institutions,
- ◆ economic implementation incentives, and
- ◆ standardization requirements across the system.

These differences require the profiled systems to heighten communications, establish creative funding mechanisms and incentives, and employ robust project management methods. Also, the systems are state governed, subjecting them to continual scrutiny and assessment from the state legislative and executive bodies.

The systems differ also from traditional consortiums, where all members are equal. At the systems, a central administration office acts as the leader of all—sometimes as a dictator and sometimes as a facilitator. And the campuses/institutions are not equal among themselves, leading to tensions as individual institutions vie for centrally funded resources and institutional autonomy. The chancellors, presidents, executive officers, provosts, chief business officers, and chief information officers at each institution play important roles in the implementation of ERP systems at their institutions. Through shared governance with their system counterparts, these institution executives lead the individual implementations.

Systems derive benefits from their ERP systems similar to those of their individual institution counterparts, but they also experience reduced overall costs for system implementation and ongoing support, common data feeds to meet governmental reporting requirements, and knowledge sharing among institutional counterparts.

## Case Background

All three systems are governed by a Board of Regents or Board of Trustees and operate a central system office that provides leadership for the individual institutions. Each system has fulfilled its centralized mission in different ways, however, which affects the nature of each ERP application implementation, as described below.

## California State University

CSU is a system of 23 campuses, 6 off-campus centers, nearly 400,000 students, and approximately 42,000 faculty and staff. The individual California state colleges were brought together as a system by the Donahoe Higher Education Act of 1960. In adopting the act, the state legislature established the Board of Trustees of The California State Colleges (designated "The California State University" on January 1, 1982) to "succeed to the powers, duties, and functions with respect to the management, administration, and control of the state colleges." Prior to this, the California State Board of Education had jurisdiction over the separate colleges. Today, 21 of the 23 campuses have the title "university." CSU offers more than 1,500 bachelor's and master's degree programs in more than 200 subject areas.

The 25-member Board of Trustees governs this diverse and complex 23-campus system by

- ◆ developing broad administrative policy for the campuses;
- ◆ providing broad direction and coordination to campus curricular development;
- ◆ overseeing the efficient management of funds, property, facilities, and investments by the system and the campuses;
- ◆ appointing the chancellor and vice chancellors for the system, and the presidents for the campuses as chief executives with certain delegated responsibilities; and

- ◆ communicating to the people of California an understanding and appreciation of the current effectiveness and the future needs of the California State University.

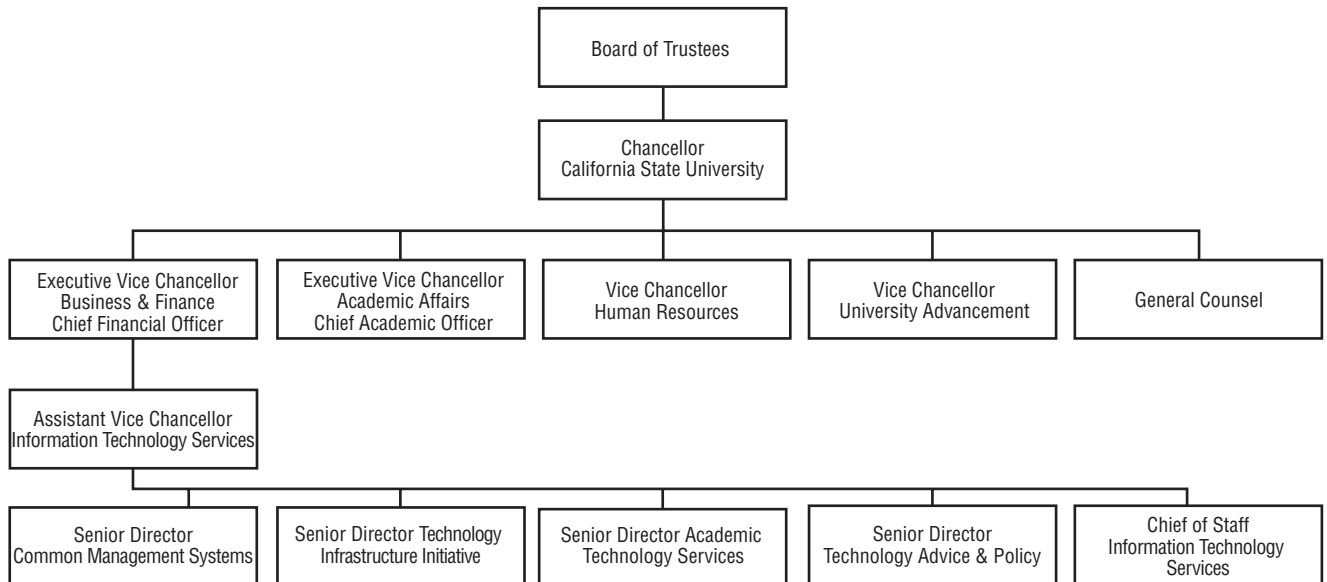
## Technology Profile: IT Organization and Governance

The CSU CIO, Assistant Vice Chancellor David Ernst, manages the central Information Technology Services (ITS) organization, including Academic Technology Services, Common Management Systems, Technology Infrastructure Initiative, and Technology Advice and Policy. He reports to Executive Vice Chancellor for Business and Finance Richard West. On each campus a CIO/CTO or equivalent reports locally within that campus's administration and is responsible for campus IT service organizations and operations of varying size and depth. Some CIOs/CTOs report directly to the campus president, while others may report to the provost or chief administrative officer. The campus CIOs/CTOs sit as an advisory body to the CSU CIO on institution-wide technology issues and policy.<sup>2</sup> See Figure 1 for the ITS's organizational structure.

The system-wide IT advisory structure includes the following committees:

- ◆ *Technology Steering Committee (TSC)*—the major system-wide policy-making group in IT, consisting of campus presidents and executive representatives of the chancellor's office, and advisory to the chancellor
- ◆ *Academic Technology Advisory Committee (ATAC)*—a committee of campus faculty, administrators, and chancellor's office staff that provides advice to the executive vice chancellor/chief academic officer on matters related to academic technology
- ◆ *Council of Library Directors (COLD)*—advises the assistant vice chancellor for information technology services on access to traditional and electronic information

Figure 1. Information Technology Services Organization



resources, long-term strategic planning, database management, and information competence

- ◆ *Information Technology Advisory Committee (ITAC)*—the official campus liaison for all infrastructure and administrative initiatives within the Integrated Technology Strategy (see below), with members appointed by campus presidents to advise the assistant vice chancellor for ITS
- ◆ *Network Technology Alliance (NTA)*—a system-wide working group that operates under the guidance of the ITAC
- ◆ *Common Management Systems–Project Advisory Committee (CMS-PAC)*—appointed by campus presidents to provide oversight and planning for all facets of the common management systems (CMS) to the executive vice chancellor for business and finance/chief financial officer

This structure and the relationships between and among the groups and administrators are available at the university's Web site.<sup>3</sup>

### ERP System Evolution

CSU has a long history of IT planning and has employed administrative technology in both centralized and decentralized modes during the past 35 years. In 1968, a system-wide computer network was established to connect 19 campuses to a central data center in the chancellor's office in Los Angeles. In the 1980s, campuses also began to establish their own data centers, resulting in a total of 20 administrative data centers within CSU. During this time, there was a pattern of noninvestment or deferral of maintenance in the financial systems, resulting in aged systems with limited functionality.

In the mid-1990s, a president-led initiative prompted CSU to address several IT-related issues including (1) the age, limited functionality, and inflexibility of existing financial information systems; (2) the lack of a human resources information system; and (3) the variety of generations of student systems in place on CSU campuses. This resulted in a planning and policy framework,

the Integrated Technology Strategy, for using information technology as a tool that could be leveraged in support of the academic mission and administrative imperatives of the institution.<sup>4</sup> The four goals of the Integrated Technology Strategy are

- ◆ excellence in teaching and learning,
- ◆ personal productivity,
- ◆ quality of the student experience, and
- ◆ administrative productivity and quality.

Two separate initiatives—one focused on collaborative software procurement to replace financial information system software and another on evaluating the costs, benefits, and potential alternatives to running multiple administrative data centers—eventually became the CMS initiative in 1998.

The trustees endorsed the Integrated Technology Strategy in March of 1996, and campus presidents and chancellor's office executives were charged with its implementation. Each campus president looks to the chief information/technology officer or equivalent to carry out campus technology activities, including the Integrated Technology Strategy implementation. The four goals translate into four major and interdependent areas of system-wide technology activity: academic technology, the campus telecommunications infrastructure initiative (TII), intercampus networking (4CNet), and the CMS initiative.

### **Common Management Systems**

CSU realized its outdated IT equipment was increasingly unable to fulfill the Integrated Technology Strategy goals and to position CSU to meet evolving technical requirements. One of the goals of the CMS initiative when it began in 1998 was to save development and operational resources while providing improved financial, human resource, and student administrative systems. The project was undertaken in response to the analysis that the existing systems were not only limited in functionality, but also more

expensive to maintain than a modern system would be. As far as could be predicted, the costs would only continue to increase.

