



Institutional Transformation through Enterprise Systems at the University of Minnesota

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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.

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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 hypoth-

eses 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 plan-

ning 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 University of Minnesota for sharing their time, thoughts, insights, and records with us. In particular, ECAR thanks Terry Bock, associate vice president—Academic Health Center; Steve Cawley, associate vice president and CIO, Office of Information Technology; Carol Carrier, vice president, Office of Human Resources; Tim Fitzpatrick, deputy CIO, central computing operations, Office of Information Technology; Bob Kvavik, associate vice president; Jill Merriam, director of finance, law school; Mark Powell, director, applications and development and maintenance group, Office of Information Technology; Scott Ruud, deputy CIO, enterprise applications/maintenance, Office of Information Technology; Wayne Sigler, director, Office of Admissions; Ted Skogman, information technology professional, Office of the Bursar; Dennis Skovsted, information systems audit manager, Department of Audits; Craig Swan, vice provost, undergraduate education, Office of the Executive Vice President and Provost; Susan Van Voorhis, director, Office of the Registrar; and Miriam Ward, director, HRMS/payroll, human resources.

Introduction

Institutions—like some Gophers—need to adapt to changing times. Goldy, the University of Minnesota’s (U of M) mascot, evolved over time, modernizing its looks to become more “intelligent, alert, friendly—representing both men’s and women’s athletics.”² (See Figure 1.) The U of M’s computer systems required a similar makeover. Its legacy systems were aging, “stovepiped,” and unable to meet the university’s evolving requirements. Information—like Goldy—needed to become more

intelligent, timely, user friendly, and integrated to provide better decision-making support and enhanced customer service in an increasingly competitive market.

In the late 1990s, the U of M embarked on such a task. Its enterprise systems project is replacing several information systems in student services, human resources, finances, and grants management—a process that continues to this day. This case study focuses on U of M's tandem implementation of two information systems—student services and human resources (HR)—and on how it transformed the university's culture and operations.

Case Background

Four campuses—Twin Cities, Duluth, Crookston, and Morris—comprise the U of M. Both a state land-grant university and a

major research institution, the U of M operates more than 15 university programs that are ranked among the top 10 nationally. The U of M serves more than 60,000 students throughout the state, offers degrees in more than 370 fields of study, and employs over 16,000 faculty and staff full-time equivalents (FTEs). The Twin Cities campus—located in downtown Minneapolis—is the institution's hub, enrolling more than three-quarters of the institution's student FTEs and employing almost 90 percent of its faculty and staff FTEs. The university received nearly \$455.2 million in contract and grant awards in fiscal year 2000.

IT Organization

The Office of Information Technology (OIT) manages the centrally provided com-

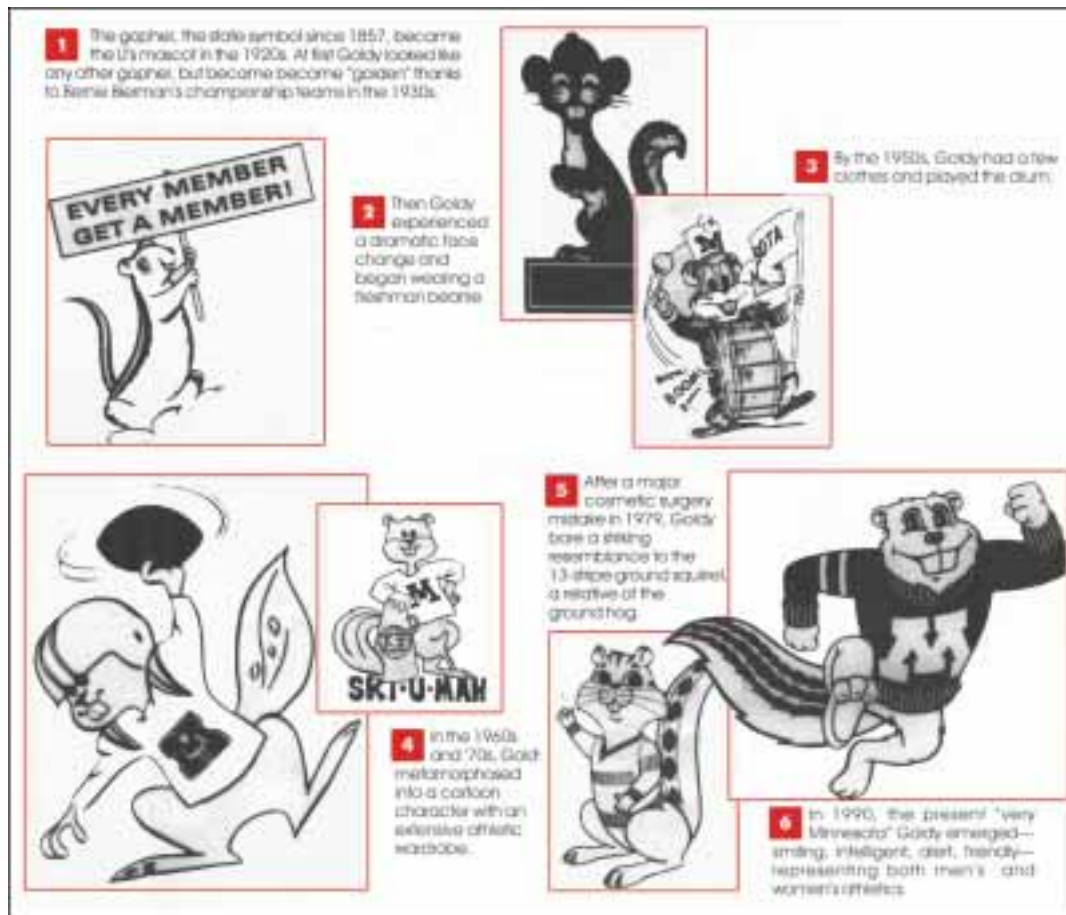


Figure 1. University of Minnesota Mascot Goldy Gopher Evolved Over Time

Source: University of Minnesota, [Click Here!](#), November 1998

puter, network, phone, and other information technology systems of the U of M. Led by Steve Cawley, associate vice president and CIO, the OIT operates three service units: enterprise management systems, technology infrastructure, and technology services. Scott Ruud, deputy CIO, heads the enterprise management systems unit, which manages the U of M's enterprise systems. Reporting to him are Mark Powell, director of applications development; Kari Branjord, director of enterprise Web development; and Susan Grotevant, director of information management systems.

Implementation Drivers

The U of M's institutional transformation was motivated by both technical and organizational goals—the need to address its aging information systems infrastructure and the desire to enhance its business operations. These pressing needs, however, cultivated a longer-term vision for the university.

Technically, the change effort was driven by the need for systems to meet the requirements posed by Y2K and by a legislative mandate to convert from academic quarters to semesters. As with other institutions, Y2K compliance forced the U of M to evaluate its long-term system options. “We had legacy systems that were written in ‘proto-squirrel,’” explained Robert Kvavik, associate vice president. “Nobody knew it anymore.” A U of M study estimated it would cost \$14 million to make its aging systems Y2K compliant. “In those days, that was quite a bit of money,” stated Mark Powell, director, applications and development and maintenance group, Office of Information Technology. “And after we were done, we’d still have our old systems.”

The U of M decided to purchase new information systems and not to write any code to prepare its legacy systems for Y2K, thus

generating significant pressure for a timely implementation. “In hindsight, I would have hedged our bets on that decision,” states Terry Bock, associate vice president, Academic Health Center. “I don’t think many of us within or without the core team understood the amount of risk involved and the potential loss of functionality with the old systems. But we made an early decision not to tinker with the Y2K issue or upgrade our current system, to use Y2K as an opportunity to upgrade our HR and student systems.”

The Minnesota legislature's decision to convert the U of M's academic year from quarters to semesters sealed the legacy systems' fate—especially for student services. “Everything in the legacy systems was hard coded for quarters,” explained Powell. “It meant rewriting the code became impossible.”

While technical needs spurred the U of M to upgrade its systems, the institution realized that these systems could be a platform to address long-running organizational problems as well. Before its enterprise system project, the U of M operated a very silo-oriented institution—from departmental, employee, and institutional perspectives:

- ◆ Departments operated independently from each other. “We had a lovely home-grown system—a mainframe with interfaces going back and forth,” remembered Sue Van Voorhis, director, office of the registrar. “Just in student records alone, we had 60 interfaces to various other systems. But because of the interfaces, there wasn’t a domino affect. I didn’t care about other offices’ business processes.”
- ◆ Many staff members knew how to access the system to complete their own tasks—and no one else’s. Limited cross-functional operations existed, creating over-dependence on individuals and limiting employee opportunities. “People worked in

their little silos, and it made me nervous when people took vacation time because we had no back up,” explained Jill Merriam, director of finance, law school. “And I wanted to give people the opportunity to do something differently.”

- ◆ The U of M’s organizational structure added another dimension to the issue. “What increases our challenge is that we have four other campuses,” explained Wayne Sigler, director, Office of Admissions. “We are all equal partners—they are part of this system, too.” The legacy systems’ silo orientation complicated institution-wide information sharing and compilation. Kvakik provided an example. “The president had no data about the number of people employed at the institution,” he explained. “A lot of employees don’t show up in some systems because they are on grants or part of the county extension study, etc. We had multiple payroll systems, people with September–August appointments, and others with July–July appointments. There was no way to aggregate them.”

As Van Voorhis summarized, “We are an enterprise-wide organization, and we need an enterprise system to conduct our business.”

Poor customer service was another sore point at the U of M, especially in these highly competitive times. Institutions strive to create a highly rewarding student experience, but students’ interactions with administrative services were totally opposite. “We had an enormous breakdown in service—there was no customer perspective,” elaborated Kvakik. “The financial aid group worked totally independently of the admissions office and the registrar—they had different office hours. A student could register, but had to return the next day because the bursar closed at 3:30 p.m. And the departments had different deadlines. A student could re-

ceive financial aid, but it was too late for him or her to get admitted.”

As a result, Kvakik, Van Voorhis, and Michael Handberg, the U of M’s Web project director at the time, initiated a skunk works to move some of its student services onto the Web. They hired a group of students to build it. “This was a system built for students by students,” stated Kvakik. “It became customer-centric because we let the customers build it. And that was the beginning of the vision.”

