



# PRISM: IT Project and Resource Management at the Texas Tech University System

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**ECAR Case Study 7, 2004**

Case Study from the  
EDUCAUSE Center for Applied Research



**E D U C A U S E**

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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 information technology (IT) issues;
- ◆ research studies—in-depth applied research on complex and consequential technologies and practices; and
- ◆ case studies—institution-specific reports designed to exemplify important themes, trends, and experiences in the management of IT investments and activities.

From its most recent research, ECAR will publish a comprehensive gathering of information on IT financing in higher education in *Information Technology Funding in Higher Education*.<sup>1</sup> The study uses a multifaceted research methodology to collect and analyze quantitative and qualitative data from approximately 900 senior IT and business officers from more than 700 higher education institutions.

## Literature Review

The study began with a review of the relevant literature on effective IT funding

practices, IT portfolio management, and IT value to define the study's major themes and create a working set of hypotheses.

## Online Survey

We conducted two quantitative surveys. We distributed a survey of IT leaders to the entire EDUCAUSE membership, and individuals at 482 institutions responded to the survey. We also distributed a companion survey for chief business officers (CBOs) to the National Association of College and University Business Officers (NACUBO) membership and received responses from representatives of 386 institutions.

## Interviews

We conducted telephone interviews to further explore some of the key findings derived from the quantitative research. We interviewed 13 individuals representing 12 different institutions. Interviewees included 10 IT leaders, two institutional financial officers, and a financial manager, all from institutions with large IT organizations.

## Case Studies

Five in-depth case studies complement the core study. In addition to this Texas Tech University System case study, we conducted case studies at Cornell University, Drexel University,

the University of Cincinnati, and the University of Massachusetts. We assume readers of this case study will also read the primary study, which provides a general context for the individual case study findings.

## Introduction

Higher education institutions invest hundreds of millions of dollars in IT each year. Institutions' investment choices can impact their effectiveness in teaching, research, and administration.

IT project and resource management can be problematic, especially in the absence of senior leaders who engage in and demand well-defined processes for prioritizing IT projects and, concomitantly, allocate human and financial resources to them. Too often, IT project selections fall prey to local interests and emergencies. Without structured and transparent decision processes, central and systematic planning can yield to the demands of a small cadre of well-established administrators skilled in the art of internal politics. The result is normally suboptimal for the institution. The alignment of IT projects with institutional goals is likely to become askew.

The core ECAR study found that nearly all of the institutions surveyed prepare some form of a business case to support technology investment requests. However, far fewer have rigorous investment decision processes to evaluate each investment opportunity. The study revealed four key components to IT investment decision making:

- ◆ a business case,
- ◆ standard evaluation criteria,
- ◆ a structured and defined process for evaluating investment opportunities, and
- ◆ an engaged and empowered advisory group that helps set IT investment priorities.

Survey respondents whose institutions satisfied most or all of these components reported greater success in securing funding

to meet their strategic objectives and maintain reliable IT operations. They were also more confident that they received commensurate value for their IT investments.

Noteworthy, too, is that institutions with all four components in place reported that they achieved greater competitive advantage from IT than those lacking one or more components. The ECAR study confirmed that a rigorous, transparent decision process combined with senior leadership's active participation helps institutions optimize their portfolio of IT investments. They obtain a better alignment between their technology investments and institutional priorities, thereby increasing IT's value to the institution. Without all four elements in place, an institution might be able to weigh appropriately the merits of an individual decision in isolation, but it is less likely to set sound priorities among competing opportunities.

## Texas Tech University System

The Texas Tech University System (TTUS, or the System) includes Texas Tech University (TTU) and Texas Tech University Health Sciences Center (TTUHSC). In addition to the Lubbock campus, the university has a field campus in Junction, Texas, and satellite campuses in Fredericksburg, Marble Falls/Highland Lakes, Abilene, and Amarillo. Texas Tech University Health Sciences Center has centers and educational programs in Amarillo, El Paso, and Odessa, with regional sites in Midland and Dallas. Texas Tech University is a statewide, comprehensive, multifaceted university with more than 28,000 students pursuing undergraduate, graduate, or professional degrees in 12 different instructional schools and colleges. Texas Tech University Health Sciences Center has more than 2,250 students in five schools and now matches the leading institutions in Texas and the nation in the number and breadth of its programs.