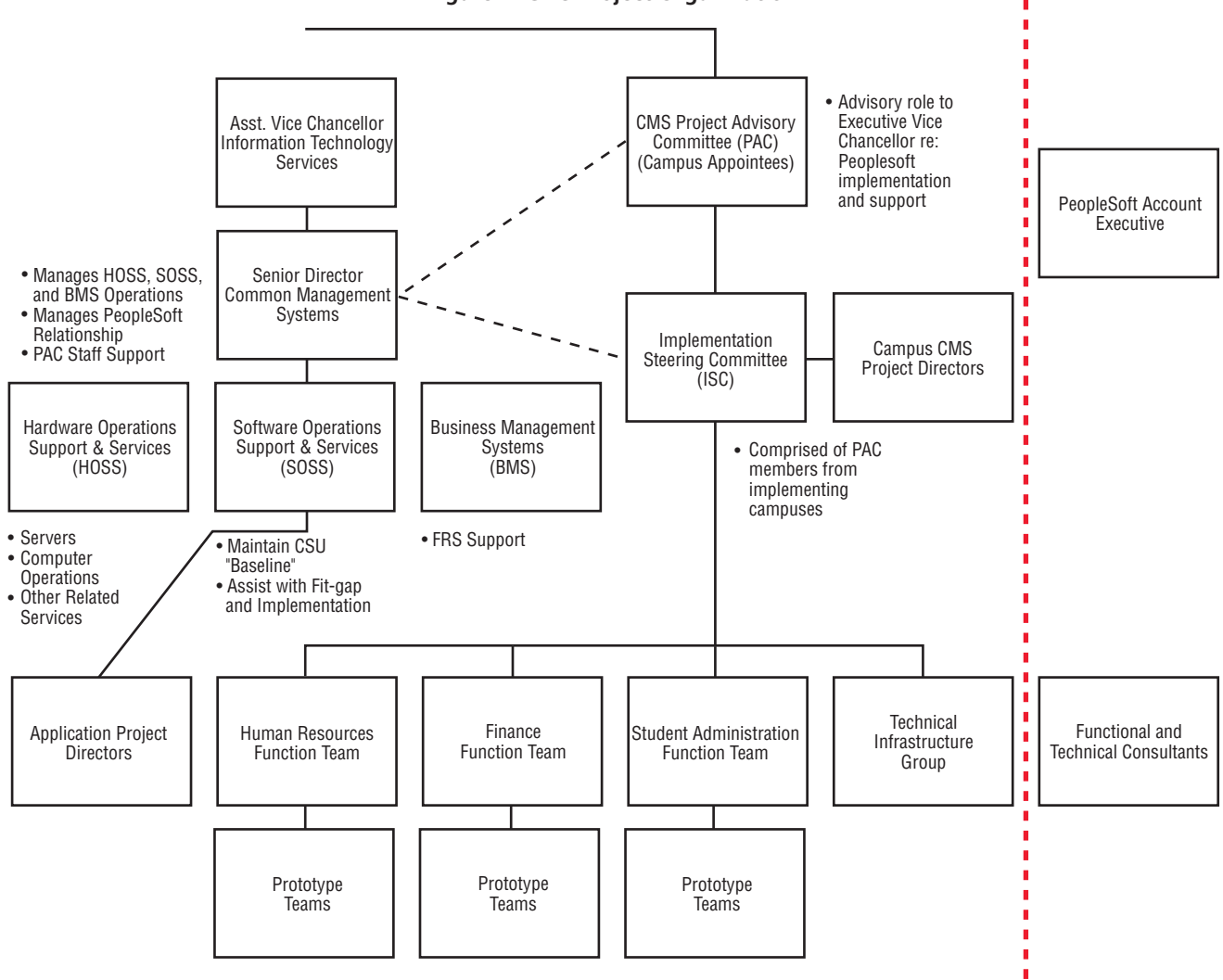
CSU took initial cost-saving steps by deciding to operate one shared, outsourced CMS data center rather than continuing to run its next generation of administrative systems in multiple campus data centers.<sup>5</sup> While the decision was made to outsource operation of the data center, CSU retains central control of the strategic areas of business process design, applications development, and applications maintenance.

A software evaluation study performed by the Gartner Group encouraged CSU to search for a software suite rather than a best-of-breed solution for their enterprise-wide administrative system needs. In choosing the suite approach, CSU understood that while every software module might not be the best match for individual needs and requirements, the greater concern was the level of additional effort and cost needed to interface disparate systems in this multi-campus system. Following a chancellors' and presidents' retreat in mid-1998, the chancellor's office mandated a suite approach, instructing all 23 campuses to migrate to this software and run it in a baseline/centralized manner rather than implementing it independently.

From an intensive request-for-proposals (RFP) process, CSU selected PeopleSoft's Human Resource (HR), Financial Information System (FIS), and Student Administration (SA) suite. A key reason was the belief that PeopleSoft would provide the flexibility to reengineer processes after going live.

In late 1998, CSU began to recruit a central staff to support this effort. Hilary Baker, senior director of the CMS, was the first staff hire in March 1999. Today the central CMS organization employs approximately 90 people. Figure 2 illustrates the overall CMS organizational structure.<sup>6</sup>

Figure 2. CMS Project Organization



The project was initially staffed by a large percentage of external consultants, although, as Blaine Wright, director of software operations and support services, explained, "The vision right from the beginning was to hire long-term staff to replace consultants as quickly as possible." When Wright joined the organization in March 2001, consultants comprised three-quarters of the staff. Today, he noted, consultants comprise probably less than 10 percent of the staff, and they are used primarily for special projects.

"A disciplined project management approach was important for a massive multi-year project like this," said West. The project

also was seen right from the beginning as one led by the functional side, with key leaders committed to business process change. The project organized campuses into multiple phases of implementation. Eleven campuses volunteered to be the first wave of implementers for HR and FIS. A readiness assessment tool was developed to help campuses assess whether they had a minimum level of readiness to begin the implementation. Readiness criteria included sponsorship, communication, project management, campus functional area participation, funding, information technology support, network readiness, workstation readiness, help desk, and training.<sup>7</sup>

Being a first-wave campus had both benefits and risks. “While these campuses had the opportunity to influence the initial direction of the project, there also was the possibility that they would be the first to experience mistakes to a greater degree than those who followed,” recalled Ernst. Additionally, there was a requirement that campuses wishing to implement the SA module first had to migrate to the HR and FIS modules to ensure that they had enough PeopleSoft campus experience before taking on the more complex SA module.

The initial FIS and HR implementations used prototyping with heavy involvement by first-wave campuses. The first SA implementations used prototyping with three pilot campuses.

As of September 2002, the 11 first-wave campuses and 5 of the second-wave campuses were live with HR or FIS or both. The three SA campuses have completed their pilot implementations. By 2006, all campuses will have adopted the CMS.

The first-wave campuses included Fresno, Hayward, Long Beach, Los Angeles, the Maritime Academy, Northridge, Pomona, San Bernardino, San Jose, San Luis Obispo, and Sonoma. The second-wave campuses included Bakersfield, the Channel Islands, Chico, Humboldt, Monterey Bay, Sacramento, San Marcos, Stanislaus, Dominguez Hills, Fullerton, San Diego, San Francisco, and the chancellor’s office. Of those, Dominguez Hills, Fullerton, San Diego, and San Francisco had not yet completed readiness assessment or accepted preproduction instances of the CMS PeopleSoft baseline software. The SA pilot campuses were Fresno, the Maritime Academy, and Sonoma.

### ***Ongoing Support and Maintenance***

The CMS technical architecture is extremely complex.<sup>8</sup> CSU decided to run multiple instances of the application and

database for each campus. They concluded that it was a significant leap to switch from independent, campus-operated administrative systems to centrally maintained baseline software in a single off-site data center. Because of concern about managing complexity and containing costs, CSU system and campus staff continue to examine how best to architect the systems in the long term.

Changes to the baseline software are carefully managed. Wright explained CSU’s change management process: “Any group can request a modification, i.e., a campus, user group, or the central development group. If a campus submits a request for modification, it is then forwarded to the appropriate functional user group to see if there is general interest in the modification by a majority of campuses. If there is system-wide interest, the modification request is submitted through the modification governance process, documenting functional and technical specifications, justifying the modification requirement, and obtaining executive approval. We don’t approve campus-specific modifications.”

### ***Funding***

The total estimated project cost is \$350–\$400 million over a seven-year period.