From Silos to the Enterprise

Kvakik’s experiences illustrated to him just how valuable an enterprise system would be to a complex institution like the U of M. His diverse appointments around the university shaped his institution-wide viewpoint. “It takes enormous perceptiveness to understand how the faculty operate, how external relations work, how the business office works, and how facilities work,” Kvakik explained. “It was almost easy and fun to think about how this ERP technology could operate. It gives the institution the ability to take the business offices, the service units, the faculty—whatever—and integrate them and paste them together.” An enterprise system provided not only the tools to enhance the U of M’s operations, but tools to rethink how the institution operates. “This was not just about replacing legacy systems,” he explained. “The project was too expensive for that. We really had to become Web-enabled and to build a self-service vision. This is no longer a stand-alone, sector-by-sector solution. This is an enterprise solution.”

To create a clear, cogent enterprise vision, Kvakik and others used a couple of strategies. “We preached to anyone who would listen to this notion of integration, finding new ways to work,” he recalled. “We just constantly leaned. And after we

installed and stabilized the system, people not only heard what we were trying to achieve, but they began to see what they could achieve.” The institution created a culture of volunteerism by using system of incentives and disincentives. “You create pressure by raising the service level on one hand—ouch, my customers are pushing me this way,” Kvavik explained. “On the other hand, you provide resources to the organizations that step up earliest and embrace change.” People who want to change get into the front of the line, creating an incentive for those in the back to pick up the pace or get left behind.

Systems Parameters

In 1997, the U of M initiated its enterprise system project, with the anticipated goal of replacing five separate systems—student systems, HR, financial management, grant management, and OIT infrastructure—over a planned period of two to three years. Eventually the university chose to address grant management system issues with a non-ERP solution. It deferred the financial management systems replacement to reduce overall risk and to focus its resources on the HR and student services implementations. “Our [American Management Systems] financial system costs us next to nothing to run,” explained Cawley. “AMS provides no support, but we don’t do anything except to let it run. And there is nothing regulatory to drive you.” So the U of M proceeded with its student systems and HR system replacements.

Product Procurement Spurs Project Evolution

Actually, individual departmental efforts to replace legacy information systems pre-date the U of M’s enterprise resource project. In the mid-1990s, human resources decided to give senior-level attention to its many,

separate legacy HR and benefit systems. “We had a legacy nightmare—several systems dating from the mid-60s—and no information,” recalled Miriam Ward, director, HRMS/payroll, human resources. “Our payroll system was 35 years old. HR began in its own silo to create a vision and an RFP for our next information system.”

Eventually individual efforts evolved into a joint purchase. Student services began their request for proposals (RFP) and evaluation efforts 9 to 12 months earlier than HR, driven by similar informational issues, Y2K, and, most especially, the U of M’s upcoming semester conversion. As HR began to draft its RFP, student services chose PeopleSoft, which later proposed a purchase of two products and free beta software. “So student services came knocking on our door with a deal for us,” stated Ward. “We had to ante up, but if we could collaborate on this, it was supposedly a good deal. And we jumpstarted our system replacement by eliminating our year-long RFP process.” OIT documented the purchase’s cost-effectiveness, and the Board of Regents approved the purchase in fall 1996.

While PeopleSoft did provide a financial incentive, it was not the only purchase consideration. Human resources had placed PeopleSoft on its short list of potential vendors because it is considered a flagship product in the human resources/payroll area. The U of M’s complexity factored heavily into the procurement process also. “A university like the U of M is complex, operating a wide range of colleges and a land grant, too,” explained Craig Swan, vice provost, undergraduate education. “We have about as many variants in key processes as we have colleges. With that many variants running on any system, it is going to be complex.” Another factor in PeopleSoft’s favor was its presence in large research universities; for

example, 7 of the Big 10 universities operate the PeopleSoft admissions systems.

“At this point, it was not an enterprise system, it was a student system and an HR system,” recalled Tim Fitzpatrick, deputy CIO, central computing operations, Office of Information Technology. “We discovered quickly, however, that an enterprise system needed a common technology infrastructure. It needed an implementation plan, schedule, and budget that was coordinated across these two major drivers.” Ward concurred: “We went to the table together, and we purchased the product. Our mindset was not yet ERP. We thought we’d operate our separate projects, and the two systems would stick together somewhere. That was our first surprise. We began to realize otherwise. First we said we were joined at the hip, and then afterward we felt like conjoined Siamese twins. During that first year we realized the impact of data integration—common data definitions and tables. Every time you sneezed, it affected somebody else. It was very different being in the same sandbox.”

Student System Parameters

The registrar, student records, financial aid, and classroom management comprise the U of M’s student services areas. Kvakik sponsored Student 2000, the student service’s information systems replacement project. Roberta Armstrong managed the Student 2000 project.

Human Resource System Parameters

Carol Carrier, vice president, Office of Human Resources, sponsored the human resources management system (HRMS) to replace the area’s legacy information systems: human resources, payroll, employee benefits, staff demographics, seniority tracking, and job application system. Miriam Ward managed the HRMS project.

Two Projects Implemented in Tandem

The U of M conducted a phased project over five years, with phased implementation points during 1998–2000 in the student services and HR areas. “We phased this implementation over a couple of years because neither PeopleSoft or we could do it all together,” stated Ward. “So we created a schedule to implement student, then a little of HR, the year cycle of the academic calendar, and then payroll.” The order of implementation follows:

1. Campus Community
2. Admissions
3. Student Records
4. Financial Aid
5. Student Financials
6. Graduate School Tracking
7. Staff Demographics/Appointments
8. Seniority Tracking
9. Job Requisition and Application Tracking
10. Health/Dependent Care Reimbursement
11. Payroll and Benefits
12. Work Study

Project Organization

Initially the U of M found it difficult to conceive an effective organization structure. “We tweaked the organizational chart because at project’s start, you don’t realize all the infrastructure you need,” explained Ward. “We started piecemeal, putting it in place as we realized that we had no clue about how we communicate with each other.”

Fitzpatrick outlined the U of M’s requirements. “Organizationally, we needed a management structure that provided line management, and we needed people to run the project hands-on in teams. The missing piece was the middle, those who could pull it together. Functionally, we needed a structure that brings the budgets and priorities together at the same table, and provides a common method for planning and report-

ing progress, variance, and issues.” The U of M eventually organized its ERP implementation in five functional tiers that, as Powell described, “... provided an escalation process from the project team up to the committee on each of the functional sides, and finally up to a higher level committee.” Table 1 shows this organization; see also Figure 2.

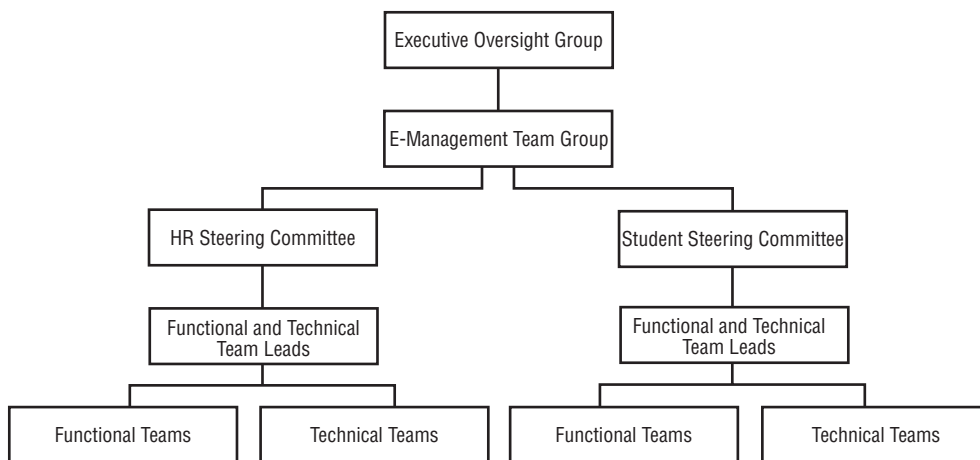
The four teams—student administration, HR, Web, and technical infrastructure—combined the project’s technical and functional aspects. While grants and financial systems staff were not involved directly in the ERP implementation, they participated in the project management. “We needed their involvement for two reasons,” ex-

Table 1. Student 2000 and HRMS Organization

Teams	Members	Goals/Functions
Executive Oversight Group	Institutional vice presidents and sponsors	Monitor budget and plan future direction
E-Management Group	Sponsors and project managers	Resolve policy issues, resource contention, and monitor schedule
HR and Student Steering Committees	Process owners, project director, team leads	Schedule and data decisions, monitor schedules and work plan
Student Administration, Human Resources, Web, and Technical Infrastructure Team Leads	Project and team lead managers	Plan and manage immediate issues
Student Administration, Human Resources, Web, and Technical Infrastructure Team	Team lead managers and team members	Implementation

Source: Mark Powell, University of Minnesota, “The Good, the Bad, and the Ugly,” presentation at PeopleSoft 2000 Conference, October 22–26, 2000, Los Angeles Convention Center, Los Angeles, CA.

Figure 2. Five Functional Tiers of ERP Implementation



plained Ward. “The first was long-term decision making—many of our project decisions would impact them, especially financial systems and its pending implementation. More importantly, however, we built an extensive back-end that is tied into the legacy system. It hits the student system some, but it hits the HR system heavily because it feeds information, like salary history, into the ledger system.”

The U of M used its organizational structure to hash out project details, issues, and problems, from data definitions to technical issues. “We talked about everything and tried to get our arms around the project,” continued Ward. “There was this vague notion of a campus community, but what did that mean? The vendor could not even help us because the product was new. So we tried to chart the waters together with the HR and student services areas working together, to build documentation and to figure out what it all meant. We found ‘student’ in unexpected places. And I am sure Student [Services] found HR, too. We assigned various people to go and resolve details.”

Executive Oversight/Senior Decision Making

The president assigned the executive vice president and provost, Bob Bruiniks, and the senior vice president for the Academic Health Center, Frank Cerra, overall responsibility for the project. Richard Pfutzenreuter of the budget office also served on the executive oversight committee. Kvavik described the executive role as providing “a lot of coordination, a lot of integration, a lot of common vision sharing.”

Carrier recalled that at the executive level, “Individual interests melded into the bigger picture.” Kvavik described how “Executives made decision trade-offs against five risk levels: (1) budget, (2) functionality, (3) personnel, (4) schedule, and (5) infra-

structure. For example, adding greater functionality impacted budget and schedule.”

