



Iowa State University's Business and Finance Division Project Evaluation and Implementation Methodology

Julie A. Ouska, SunGard Collegis
Judith A. Pirani, ECAR Fellow

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4772 Walnut Street, Suite 206
Boulder, Colorado 80301
www.educause.edu/ecar/

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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 regarding the selection, development, deployment, management, socialization, and use of information technologies in higher education. ECAR research includes

- ◆ research bulletins—short summary analyses of key IT issues;
- ◆ research studies—in-depth applied research on complex and consequential technologies and practices;
- ◆ case studies—institution-specific reports designed to exemplify important themes, trends, and experiences in the management of IT investments and activities; and
- ◆ roadmaps—designed to help senior executives quickly grasp the core of important technology issues.

From its most recent research, ECAR published a comprehensive presentation and analysis of information on business process innovation in higher education in *Good Enough! IT Investment and Business Process Performance in Higher Education* (Kvavik and Goldstein, with Voloudakis, 2005). The study uses a multifaceted research methodology to collect and analyze quantitative and qualitative data from approximately 350 senior administrative and IT officers.

Literature Review

The study began with a review of the relevant literature on business process innovation in order to define the study's major themes and create a working set of hypotheses to be tested. A further and significant distinction is made in the literature contrasting "technological" and "administrative" innovation. Technological innovation looks at the adoption of new technologies such as enterprise resource planning (ERP) systems or a course management system (CMS); which technologies are adopted, rejected, or accepted within organizations and reasons or processes that influence successful or failed adoption. The study of administrative innovation is similar, but focuses on the adoption of new business processes or new ways of doing business. Typically administrative innovation lags behind technological innovation, which we have repeatedly learned in ECAR studies of ERP, security, and classroom technologies.

Online Survey

EDUCAUSE staff sent an e-mail with the Web address of the survey and access code information to 1,473 institutions belonging to EDUCAUSE. The respondents were senior college and university administrators from 335 institutions, the majority of whom are chief

information officers (CIOs). Their responses provide a detailed understanding of how higher education is engaged with business process improvement and innovation.

Interviews

We collected qualitative data from 32 IT leaders and senior administrators who were significantly engaged with business process performance at their institutions. Our purposes were 1) to uncover in greater depth what distinguished institutions that considered themselves exemplars from those who had business processes deemed at risk; 2) to gather additional evidence to support findings from our quantitative data about the importance of employee suggestions in business process innovation; 3) to determine a sharper explanation of what causes business process change; and 4) to gain a better understanding of how institutions managed to improve strategic business processes, which we hypothesize are the most difficult business processes to change.

Case Studies

Researchers conducted this in-depth case study to complement the core study. We assume readers of this case study will also read the primary study, which provides a general context for the individual case study findings. We undertook this case study to examine the Iowa State University (ISU) formal program to facilitate business process innovation.

ECAR owes a debt of gratitude to Diane Beckman, Associate Director, Administrative Technology Services; Bill Cahill, Accountant, Controller's Office; Venita Currie, Academic Fiscal Officer, College of Liberal Arts and Sciences; Jim Davis, Chief Information Officer; Maury Hope, Director, Administrative Technology Services; Warren Madden, Vice President for Business and Finance; Johnny Pickett, Associate Vice President for Business and Finance/Controller; Lynn Prior-Miller,

Manager of Business and Finance Systems, Administrative Technology Services; and Sheryl Rippke, Director, Internal Audit.

Introduction

Many institutions have invested considerably in new hardware and software technologies to promote business process reengineering with the aim of improving services and reducing costs. Some have been very successful, as indicated by ECAR's core study on business process performance. However, it is a unique organization that consistently promotes enhancements in process and customer service, and implements a sustainable method of cross-departmental business process reengineering.

ISU is one such institution. Its Business and Finance (B&F) Division has used a replicable and sustainable process of business analysis and improvement for the past six years. The result has been significant process improvements and technology investments that have improved the quality of life at ISU for students, faculty, and staff. This case study details the B&F division's methodology to evaluate and enhance business processes, and provides an illustration of its practice in action with the successful redesign of the university's travel reimbursement process.

Background

In 1862, Congress passed the Morrill Act, which created the land-grant university. Iowa was the first state to accept the law's provisions. Today, ISU is a Carnegie doctoral/research-extensive university, with nine colleges offering more than 100 undergraduate degrees and nearly 200 fields of study leading to graduate and professional degrees. The ISU community is composed of more than 26,000 students, 6,000 faculty and staff, and 190,000 alumni. In fiscal year 2004, ISU's sponsored funding for research, public service, and educational programs reached

a record \$274 million, of which \$163 million alone was for research. In recent years, ISU has launched new research and technology transfer initiatives in such areas as agricultural biotechnology, plant and animal genomics, bioinformatics, “smart” materials, agricultural product and market development, human nutrition, human computer performance, biorenewables, and food safety and security as well as research and outreach programs dealing with rural America.