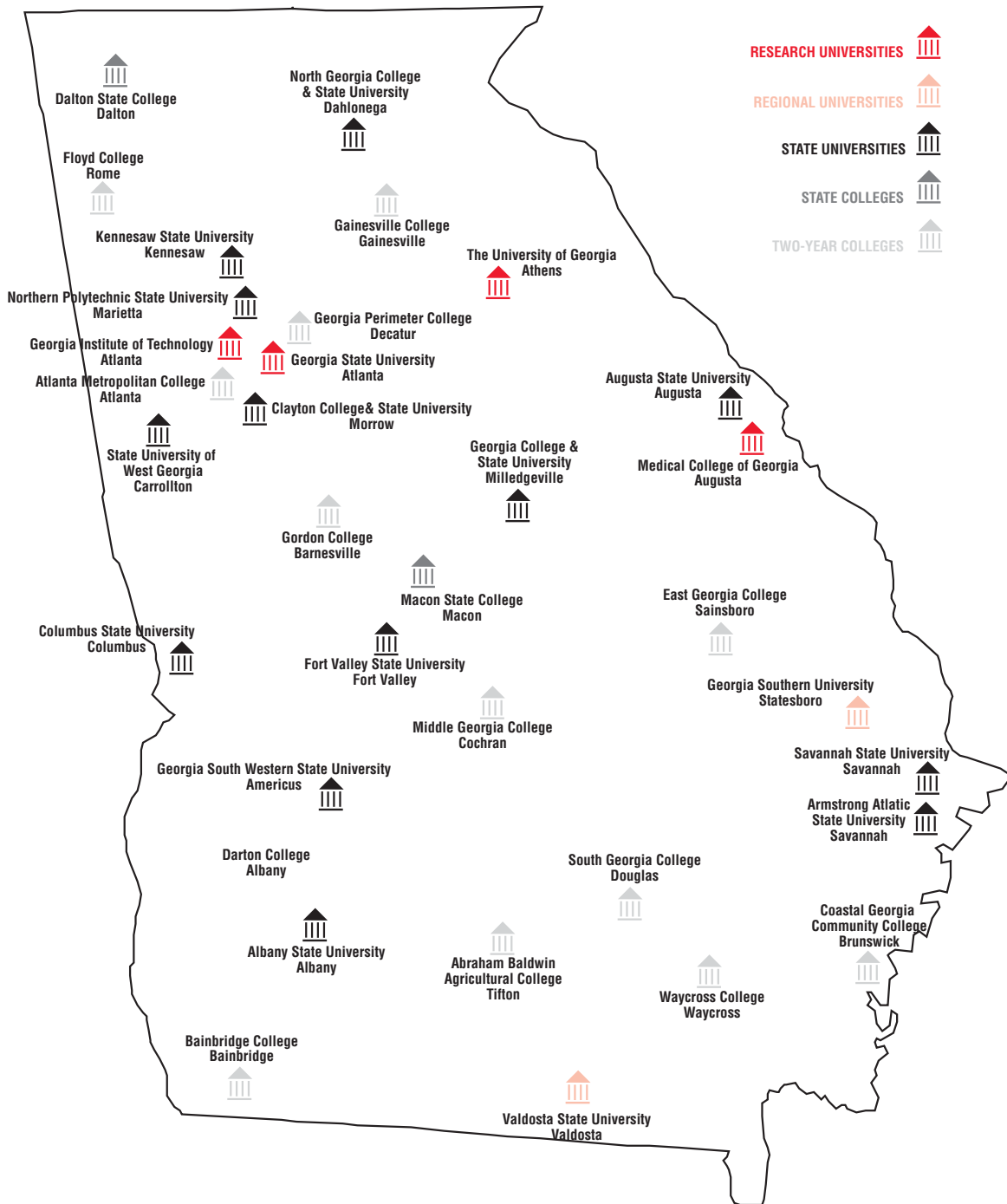
CSU did not seek additional funding from the state for the CMS. The funding source is a mix of off-the-top, reallocated, central, and campus general funds.

## **The University System of Georgia**

Created in 1932, the USG is governed by a 16-member board of regents. The board appoints the chancellor, who acts as the USG’s chief executive officer and chief administrative officer. In 2001, the USG enrolled 164,441 students (total full-time equivalent, or FTE) and employed more than 35,000 full-time faculty and staff. The USG consists of

- ◆ 4 doctoral/research institutions (which ECAR excluded from the case study because each operates its own ERP independently of the USG central implementation),
  - ◆ 2 regional universities,
  - ◆ 13 state universities,
  - ◆ 2 state colleges,
  - ◆ 13 two-year colleges,
  - ◆ the system administration office, and
  - ◆ an independent research unit, Skidaway Institute of Oceanography.
- See Figure 3 for a map of Georgia showing the elements of the USG.

Figure 3. Map of Georgia



**Technology Profile: IT Organization and Governance**

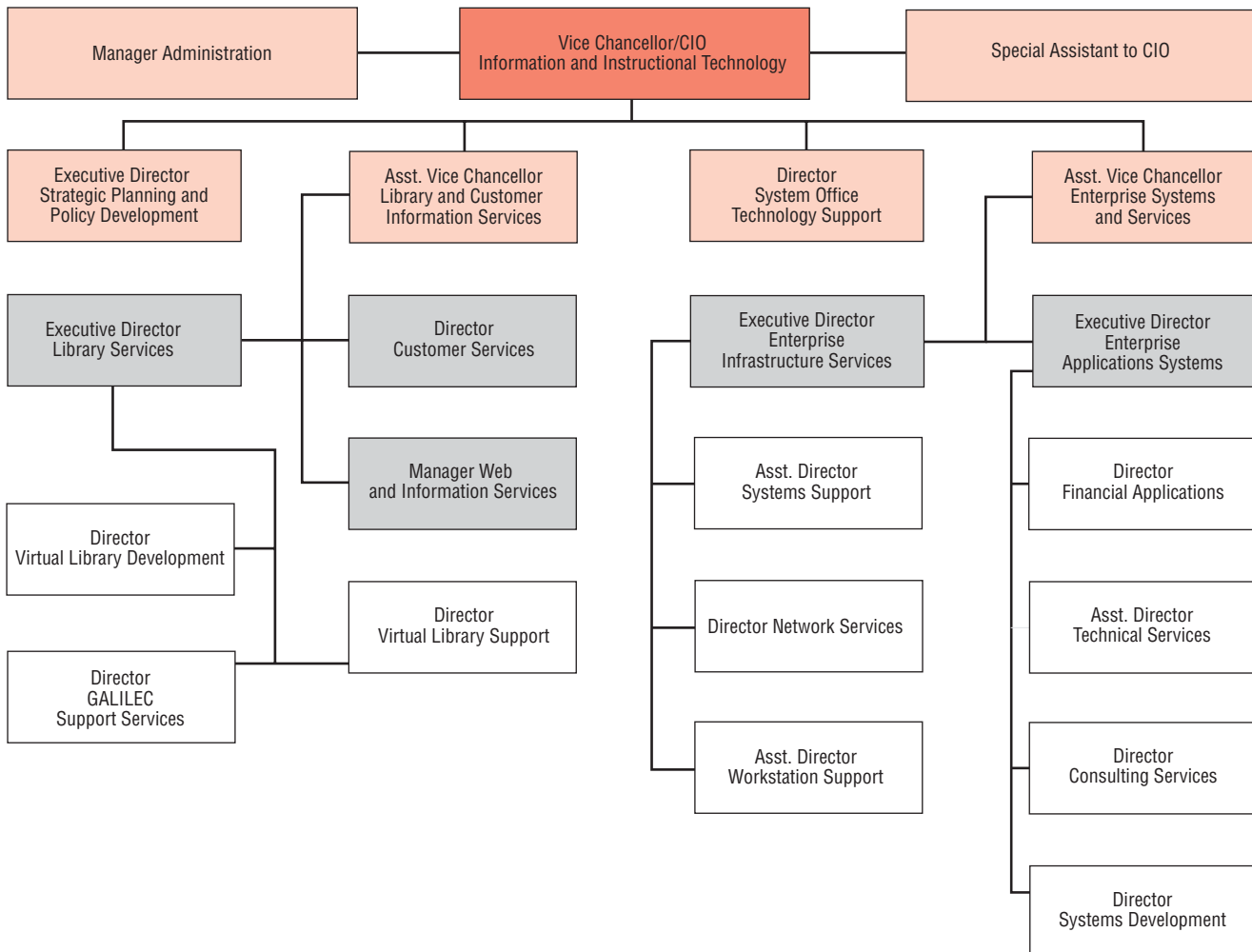
The USG CIO Randall Thursby manages the Office of Information and Instructional Technology (OIIT), formerly the Office of Information Technology (OIT). (See Figure 4 for an organization chart.<sup>9</sup>) He is responsible for providing centralized, common information and instructional services for the central offices and all units of the USG. This includes academic administrative systems, academic distance learning, business and financial systems, technical support, and management of the USG-wide network, PeachNet.

Each institution has its own IT staff, usually including a CIO, in addition to receiving services provided centrally by the OIIT. IT staff at each institution provide support for the campus network and campus desktops.

Two groups oversee the USG information technology initiatives:

- ◆ The Board of Regents Information and Instructional Technology (IIT) Committee consists of five regents who are responsible for strategic direction and oversight of the USG’s information and instructional technology policies and practices.
- ◆ The Administrative Committee on Information Technology, composed of a

**Figure 4. OIIT Organization Chart**



representative from the highest level of IIT management at each system institution, provides advice to the USG vice chancellor/CIO.

### **ERP Evolution**

It wasn't until 1988 that the Board of Regents recognized the importance of IT and formalized a system-wide structure, approving the creation of the OIT, later the OIIT. One of the OIT's first functions was to develop a plan for the future. The Information Technology Strategic Plan outlined three long-term goals for the USG system:

- ◆ Establish platforms for long-range development.
- ◆ Establish the basic structure for PeachNet.
- ◆ Begin common software acquisition.

Additionally, the plan identified three categories for administrative computing within the USG. These categories enable the institutions to decide for themselves what level of ERP system support they want from the OIIT.