Fitzpatrick outlined the importance of Cerra’s role: “He was not vested in the project, but an actual user. He asked very challenging questions about risk and reward, without any parochial interest. He contributed very high-level opinions without being vested in either camp—and that was important. You need someone who is intuitive, informational, or both to force the tough questions.”

Steering Committee

The Steering Committee consisted of a combination of executives and managers. Carrier described its function as “gathering input from different position levels, and we tended to roll up report to the larger sponsor groups.” Kvavik described the group as “very candid and frank—not a typical Minnesota operation with passive/aggressive tactics. It was a way to keep everyone informed so [that] all the troops knew about the project. And that is where we brought in the auditor, who provided an interesting check and balance.”

Again, Bock’s participation was important because he was the only user. “You had people from the project; you had people from the central business offices—human resources or student services—and there was me,” he explains. “So the project’s user input occurred at the functional level, rather than at the steering committee level. I think the U of M could have benefited from greater user input at the steering committee level, but the question is how to accomplish it efficiently, given all the constituents involved.”

The Steering Committee decided on requests for enhancement. “Any time we wanted to modify the vanilla software,” explained Van Voorhis, “we put together a business case for each proposed modifica-

tion that required over x number of hours for Steering Committee review.” Bock recalled that, “Requests tended to be boiled down to a few key points on functionality, but a lot of it focused on schedule, do-ability, and budget—with the presumption that more detailed and more rigorous analysis of the request was completed elsewhere.”

Bock believed the Steering Committee should have played a greater decision-making role. “It really was a crisis-driven process, trying to step back every so often to plan the next stage,” he recalled. “One got the feeling the teams made decisions meeting throughout the week, and then reported on at the Steering Committee, rather than deliberating at the Steering Committee. I felt more could have gone to the Steering Committee.”

Project Committees

At the project committee level, activities grew more tactical, focusing on individual tasks in each system implementation. To handle these tasks, the U of M developed an implementation team that combined functional and technical IT sources. Said Powell, “We basically went after the best, people that worked here for several years and who understood their area’s business process with their current systems.”

“We detailed and laid out our implementation so I could assign specific people to work on each of the pieces,” explained Van Voorhis. Sample goals and tasks included

- ◆ *Communication to compensate for lack of documentation.* Meetings provided an important venue to coordinate and report on specific activities. It was especially important because no documentation existed for the student system. “We had to figure out ourselves how to work it,” stated Van Voorhis. “We communicated our activities so others could report its impact on their areas. We conducted experi-

mental processes to ensure that we implemented the system correctly.”

- ◆ *Data definition and conversion issues.* Each implementation created a separate group to work on the data conversion. For example, the student area’s legacy system had to convert 22 million course records, dating back to 1926. The groups also defined data elements to ensure consistency. “Inputting an instructor’s name or an address was an issue now,” recalled Van Voorhis. “It went all across the university, where before, each did it a little differently. So we had to come to agreement.”
- ◆ *Reporting.* Issues evolved, involving HR, student services, and institutional reporting. “When we operated silos, we created our own little tables of whatever we needed, but now we had to mesh the HR and institutional codes,” stated Van Voorhis. “We had some intense debate, but we did come to consensus.”

User Input

User input is obviously important to create a system that fulfills their requirements. Bock described how the Academic Health Center communicated their input into the project:

- ◆ *Outside the Academic Health Center:* As part of his role on the Steering Committee, Bock functioned as a user and advocate for the center in the requirements definition and planning.
- ◆ *Inside the Academic Health Center:* For the HR side of the system, the center solicited input from its IT and HR offices as well as forming several groups to (1) define the center’s business requirements and (2) redefine the business processes that connect with the central system. It appointed a single spokesperson to work with the central project teams and to

communicate the center's requirements. The spokesperson, in turn, served as the liaison with the individual Academic Health Center schools. "As we documented processes in the AHC's individual schools, we discovered greater variances in our individual school processes than central IT ever imagined," recalled Bock. "We used the ERP implementation as a means to address these issues."

Consultants

While many institutions hire consultants, the U of M likes to limit their involvement as much as possible. "The university has a history of wanting to own its projects and not to let someone from the outside own them," stated Powell. "We're going to live with the system long after the consultants are gone. We'll have responsibility. We've had problems with technology knowledge transfers or lack of documentation when the consultants leave."

Initially, HR and student systems entered into a joint RFP for a management partner. "We spent about six or eight months in the process," recalled Ward. "We came to agreement, but in the course of that agreement, both sides sacrificed their preferred consultants. We came to another conclusion on which we worked, and in the end neither was satisfied. So we gradually let those people go. In the end, the individual implementation projects contracted independently with multiple, different consultants as opposed to a single company that met our various functional or technical requirements."

Budget

Forecasting the cost of ERP implementations accurately is more art than science because so many variables and unforeseen issues arise during the project. "You can't do a good predesign to derive a good budget number," explained Cawley. "And the

tendency is to push back. You are pressured to commit to do it for less—and you can't. So you have cost overruns. A methodology for predesign and nailing a budget is a methodology for redesign." The principal cost centers were student system, HR system, Web implementations, infrastructure, and integration. As the implementations proceeded, the U of M's \$42 million budget ballooned past \$60 million, resulting mainly from cost overruns with the student implementation.

One benefit derived from the ERP implementation is the introduction of deferred maintenance for infrastructure into the project budget and ongoing budgets. "We had insufficient funds to pay for the infrastructure platforms," stated Fitzpatrick. "So we amortized them—we attributed the early years to the project budget, we attributed the later years to ongoing budgets. On the one hand, it might be cooking the books, but on the other hand, it sets the stage to build into your ongoing budget the required amount to pay for it. This sets a precedent in subsequent projects to include requests for purchase, maintenance, development and production, disaster recovery, and some requests for equipment replacement."

IT Staffing

On average, the U of M employed approximately 30 to 35 functional and technical staff members for the Student 2000 and HRMS implementations (see Table 2). According to Ruud, at the project's peak 60 consultants worked during a 3-month period to get the systems operational before December 31, 1999. "Up until this point, we've implemented new functionality requests, and now we are deploying staff resources to handle our version 8.0 upgrade," stated Ruud. "If we have a production emergency, we take them off the upgrade to address it."

Table 2. Student and HR Systems-Related Staffing

Number of Staff	Function
21	Web Developers (not exclusive to PeopleSoft)
20	Data warehousing (information management systems)
15	Student system developers
10	HR system developers
7	Legacy system support personnel
3	Supervisors
1	Director

Student 2000 and HRMS Implementations

The student services and human resources departments learned to function together throughout their project implementations. The project schedule—switching back and forth between areas—engaged both areas throughout the process. One party could not disengage midway through the project. The prolonged exposure facilitated better understanding of their respective operations.

Preparation and Planning

Before either team wrote the first bit of code, the institution worked to set the stage both organizationally and technically for the project.

Strategic Vision

To prepare staff members for an enterprise environment, the student systems and HR project managers brought people together at the university level to encourage enterprise—not silo—thinking. Additionally, the Student 2000 project team hired an outside consultant to create a strategic vision for the project. “I can remember think-

ing at the time, ‘This is a waste of my time. Why don’t they tell us the answer?,’” recalled Powell. “Of course, in retrospect, I understand it’s the process. It really got us to be thinking enterprise-wide, not just about my part of the world, my silo. And when the project got tough, I reviewed the enterprise vision to help me understand the project’s objectives.”

Gap Fit Analysis

The institution also conducted a gap fit analysis. “We decided what functions we could live with and which ones we needed to modify,” recalled Powell. “It was a moving target because PeopleSoft’s student system was still under development. We used their beta .85 version, which did not contain many functions yet, so we had to make modifications. Interestingly, the beta software was PC installed. When we could install it on a server, people did not want to give up their individual databases.”

Business Process Redesign

Different university areas undertook business process redesigns to leverage the ERP systems most effectively:

- ◆ *Student systems.* A consultant worked with the student systems group to develop the ideal business process to take a student from the start to the finish of the university experience. “We called it the ‘Molly scenario,’” recalled Van Voorhis. “Our goal was to ensure student satisfaction while attending the U of M, to centralize contact points with university departments, and to simplify the experience to ensure the student had time to study.”
- ◆ *Academic Health Center.* The U of M’s ERP implementations pushed an ongoing project. “Part of the AHC’s original strategic plan is to examine administrative services, to upgrade them, and to professionalize their quality, their response time, and efficiency,” said Bock. “We examined workflow, but we needed to address standardization, training, and development. The PeopleSoft project became the lever to facilitate and expedite the process. The central staff couldn’t devote the time, nor did they have the local presence, understanding, and connections, to ensure the [Academic Health Center] would rethink our processes. It became a good way to match the local requirements with the central requirements and to drive further the AHC’s business process changes.”
- ◆ *Office of the Bursar.* This area used the implementation to update current business practices. “We revamped our business process either because of the new system or to better serve the students,” stated Ted Skogman, information technology professional, Office of the Bursar.
- ◆ *Payroll.* The HR implementation affected the payroll department significantly, as the university shifted the organizational responsibility for the payroll office from finance to HR and as many operations were decentralized. “It required a big shift,” stated Ward. “Payroll was a pow-

erful, centralized function. But we married the HR and payroll systems, and it became a back-end function. The central payroll department still handles the gross-to-net calculations and special deductions, but all the colleges and departments enter directly into the system new hire information and exceptions to the biweekly payroll.”

- ◆ *Law school.* Ward hired two consultants to visit all the departments and schools for the HRMS implementation. “We reviewed and discussed work processes and flowcharts,” recalled Merriam.

Operational Issues

Every ERP implementation encounters some bumps along the way, and the U of M is no exception. Some specific operational issues they encountered include

- ◆ *Maintaining Web functionality.* One factor that contributed to the Student 2000 cost overruns was its requirement to maintain Web functionality. “We developed advanced Web technology with the legacy system,” said Van Voorhis. “We did not want to lose that piece. PeopleSoft’s limited Web capabilities meant that the U of M would have to rewrite our area’s entire Web functionality simultaneously with the implementation.” It was too much to handle, so student services partnered with IBM to develop a one-stop Web interface. Inexperienced project management and personality conflicts, however, almost doomed the project. “So we started monthly meetings between IBM executives and our group,” Van Voorhis continued. “We both made management changes, kicked the project into high gear, and made our implementation deadline—barely.”
- ◆ *PeopleSoft issues.* Two major issues emerged during the Student 2000 and HRMS projects. While PeopleSoft’s HR

system is a mature product, its student system was still relatively new when the U of M implemented it, resulting in an unsatisfactory level of bugs in the system. “When we started, the PeopleSoft product was not a mature product. This required a *lot* of effort,” recalled Swan. Financial aid, especially, experienced many bugs and gaps, forcing the U of M to debate whether to implement the payroll module on schedule or clean up the student system beforehand. In the end, the U of M proceeded with the payroll module implementation. Additionally, “The long implementation was a blessing, but it created a problem. PeopleSoft required us to do a mandatory upgrade, adding costs,” stated Powell. “We would never, ever build a project plan that would require an upgrade in the middle of our implementation schedule!”