ISU takes its role as a land-grant institution very seriously, and its mission statement reflects a constant striving for organizational improvement. “Iowa State University supports the Board of Regents, State of Iowa, in becoming an exemplary model of governance and stewardship of resources, and the best enterprise of public education in the United States.” (Iowa State University Mission Statement) According to the ISU Web site there is a “university-wide commitment to be the best university in the nation in fulfilling its land-grant responsibilities. ISU takes great pride in showcasing these accomplishments of which there are no equals (as the university strives to be) the best of the best.” (Iowa State University Fact Sheet). ISU’s strategic plan takes this commitment a step further. “Publicly stating our aspiration expresses our willingness, desire, and commitment to stretch ourselves in our effort to continuously improve what we do as individuals and as a university community. How we work toward our aspiration is as important as achieving it. Aspiring to be the premier land-grant university in the nation also implies that we strive for excellence as measured by national standards. There is no single measure by which we can track our progress. Instead, there are multiple indicators representing all aspects of our mission that we will examine over time.” (Iowa State University 2000–2005 Strategic Plan) Not only is there an institutional culture of

continual improvement, but also a culture of measurement, assessment, and evaluation on an ongoing basis.

ISU’s current organization structure includes a vice president for business and finance, a vice president for academic affairs and provost, and a vice president for student affairs, all reporting to the president. Vice President Warren Madden heads the B&F division, which encompasses Administrative Technology Services (ATS), Business Affairs, the Controller’s Department, the Environmental Health and Safety Department, the Facilities Planning and Management Department, Human Resource Services, Iowa State Center, the Public Safety Department, Telecommunications, the Treasurer’s Office, the University Museums, and the ISU radio stations.

Madden considers the B&F division’s units as service functions that support ISU’s core areas of teaching, research, and outreach. This attitude spurs continual efforts for improvement in customer service delivery and operations efficiencies. Maury Hope, director, ATS, reiterates this focus. “It is normal for people to want to make their lives easier and since most of the B&F units serve the rest of the university, we always look for ways to improve our operations. It is a team effort to make this improvement attitude work. For example, ATS tries to help students register for classes easier and pay their bills faster. The Environmental Health and Safety Department receives national recognition for their work. The Facilities Planning and Management Department is on a 12-year track to become the best facilities operation in the U.S. and has won numerous awards.”

Information Technology Organization

The current information technology organization is divided between academic and administrative aspects of the institution. Academic Information Technologies (AIT)

What Is Total Quality Management?

Total quality management (TQM) is a comprehensive and structured approach to organizational management that seeks to improve the quality of products and services through ongoing refinements in response to continuous feedback. TQM requirements may be defined separately for a particular organization or may be in adherence to established standards, such as the International Organization for Standardization's ISO 9000 series.

Source: EDUCAUSE Web site

and the Instructional Technology Center (ITC) report to the provost and vice president of academic affairs; ATS and the telecommunications unit report to the vice president for business and finance. In order to align the entire information technology function more closely and to address possible administrative and academic computing overlap, in 2004 ISU established the position of CIO, reporting to the provost.

A year-long planning process has resulted in a commitment to combine AIT, ATS, ITC, and telecommunications into one central organization reporting to the CIO, beginning in July 2005. This process has already resulted in an extensive study and evaluation of IT at ISU with the following objectives: "Determining the perceived value and efficacy of the current portfolio of IT services; identifying unmet IT needs and barriers to effective use of IT; learning how participants are currently using IT to support research, learning, and university leadership; and anticipating how their IT needs will evolve over time. Input from the participants provided insights on which services should be offered centrally and which can be localized, whether the current portfolio of services provided centrally should be realigned or expanded to better support the IT needs of campus and how the IT providers might be

reorganized to create synergies that lead to improved services." (Iowa State University Information Technology Study Report, 2004). This self-study is indicative of ISU's cultural commitment to data gathering, assessment, and evaluation.

Project Evaluation and Implementation Methodology

Over the last six years ISU's B&F division has engaged in an extensive process of service improvement starting initially with a total quality management (TQM) initiative in the 1990s and more recently with a biannual process improvement evaluation and implementation methodology developed in 1999 by PricewaterhouseCoopers (PWC). Projects accepted into the process must cross functional lines either within the division of business and finance or on a broader institutional scale. The projects must lead to an improvement in service and efficiency that benefits the overall institution.