- ◆ *Independent campus-based systems*—The universities develop and operate their own information systems.
- ◆ *Common, integrated campus-based systems*—The institutions primarily use standard platforms and applications software implemented in an integrated environment. They may supplement the standard applications with local applications.
- ◆ *Centralized and centralized-supported systems*—The universities rely mostly on centrally supported systems. This includes a limited amount of on-site operations and development.

Since 1989, OIT/OIIT has led the development of PeachNet, the establishment of system-endorsed and system-supported hardware and software platforms, and the selection and implementation of application software for library, student, financial, human resource, and course management functions. The USG has moved to a culture

of sharing resources where practical. For example, to serve the entire USG, the library system, Endeavor's Voyageur system, WebCT processing facilities, and GALILEO (Georgia Library Learning Online), the Georgia state-wide library project, are operated by the University of Georgia and Georgia State University with project management from the system office.

The USG outlined its evolving IT requirements in "Learning Without Limits: The Information and Instructional Technology Strategic Plan for the University System of Georgia." Goals are to

- ◆ enhance student learning,
- ◆ expand reliable and secure access to information and services,
- ◆ increase customer focus,
- ◆ ensure continuous innovation, and
- ◆ effectively and efficiently plan and manage IIT operations.<sup>10</sup>

### **Student Systems**

When the USG selected SCT's Banner student system in 1994, the centralized information technology organization was inexperienced in implementing student information systems. Prior to 1994, each of the 30 institutions maintained independent student systems, with local IT staff support.

Because of this local expertise, the USG decided to create a baseline student product centrally and allow each institution to implement its own student system independently, with additional local modifications. By 1997, all institutions were in production. While OIIT provides a baseline Banner product to each institution that includes vendor release software, patches, fixes, and "Georgia mods," each institution makes its own modifications and tends to use the data fields differently. Rich Loftus, USG project manager for financial aid recalled, "Each institution had their own interpretations of how to set up the data. When we went to collect the data, it was in different parts of

the application. We needed to reevaluate where to get the data from to ensure consistency at all the institutions.”

The decentralized implementations made it hard for the USG institutions to work together on student issues. “We were involved in the implementation of the Curriculum Advising and Program Planning (CAPP) module—having a hard time with course articulation,” explained Jim Wolfgang, CIO of Georgia College & State University. “It was almost like the Tower of Babel—everyone was talking, but nobody understood what the other one was saying.”

It became obvious the USG could realize greater efficiencies by standardizing the Banner implementations. In response to this, the USG initiated the GeorgiaBEST (Georgia Banner Enhanced System Team) project in 2001 to revisit the Banner student implementations. The goals of the project are to provide

- ◆ superior student services;
- ◆ data standardization for accountability;
- ◆ business process analysis to minimize modification; and
- ◆ a universal set of modifications, where necessary.

Part of the Banner implementation review included a project readiness assessment conducted by SCT in early 2001, which provided an independent evaluation of the USG’s ability to carry out the project. More than 144 people participated, including campus Banner representatives, functional and technical employees at the Board of Regents, selected campus presidents and vice presidents, and additional stakeholders. Currently, GeorgiaBEST teams are being formed to work on best practices and system deployment, with the goal of production implementation in June 2004.<sup>11</sup>

GeorgiaBEST user groups are charged with establishing policy and procedures as they relate to GeorgiaBEST. They include the

- ◆ Academic Affairs-Faculty User Group,
- ◆ Accounts Receivable User Group,
- ◆ Financial Aid User Group,
- ◆ Recruiting and Admissions User Group,
- ◆ Registration and Academic History User Group, and
- ◆ Technical Support User Group.

### **GeorgiaFIRST**

The Georgia Financial Information and Reporting Systems for Tomorrow, or GeorgiaFIRST, project<sup>12</sup> began with planning for the acquisition and implementation of an ERP system for HR and financials. Staff from the institutions and from the USG participated in a two-year study that resulted in the development of an RFP. The Board of Regents approved the PeopleSoft software contract in 1997 and sponsored the implementation. An independent consultant’s report on deployment strategies informed the decision to create a centralized implementation with 32 separate instances per application. This decision was made to ease the institutions’ transition to a central ERP system and to avoid technical concerns about the ERP system’s ability to handle the 32 distinct entities within a single instance of the database.

Initial implementation of the HR system began in January 1998 and was completed by fall 2000 for all 32 institutions. The financial system implementation was on a more ambitious 11-month schedule, with all institutions in production by May 2002. New Government Accounting Standards Board (GASB) reporting requirements dictated the schedule. There are 64 databases: 32 instances (one for each institution, the USG administration, and Skidaway Institute of Oceanography) for each of the financials and HR applications. These databases are run at a central server site at the University of Georgia.

Project oversight is provided by a small group of presidents. The core advisory com-

mittee includes CIOs and business officers from the institutions and some USG staff. In addition, each institution has its own project director and oversight committee. The functional side of the institutions led the HR and financial system implementations, with varying involvement of the institution CIOs and IT staff. The USG learned the importance of staff involvement in the implementation. “The human resource implementation was difficult,” stated Bill Bowes, vice chancellor for fiscal affairs for the USG and project codirector. “We didn’t have an in-house functional staff—we relied on the staff at the pilot institution. We learned software and made some decisions early on. For system testing we had to rethink some things. With the financial implementation, we got people involved early on. We set up various committees to make recommendations on the modules.”

Centrally, the OIIT creates the Georgia Model, which includes the PeopleSoft software, vendor patches and fixes, and the Georgia mods. This model is then applied to the database instance for each institution. In addition, the OIIT maintains system-wide interfaces and reports. Campus-specific reporting is done by the individual campuses off the production databases. The overall goal is to use the Georgia Model from OIIT with no modifications at the campus level.

### **Funding**

Bowes acknowledged that the USG is implementing the ERP systems with a focus on cost containment. “We’ve been spending \$8 to \$9 million per year for the last five years for the centralized implementation,” he said. “This doesn’t include the four doctoral/research institutions or the campus costs. There was no separate state allocation for the PeopleSoft purchase and implementation.” The USG funded the initial purchase of the PeopleSoft HR and finan-

cial systems as well as central IT staff, hardware, and vendor software maintenance. Institutions bear local implementation costs, with the exception of some initial desktop upgrade monies the campuses received.

For the Banner student implementations, the USG paid for the initial software. The campuses paid the subsequent cost for vendor software maintenance and for the USG staff to maintain the Georgia mods. The institutions funded their own project staff and desktop and server hardware, and pay for ongoing system costs. “Later in the project we used alternative financing methods,” recalled Tonya Lam, senior advisor for student enrollment and information services. “We funded the advising module, CAPP [Banner Curriculum Advising Program and Planning], like a grant model. The system office paid one-half the cost.” According to Richard Loftus, USG budget director, “The GeorgiaBEST project spent \$2.7 million last year and will spend approximately \$500,000 to \$700,000 less this year. We are using State Budget A and B funds, but our Budget B [lottery] funds are disappearing.”

### **Ongoing Support and Maintenance**

Today the OIIT tests the PeopleSoft financials and HR baseline code, adds the vendor’s patches and fixes, modifies the Georgia mods, and updates the 32 database instances. This has been very efficient. Beth Brigdon, assistant vice chancellor for enterprise systems and services for the USG, described the release schedule for HR: “With human resources and financials, I can get 32 campuses installed and live between 6:00 Friday night and Monday morning at 7:00.”

The current student implementation rollout of new releases is more time-consuming due to the campus customizations. “In the current student environment the local mods have to be tested in addition to the work done centrally,” said Brigdon. “The

goal [of GeorgiaBEST] is to standardize so that patches and fixes can be done quickly with student as is done with human resources and financials.”

## University of Wisconsin System

The UW System was created in 1971 with the merger of the former University of Wisconsin (Madison, Milwaukee, Green Bay, Parkside, 10 freshmen-sophomore centers, and Extension) and the former Wisconsin State Universities (9 universities and 4 freshmen-sophomore branch campuses). A 17-member board of regents governs the UW System.

In 2001, more than 131,000 total students attended UW System schools, and the system employed almost 27,000 total FTE faculty and staff. The UW System consists of

- ◆ 11 universities that award bachelor’s and master’s degrees,
- ◆ 2 doctoral/research institutions—UW–Madison and UW–Milwaukee,
- ◆ extended degree programs,
- ◆ 13 freshmen-sophomore campuses forming the UW Colleges,
- ◆ UW–Extension outreach programs, and
- ◆ UW–System Administration, which includes the Office of the President.

The UW System president has full executive responsibility for the operation and management of the system. The president reports to the Board of Regents, while the senior vice presidents, vice presidents, 15 chancellors, and general counsel report to the president.

### **Technology Profile: IT Organization and Governance**

Human resource and accounting processing has been centralized in Madison, either at UW–Madison or UW–System Administration, since the original formation of the University of Wisconsin and Wisconsin State University systems. Two processing centers,

originally located in the Peterson Building and the Wisconsin Alumni Research Foundation Building, merged in 1994 to become the University of Wisconsin Processing Center (UWPC) in response to state pressures to reduce data center costs.