- ◆ *Information duplication.* “Some little things eat us alive—like the addresses and duplicate IDs,” stated Sigler. “In an integrated environment, the consequences of having a duplicate ID entry are enormous. It feeds into our human resources and fiscal systems.” Ward agreed: “We converted several modules in a relatively short period—HR appointments and demographics, campus community, and then the student modules went live. It resulted in a massive data effort coming from all these separate systems.” For example, some people may have records in several names if they married while a student or employee. HR determined criteria to conduct data purges: social security number (not required for students) or birth dates, for example. It was difficult to contact every area that the record touched. “If the person was not an employee, we threw it over the fence to student services,” stated Ward. “And sometimes admissions got involved

in sorting student records. It could get really confusing.”

- ◆ *Performance.* Slow performance hampered the system initially on the Web and with PeopleSoft panels. Van Voorhis remembered severe performance problems when the system first went live. “We had a major commitment to online registration because the U of M offered one of the first online registration systems before the project. It is a high-volume activity, processing over 25,000 transactions per day during peak registration periods. We had to migrate the U of M’s online registration into PeopleSoft, and we approached that first registration without good system testing/tuning capabilities.” Transaction times slowed considerably—sometimes as long as 25 seconds to add or drop a class online. A campus visit summary report ran for 8 or 10 minutes. The system crashed when too many people accessed it at once. It took almost a year for OIT to diagnose and to solve the performance issues. For example, they retuned the databases. Eventually the Web add/drop process time decreased to 7 to 10 seconds, and a campus visit summary report declined to a 30-second running time.
- ◆ *Customizations.* “Due to its size and scope, we knew the system required significant customization,” recalled Skogman. “We refined the process continually, and in fact the U of M is creating an online customization approval process.” A customization request filters up through the organization, starting with the individual request and moving on to supervisor approval. The enterprise systems group becomes involved if it is a technical issue. According to Skogman, the number of areas affected by the customization impacts the approval procedure. If the customization affects just one area, for example, student financials,

then the area director determines if resources exist to pay for it. If the customization crosses areas, OIT calculates the costs and each area's contribution, and it requires enterprise-level approval. The data integrity team examines conflicts between areas.

Training

The student services and human resources areas use different approaches for training. HR operates a central model, whereas the student system trains people at the individual colleges.

"We put our plan together very deliberately," explained Carrier. "We deployed full-time trainers from our Center for Human Resource Development to handle the human resources and community modules training in regularly scheduled classes." To handle the additional training demand, the HR department added 2 to 2.5 FTEs. Local department liaisons, called key contacts, scheduled training for their areas. Carrier liked this method because "the central staff was not responsible for over 50 units; each department's key contact ensured the correct flow of employees." In addition to the formal classes, HR offered highly popular drop-in lab sessions where people visited the training lab for an hour or two to work with any on-site instructor. HR regularly evaluated its training program, gathering feedback from participants and conducting focus groups. "We intended to keep our hand on the pulse of things—to ensure training proceeded well and addressed employees' needs," stated Carrier.

One issue is determining the amount of required training and the certification process, particularly since HR decentralized many of its functions. HR uses exception reports to identify staff members who make consistent mistakes, and the offender receives additional training. If the mistake is

common and repetitive, then OIT designs a system modification.

HR scaled back training as staff members became comfortable with the PeopleSoft implementation. Carrier foresees ramping up somewhat for the forthcoming version 8.0 upgrade, but not dramatically because version 8.0's changes are fairly subtle. HR toyed a bit with expanding into more Web-based training, according to Carrier, but many employees still prefer one-on-one or classroom training to learn PeopleSoft.

Post-ERP Implementation

"Declaring that the project is over does not mean that the work is done," stated Powell. Two tasks that face every ERP implementation are patches and upgrades. Ruud disagreed with the common sentiment that "patches are horrible. They're not, because there are processes in place. PeopleSoft sends out the patches, it identifies the affected touch points, and the user approves or disapproves the modification." Ruud's group evaluated fewer than 10,000 online object changes in a month. "A typical patch contains about 100 objects," Ruud mused. "It doesn't take too many people, too many hours to examine and decide which objects to keep. If a forthcoming upgrade is significant, you plan for it and allocate the resources."

Next, the U of M is preparing for its version 8.0 upgrade next year. "It is right on schedule, and it is probably going to be under budget," stated Cawley. "We've done a test upgrade once, and we are on our second pass now. It is still a six- to eight-month effort."

In comes the new, out goes the old. The U of M implemented its plan to eventually disconnect its legacy system—four to six years from now. "Today we freeze; tomorrow, we phase out; and someday, we'll turn out the lights," summarized Fitzpatrick. And he believes turning off the old system is as

important as installing the new one. “People will cling to the mainframe forever,” Fitzpatrick asserted. “They won’t transition to the new.”

Organizationally, the implementation’s completion refocused the executive committee’s priorities. “Now there is less need for risk management, more need to determine resource allocation,” explained Kvavik. “We examine fixed resources, allocating some for maintenance and others for functionality enhancement. We prioritize the departments’ needs and assign the resources.”

Institutional Transformation

The Student 2000 and HRMS implementations did more than update some old legacy systems. As department users grew comfortable with their new systems and the integrated data, they began to envision and to create new ways to use their information (1) to enhance operations and decision making, (2) to achieve greater efficiencies, and (3) to provide customer service. Additionally, as university members absorbed Kvavik’s vision, departments began to understand how their new systems could function as enterprise tools as well. Examination of student services, HR, and admissions illustrate their operational changes.

One Step Back, Two Steps Forward

While individual departments now report glowingly about the ERP system, the U of M suffered the same anxieties that every institution faces in the wake of change. “There were some morale issues with a couple of 20-year veterans about their job change,” stated Merriam. “We met with people individually to explain about their upcoming job changes.”

As departments adapted, they discovered the system’s potential. “The biggest difference here is the ability to command a

lot more information and to make the most effective information readily available to the people who really need it,” stated Swan. “It is partly the enterprise system, it is partly PeopleSoft, and it is partly our data warehouse. We envisioned PeopleSoft originally as both a transaction and a reporting engine. It, however, functions more as a transaction engine, while our data warehouse serves as our reporting engine. We can get up-to-the-second information out of PeopleSoft, but the trick is to format it in a way that people can get their required information as they need it.” Swan compared it to “either pointing a fire hose and turning on the data stream into a Dixie cup or using a fire hydrant to get a drink.” Further, as discussed below, departments pour information into their operations in various ways and mixtures.

Student Services

Student services eagerly anticipated its Student 2000 implementation, but going live presented a new set of problems. “We had performance problems when we went live,” recalled Van Voorhis. “Lines of students formed during registration, and whenever over 60 students accessed the system, it crashed.” Additionally, the U of M’s Financial Aid Module was unfinished, rendering the institution incapable of dispersing financial aid during the first semester in operation. The institution administered internal loans, with government repayment later. Also, the institution could not produce an accurate bill—they issued fall semester bills in December.

Departmental users learned the impact of their individual transactions on the entire system. “If we made a change in the students, it affected all the way down to student finance, financial aid, and billing,” stated Van Voorhis. “So we really had to work together as a unit. Luckily, we merged

all enrolled student services into one organization earlier. It facilitated coordination." Skogman agreed: "Our office is the final link in the student process. With an integrated system, it is easier to go back to track problems. I can approach various departments to discuss how their actions impact mine farther down the chain."

As the Student 2000 system stabilized, the student services area placed more of its services online, empowering students to handle normal transactions themselves. "Students now know more about IT than we do. They have very high expectations. They expect the technology to be there," explained Van Voorhis. This altered departmental operations as well.

One-Stop Student Services

The student services departments created one-stop student services for the most convenience for students. It was a 180-degree switch from the harried days of students navigating uncoordinated administrative department hours and deadlines. For example, students can access the Web now to register, access their university records, apply and manage their financial aid, and update their addresses. "The Web handles all of our 'generalist' transactions," Van Voorhis stated.

As part of the program, student services transformed its front-desk operations to handle students' specific problems. "We need experts at the front-desk to help the 8 to 17 percent of the students with problems," explained Van Voorhis. The area merged its three departments into one front counter manned by 23 student case workers to handle individual student problems, from initial contact to problem resolution. For example, if a student has a registration issue, the case worker handles it, along with any retroactive process affecting financial aid and billing. The case workers staff the one-stop student service phone bank also. "During

August, we receive 3,000 to 5,000 phone calls per day," continued Van Voorhis. "We try to refer callers to our Web site, but staff will work evenings to respond to inquiries."

Paperless Financial Aid

As part of the one-stop student services, the U of M created a paperless financial application in 2001 to handle students' financial aid process. The system includes a promissory note process and signatory feature that links with the Department of Education's e-signature process, as well as an online award notification that gives students nearly unlimited access to their account information.

Paperless financial aid benefits the U of M in several ways. It reduces financial-aid processing time from six weeks to four days. The institution reports saving more than \$80,000 with the process, and it received nationwide attention with its EDUCAUSE Award for Excellence in Administrative Information Systems. "Financial aid had a reputation of being sort of a 'low-service' office, but the paperless financial aid process changes that," stated Swan. "Most students handle the process directly online now, enabling the staff to work on particular issues with students. Long lines developed outside the financial aid [office] before paperless financial aid. In fact, in 2001, 30 to 40 percent of eligible students submitted their applications directly online; this year, 85 percent of eligible students did." In addition, the U of M now packages 80 percent of its student loans automatically, without human intervention.