Backdrop: From TQM to PWC

The B&F division's process enhancement began in the 1990s under the guidance of Warren Madden. As he explains, "I could see through my involvement with NACUBO (National Association of College and University Business Officers) that ISU's business processes were not keeping up with other institutions. I learned from talks with other institutions about the resources needed to move forward and the resultant challenges they faced. ISU's then President Martin Jischke and I determined that ISU did not have the ability to implement the appropriate resources—and yet we wanted to keep making progress. ISU's systems were pretty functional, tailored to meet the unique needs of many activities, and we needed to change our processes to emulate ERP-like processes."

Coincidentally, Texas Instruments (TI) Incorporated Defense Systems & Electronics Group won a Baldrige award in 1992. Its then CEO, Jerry R. Junkins, was a ISU engineering alum and major supporter, and as a Baldrige recipient decided to educate ISU about quality management using TQM activities. TI sponsored training for selected ISU faculty and managers on relevant TQM tools and techniques for assessment and analysis. Eventually the B&F division hired a full-time TQM manager and adopted Oregon State University’s Total Quality Management Team process, outlined in Table 1, to facilitate business process enhancement.

Johnny Pickett, associate vice president for business and finance/controller, discussed TQM’s impact on the B&F division’s managerial process. “TQM brought a cross-functional focus to problem solving and facilitated more data analysis in the decision-making process. We collect more data up front, enabling us to better understand the problem. Interestingly, after we gathered data, we discovered that nine times out of 10, the problem definition changed. We also found that after the team is formed and the data is collected, the project’s solution phase is much easier—like falling into bed.”

One example of an early TQM project was the redesign of the ISU graduate approval process. “It drove everyone crazy because of numerous signatures required on the card,” recalls Pickett. “The student had to obtain signatures from each teacher of their final semester classes, involving visits to many different offices, lots of time, and irritation. When we diagrammed the process and saw how incredibly horrendous it was, everyone got committed to finding a solution.” Interestingly Pickett notes that many ISU staff members were unaware that it was a TQM project.

Despite the TQM initiative’s success, several factors prompted the B&F division to consider enhancing its planning and implementation process in the late 1990s:

- ◆ *Accelerate planning and implementation.* “While ISU made a strategic decision not to implement a commercial ERP system, we wanted similar ERP functionality without the disruption of implementing a commercial ERP system,” says Pickett. “We needed to evolve our system faster. Web-enabling was quickly gaining momentum and our current progress on making system changes was slow.”
- ◆ *Impersonal and cross-functional project evaluation.* Personal issues at the direc-

Table 1. Total Quality Management Team Process

Interview customers
Select issue and develop performance measures
Diagram the process
Diagram causes and effects
Collect and analyze data on the causes
Develop solutions
Benchmark
Select and implement solutions
Measure results and refine performance measures

Source: Oregon State University

tors' level began to also impede project process, creating a need to rationalize systems planning. Pickett notes that during this period, "All the planning was done in silos. I owned the accounting and payroll systems. Another director owned the purchasing system." It became apparent that the division needed a joint planning process. Madden agreed, "My directors represent diverse areas. When you get the leaders together to figure out commonality, it is sometimes a challenge."

◆ *Greater alignment with strategic planning.*

Madden also notes that in the late 1990s ISU was in the middle of its five-year institutional strategic planning cycle. "Each major division was faced with developing a plan. President Jischke thought if we could promote forward thinking in the nonacademic support areas, then we had a better chance of moving the university culture in that direction. These projects were part of an effort to investigate how the B&F division could better serve ISU in the context of a broader university plan. One goal of the new planning process was to inform people in a broader sense about the big-picture direction of the university and try to identify some B&F division projects that could serve the university," he says.

- ◆ *Administrative Technology Services (ATS) focus.* During the strategic planning process, the B&F division decided to focus on specific issues, one of which was information systems. "It was clear that some users on the campus wanted to develop better access to information," says Madden. "It was not timely or well organized in its current state. There were some shadow systems in operation and some batch-work operations that needed to transition to Web-based self-service. Budget constraints and desktop information access also made it increasingly a challenge to

maintain the traditional user-base charge model that supported the ATS services. We were faced with transitioning our processes to support this, so we started to identify ATS-oriented projects."

The general consensus was that "we needed a joint planning process to succeed," says Pickett. "We also knew that we required an outside firm to assess our current processes and help us design a better process." The B&F division hired PricewaterhouseCoopers (PWC) for this task.

The B&F Division Project Evaluation and Implementation Process

PWC designed a new project evaluation and implementation process that melds TQM principles with the B&F division's specific planning requirements. The result was a formal, predictive process to solicit, evaluate, and implement suggestions for business process enhancement, as outlined in Table 2.