The institutions are responsible for their own campus networking and infrastructure. Each of the institutions has its own CIO and centralized IT staff. In addition, each institution runs its own student application system.

### **ERP Evolution**

UW System institutions work together on many projects, laying the groundwork of collaboration for their ERP implementations. “WiscNet, the state education high-speed network, changed the fundamentals of operation, altering what we could do with administration,” recalled Ed Meachen, UW System CIO. “Administration is not important to the individual institution in the way that instruction and research are. It used to be that each campus did everything for itself. Now, campuses could work collaboratively.” Moreover, the interactions, roles, and responsibilities between UW–System Administration and the campuses are changing. “UW System originated as a confederation, but over the years it has evolved as more campuses are willing to give up some of their own autonomy to get value from common systems and processes,” stated Debbie Durcan, vice president for finance for the UW System.

The UW System Common Systems initiative, a project directed at upgrading and consolidating administrative applications, started in 1996. The goal was to look for opportunities to share computer systems across the UW System. The vice president for finance launched this initiative in response to complaints about the limited functionality of the UW System legacy accounting system. The PeopleSoft financial system was the first ERP purchased.

Today, each of the three ERP applications—financial, student, and human resource—has its own implementation and governance structures. Student systems are decentralized to the institutions, reflecting the institution autonomy needed for each institution's unique mission. Both the financial and human resource ERP applications are centralized, as the legacy systems were, with an oversight board consisting of UW System and campus representatives.

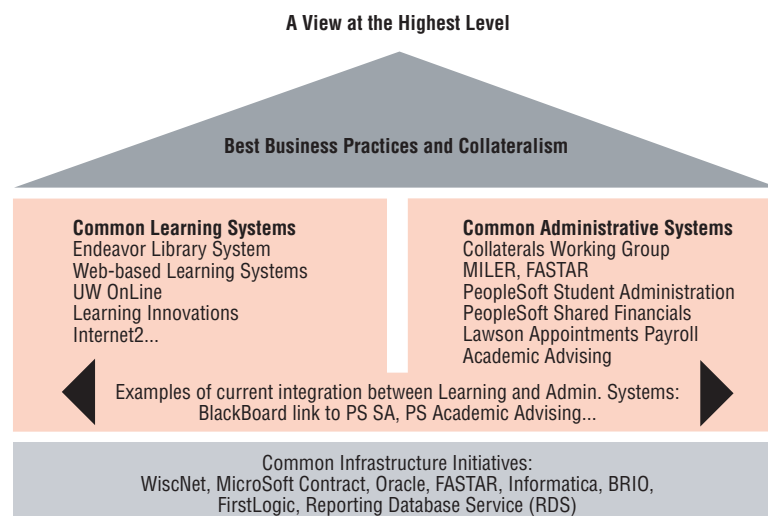
### **Student Systems: Decentralized**

Each UW institution implements its own student system, controlling whether to go to an ERP system and which vendor to select. In 1998–99, UW–Madison implemented PeopleSoft's Student Administration (SA) system. In 1998, UW System, adding on to the UW–Madison contract, acquired a UW System system-wide license for the PeopleSoft SA module. All UW System institutions can purchase the application at the discounted rate if they desire. To date, nine institutions have either started or finished a PeopleSoft SA implementation. The remaining institutions are considering whether or not to migrate to the PeopleSoft system. As more and more institutions implement the PeopleSoft student system, the remaining

campuses may feel compelled to install it. Meachen predicted, "The advantages of operating with common software will cause all campuses to feel the pressure of going to PeopleSoft."

The UW System Collaterals Group was created in 1999 to look for opportunities to share resources and expertise in PeopleSoft SA implementations. One service that the group provides is staff resources for campuses that want to implement PeopleSoft's SA, through its Methodology for Implementation at Lowest Effort and Resources (MILER) project. MILER staff members are either vendor contractors or employees with expertise in the PeopleSoft SA application. "This is really a win-win for the campuses and for the UW System," said David Hart, project manager of the UW System Collaterals Group. "The campuses get ready access to the expertise they need for implementation at a fraction of the cost of obtaining this expertise in the marketplace. In addition, UW System gets maximum use of staff expertise gained during implementation of PeopleSoft Student Administration at another campus. The opportunity for information sharing and growth is tremendous."

See Figure 5 for systems and services shared throughout the UW System.



**Figure 5.**  
**Overview of UW**  
**System Shared**  
**Systems and**  
**Services**

Source: David Hart, project manager of the UW System Collaterals Group, University of Wisconsin System

Another initiative of the UW System Collaterals Group is system-wide data warehousing, started in 1999 at the request of the UW–Oshkosh CIO John Berens, who needed to make data available from each PeopleSoft module as it moved to production. At that time, only UW–Madison and UW–Milwaukee were putting much effort into the data warehousing area. Since then, all UW System institutions either have or want to implement a data warehouse.

### **Financial System: Centralized**

The Shared Financial System (SFS)<sup>13</sup>, based on the PeopleSoft financial system, is overseen by the UW Processing Center Board. The board consists of nine people—three from UW–System Administration, three director-level people from the campuses, and three vice chancellors from the campuses—and meets monthly to review the operational budget and set strategic directions for the SFS.

UW–System Administration employs Project Manager George Ketterer. When the project started in 1998, Ketterer was the controller for the UW System. The project manager position wasn't created until several months into the project. "If I were to do this over, I'd appoint the project manager much earlier. The lack of a full-time project manager slowed our implementation," acknowledged Ketterer.

The acquisition process involved many people from UW–System Administration and the institutions and lasted many months. "For financial system acquisition, we performed a best business practices study with campus and system representation. This resulted in the purchase of PeopleSoft financials," explained Durcan. "There was a long approval process including the campus chancellors [and] the UW president, and it was presented to the Board of Regents as part of the UW System IT Plan." PeopleSoft

was chosen because of an existing contract, knowledge of the PeopleSoft technical infrastructure, and functionality.

Currently the SFS is in production at 12 institutions, with UW–Madison the only remaining institution. The SFS was implemented over a number of years using a phased approach. The first four institutions—UW–Whitewater, UW–Platteville, UW–Milwaukee, and UW–Colleges—went into production in July of 1999. Since then, four to six institutions have come up every six months. During this transition time, bridges were built between the legacy accounting system on the mainframe and the PeopleSoft system. Each night, bridging programs are run, and detailed accounting transactions are sent to the State of Wisconsin's Department of Electronic Government. Some campuses also run local systems that interface with the SFS.

### **Human Resources: Centralized**

Implementation is currently under way for replacement of the legacy HR system, with a targeted production date of January 2005. The application is called the Appointment, Payroll, and Benefits System (APBS) and is based on the HR system from Lawson.<sup>14</sup> The core team for implementation consists of eight staff, including Project Manager Margo Lessard and seven technical and functional staff from the UW System and UW System institutions. In addition, the APBS Steering Committee, which includes the UW System CIO, the assistant chancellor of university financial administration at UW–LaCrosse, and the vice chancellor of administration at UW–Madison, provides oversight for the project.

### **Funding**

Sometimes funding for major projects can be obtained from the State of Wisconsin during the biennial budget process, but not so for administrative systems. Explained

Durcan, “The library system was our first Common System. For its purchase, we received State of Wisconsin funds, but with all the competing priorities, administrative systems are a hard sell for state funding. We had to find ways to fund them without seeking a state budget appropriation.” Using a combination of monies set aside in previous fiscal years and campus contributions, the UW System funded the purchases and implementation of PeopleSoft financial and student systems and the Lawson HR system.

Currently the UW System spends \$12–\$14 million on the funding of Common Systems. Systems include UW System-wide library, financial, and HR systems, as well as the UW System Collaterals Group initiative for student systems. This money only foots about two-thirds of the Common Systems costs. According to Meachen, “We’re reallocating to underwrite the rest.”

The institutions are directly responsible for the costs of their student applications, but can get discounted rates for contractor assistance by using MILER resources. For the SFS, discussions are under way between UW–System Administration staff and campus professionals on how best to share the software maintenance costs.

### ***Ongoing Support and Maintenance***

Overall ongoing operational support for the SFS was transferred from UW–Madison to UW–System Administration in 2000. The UW–Madison Division of Information Technology (DoIT) provides the data center support under contract to UW–System Administration. Ketterer stated, “I’m shocked by the amount of technical expertise required to implement and continue operations. I thought it wouldn’t be so much.”

One of the surprises with the ERP systems was the steady dose of patches and fixes. “On the PeopleSoft side, I wasn’t prepared for the concept of patches and fixes—

fix one thing and other things break,” related Durcan. “The ongoing effort is greater than expected.” To ease this burden for the campuses, the UW System has contracted with UW–Madison’s DoIT to provide an upgrade lab, Facility for Shared Technology and Resources (FASTAR). FASTAR currently provides centralized bundling of upgrades, patches, and fixes for the PeopleSoft SA system for all UW institutions that have implemented PeopleSoft SA.

## **System-Level Issues and Benefits**

Interestingly, the systems profiled described many similar ERP issues and benefits as their institutional counterparts. But a system-wide ERP implementation presents a unique set of issues or, by its nature, compounds those issues experienced at single-site institutions. Examples of the differences and similarities follow.