Other Operational and Organizational Impacts

The department transformation changed staff requirements also. "I reclassified the front-desk positions from a civil servant class to a student personnel worker," explained

Van Voorhis. "It is a very difficult job. The case worker must know all the registration issues, financial aid issues, and billing issues. We need people who can problem-solve, be accountable for their actions, and still have great customer service skills. So, we brought the staff up to speed. Some folks could not rise to this expectation and had to retire or leave. Others, however, welcomed it and thrived on learning new things."

Before the ERP implementation, the student systems created and distributed numerous reports out to the colleges. Van Voorhis felt it was an inefficient use of staff time and investigated the reports' necessity and usefulness. She eliminated her reporting requirements by creating a user-driven, Web-based alternative. Van Voorhis used the U of M's new data warehouse to implement Web-based reporting that each college runs based upon its own parameters. To ensure it fulfills their requirements, she organized monthly meetings in which student advisors and faculty members could voice their concerns, solicit feedback, and demonstrate progress.

Van Voorhis also met with the advising community throughout the Student 2000 implementation. Advisors, in turn, realized that students' expectations required them to update their technical skills. Eventually, they created an advisors' Web site. "Let's forget all about pushing paper—students know what courses they need to take," stated Van Voorhis. "The technology piece transformed advisors' jobs because they don't concentrate on printing transcripts or degree audit reports for registration advising." Swan concurred: "We are giving students more power and information (when they access information online) that was available previously only from their advisor's files. This potentially changes the nature of the conversation between student and advisor, from detailed and regulation-oriented

conversations to a discussion of the broader implications of the student's actions."

Overall, Van Voorhis believes the ERP system technology requires more from employees. "In the past, a staff member made a phone call and asked someone else to do X, Y, and Z," she explained. "Now he is expected to do X, Y, and Z because it will automatically go into the system. Faculty do more tasks themselves—printing their own class lists and, in the future, entering their own grade alerts." Unlike veteran staff members, Van Voorhis observed, new hires experience no problems with the system because they did not use the legacy system and operations.

Human Resources

The human resources area faced its own specific issues in regard to the HRMS implementation. "We went from HR as the first implementation point to payroll as the last," explained Ward. "And through the two years that ensued, human resources [had to] keep both the legacy payroll and the new PeopleSoft system operational while OIT focused on the Student 2000 system. And during the project, HR completed a two-year massive data synching effort that really impacted morale. "They were disgusted," recalled Ward. "But a year later, we checkpointed our staff, and they love the system."

The new HR system affected the university in general because it decentralized many operations to the schools and departments, with varying results. "HR operated separate legacy systems, managed by different people, with poor interfaces. Now we have one," stated Carrier. "HR has more local links because of the nature of our work, whereas student systems operates more centrally. Departments now perform their own data entry for appointments, payroll, and other employee-related issues. Central

human resources generates reports and addresses other issues.”

“Our central human development office offered to help departments, but there are no rules as to how they adapt the HRMS system,” stated Ward. “Some colleges pushed the simplest, high-volume transactions down into the departments, keeping the complex ones. Others tried to keep their old way of doing business. We saw the most problems in the latter units, complaining about increased workloads and requesting more resources. In fact, when we analyzed the situation, we realized there were savings because we eliminated multiple forms.”

Another issue is dirty data. “I get nervous sometimes because I don’t have all of the auditing processes in place in yet,” Carrier admitted. “The first year or so, we had lots of concerns about dirty data. We did massive clean-up projects, found out where most of the problems originated, and trained those areas further. As the steward of all this, I worry that we gave away a lot of functionality, and we have to be accountable that it is working.”

Merriam, however, believes her department’s efficiency increased in the second year of operation. “I don’t know if it is the system, or that people understand it better, or that we worked out some of the bugs,” she said. “The new system improved our environment because folks don’t work as much in silos. When people go on vacations, it is not frightening because there is back-up.”

One-Stop Employee Services

As with student services, the employees’ online one-stop employee service section continues to gain momentum. In July 2000, for example, HR put employee pay statements online. “Employees with direct deposit receive paper stubs no longer,” explained Ward. “It is just available on the

Web. As a result, we no longer print 20,000 pay statements every biweekly pay period.” Also, Ward said, the online pay statement generates employee Web traffic. “We have 12,000 employees who set up tabs in the employee one-stop section. And I’ve got to assume that employees with direct deposit review their pay statements online also.” Merriam estimated that her area saves a couple of hours every other week due to the online pay statements. Employees receive other online information, either through the HR or the one-stop Web sites, including W2 forms and tax calculator, W4 form modifications, channels to view benefit options, vacation and sick leave updates, and training reports.

The integrated information continues to enhance customer service. “The U of M had close to 20 different places where a person might change their address, sometimes in areas that don’t come to mind—parking and the credit union, for example,” stated Ward. “We fantasized about maintaining a single central repository so [that] a person changes his address once. Having a common system at the back end helps, and it does feed into auxiliary systems like parking.”

Overall, Carrier believes, “Our level of service is better now. We’ve reduced the length of time it takes to complete tasks, plus the additional level of information we provide to an individual employee through our self-service channels is way, way better than it was three years ago.”

Other Operational and Organizational Impacts

The U of M’s ERP system enables student services and HR to combine information in new ways. One example is work study. “For example, we connect financial aid information into payroll to track how aid reduces departments’ direct payroll costs,” explained Ward. “We take that money [and] notify

ledger to credit the departments automatically for any savings derived from paying students with financial aid funds instead of their own department-funded dollars.”

As with the student system, the HR system impacts staff requirements. “Our employees are more highly trained and highly integrated with several functions now,” said Carrier. “We identified new roles and responsibilities and better job descriptions. When turnover occurs, in many cases the units looked for different skills.”

Admissions

Sigler views the U of M’s ERP implementation slightly differently. “PeopleSoft or an enterprise-level software is our basic plumbing, electrical, and heating system. Our whole house of computing is built around it,” he explained. “It is really critical that it works well and [is] dependable because the whole thing is a house of cards.” Sigler views PeopleSoft as a means to “help us work smarter, to reduce transaction costs, and, equally important, to extend the service we provide the students and our campus colleagues.” Several factors differentiate the admissions department’s needs:

- ◆ *Outcome orientation.* “We are not as process oriented,” explained Sigler. “At the end of the year, we have to show some results.” And the results must be precise. “Coming under target is enormously expensive and almost unacceptable,” Sigler said. “Too high [a number] creates space and housing problems.” Enhanced data warehousing facilitates the admissions department’s predictive modeling to identify potential students, track contacts, analyze the effectiveness of various recruitment techniques, and triangulate on the appropriate number of prospective students to admit.
- ◆ *Marketing and quantitative orientation.* The prospective students frequently get their initial impressions of the institution

from their experiences on the U of M’s Web site. Part of this involves image. “Prospective students have a voracious appetite for more information,” explained Sigler. “It has to be current, edgy, and fresh.” Part of this is functionality. For example, prospective students can create their own “My Minnesota” to view books online, customized to their particular interests, and sent to them as PDFs. In the short term, it costs the admissions office more to maintain both the Web view and paper view books to satisfy both student types. Applying online continues to gain popularity, however. “We offer online requests for information, Web-based admissions applications, and Web-based status checks,” stated Sigler. “We work constantly to make the process more user friendly. About 40 percent of our freshman applicants apply online, and we expect it to increase once we introduce the next online application version.”

- ◆ *Seasonal work nature.* The U of M receives the bulk of their applications between October 1 and December 1. Sigler’s department receives between 25, 000 and 30,000 total applications annually.

Admissions’ specialized nature means Sigler must balance his department needs with the university needs. “We tried to strike a reasonable balance of sticking with the enterprise software and not modifying it beyond a certain point in order to facilitate upgrades,” he said. “It is a little clunky—we have more data-entry panels than we would want.” To address its specific needs, admissions is more apt to purchase specialized software and link it with the PeopleSoft system.

The cost impact is mixed, too. The admissions office has reduced the number of some temporary/student staffing, but IT requirements offset the savings. “Admissions employs five people to handle Web-based

applications, and one staff member of our technical support staff spends at least 95 percent of her time on PeopleSoft maintenance or upgrade issues," stated Sigler. "I would estimate PeopleSoft costs us an extra \$100,000 per year in related costs."

The student system does help Sigler maintain "the appropriate blend of high tech and high touch." He explained, "The PeopleSoft infrastructure and our tools help us to combine the two. A lot of our recruitment is based upon extra mile, relationship building, and customer-service marketing." For example, database marketing represents the first step in the admissions process. The casually interested prospective student can access the U of M admissions Web site 24 x 7 for transactional issues. Admissions can track the prospect's process, initiating personal contact if relevant. "At some point, the prospect has to talk to someone," Sigler stated, "and not for the wrong reasons—that is, because they can't access information or an application or apply online. PeopleSoft prevents this and helps us to capture all the touch points to build a robust profile as the prospective student moves through the interest/application phase."

Success Factors

A combination of several factors fostered the U of M's institutional transformation.

Campus Culture and "Minnesota Nice"

Interviewees pointed unanimously to one factor in the U of M's successful transformation—the university's culture. Everyone rolled up his or her sleeves and worked together to get the job done on time. "It took extraordinary efforts from many people that just lived here to get it done," claimed Powell. "The attitude was, 'This is important to the university. You are important to the project, and we need you.'"

People responded to the challenge. "We had modest incentive programs," recalled Carrier. "And in the thick of the project, companies from all around the country tried to recruit our staff. Some offered signing bonus offers of \$25,000 to \$50,000, but we lost relatively few people. The intrinsic value to get the system up and running appealed to many people."

Many referred to "Minnesota Nice" in their conversations. It seems inherent in people who live here to want to help out and work together. "I am not from Minnesota, and it is still a shock for me," stated Van Voorhis. "Everyone here is so nice, and that made a significant difference with the project. I knew the steering committee members beforehand, so I trusted them and built a good rapport. I could request a meeting with a dean to discuss a problem, and he responded—sooner rather than later. I scheduled a 6:00 p.m. meeting once with our Academic Health Center group, and everyone attended." Cawley agreed: "When you work in an inclusive environment, with people who enjoy working with each other, you end up with a much better project because you can make timely decisions."

While politics plays a role in any project of this magnitude, participants tried to set aside their individual agendas for the welfare of the university. "We have payroll and HR, and their business issues and timelines are so different from the student side," stated Cawley. "We try to find common ground, but that wasn't always possible. We needed a mechanism to say there is no good answer here, someone is going to hurt. Let's make sure we're okay with the bleeding that will occur—and share the pain." Kvakik recalled, "Eventually, we began to operate as a team, and for the first time, we'd hear the vice president of human resources say, 'All right, we'll live without this functionality for this period of time.'"