Ground Rules

The B&F division project evaluation and implementation process contains several ground rules:

- ◆ The process is cyclical. The project evaluation meeting occurs every two years, enabling the B&F division appropriate time to select and implement selected projects during the current cycle. Progress reports at the monthly B&F directors meeting ensure that projects do not languish.
- ◆ Any department can submit a project proposal.
- ◆ The entire B&F division evaluates all the proposals at the biannual project selection meeting using an agreed upon methodology.
- ◆ The project proposals must be cross-functional across the B&F division and/or ISU. Projects that impact a single B&F division unit are addressed locally.

Table 2. ISU's Business and Finance Division Project Evaluation and Planning Process

Meeting preparation
Scan of ISU, technology, and higher education environments
Project submission by B&F division members
Project evaluation meeting
Project review, evaluation, and selection of business process enhancement projects
Postmeeting follow-up
Resource and IT requirements to determine final project selection
Project implementation
Create project charter, appoint sponsors and working committee members
Work on business process redesign and implementation
Feedback
Regular feedback to managers and administration on progress and activities

- ◆ Since many of the proposed projects involve information technology and systems, ATS coordinates the process.

Step 1: Meeting Preparation

In preparation for the project planning and evaluation meeting, ATS conducts an environmental scan of general information technology and higher education concerns, using trade publications, trade organizations, and discussions within the B&F division to learn the latest technologies and buzzwords. ISU strives for top rankings with peer institutions so ATS uses the EDUCAUSE Core Data Service information for comparison purposes as well as EDUCAUSE's annual CIO survey of top concerns and priorities. ATS consults the ISU strategic plan to determine how the B&F units will contribute to the plan's goals, and it analyzes which current and future technologies could impact ISU.

The B&F units submit their project proposals to ATS for coordination, additional research on technology requirements, and clarification from the submitter, if necessary.

Each project submitter prepares a written proposal outlining the project; giving the project statement; integration opportunities and issues; desired outcome; expected benefits; priority or urgency; required resources; and expected completion date. The projects are compiled in a binder and distributed to the B&F units for review prior to the planning meeting. B&F units submitted 34 project proposals for the most recent planning meeting in July 2004.

Step 2: Project Evaluation Meeting

The B&F division holds the meeting in a retreat-like setting. Diane Beckman, associate director, ATS, elaborates. "The retreat is really a matter of providing a forum to inform all the department heads about the projects and to discuss them. You see some lightbulbs go off. You get a new piece of the puzzle that you were not aware of before."

The project evaluation meeting has evolved as participants gain familiarity with the process. Beckman recalls that "the first time there was a lot of uncertainty about

what would happen, and whether anything would happen.” The first meeting occurred at an out-of-town conference location; now it is held at an ISU site. PWC consultants facilitated the first meeting; now ATS staff members manage the meeting. The initial meeting took two days; the July 2004 meeting lasted a half day. Meeting attendees include the B&F division directors as well as invited guests.

After setting the appropriate framework, meeting attendees evaluate all projects, either together or in breakout groups, depending upon the total number of projects. Notes relating to each project are placed on a board. During the presentations, similar projects are grouped together, and projects are redefined or consolidated as appropriate. The group agrees on the projects to be addressed. Some projects may be eliminated from this process if they do not cross departmental lines or do not provide significant overall benefit to the institution. Those “rejected” projects may still be addressed locally, but they do not meet the criteria for these transformational projects.

Step 3: Postmeeting Follow-Up

After selecting the projects, the group tentatively prioritizes them and assigns staff members to complete further homework for each project: assessing human resource availability, funding options, and the order of project implementation—a reality check on each project’s feasibility. Upon homework completion, staff members present their findings to the B&F division directors, who select and prioritize the final project roster.

Diane Beckman explains the importance of this step. “At the first project evaluation meeting, many requests involved Web-enabling online services. Another suggestion, however, highlighted the need to enhance the existing Web-development environment and to train staff on new tool sets. At the postmeeting follow-up, we realized that

we needed to complete the infrastructure/training project first before developing the Web-enabling systems on a broader scale. We could easily see that infrastructure was our top priority before we could continuously roll out services.” Once a consensus is reached, the projects are forwarded to the vice president of business and finance for approval and funding.

Steps 4 and 5: Project Implementation and Feedback

At this point, formal project implementation begins. A project charter is written that outlines goals, project sponsors, and members of the working group, and the project commences. Progress reports, prototype demonstrations, and emerging project issues are discussed at the monthly B&F division directors meeting.