### **Local versus System Control**

A statewide system is a sum of its parts—the individual campuses and institutions—which in turn may develop their own systems, processes, and procedures as needed to conduct their business locally. While this may facilitate efficiencies at the campus level, it can complicate system-wide operations, especially in state and other governmental reporting. Systems have long recognized this problem. For example, the USG OIT immediately identified commonality as an important objective upon its creation in 1989. Its initial strategic plan included strategies for implementation of a system-wide TCP/IP network (PeachNet), standardization on UNIX and Oracle for enterprise servers, and the acquisition of library, student, financial, and human resource/payroll applications for the USG.

All of the systems’ ERP implementations resulted in some level of centralization at the system level. In all cases, individual cam-

puses are directly involved in campus-specific interfaces and reporting. As CSU's Baker noted, "This is the largest ERP project underway in higher education. It is a campus-led system initiative that is mandated by the chancellor and facilitated by our office."

The nature of the ERP application implementations for these systems varies greatly in the amount of central control and individual institution autonomy allowed. For instance, in the case of student ERP implementations in the UW System, individual campuses can choose any student application they want, while at CSU, all campuses are required to migrate to the PeopleSoft student application. Only the UW System maintains a single database instance for its financial and HR applications for the entire system. Both the USG and CSU have a database instance per campus.

Striking the correct balance, however, can be difficult. For some, a more centralized approach works. "When the decision was made to implement centrally ... nobody liked it initially because we were losing control—campus control. At the same time, not having to worry about upgrades is a plus... I've changed my mind on this," related Bill Gauthier of the State University of West Georgia.

Institutional autonomy can be problematic. As noted earlier, the USG decided to create a baseline student product centrally and allow each campus to independently implement the application with local modifications. But standardization issues soon emerged. As a result, the USG launched the GeorgiaBEST project to standardize, where possible, the Banner implementations on all the campuses. When the project is completed, the USG hopes to provide an efficient and effective process for releasing Banner upgrades, fixes, patches, and Georgia mods. Through user groups and a ro-

bust change management process, campuses will have input and involvement in the functionality directions of the student system. Barry Fullerton, GeorgiaBEST project director, explained, "We want to learn from our previous Banner implementation. It was a whole lot more complex than we thought. We did it *laissez faire*. Now we have to go back in and redo."

All three systems used their system-wide ERPs as a springboard to create common business processes and data collection points, especially for HR and financial systems. And they have recognized the benefits of standardized functions and processes. "Financial data available in the same format for all institutions will result in better accountability," explained the USG's Bowes. Here, too, a balancing act occurs to provide consistent system-wide processes while addressing individual institutional needs. George Ketterer of the UW System explained the benefits for the SFS: "We have the best of centralization and decentralization. For example, there is local check-writing capability but consistent system-wide purchasing and financial processes."

### **Smaller Institutions' Greater Access to Systems and Resources**

In university systems, a two-tiered system exists, frequently creating a disparity in both internal operational capabilities and the student experience. The larger campuses—with greater budgets and resources—can attempt new innovations and enhancements, while smaller counterparts simply cannot. Centralized ERP system implementations can be an equalizer, enabling smaller campuses access to systems and resources that they could not afford to acquire on their own. "You have people who would never have been able to afford the functionality,"

the USG's Brigdon acknowledged. "Today the smaller campuses would tell you they are better off."

With a system-wide ERP system, the centralized approach gives all campuses—large and small—access to the same potential resources: a centralized baseline product with regular maintenance and centralized technical and database administration support. California Maritime Academy (CMA) was able to be one of the first CSU campuses to participate in the CMS Student Administration pilot by partnering with Sonoma State. At the USG, small institutions such as East Georgia College received the benefits associated with the PeopleSoft financial and HR systems. UW–Superior, a 2,800-FTE enrollment campus in the UW System, was able to implement PeopleSoft's SA module using existing staff along with UW System consultants and staff. UW–Superior was also able to offer Web registration for its students for the first time in April 2000 (for the fall semester), using the PeopleSoft-delivered functionality.

The system-wide ERP implementations created more collaboration between and among the campuses. "Large campuses such as UW–Madison have personnel resources and expertise that can assist the smaller campuses, and this has been very beneficial," explained Durcan of the UW System. Sheila Bickham of CSU agreed: "The CMA and Sonoma State University are jointly participating in the SA pilot. With such a small staff [CMA has a student enrollment of about 650], this would have been very difficult for CMA to implement on its own."

Even larger institutions benefit from the system-wide programs and tools. Bruce Maas of UW–Milwaukee recalled, "We couldn't have successfully completed the student implementation on time and on budget without the MILER program's assistance. It made the difference in our ability to make our schedule for every module."

### **Cost Reduction**

Anticipated cost savings factored heavily in the decision to implement system-wide ERP systems. Durcan noted, "The goal was to be able to do more with less." Bowes added, "We did some cost avoidance. Had we done it [PeopleSoft human resources and financial implementations] at each institution, it would have cost more."

The system-wide ERP implementation provides opportunities to leverage services across the system. Meachen advised, "Look for opportunities to collaborate. Outsource internally, a kind of ASP [application service provider] model. If you don't use the size of the system to help mitigate the costs, you're wasting opportunities." For example,

- ◆ For PeopleSoft's SA system, UW–Madison's DoIT, under contract to the UW System, established the PeopleSoft upgrade processing facility FASTAR. Initially started as a facility for upgrading from PeopleSoft SA versions 7.0 to 7.5, it has since grown to include bundling of patches and fixes for the campuses. It also provides access to the site license copy of Brio and Informatica for all the UW System institutions. According to Hart, "FASTAR has been a tremendous asset to the UW System. This is especially true of the smaller campuses. They have limited staff resources available for upgrades and fixes, and they benefit greatly from FASTAR's upgrade facility and the bundling of the patches and fixes. It has saved us millions of dollars in licensing costs and staffing costs."
- ◆ The UW System's SFS, based on PeopleSoft's financial system, provides day-to-day transactional support, but doesn't address reporting very well. In response, an application called WISDM (WISconsin Data Mart) was developed. Based on a star database schema, this application provides summary and drill-

down access to financial information via a Web interface. Currently, there are 5,400 authorized users accessing approximately 50 million financial detail records from fiscal year 2000 to the present.

- ◆ The MILER initiative at the UW System provides low-cost access to external consultants and UW System staff with PeopleSoft SA expertise to institutions implementing PeopleSoft. These staff members provide much-needed project management, programming, and functional expertise to these institutions at a fraction of what it would cost the institutions to hire outside contractors. According to Hart, “We wanted to implement in a similar fashion at each campus—so we could get better at it. The MILER core team has moved from campus to campus like the teams that used to build cathedrals.”
- ◆ At the USG, Brigdon reported, “For PeopleSoft systems, we outsource operational space and support at the University of Georgia. They already have a machine room. We leverage what the Research 1 institutions have already done. There is no USG data center. We add to the Research 1 infrastructure with things such as UPS [uninterruptible power supply], as a trade-off for adding to their site. We did ASPs before the market did ASPs.”

Indeed, the move to one data center, rather than data centers at each campus, is expected to save money for the systems. None of the ERP implementations at these systems is completed yet, but savings can already be envisioned. In the case of CSU, the use of one outsourced data center will certainly be less expensive than each of the 23 institutions operating its own data center for the PeopleSoft applications. Simi-

larly, in the UW System, the one data center serving all the institutions for financial systems readily provides one place for the daily financial data feeds to the State of Wisconsin Department of Electronic Government. For all the USG institutions, the data center operations of the doctoral/research institutions are used for the ERP applications operations.

With the centralized approach to the PeopleSoft software at the USG, efficiencies in staff resources have also occurred. For example, according to Thursby, “There is a desktop group in OIIT that tests all vendor releases against the various desktop operating systems. If the campus follows the recommended technology standards, little testing needs to be done locally.” PeopleSoft is combined with patches and fixes and the Georgia mods and placed in the campus’s database instance. Instead of 32 institutions doing this work with their own resources, only central resources are used.

### ***Shared Resources and Expertise***

The system-wide ERP implementations promote common knowledge and information sharing among institutions. For example, for the past several years, the USG has hosted the Georgia Summit Conference. Originally started as a forum for users of the SCT Banner system to share experiences and expertise, this year’s Georgia Summit included users of the PeopleSoft HR and financial applications as well. This conference provides two-and-a-half days of presentations and discussions, and enables system implementers and users at the campuses to learn from their Georgia colleagues. Jim Wolfgang of Georgia College & State University said, “Some say we’re giving information to the competition, the other institutions. We are recruiting the best students we can get, but we also have to re-

member that we're a member of the University System of Georgia. That is where our check comes from and where our leadership comes from. So when we give something to Georgia Southern, we're not really giving it to our competition, we're giving it to our brothers and sisters who report to the same 'daddy' up the road." More than 530 USG faculty and staff who are users of the ERP systems shared experiences, knowledge, and insights at the September 2002 Summit.