Strong Top-Down Leadership

The project's fellowship extended from the university president on down. When a new U of M president, Mark Yudof, inherited the project, he commissioned an independent review to evaluate it. Satisfied with its results, "the president stood behind it, promoting it to the board and press. That was very, very important," remembered Cawley. "And he stuck to it. He was, perhaps, unhappy at points during the project, but the president communicated the project's importance to the university and his appreciation for the project members' work. He attended events to pump people up with the mascot and to give a speech."

As mentioned earlier, the provost, Bob Bruininks, and Frank Cerra, senior vice president, oversaw the project on a day-to-day basis. "They both brought different approaches to oversight," recalled Cawley, "They're very candid individuals, and they engaged with the senior management team—vice presidents, associate vice presidents, the vice provost—on a regular basis. They sorted through some tough issues and ended up liking each other in the end. It was a good senior-level team. The staff felt that they had an engaged senior management who addressed the issues. And keeping the project management in house facilitated this."

Ruud agreed. "Probably the most important thing to a project's success is to have upper-management support—both on the technical and the functional side," he explained. "If upper management commits fully of the time, resources, dollars, and space, you are well on the way to making it a success."

Separate Project Work Site

The U of M moved its technical and functional project members to a separate work site so that everyone could focus primarily

on the Student 2000 and HRMS projects. The close proximity created a subculture from which fellowship, ideas, and communication percolated. "It created an identity for all the project members," explained Ruud. "When people work together, they'll talk about other things and become friends." He continued, "They might go out to dinner after work, and sometimes it is those casual, outside places that feed informal idea sharing. And if someone needs feedback on something during work, he can poke his head immediately into his colleague's cube instead of waiting for a phone call or e-mail message. It all helps to make the shared burden more fun." Kvikvik agreed: "It created bridge building between the IT people and the functional business people—the likes of which hadn't happened before."

This fellowship extended even to the admissions, student aid, human resources, and student records functional managers. "We'd never worked together before," recalled Van Voorhis. "But we started talking and reviewing processes. A bond formed. We wanted to ensure the project's success and improve things for the university community. And we pushed our IT organization. The project manager separated us later because we formed too much of a bond, but it was too late. Our bond was too strong."

As the U of M implemented the modules, the relevant project team members moved back to the campus. The technical staff members maintained the modules and patches. The functional people returned to their offices. Some communications problems arose as team members dispersed.

Unfortunately, the U of M's current space shortage precludes a separate work site for the PeopleSoft version 8.0 upgrade team. "It does result in some delays because we don't have the face time for immediate feedback from the functional staff—we communicate via phone calls and meetings," lamented

Ruud. Ruud values the close-proximity workspace so highly that he reserved a 12-cubicle area to house members of smaller projects. "It is important enough that, while space at the university is tight, I am willing to set aside 12 cubicles in my group project workspaces," he stated. "And the functional and technical group coordination is important enough that I want to rotate some of our key developers with the functional people in the areas they support to maintain interaction and communications."

Campus-Wide Communication

In one instance particularly—communications—the U of M learned from its past errors. "I was involved in the College and University Financial System (CUFS) implementation in 1991," recalled Merriam. "There was no user involvement. We used a lot of consultants, many of whom were unfamiliar with the university environment. As a result, we addressed many post-implementation issues. I'm pretty sure that when the U of M decided to implement PeopleSoft, executives reviewed the CUFS project. It was a 180-degree cultural shift—the PeopleSoft project teams involved users."

"Communication was a high priority," stated Bock. "We made sure we produced a lot of proactive communications. The Steering Committee drove, debated, and reviewed the major messages." It was a delicate task. "We wanted the university to understand our vision and support it and to know the implementation dates," explained Powell. "On the other hand, we had to admit that we could not offer full functionality from day one. I think most people understood that."

The U of M maintained a high profile for the implementation, receiving newspaper coverage and debate in the legislature. The institution sent e-mails, created *Click Here!* (a newsletter to communicate project news),

placed ads in the student papers, operated listservs, and conducted informational meetings with departments. "Communications was a small percentage of the total project's cost—less than \$500,000," stated Cawley. "But it reaped a lot of benefits." Areas of particular note included

- ◆ *Communicating problems.* When any new system goes live, everyone typically copes while IT gets the kinks out. Good communication, however, makes it easier for the actual users to understand and empathize with the problems. "When the project was going poorly, you wanted to bury your head, get under the radar, and try to survive," explained Cawley. "But that was the time we got out front and really communicated. Kvakik and I met with the deans and associate deans—an angry group of people—so they could address their frustrations with us." When Van Voorhis registered students using PeopleSoft for the first time, she made sure the students understood the situation. "Since we migrated to semesters simultaneously, it complicated the situation. The students, however, were great because we had communicated with them throughout the entire project. We e-mailed them. We published articles in the daily paper. We hosted pizza luncheons. All staff members wore buttons that said, 'Bear with me, I am learning a new system.' We provided cookies and lemonade as students waited in line."

- ◆ *Campus communications.* The Student 2000 project team hired a 1.5-FTE communications team to focus on campus-wide project communications. It proved so effective that the team became an enterprise resource. The coordinator orchestrated communications and created the *Click Here!* newsletter. The individual project teams provided content, while

the coordinator gave it a common look and feel. “Sometimes you look at it and say, ‘It is fluff,’” acknowledged Cawley. “But the fluff really helped to repeat the message over and over and communicate it throughout the campus.”

- ◆ *Departmental communication.* While the ERP implementations impact the campus as a whole, each department and school must adapt the system to its operations. As a result, more tailored communications are needed. “AHC did some supplemental communication to try to build on the central project management,” explains Bock. “We targeted more to the direct users of the PeopleSoft system or the people who would depend upon it. The local communications tended to be more technical.”
- ◆ *Inter-campus communication.* The project communications eased relations among the university campuses. “The project created more communications between the Twin Cities campus and the coordinate campuses because we needed their buy in and wanted their input,” stated Skogman. “As a result, members from all the campuses got acquainted with each other.”
- ◆ *Key contact program.* The HR project team organized a key contact program to facilitate communications between the HRMS project team and the U of M’s schools and departments. The deans chose a key contact, a person with responsibility for HRMS system implementation within that group. The HR project team trained the key contacts and, in return, the key contact ensured the area fulfilled its responsibilities for the HR project. “It put some responsibilities on the colleges for the implementation,” stated Merriam. “And the key contact provided a central contact point to discuss problems.”

- ◆ *Departmental visits.* The U of M employed a campus-wide road show to introduce the system to all the departments. “All the departments—HR, payroll, and grants—went out like a troop movement and presented at every college,” recalled Ward. “Some departments spread it deeper—to the potential users; others kept it closer—just to the deans. But it was our foot in the door.”

Despite all these efforts, some feel the project could have communicated more. “We communicated well with some groups, like future staff users, but I think that despite all of our efforts, we under-communicated with some groups—as for example, the Dean’s group,” states Carrier. “Communication efforts, however, are compounded by the fact that everyone has so much on their plates—new roles, new people, and new tasks.” As Kvavik advises, “Take whatever communication plan that you think is adequate and double it.”

Project Auditing

The U of M’s Department of Audits helped the project teams stay on track. “I sat on the Steering Committee on an advisory basis,” stated Dennis Skovsted, information systems audit manager, Department of Audits. “My communication is not adversarial; rather, my goal is to facilitate positive change. I provide an independent look at the project’s status, adding standing and credibility.” The audit department participates in all project phases: (1) project feasibility/approval, (2) implementation components, (3) management process, and (4) specific project components like security, change control, and various subcomponents such as HR, payroll, student registration, and so forth. Skovsted attended Board of Regents meetings regularly as Kvavik and Cawley reported to the board’s audit committee about the project’s status.

The Department of Audits participated in the project from an early stage. The U of M planned originally to implement a financial system as well as a student services and a human resources system, but deferred its implementation in response to the Department of Audits's recommendation. Skovsted monitored the PeopleSoft project closely. "Since we didn't modify our legacy system's code for Y2K compliance, we bet the ranch on a timely implementation," he explained. "Throughout the project I emphasized our contingency plans, tracked our schedule, and judged whether we had reasonable confidence that we could implement the new system adequately by the deadline."

Management used the audit process to develop innovative contingency plans. For example, when the U of M discovered the financial aid module was not as robust or on time as required, they developed a contingency plan to provide students with loans directly. "It wasn't pretty, but it was workable," stated Skovsted. "And it gave us time to get the financial aid system up and running."

"Management has the discretion to manage the project as they see fit," said Skovsted. "We, however, influence it later on by identifying potential risks and investigating alternative solutions." The Department of Audits examines

- ◆ goals,
- ◆ scope,
- ◆ sponsors,
- ◆ decision-making process,
- ◆ budget,
- ◆ schedule,
- ◆ acceptance criteria,
- ◆ status reporting,
- ◆ contingency planning,
- ◆ hardware,
- ◆ database,
- ◆ security,
- ◆ change management,

- ◆ disaster recovery,
- ◆ system functionality and controls,
- ◆ gap fit analysis,
- ◆ process to remove customizations,
- ◆ business process simplification,
- ◆ reporting capability,
- ◆ portal strategy,
- ◆ standards changes,
- ◆ testing,
- ◆ tools,
- ◆ system performance,
- ◆ regression testing,
- ◆ conversion testing, and
- ◆ data conversion.

Skovsted explained the process: "Before we conduct our audit, we prepare an audit program, define its scope and objective, and [determine] the steps we plan to perform. We create risk matrices and review the pluses and minuses based on risk. Informally, I discuss possible solutions." Formally, Skovsted published issue papers "to examine potential weaknesses, things that management should consider as they progress through the project," he explained. "They were not problems, necessarily, at the time. And management may have decided to accept some level of risk for a period of time, but they accept this risk consciously. Some risks evaporate and others expand throughout the project, so you spend more time on the latter. We try to identify risks early, and usually there are three, four, five options that range in degree of prettiness and ugliness, driven by multiple factors including costs, schedule, functionality, and customer support." Skovsted continued, "As we hit risk points, management implements special tools to reduce those risk points. For example, when we experienced system performance issues, we conducted daily status phone calls to discuss project status and options. Eventually, as things progressed, we built our confidence that things were back on track."