At the July 2004 project evaluation meeting, the B&F directors authorized projects in support of:

- ◆ identity management, including elimination of Social Security numbers as identifiers for students, faculty, and staff;
- ◆ data warehousing including identification of authoritative data sources for key institutional data; and
- ◆ enhancements to the procurement and payment process.

Interestingly, both the identity management and data warehousing projects necessitate significant work on policy development prior to the development of processes or implementation of technology—a first-time occurrence. Like many other institutions, ISU has found that technology projects often tie to human and policy issues as well as technology.

Each approved project is a combination of several suggested projects that were linked in some fashion. For example, the final procurement and payment processing project coalesced from approximately 10 suggested projects for business process improvement.

“Because of the participation of ATS at the monthly B&F division directors meeting, most individual project proposals discussed at the project evaluation meeting were not a surprise,” says Maury Hope. “But when we grouped them together and discussed them in the broader framework of national, higher education, and ISU strategic issues institutional and cross-functional needs took precedence over individual departmental needs in regard to project selection.”

Hope also describes how the process has matured over the years. “The first time we held the meeting, the directors did not know the outcomes. Now they understand that there is going to be an end result and it will work,” he explains. “Many directors have experienced previous planning and implementation cycles and can see the progress, reassuring them that it is not an academic exercise, a philosophy du jour, or a shelf document.” Hope also observes that the proposed projects are getting tougher. “Perhaps it is because there is no more low-hanging fruit, but I also think the directors are thinking more broadly than they did before. The directors realize that the project might take a year or two, and they might have to make some changes. They understand that it is a process, and they understand it is a team project between IT and the functional area. Other directors have also noted a more positive atmosphere and attitude at the monthly B&F division directors meeting since we implemented this formal process.”

Process in Action: Redesigning the ISU Travel Reimbursement Process

One recent major business process project of the B&F division focused on the redesign of ISU’s travel expense tracking and reimbursement process. The new Web-based system, which is now mandated throughout

the university, had its beginning as one of the projects suggested at the project evaluation and implementation meeting. Since its inception two years ago, ISU has processed over 28,000 travel reimbursements, totaling over \$10 million.

Previously, the only automated travel-related function was the acquisition of airline tickets through a contracted travel agent. The new system is now available through any Web browser, allowing employees to request reimbursements while on or off campus. Users can log in, authorize travel (an optional function), and enter expenses. Through an assigned event number the system tracks the reimbursement request from authorization through reimbursement. Because approvals are all electronic, employees stay informed about the status of their expense report through automated e-mails that are sent throughout the stages of processing. Once approved, the funds are direct deposited into the employee’s bank account within two working days.

The new system also identifies user mistakes up front before the expense report is submitted for reimbursement. Bill Cahill, accountant, controller’s office, says, “With the old process, the departments would learn about their mistakes a week later, thus delaying the reimbursement. Now mistakes are known right away. The system will not allow the employee to continue filling out their electronic travel report until a mistake is corrected. We knew from our data the top-10 reasons that reimbursement forms were returned to the department/traveler. We were able to build in checks for seven of them, which reduced our back-end auditing.”

The project sponsors’ one-page memo framed the project, identifying the key players, working committee members, and goals. Lynn Prior-Miller, ATS manager of business and finance systems, discussed the project’s goals. “Our charge was to redefine the travel

reimbursement business process and to develop a supporting Web-based system. We were not just re-automating a process. The main goals were to eliminate paper-based expense reports, to speed up the reimbursement time for out-of-pocket travel expenses, and to minimize printing of reimbursement checks." In addition, the old system provided no available reporting details on who traveled, where, and why; the only available travel information was the aggregated data entered into the institution's general ledger.

From this one-page document began a project that crossed not only departmental lines, but administrative and academic lines as well. Table 3 illustrates specific project activities used during the ISU Travel Reimbursement System redesign.

Venita Currie, academic fiscal officer, College of Liberal Arts and Sciences, and Cahill served as the working committee cochairs. Cahill coordinated development efforts with a variety of individuals including representatives from accounts payable, controller, internal audit, extension agents, faculty, and grants. Currie represented the academic side of the institution. Cahill notes, "It was helpful to have broad representation to discuss their different interests and to provide different perspectives even though it took longer to complete the project." Other constituents included:

- ◆ *Users.* The chemistry department used a multitude of travel authorization rules to ensure adequate travel funding and appropriate class coverage during the faculty member's absence. "Without a chemistry