As noted earlier, the UW System Collaterals Group was created in 1999 with Hart as its leader, to look for opportunities to share resources and expertise in PeopleSoft student ERP application implementations. Currently this group consists of institution IT professionals and student system functional staff from all institutions, not just those implementing the PeopleSoft software. It has initiated many common IT projects for the UW System. Funding for these projects comes from the UW System Common Systems group, a small group of institution and central UW System executives charged with making common administrative systems funding decisions. The ERP implementations have changed the relationships between and among UW-System administration and the campuses. "The real benefit of the Common Systems implementation is that it has made the UW System more cohesive and brought the campuses together," stated Durcan. "There is a true sense of value of being a system." Meachen concurred: "The greatest benefit from the Common Systems efforts is twofold—one is voluntary and one is not. The first is the knowledge assets we've gained with full-time knowledgeable employees and collaborative thinking. This has changed our culture. The second is voluntary. It is the willingness of people from all over the system to volunteer their time and advice to help others."

### ***Improved Services for Students, Faculty, and Staff***

Throughout the interviews, members of all three systems identified the common goal of improved service to their constituents throughout the system. For example, improved service is a driving goal of CSU, as outlined in the CMS project mission, to enable CSU's 23 campuses plus the chancellor's office by 2006 to (1) perform administrative functions in concert with a common set of administrative "best practices" approaches; (2) support administrative functions (initially including human resources, financials, and student services) with a shared, common suite of PeopleSoft applications software; and (3) operate the administrative software suite at a shared data center.<sup>15</sup>

In many cases, the ERP system helps the individual institutions achieve greater efficiencies as well, by automating services online. Lis Wolfgang, director of admissions at Georgia College & State University, is pleased with the Web functionality the student system provides: "In admissions, we've reduced our calls by letting students check their admissions status online. We're getting an average of 57 hits per day on the admissions status check on the Web. As we close in on admission deadlines, we can have as many as 100 hits per day."

The improvements are just beginning. Meachen predicted, "The task of the next decade is bringing the ERP and academic systems together in an environment where we gain some service advantage to students, faculty, staff, and alumni. We're getting a glimpse of what's possible with portals."

### ***Improved Information Access***

Jim Wolfgang described the drivers for the USG's ERP applications: "This is part of the evolution. We went from a Georgia that

was basically a southern rural state to where our population growth is up there. Our technology infrastructure is up there. The quality of our education in the USG is up there. In order to keep up with that and meet the expectations of our customers, we couldn't keep working in the way we did in the 1950s and 1960s." CSU's West agreed: "The driver here was replacement of administrative systems in the same sense as you would treat a capital good. The existing systems had served for a generation. There was a need to replace them and also to have functionality improvements."

Aging infrastructure also impeded changing information demands. In response to complaints about the limited functionality of the UW System legacy accounting system, the UW System commissioned "a best business practices study for the Shared Financial System," recalled Durcan. This committee consisted of staff from the campuses as well as staff from UW–System Administration. This initiative was later called the Common Systems initiative. The process was repeated for the HR and payroll system, and the results of these best practices investigations eventually led to the purchase of PeopleSoft for financial and student systems and Lawson for HR and payroll. At the USG, the schedule for implementation of the PeopleSoft financial system was driven by the desire to meet the GASB-required reporting guidelines. Gauthier of the State University of West Georgia recalled, "GASB changed our reporting for June 2002 fiscal year reporting. We had to either change the reports out of the legacy financial system or implement PeopleSoft. They put us on a structured time frame. The GASB changes were bigger than Y2K."

System constituents report better information analysis and access also. "I know when I ask questions about budget now I can get it sliced and diced how I want it in a

short period of time," reported Benjamin Quillian, vice president for administration, CSU, Fresno. "My budget office is at an entirely different level of response than before. Those who know how to use the system now can provide information in a timely way."

The USG's Thursby agreed: "We have increased flexibility in human resources and payroll of what we can do. We can now have options for deductions and retirement plans that we couldn't have had before, and we can now track applicants for positions in an automated manner. On the student side, we have increased access to services via the Web. With the CAPP software we can do transfer articulation, and soon students will be able to self-evaluate progress toward their degree or determine effects of a change in degree/major."

Gauthier added, "These systems will do a lot more for us than the legacy system. The centralized system is more beneficial to use than we would have thought before. Reporting is going to be easier."

## Lessons Learned

All three systems studied in this report have a long history of overseeing the operations of the institutions in their systems. When a decision was made to implement ERP solutions, these systems already had the relationships and background for making this work. The advice they give addresses ERP implementation challenges rather than the challenges associated with setting up a consortium. Interestingly, many can be applied to institutional implementations.

## System Related

- ◆ *The system challenge—they can't move rapidly.*

All the systems recognize that moving many institutions takes time. They will likely never be "bleeding" edge. Part of the reason is just the sheer size. West emphasized, "You

need to take a longer view. You can't move a system with 23 campuses, almost 400,000 students, and over 40,000 faculty and staff anywhere easily. This is a gradual process."

Moreover, gaining consensus is important and time consuming. "Deal with the political realities of a system," emphasized Bowes. "To take 34 institutions and turn it on a dime is not an easy thing to do." Jim Wolfgang agreed: "You need to ask questions in full scope of where you're going as an institution. We can't be in the Wild West anymore. There needs to be consensus across the system/institution."

## Project Management

- ◆ *Strong leadership is imperative to implementation success.*

When implementing an ERP system across numerous institutions that involve thousands of people, strong leadership takes on an imperative role—to communicate the system's commitment to the project, to promote it internally, and to keep it focused. "Get the support of the key decision makers of the institutions. This [was] important, so that everyone knew they had to get this done," advised Thursby. Fullerton of USG concurred: "The chief officer has to be on record in writing in support for the project as well as orally committed to the project." Durcan advised, "An important lesson learned is having strong people in the project leadership roles. Ones who can stay within budget and keep focused on the objective to provide 'core functionality first.'"

Quillian described the importance for the CSU CMS: "One of the major lessons learned is to give the primary responsibility for the implementation to the functional users—not the technical IT staff. The IT staff should provide input and support, but the primary decision making should rest with the functional users. I believe the decision to focus on the functionality and not the tech-

nical aspect was a key to our success." Stated Quillian, "It is important to expect and anticipate some steps backward in functionality and prepare the functional users for such. Over time, the advancements will come, but it is important for the senior leadership to acknowledge there will be frustrations and difficulties and do whatever is necessary to provide moral support to the users of the new system."

- ◆ *Involve the right people.*

Bowes explained, "Get a full-time project director, someone who understands the business and can work effectively with IT, vendors, and consultants. It is an unusual set of skills, and it is therefore hard to find the right person." Durcan advised, "For implementation, get the best people involved. You want people who not only understand how you do your business, but why. They also need to be open to change."

- ◆ *Learn from other projects.*

One of the goals for the USG's PeopleSoft implementation was to learn from the SCT Banner project. Brigdon recalled, "We applied the lessons learned during the Banner implementation in 1994–97 to our implementation of PeopleSoft human resource and financials from 1997 to now. And now we applied the PeopleSoft lesson learned to reengineer deployment and standardization for Banner." The USG applied staffing and scheduling lessons also from its HR implementation to its financial implementations. "Because of the centralized implementation, the process for the HR/payroll implementation called for functional staff to work together with other institutions at a central location," recalled Gauthier. "This took people away from their jobs, and these were people critical to the day-to-day operations—payroll, for example. It was a workload burden for some individuals. For the financial implementation we learned how to organize it better and treated the

implementation as a series of workshops, again using functional staff, but a much smoother process. Bottom line—by the time they got to financials, they had a better feel for curriculum and training.”

◆ *Create good project management tools.* Many of CSU's CMS participants described its outstanding project management approach. A number of project documents are available on the CMS Web site: project plans, scope documents, deployment timelines, change management procedures, software modification and approval processes, software modification logs, and work plans, among others.<sup>16</sup>

◆ *Prepare your metrics early in the process.* In 1999, CSU created *The Integrated Technology Strategy: Measures of Success* metrics in response to questions from the California Legislature surrounding the planned \$250-million investment to build out its network infrastructure. CSU committed to report to legislators for the next 10 years on not only the network build-out, but also on all of the ITS major initiatives, including CMS. The first *Measures of Success* report in 1999 outlined the framework. The 2000 report collected baseline data; 2001 was the first year to measure progress against the baseline. CSU is currently in the process of collecting 2002 data.<sup>17</sup>

CSU's Ernst admitted that he is “looking forward in 2002 and 2003 to compare longitudinally. We will be able to measure in a number of ways how attitudes have changed, how many purchase orders have been processed, etc. If you don't pick the success measures yourself, someone will definitely pick them for you. We specified early on what outcomes we intended to achieve and how we would measure our progress. While this does not ensure success, it does provide a common road map to show progress toward a known destination.”

◆ *Communication is important.*

With so many institutions and so many people involved, ERP participants emphasized the importance of communication. Baker recalled, “The enthusiasm of all the players and the willingness to work as a team greatly contributed to the success. Communication occurs through a large number of teams, starting at the executive level, project advisory committee, functional and technical user groups, and many ad hoc teams focused on specific functional or technical areas. There is a lot of system-wide team representation—in person, and teleconference, and e-mail. We operate many listservs to address questions and concerns for specific topics of interest. Campuses host and initiate videoconferences about specific items. There is great communication not just between the CSU central system group and campuses, but among campuses themselves.” In addition, CSU established campus liaisons to coordinate the interactions between the CMS central and the campuses. “Campus liaisons are the primary escalation point of contact for campuses,” stated Bickham. “Campus project directors call campus liaisons for the unusual issues that sometimes surface; ordinary calls go to the help desk. They [the liaisons] are the heartbeat to what goes on in the organization. They have regular standing meetings with their campuses, who drive the agenda. The liaisons are looking out for any hot issues.”