Working closely with the department of audits enabled the U of M to develop better option and contingency plan analysis. “Initially, most people don’t want to discuss options, but as problems develop, you must examine the option to delay, to change scope, or to explore new ideas,” explained Skovsted. “One of the U of M’s success points is its growing ability to trade options if we run into problems: seeing the trade-offs, deciding which sacrifices are best for the university, establishing criteria for evaluating the options, and looking for tools that define the possible impacts on the 8.0 upgrade.”

As the U of M upgrades to 8.0, the institution leverages the project-management process crafted during the original implementations. “One of the key things with which I am impressed is the status reporting,” stated Skovsted. “IT developed a visual project tracking tool with a dashboard interface. Management ascertains the project’s status at a glance by viewing the red, yellow, or green monitor dials. If managers see red—literally—they know to get involved and evaluate options.”

While Skovsted views the 8.0 upgrade as a low-risk implementation, his team is already involved. “It is a different situation. We’re not faced with a Y2K or semester conversion, and we have robust version already in operation,” Skovsted noted. “We’ll start to evaluate contingency options even though it is a lower risk project, and we start implementation next February. We’ll look now at the risks, options, impacts, and decision criteria.”

Ruud believes he now has a good project tracking team in place. Steve Goodvegen, the version 8.0 project manager, developed management tools—like the dashboard project monitoring interface—and templates. Branjord developed methodologies to track and to manage the version 8.0 project’s scope and progress. “[Among] the

three of us, we developed standards that we can apply to all our projects,” explained Ruud. “The version 8 project is our initial use of this methodology.”

The IT department’s enhanced auditing skill enables Ruud to focus more of his time on strategic issues. “Because my staff can monitor closely and report to me about the project’s process, it enables me to examine all our projects and how they fit into our longer-term strategies,” stated Ruud. “I can identify when to start jobs and scheduling, so they can line up their resources appropriately.”

Cost of Ownership Reductions through IT Flexibility

One of the IT facts of life is that technology always changes—systems require upgrades, and new technology always emerges. Who thought about portals five years ago? One of the OIT’s goals is to develop a five-year plan to help them understand their future priorities. “OIT has a long list,” explained Cawley. “We’ve got a PeopleSoft upgrade, with projects before and after. And if you look far enough down the road, you see a version 9.0 upgrade, and that is a wake-up call! We can’t assume that things are quiet enough for the next three-and-a-half years to tackle the financial system replacement. Even if we start the financial system in July 2003, we’ll experience a resource collision with the version 9.0 upgrade in the latter part of the financial system replacement. And if you must upgrade your ERP system every two-and-a-half years, and it takes eight months to implement it, you receive less than two years to enjoy your investment. That seems too short to really get an ROI.”

Cawley realized that the OIT faced a continual fight for resource funds. “We see it in a lot of schools—a lot of one-time, beg-for-this, beg-for-that funding,” Cawley stated. “But you can’t stabilize and staff your

IT organization with that kind of funding. University budgeting is always in a state of denial. It operates with 20-year deferred maintenance on buildings, so it is foreign to consider the risks of deferring technology maintenance beyond five years.”

Cawley devised a flexible workforce strategy to move IT staff from project to project as needed. “You experience spikes in project costs always,” explained Cawley. “And contractors comprise the biggest cost spikes. We demonstrated to the CFO and the provost that instead of funding each project individually with contractors, a flexible workforce hews the tops off the project cost spikes for periodic contract help. Over time, you knock the total cost of ownership down by investing in a flexible workforce up front.”

The challenge is building the actual force. “You don’t want to get stuck with programmers who can work only in this language or business analysts who can function only in the bursar’s office,” explained Cawley. “What good is it when the work dries up and you need to deploy them somewhere else?” The U of M decided to hire people with track records demonstrating a high skill level, so they could be moved to different assignments.

Cawley found it relatively easy to build a flexible technical force, but more complex to build a flexible business analyst team. “We got permission to use a \$1.8 million recurring annual fund that we split between the business side and the technical side,” explained Cawley. “When a business area becomes involved in a project, it goes through central IT to hire its business analysts on one-year contracts. The person they hire is not flexible, but the money is. It preserves the \$1.8 million line item, and I apply it to the next project’s business areas.”

“We created a CIO-owned internal consulting firm,” stated Kvavik. “We’ll hire IT staff that we normally would have hired as consultants. When they finish with the li-

brary system, for example, we’ll switch them to the version 8.0 upgrade. When they finish with the upgrade, we’ll move them to the financial system, and so on. We hope to build a cadre with an integrated perspective of the institution’s functional and technical pieces.”

In addition, OIT identifies those who want to learn new skills. “We have one project where we’ll move PeopleSoft administrators to a Web project. We’ll have individuals who are knowledgeable about both PeopleSoft and Java,” stated Ruud. “It ties in with the enterprise concept.”

Cawley conceded that institution size impacts the plan’s feasibility. First, it must have the workload to deploy the flexible workforce continually throughout the university. More importantly, it must have the resources to recruit and retain highly skilled people.

Transitioning IT Staff to a New IT Environment

Before the U of M implemented its ERP systems, the central computing operation employed nearly 80 people. Currently only a handful of the original staff remains, but all former central computing staff members transitioned from the legacy environment. “The staff transition is good for the organization and it is good for the budget,” stated Fitzpatrick. “We didn’t hire many consultants that could bleed the budget and create an adversarial environment with our in-house staff. I heard that client/server implementations cost more—and maybe they cost more in end user, desktop, and application support, but [they do] not increase the data center infrastructure costs. Not only do we have fewer FTEs in the infrastructure area than when we started, but most of them are the same people.”

Fitzpatrick views the move as a strategic one. “If you want to transition [a] system en-

vironment from the old place to the new place, you must take the people along with it.” The U of M trained the mainframe staff, but the department completed most of its training on the job. “It was trial by fire,” recalled Fitzpatrick. “And we created battlefield promotions.” Fitzpatrick identified the trailblazers in his group—those willing to try new things—and they led the others. He recruited project managers from the application area because “they had a lifetime of project management and had earned credibility already through their working relationships with the operations/infrastructure staff.”

Lessons Learned

Besides the success factors outlined previously, individual U of M members offered assorted deployment, technical, and post-implementation lessons learned.

Deployment Lessons

- ◆ *Keep the project fun.*

Not only does a good work environment facilitate good work performance throughout the project, but also, Ruud believes, it increases the final outcome’s quality. “If you and your project team are not enjoying yourselves to a point, you’ll complete just a job,” stated Ruud. “You won’t have anything special when you’re finished. If you can keep everybody enjoying what is going on, your project is going to have a much better life cycle.”

- ◆ *Don’t be too ambitious with your goals.*

An ERP implementation requires considerable energy and resources just to get it operational. “Installing an enterprise system is reengineering enough,” explained Sigler. “We tried to reengineer too many things at one time, and as a campus we tackled too much initially. It added stress up and down the line. Narrow your focus, and, throughout your journey, continue to narrow your focus. Constantly re-prioritize.”

- ◆ *Create a centralized authority for data conversion early in the project.*

Van Voorhis wishes the U of M had established the data integrity group at the project’s beginning. A centralized authority to manage the process, define data, and set standards facilitates the process. “It is one of the best things we have ever done,” stated Van Voorhis. “Any time we want to make a change, the data integrity group reviews the entire process and every change across the systems.” Ward recalled heated discussions about data definitions. “For example, it took a month of really heated meetings to conclude how to directly convert the student ID numbers into the new system. Everyone who attended the U of M remembers his or her ID number. So we converted the ID numbers directly into the system. For something that simple, it took a month.”

- ◆ *Use the implementation to standardize institutional policies.*

Inherent in standardized data definitions are standardized procedures and policies from which to generate uniform baseline data. Before its implementations, the U of M “had a homegrown system that catered to 26 colleges,” explained Van Voorhis. “For example, each one instituted different probation and dean’s list policies. So if a student had a question, I had to refer them to the individual college.” Under the guise of the semester conversion, the U of M formed a policy group comprised of a small group of people who are widely respected in the undergraduate colleges on campus. Together, they standardized 29 key institutional policies. “We got rid of some grading systems, [although] we still have to support them on the transcripts,” stated Powell. “But an ‘A’ means the same throughout the campus.”

- ◆ *Use an experienced project manager.*
- “You can’t just appoint a person, give them

Project Management for Dummies, and expect them to put in an ERP," Van Voorhis pointed out. "The project doesn't have to be that painful if your institution utilizes an experienced ERP manager. You need someone from the outside to keep pushing people, to debate issues with the technical staff, and to question the functional staff about the necessity of specific modules and functions."

◆ *Communicate often within the project team.*

"You must communicate within the entire project organization where you are on target and where you will need additional resources, or you are going to be in big trouble," explained Ruud.

◆ *Communicate often outside the project team.*

"Keep communication lines open with the end user. For example, our full-time communications person informed the university, all the coordinate campuses, and the end-user departments about each project milestone and its impact on the project," recalled Ruud. "When there is a group spending millions of dollars on a project, each area wonders, 'What's in it for me?' If you tell them, your project will proceed more smoothly." Van Voorhis believes communication with students is just as important because they too are affected by the project.

◆ *Communicate succinctly.*

"We told people exactly what we needed," explained Van Voorhis. "At each step, we explained exactly what we needed from each affected [person] and their deadlines. 'This is very critical during the next week. We may have to delay if we don't get X, Y, and Z from you on this date.' It helped to keep the project on track."

◆ *Communicate often to build trust.*

"It is difficult [to accomplish], and absolutely essential, that the functional and technical

people develop trust," stated Swan. "It requires an extraordinary level of communications—multiple meetings at multiple levels—so the functional and technical staffs can work together and solve problems together. [You can't have] the technical people saying, 'We know best.' Or the functional people saying, 'They don't understand the business.' You need to get beyond that." Trust counts at the management level, too. "The Council of Undergraduate Deans meets once a month," explained Swan. "Someone from one of the colleges chairs each meeting. The committee members see a bigger set of principles at stake than their specific, narrowly defined, collegiate responsibilities. That helped to help to establish a level of trust here."

◆ *Keep management active, even when the implementation is done.*

As a project moves toward a plateau of maturity, the governance energy may evaporate. "The oversight that occurred during the planning and implementation should continue, because the implementation is never done," stated Fitzpatrick. "Infrastructure is never that sexy. Now the PeopleSoft project isn't that sexy. Maintaining a sense of urgency at the correct level is not so easy as it was two or three years ago."