Table 3. Business Process Redesign Best Practices

Project To Do's	Benefits
Create a one-page memo outlining the key players, the working committee members, goals, process parameters	Focused committee activities
Get broad administrative representation on project team: heavy users, special need users, administrative representatives, internal auditing, and IT	Learned about special needs, complex situations during planning, not during implementation
Review flow chart of current process	Determined which parts of the process to keep, change, or eliminate
Environmental scan: other systems, conference presentations, commercial packages	Determined feasible options
Set deadlines for planning and to begin rudimentary mock-ups	Prevents getting stalled in planning, reviewing concrete examples of business process ideas moves committee into implementation phase
Validate the process by creating a list outlining agreed upon business rules and system design concepts; redesigned flow chart	Easier to track decisions and to provide base documentation
Slow roll out of testers and evaluators: Areas with special needs, internal auditors all tested the system first to identify bugs	Provided feedback from supportive users, worked system kinks out before release, satisfied testers "sold" system to campus

department representative on the committee, we would have missed this important step," says Currie. "The redesigned system would not have met the needs of a key department with a significant amount of travel." ISU's county extension agents travel constantly throughout the state, generating many travel receipts and traveling to places where only dial-up Internet is available. Grant funding was another issue, ensuring the proposed travel was allowable under the specifications of the particular grant. All these issues had to be factored into the redesign of the reimbursement process.

- ◆ *IT.* ATS was involved from the beginning, providing a technological reality check and offering practical solutions to committee members' ideas. For example, a previous project created programming code for electronic authorizations on the Web, which ATS reused in this project, thus leveraging the initial investment.
- ◆ *Internal Auditing.* With guidance from the internal auditors, the project team was able to design a system whereby original receipts are retained by the originating department rather than sent to the controller's office. Only if the expense report is selected for review is the department required to submit original receipts via fax. A criterion for review was established and is based on the type of travel, dollar amount of reimbursement, and other risk indicators. Internal auditing also recommended that travelers electronically verify the travel report before submission for reimbursement.

The committee reviewed a flow chart of the existing system to determine which parts of the process to keep, change, or eliminate. In addition, committee members reviewed proceedings from conferences and commercial software offerings to better understand feasible redesign options. To avoid confusion as discussion ensued, the

committee drew up a single laundry list, says Prior-Miller, "outlining our decisions and the agreed upon business rules and system design concepts, which we corrected and refined from there." The committee also designed a new flow chart.

After discussing needs and suggestions for redesign, committee members turned to mock-ups. Prior-Miller stressed their importance. "The planning process can only go on for so long. You could easily get bogged down in the planning, so we began to review concrete examples that translated the business process ideas into screen interactions and screen designs. Mock-ups help users visualize the final product and are useful for eliminating wrong solutions or invalid concepts." Or as Cahill described, they were useful in provoking "the ah-ha moment."

As specifications were further defined, Currie engaged faculty and staff within Liberal Arts and Sciences to assist in the validation of the design. A pilot group of users from key areas tested the system, and their suggestions were incorporated into the system. "You can't think of everything to code into the process," says Prior-Miller. "After a certain point, you can't think outside of the box. Evaluation and feedback is important to further refine the design."

Project roll out was thoroughly planned as well. According Prior-Miller, "Once we reached a point when we tested it enough—you can only test it so long before people want to use it for real—we did a slow, gradual, controlled introduction. Our committee worked with the provost's roundtable to identify which departments for initial roll out." Training was another issue. "For the initial roll-out phase, we offered quite a bit of training, and they gave us good feedback," he says. "Now we have built in tutorials, textual, and graphic examples on how to fill out the screens. It walks you through a five-day trip, how to fill out the expenses for each day."

Soon people began to see the system's benefits, and other departments wanted to adopt it. "The momentum picked up quickly," says Prior-Miller. "We began to see a drop-dead date for the rest of the campus to adopt it. So we made the system mandatory on May 1 in preparation for actual cutover at the start of the new fiscal year on July 1."

Committee members outlined several benefits of the new travel reimbursement system:

- ◆ *More information equals better negotiation.* Prior-Miller notes the new reimbursement system generates more information to help department planning and ISU negotiations with hotels, airlines, and other travel partners.
- ◆ *Reduced costs.* Direct deposit of travel reimbursement checks into employee bank accounts is less costly than printing and distributing paper checks. ISU prints and mails approximately 350 fewer checks per week. The automated system eliminated outsourcing the scanning of all the travel-related forms and receipts, saving an estimated 10 cents per sheet of paper. The departments, however, keep paper copies in file cabinets in case of auditing, resulting in new file cabinet expenditures.
- ◆ *Fewer support calls.* "There are fewer phone calls about the status of travel checks because the system automatically informs the employee about the status of each reimbursement form," says Cahill. "Before we'd have to thumb through a stack of paper forms to answer the question and/or the travel reimbursement form might still be in campus mail."
- ◆ *Leveraging technology and processes.* A key project component was the use of already developed technology, specifically, a preexisting routing approval process. In addition, the basic business process for employee travel approval and reimbursement applies to other employee expenses

and reimbursements. "Now we are redesigning our accounts payable process," says Cahill. "What we have learned from our travel reimbursement process redesign has helped us. The accounts payable process is more complex, so it makes sense to redesign the travel process first and apply any lessons and technology accordingly." Prior-Miller notes that "the B&F division plans to expand the travel reimbursement system into an employee reimbursement system, modifying the system to inquire about the type of reimbursement the employee requires."