## Financial

◆ *Plan the budget carefully.*

Adequate funding is important to ensure proper staffing, the largest component of an ERP implementation budget. “If I had it to do over, I would find a way to devote more resources to the project,” Quillian admitted. “We did not have the resources to

do the amount of backfill that the consultants called for. The result has been a lot of strain on people's jobs—some backfill, but not nearly at the recommended level. The staff paid the price for this. There are just so many pizza parties you can give to keep morale up." As Fullerton advised, increase your initial investments: "Same as someone going overseas, unpack half your clothes and double your money."

## Technical

### ◆ *Limit modifications to the vendor software.*

The systems have rigorous change-management processes that limit modifications to the base software product. "We established the principle of using the business processes of the software and were very careful about mods," Bowes stated. "We learned this from the Banner implementation. We didn't want to get into a situation where we had to do major mods for every new release."

Central offices control modifications to enhance system consistency. Wright explained, "It's very clear. Campuses cannot change PeopleSoft-delivered or baseline objects because they don't have access to the production environment. Campuses are able to create campus-specific SQRs [structured query reports] and reports that get submitted through a CMS review process before being put into production."

### ◆ *Ensure timely creation of reports and data warehouse.*

All the systems have initiated additional reporting and data warehouse projects. Maas of UW–Milwaukee explained, "We knew about the PeopleSoft performance hits that come with client-server queries and the complexity of reporting directly from an operational database. As a result, we rolled out the data warehousing concurrently with every module to solve reporting and ex-

pected client-server performance problems. We had earlier experience on our campus with a legacy data mart, which provided limited access to the most commonly needed list/label data. There was a commitment from our campus leaders at the very start of the project planning to improve upon existing legacy data warehousing capabilities with the new system, in order to provide easy, timely access to data to our end-user community. We spent time forming a team of users to work on early reports, learning the data and learning some new software tools. Brio is the tool they use. The user team has been developing reports immediately upon warehouse modules' going into production."

### ◆ *Give attention to ongoing support.*

The ERP implementation doesn't end when the system goes live. Rather, ERP systems require more ongoing resources for maintenance, patches, and fixes than legacy applications. "I used to think of the ERP implementations as a project. I've come to realize that you are never done," stated Durcan. "I wish I'd known this at the beginning. There is a general recognition now that we'll be in a state of continuous change. For example, at the UW System level, we're responsible for taking care of the Shared Financial System. The constant nurturing is eye opening, and the campuses are completely dependent on us. The level of expertise we need is higher than we expected." And it is a constant process. "We are working to stay close to the vendor and stay on top of releases," according to West. "We have seen maintenance and releases get short-changed on other implementations."

## User

### ◆ *Focus training.*

"Organize early," Ketterer advised. "Do targeted training. Do not send end users to

PeopleSoft training—give them focused, job-related training instead.” Lam emphasized the importance of integrated training: “With Banner, the registrar’s office could have benefited with training with the bursar’s office. Instead the registrar’s office just trained in their own areas—registration, records. It would have been useful to have the different functions train together so that they could see how it interrelates.”

◆ *Get users’ buy-in.*

Quillian also noted, “We wanted to place more responsibility with departments. But in some instances, the departments’ reaction may be ‘the accounting office used to do this, and now we just have more work,’ and it’s not always well received. I didn’t anticipate this.”

## Future

As their implementations go live, the systems continue to enhance them with the goal of improving services to students, faculty, and staff in the most efficient and cost-effective manner possible.

## Enhancing ERP System Technology

Like their institutional counterparts, the systems plan to enhance their current ERP implementations technically to enable their constituents to use them to the fullest extent. Data warehousing is a priority. “It is key for our USG to get information about our institutions, and our data warehouse project is going well,” reported Bowes. “Institutions are now loading data from last year and this year. We’re focusing on financial data currently, but we will eventually include human resource and student data in the initiative.” The UW System Collaterals Group Data Warehousing initiative started in 1999 and continues today. The UW System is building upon existing

data warehousing initiatives at UW campuses and has obtained site licenses for Informatica, an ETL tool, and Brio Query, a Web-based query language.

Another project under way is the UW System Identification, Authentication, and Authorization System. Developed by UW–Madison’s DoIT, this system will feature a white-pages Lightweight Directory Access Protocol (LDAP) directory in its first phase. The goal of this project is to include all 131,000 students and 26,000 faculty and staff of the UW System in one directory. Discussions are now in progress to identify follow-on applications that will exploit the potential of this directory, including integration with the UW System ERP systems. Additionally, the UW System is evaluating workflow and imaging.

The USG recently signed a contract with Campus Pipeline for its new Luminis software product line as a standard within the system for the delivery of portal services. The contract includes the rights of the system institutions to acquire software, maintenance, and functional and technical services.

## Enhancing Functionality

As the systems’ ERP implementations are fairly recent, all their base products’ functionality is not implemented yet. “We realize that it [Banner] can do more than we thought,” explained Jim Wolfgang. “It’s like having a race car to drive down the road for a bottle of milk. We’re not pushing close to the envelope yet, but we’re excited about the things we’re finding.”

## Continued Standardization

As they recognize the benefits, the systems will expand standardization in the ERP implementations. For example, the UW System uses a single instance of PeopleSoft financials for its institutions. The USG’s

GeorgiaFIRST is a standardized implementation of financials and human resources, and GeorgiaBEST will continue its efforts to standardize its Banner implementation system-wide.

As noted earlier, CSU's CMS is a standardized implementation for all three areas: student, financial, and human resources. The March 2001 report to the Board of Trustees outlined the following goals for the CMS: (1) facilitate standardized training and consistent application of university policies; (2) allow employees to transfer between departments and campuses without requiring a large investment in training; and (3) require less effort to apply and maintain campus-unique software enhancements.<sup>18</sup>

### **Establish Measures and Accountability**

Given the significant amount of investment in their ERP implementations, it is unsurprising that all three systems are interested in the areas of measuring return on investment and accountability. Only CSU planned for metrics early in their project with their Measures of Success initiative. The UW System wants to measure its systems' success more closely. "We monitor our budgets and report to the chancellors twice a year to brief them on the ERP projects' status," stated Meachen. "But what we don't have yet is a good way to measure our return on investment and the benefits the campuses are getting."

### **Endnotes**

1. The scope of the ERP investigation included the primary administrative applications: human resource, financial, and student.
2. See the organization chart at <[http://its.calstate.edu/documents/its\\_org\\_chart.shtml](http://its.calstate.edu/documents/its_org_chart.shtml)>.
3. See <[http://its.calstate.edu/Systemwide\\_it\\_advisory/Technology\\_Structure.gif](http://its.calstate.edu/Systemwide_it_advisory/Technology_Structure.gif)>.
4. See <<http://its.calstate.edu>>.
5. Outsourcing is detailed in an earlier ECAR Case Study: <<http://ecar.educause.edu/ecar/research/doclistecs.asp>>.
6. See also <[http://cms.calstate.edu/T1\\_MProjectOverview.asp](http://cms.calstate.edu/T1_MProjectOverview.asp)>.
7. More information about the readiness assessment tool is available on the Web at <[http://cms.calstate.edu/T1\\_MCampusReadiness\\_Deploy.asp](http://cms.calstate.edu/T1_MCampusReadiness_Deploy.asp)>, with a campus assessment report at <<http://www.csuchico.edu/cms/planning.htm>>.
8. For details, see <[http://cms.calstate.edu/T3\\_MTechnicalOverview.asp](http://cms.calstate.edu/T3_MTechnicalOverview.asp)>.
9. The OIIT organization chart can be found at <[http://www.usg.edu/oit/admin/dir/org\\_chart.html](http://www.usg.edu/oit/admin/dir/org_chart.html)>.
10. See <[http://www.usg.edu/usgweb/iitsp/documents/docs/Learning\\_Without\\_Limits\\_4\\_1\\_02.pdf](http://www.usg.edu/usgweb/iitsp/documents/docs/Learning_Without_Limits_4_1_02.pdf)>.
11. See <<http://www.usg.edu/gabest>>.
12. See <<http://www.usg.edu/gafirst>>.
13. See <<http://www.uwsa.edu/fadmin/sfs/sfsindex.htm>>.
14. See <<http://www.uwsa.edu/hr/apbs>>.
15. See <[http://cms.calstate.edu/T1\\_MprojectOverview.asp](http://cms.calstate.edu/T1_MprojectOverview.asp)>.
16. See <<http://cms.calstate.edu>> for more information.
17. See <[http://its.calstate.edu/Systemwide\\_it\\_resources/data\\_collection.shtml](http://its.calstate.edu/Systemwide_it_resources/data_collection.shtml)>.
18. See <[http://its.calstate.edu/systemwide\\_it\\_resources/its\\_planning\\_documents.shtml](http://its.calstate.edu/systemwide_it_resources/its_planning_documents.shtml)>.