◆ *Learn from your peers to position your institution and create the proper structure right from the project's inception.*

"Our project was almost over before we got it right," stated Ward. "In early '96 and '97, we did not have a lot of models. There was a lot of learning and a lot of surprises along the way. There are more resources available now. A lot of schools call me to learn about the U of M's implementation process and organization structure. So find out from others what worked and did not work."

◆ *Don't train your staff too early.*

"If you train people too early, they forget

it," stated Carrier. "In a couple of cases we trained some groups too early, and we had to train them again."

Technical Lessons

- ◆ *Both broad and deep system knowledge are important.*

"With an intricate system like PeopleSoft, you must understand how all the pieces come together," said Ruud. "All the layers of software and operating systems must fit together and work together. We have experts within OIT who understand the in-depth pieces well. If you don't have good solid knowledge on both, you can get burned on a lot of small things."

- ◆ *Fine-tune your databases.*

"We run hundreds of batch jobs and 600 to 800 different processes nightly. If some are not tuned or are resource hogs, we can run out of the batch window time," explained Ruud. "Your groups must ensure that your systems are well tuned and running efficiently to perform all your overnight jobs. If we had the resources, we would build a data warehouse that is as near to real time as you can get in three to six months," stated Ruud. "Up until six months ago, we were a day-and-a-half behind. And now, because of our production system structure, we have the ability to be near real time."

Post-Implementation

- ◆ *Don't underestimate the system's impact on users, especially if decentralizing tasks.*

"The perceived additional workload out in the colleges and departments is a sore point [for] complaint because we have not migrated resource units from HR's central operations," explained Carrier. "Some argue that they had to add FTEs. It is hard for us to track, but certainly it has been one source of complaint."

- ◆ *Don't rest on your laurels.*

A typical implementation requires so much effort that it is tempting to maintain status quo when it goes live, but Sigler advised, "You have to be constantly vigilant because you don't see the barnacles growing that inhibit department performance. Never drop standards, but eliminate hurdles when you can. Constantly streamline and be customer friendly. It is hard because it takes a lot of energy." For example, the Department of Admissions reengineered and vastly simplified the U of M's application form and the application process for students.

- ◆ *Implementation project members are more knowledgeable than they believe.*

"When learning how to install a new system and software, people get used to thinking they are unknowledgeable about it," explained Ruud. "It was a challenge for my staff to realize just how knowledgeable they've become after working with the system for six months or a year." This lack of confidence impacts future projects because staff members compensate for their perceived inexperience with longer project timeline estimates. For example, Ruud believes some staff members overestimated the time required for the version 8.0 upgrade. "They estimated many months to understand and prepare for the upgrade," Ruud explained. "I had to convince them otherwise—they understand the system and business processes as well as anybody. We didn't need significant study time. We could just dig in and make it happen. I must help people understand what we have accomplished and how far ahead we are in relation to other universities."

- ◆ *Watch out for growing salary disparities.* Changing systems required different skill sets for both technical and functional personnel. The U of M trained current staff and hired new employees to meet the changing re-

quirements. “We had to become much more competitive in the marketplace in terms of buying resources,” explained Powell. “We recruited additional people, and we ended up with a big salary gap between the new hires and our long-term employees, resulting in a number of internal adjustments—especially with functional staff members. Traditionally, it’s harder to approve market increases for functional staff than technical staff because there is really no peer group that you can point to in industry.”

Future Plans

The U of M outlined future plans in several areas.

System Enhancements

“Our intent is to maintain the PeopleSoft system that we have,” stated Ruud. “There is no discussion of replacement, nor should there be. It works better than our older system. Folks are used to the system, it meets their requirements, and our intent is to keep forward with it. We want to use our current system to the max.” OIT has identified the system upgrades—version 9 in two years and version 10 in four or five years—and the deployment of the time and resources.

The U of M’s administration mirrors Ruud’s view. Van Voorhis commented, “Things are constantly changing. You are constantly improving, and there are so many things that didn’t get implemented initially. The system just continues to evolve.” She pinpointed two areas for improvement in her area: more Web-accessible services for the faculty and students, and better alumni relations. “I think we can get better donations, but we are afraid to ask,” she said. “We could do a lot more with scholarships, especially with the state funding.”

Others have longer-term visions. Swan envisions how PeopleSoft can continue to change the students’ relationships with their

advisors. Students and advisors could create an academic plan at the end of the freshman year, for example. “It is also important to understand that plans can be changed, but if a student wants to major in physics, we could list all the required courses in his junior and senior years and their prerequisites,” Swan explained. “It places responsibility back on the department to ensure regular course offerings. The plan could include decision deadlines and the strategies to get a student to a decision point. And then, if the student was really serious, the student could register online. Some advisors believe this process requires one-on-one contact, but not all students need the same level of contact.” As the U of M automates more functions, student advisors can focus more on the advisory role, not just on clerical functions like verifying the fulfillment of degree requirements.

Portals

Another priority is portal development. “This institution is sold on self-service. [A portal] is the ultimate decentralization of many tasks, and it generates excellent efficiencies,” stated Cawley. “We plan to invest additional resources in the Web development team this year.”

As of now, the U of M customizes most of its self-service functions. The institution, however, wants to move in the opposite direction whenever possible. “With the version 8 upgrade, we will implement about eight pieces of PeopleSoft’s self-service,” stated Ruud. “And PeopleSoft has built some technology into PeopleTools 8.4 and beyond that makes the Web services’ functionality easier to work with. My hope is that as PeopleSoft moves into version 9.0, we can implement more of it.”

The U of M created a five-year plan for self-service functions and operates a steering committee that meets monthly. “We review the work in progress, upcoming

work, and future work under analysis for final approval. We review the list at least once a quarter, fine tune it monthly, and track progress on it," explained Cawley. "We follow a balanced approach there. Student and HR tend to be the competing forces, and you must address collegiate, central, and multi-campus needs. We try to balance our investments." The plan helps Ruud allocate his resources. If a project window appears, he can discuss with the functional staff the best way to fill it.

Addressing School/ Departmental Needs

As the administrative offices continue to integrate PeopleSoft throughout their operations, OIT can focus on individual school and department needs. "The schools' perception is that they don't use PeopleSoft except for admissions and records," explained Cawley. "Of course they do—all their transactions run through PeopleSoft, but they use front-end systems. But to get to the maximum return on our investment, we need to address the professional schools and graduate school needs."

Bock agreed: "PeopleSoft does not meet many of the professional student needs at the Academic Health Center. PeopleSoft tends to focus on the big, central systems, which usually means undergraduate. A belief we need to test is that the admission and selection process works for graduate schools. The educational paradigm is different. Our registration, grades, and advising are different, and as a result we have different functional needs. We start initiatives, but we go back to addressing the fundamentals to ensure the central systems work. Then there is the numbers game of meeting the undergraduate needs. It becomes an unending cycle."

Both the Academic Health Center and the law school still use shadow systems. For example, the law school conducts a lottery

for class enrollment, and neither PeopleSoft nor the law school's shadow system vendor supports it any longer. But Merriam believes the situation is improving in the law school. "Within the last year, OIT has worked with the law school, and they have made some changes that help us. Now we are starting to get some results from the system."

Decision Support Tools

As people adapt to PeopleSoft, it evolves from just a transaction system to a decision-support tool. Carrier described HR's transformation: "HR is geared toward a system that provides information to people, to a departmental person, or an individual employee—quickly and accurately. As my staff spends less time on transactions, we're just beginning to realize it's the reporting capabilities, and that will have enormous implications." Cawley agreed: "There is a tremendous gain in reporting decision-support tools. It is not about reports, it is about supporting decisions. And the lightbulb has gone on in a number of areas." For example, the colleges manage tuition and section offerings more effectively by analyzing course/section offerings to determine how to increase enrollment or whether to offer another section. This in turn increases both institutional revenue and graduation rates.

Cawley acknowledged that to get that kind of return on investment, "We need to go out and take the story to the local setting. The process of drilling down is the answer." He envisions further training at schools and departments on decision-support tools to demonstrate their capabilities locally in real-life scenarios. Merriam agreed: "I am still learning how to use data better. One of the downfalls of a smaller college is [that] I don't have someone to handle queries and create the reports. So I am really reliant on the canned reports. I was trained, but I do not have time to use my training."

Financial System Implementation

Now that the U of M's HR and student systems are operational, the institution is currently taking aim at a financial system implementation to refresh its aging AMS financial system. The institution is taking two tacks: an RFP process with Gartner Group's assistance, and a parallel process to evaluate membership in a proposed financial system university consortium that is exploring building and implementing a UNIX version with Web interfaces of Indiana University's (IU) financial systems. "We haven't decided on the approach yet. IU's concept is still alive, and there is enthusiasm, but there are issues to work out," stated Cawley. "What drives everyone to evaluate it are the total-cost-of-ownership concerns." Cawley believes the implementation costs are similar, but the U of M may derive savings from ongoing maintenance fees. Ruud supports whatever system the functional departments choose if "it meets our technical requirements, we can support it, and we can have or find the personnel to write code."

Cawley wants to minimize the risks before commencing the implementation. "For some reason, a lot of schools trip up on the financial system implementation," he explained. "It should be less difficult than a student system implementation, but it has such a wide impact beforehand. And we've got a financial system that works pretty well. As things get tough, people may question

the project's wisdom." Cawley plans to review the institution's readiness for everything, including communications and business analysis. And he plans to continue with the same management structure. "I think it is time for the HR and student [services] folks to help the financial folks," he stated. "The financial folks stayed at the table for the duration of their projects."

But one roadblock remains—funding. "It is all about the budget, explained Cawley. "The downward economy and the State of Minnesota's forecasted \$3 billion deficit means it is hard to imagine we'll get any new money. So it has to come out of somebody's hide." Cawley estimated that a new financial system is a \$20 to \$30 million proposition, but there is institutional support for the project. "There is some opposition out in the colleges," admitted Cawley. "The college deans would prefer to invest the money in something other than administrative systems, but PeopleSoft's success has generated enough credibility. They saw the pain, but they saw it come out on the other end as a success. I think the institution has already agreed that we need a new financial system—the timing is the issue."

Endnotes

1. The scope of the ERP investigation included the primary administrative applications: human resource, financial, and student.
2. *Click Here!*, University of Minnesota, November 1998.