Lessons Learned

ISU outlined several lessons learned; some are general truisms, others are specific to the converged network implementation:

- ◆ *Business process innovation does not happen overnight.* As Maury Hope explains, "You have to have the right attitude because it is not a quick fix. It really does take some time and tenacity and the realization that it is not going to work exactly right the first time. There is no textbook or recipe. You have to work with people, make adjustments." Interestingly, the project evaluation meetings initially transpired annually, but the B&F division concluded that it needed more time between meetings to complete projects. Now meetings occur biannually.

More specifically, both Prior-Miller and Cahill indicated that the ISU travel reimbursement system redesign took longer than it should. "When someone says to redefine a business process and automate it, you need to spend some time to work through the process," says Prior-Miller.

- ◆ *Scope out business requirements carefully.* The project charter should discuss the process parameters—what the system is supposed to do—so the working committee does not develop something different

from what was originally conceived. Prior-Miller observed that the project sponsors immediately asked for more functions when they reviewed the first travel reimbursement system mock-up.

- ◆ *Stick to your methodology.* Johnny Pickett discussed the critical need to stick to the methodology, whether the 10-step TQM process or the broader B&F division process. “When we redesigned our payable process, the project leaders wanted to skip the data collection step,” she recalls. “I refused because it was the most important phase. Later they were glad because they can now benchmark the current process against the former process.”
- ◆ *Continue to reinforce the business redesign process.* The B&F division project evaluation and implementation process builds in constant feedback—the status reports at the monthly meetings, for example. As the directors experienced actionable results, it made them more willing to continue with the process. Pickett observed that “once we demonstrated proof of concept, the next project evaluation meeting was not as difficult. We no longer needed an outside facilitator. It became a pretty stable process.”
- ◆ *Leverage what you have.* “ISU’s philosophy is any time you automate something where you [have] approvals, don’t build that into the application directly,” says Prior-Miller. “Instead, build reusable routing engines and Web services, so other systems can use it.” Indeed, the B&F division continues to leverage work flow and technology from one project to the next. The knowledge gained from the Web enabling and travel reimbursement redesign projects will transfer to other projects. Because the travel reimbursement process is hooked into the payroll system, travel reimbursement checks can be deposited into employee bank accounts. The pro-

cess uses an in-house developed routing and approval process already in operation by the human resources and payroll departments. Now ISU has three—soon to be four—processes that use that same routing software: Web requisitions, personnel, travel, and in the future, purchasing card approval.

- ◆ *Involve IT from day one.* “The IT staff members need to hear the initial dialogue about process so they can understand the reasoning behind the decisions,” says Cahill. “IT also gave the committee valuable and immediate feedback on possible solutions and those that were beyond a reasonable expectation, so we did not waste our time designing an impossible solution. To have them attend every meeting helped the project move forward without backtracking or recovering issues. Sometimes they gave us new ideas because we were not imaginative enough to know what was possible or what technology was possible.” Cahill also noted the importance of IT involvement in a specific process redesign. “It is important for IT staff members to work with business process people to learn and understand any relevant business rules and practical day-to-day issues. For example, ISU has strict rules about meal reimbursements based upon employee departure and return times, something audited previously in the paper version. We programmed these rules into the new system.” Prior-Miller added, “When a programmer understands the business process, his/her thinking expands beyond writing code that addresses a box on a flow chart to how it relates to the business process in general.”
- ◆ *Plan your business process roll out carefully.* Roll out is critical, especially given general resistance to change and departmental investments in how they are already doing business. A controlled roll

out also delivers a more stable system and with a stable system comes greater acceptance. Cahill reflects, "A slow and controlled roll out was helpful because we had a chance for supportive users to test the system and make changes. If we had mandated for everyone to use the system by a certain date and we were still making changes, it would have been a tough sell for the campus. Instead, we had the time to make some changes as we went along, and by the time the system became mandatory, it was a very workable system."

- ◆ *Use business process redesign to alter attitudes on IT.* The group involvement in business process redesign has changed directors' attitudes about IT in general. "Now people view IT as an institutional activity, and we try to push that attitude," says Diane Beckman. "We can't help everyone individually. IT needs everyone to work together collectively to get the best solution."
- ◆ *Involve others in the project.* Cahill involved the university's internal auditors in the project to ensure that the project met appropriate audit guidelines. The internal auditors were so impressed with the new process and its ability to sample expense reports that they became major proponents of the system. Their involvement helped speed the implementation of the system on a university-wide basis.

Process Evolution: Moving Beyond the B&F Division

Given the success of the B&F division's project evaluation and implementation process, plans are afoot to expand its use. As noted earlier, the AIT and the ITC report to the provost and vice president of academic affairs, and ATS and telecommunications report to the vice president for business and finance. When the four areas consolidate into one or-

ganization under CIO Jim Davis in July 2005, the consolidation will provide an opportunity to expand the B&F division's process into the entire IT organization.

Davis notes that the planning function operates differently in the academic IT organizations. "The project management is in place; not the listening part," he says. "The projects come forward based upon IT staff and constituents feedback. Frequently we don't hear about requirements until it is a crisis, a major irritation, or an unanswered need that suddenly becomes a priority. It is not always the case that projects that seem to be most pressing at the time are really the highest priority."

Davis finds the B&F planning process attractive. "It is transparent. Everyone understands how the process works. You can see where you are in the big picture. It is predictable. At a certain time of the year, you know it is time to get together and discover what the needs are, prioritize them, and move forward."

He foresees instituting a parallel process with AIT, adding a different twist by using focus groups. "The B&F staff members wrote their ideas on paper; we used focus groups as a major information source to learn about student and faculty needs for learning and research for the Iowa State University Information Technology Study Report," explains Davis "The focus groups were our way of measuring what is out there from the systems side, the academic side, and the student side. We plan to bring the ideas back to the table and see how they fit into the overall picture. For example, identity management might be a pervasive theme, so we'd select those projects that support the overall IT plan. The B&F planning process has worked well, and I don't want to disturb it. I want to make sure the projects that emerge from both processes move the university forward. At some point we need to make sure the two processes are congruent."

As a part of the restructuring of the IT organization Davis is also planning to introduce the methodology to the rest of the institution. The new IT organization creates liaisons to the student affairs and provost divisions that have not existed in the past. Maury Hope says that “one of the recommendations put forth is that an IT representative attends the monthly student affairs meeting. That is where it starts. You can listen to what is happening in that area and build relationships.” Indeed, outreach has already begun:

- ◆ At the minimum, the nature of several projects—such as Web-enabling services and travel reimbursement—do impact other parts of the university.
- ◆ The B&F division also invited staff members from the student affairs and provost divisions to attend the July 2004 planning and evaluation meeting to discuss their issues and concerns related to the B&F services and to observe the project evaluation methodology in action. “Their participation did not influence the projects this time around, but they presented their perceptions and issues about the services that we provide,” says Hope. “It helped us understand how we need to communicate the value of our services or rethink our charges.”
- ◆ After the last planning meeting, Hope and Beckman presented the meeting results to the academic fiscal officers for their feedback and to give them an understanding of the process. Hope notes that conversations about the process are starting to emerge from other ISU areas.
- ◆ Recently selected projects—especially the initiative to eliminate Social Security numbers as identifiers—are very global in nature and will provide a good introduction of the B&F division’s process to the rest of ISU. Warren Madden further notes that “student affairs is also a natural place to expand our methodology cross-

functionally because many of the systems overlap. Web technology has enabled this trend as people want information and services to be online with real-time access.” Hope also believes that if ISU ever purchases a commercial ERP system, the cross-functional nature of this process will help with its implementation.

Madden also described a system-wide application of the B&F division’s methodology. ISU, University of Iowa, and Northern Iowa University all report to the same board of regents, and currently the business officers of all three institutions are using a similar process to sort through administrative efficiency issues. “The regents have completed a plan where if the legislature provides an additional \$40 million, the institutions will implement a plan that reallocates on a two-to-one basis,” explains Madden. “So we have to create an environment that supports this plan, demonstrating to the legislature and public the efficiencies resulting from this funding.”

One secret behind the B&F division’s project evaluation and implementation process, according to Johnny Pickett, is that “we started to treat planning as a process itself. We used to think that planning was a meeting. You’d meet and go away. But now planning is a continual process where we meet every two years to select projects and report back on the progress at every B&F monthly meeting.”

Davis also believes that “the basic characteristics of the process—transparency, inclusiveness, predictability—are really important. People need to know how to interface with IT. They know there is a certain time to bring their ideas forward and how we are going to evaluate and perhaps implement them. If we don’t choose their ideas, they also know the rationale behind the decision.” Perhaps most important is that the project evaluation and implementation methodology facilitates ISU’s commitment to continual improvement to become the “best of the best.”

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