## Texas Tech University System as an Exemplar

When Michael Phillips took over as CIO for the Texas Tech University System, he was determined to establish a new and open process for allocating Information Systems (IS) resources and better align IT projects with institutional goals. IT decision-making processes and tracking were badly broken. IS staff were unable to reconcile customer demands with available and shrinking resources. They faced an unwieldy backlog of more than 300 projects, many of which would never be initiated. Historically, IS accepted all requests for programming work and kept an ongoing list, with departmental representatives and IS staff prioritizing projects via a Prioritization Committee when resources became available. According to Phillips, “The current process was neither efficient nor effective, and it was difficult to hold anyone accountable.”

Not surprisingly, Phillips found general dissatisfaction among the IS staff, who were overly stressed by an unrealistic workload and having to deal with unhappy customers’ false hopes and unrealistic expectations. IS was the “bad guy,” getting repeated black eyes for not meeting the university’s needs. Disgruntled departments knew only that their requests weren’t being met in a timely fashion, if at all. They had no idea of the problem’s magnitude because information was anecdotal and not based on empirical data. Management didn’t have any tools or measures to fully understand the problem, either.

Phillips’s goals included

- ◆ better alignment between projects and institutional priorities,
- ◆ greater accountability,
- ◆ increased customer satisfaction,
- ◆ improved use of resources,
- ◆ a mechanism for saying “no” when all available resources were consumed, and
- ◆ better and more realistic planning by both customers and the IS organization.

Accomplishing these goals required a fundamental change in the rules of engagement between the central IS service and the stakeholder community. Phillips realized that to succeed, he would have to move priority setting to a higher echelon of the organization: the provost and CIO would have to be present and fully engaged with customers and IS staff. The process would have to be open, transparent, and data driven to justify additional staff resources, if needed. In short, Phillips needed a more formal, data-driven, broadly representative, and comprehensive process to manage and track project requests and resource utilization.

## The Advent of PRISM

PRISM (Projects and Resources for Information Systems Management) is a highly collaborative and formal process developed by TTUS in the past year. It establishes policies and procedures for IT project and resource scheduling, tracking, and use monitoring. According to Vice Provost Elizabeth Hall, “It is a goal-oriented process.” She explained, “If there is an issue, there is a process for deciding how and when it will be dealt with.” IS, as the IT organization responsible for the core business systems of the TTUS, led the design of the process under the direction of the System CIO.

PRISM encompasses primarily enterprise administrative applications modifications and enhancements—finance, student administration, and human resources (HR), deployed centrally and shared by similar functional units of the System’s two institutions. For its financial systems, TTUS uses the College and University Financial System (CUFS), which the vendor no longer supports. It uses an in-house HR system and SunGard SCT Plus for student administration, adding to the complexity of maintenance and enhancements, especially across business areas.

PRISM was the brainchild of Phillips and

IS management: Kay Whyburn, assistant vice president; Linda Ricks, director; and Joe Bilbro, assistant director. Its development was also a broad community effort, with stakeholders deliberately involved in the design process. This added to PRISM’s creation time but helped ensure community buy-in. According to Whyburn, “There was a lot of stakeholder involvement in the design of the process, and that really paid off.” Many people agreed that much of PRISM’s early success is attributable to the careful engagement of stakeholders prior to full implementation.

After the design phase, IS provided training to PRISM committee members. While this, too, delayed full implementation of PRISM, it gave the committee members a much better understanding of the issues before them and decrypted the multiple acronyms the technology community uses. Vice Provost Hall noted that she would still like a better guide for the non-techie.

PRISM’s design addresses what Phillips envisioned. It modifies the rules of engagement among IS and the broad community of users. It shifts the task of priority setting to

a carefully selected higher-echelon and representative group of empowered stakeholders guided by PRISM’s calendar, transparent procedures, and policies. PRISM aligns IS resources and institutional priorities, demands greater accountability of IS management and staff, and serves as a communications tool for demonstrating IS performance and managing user expectations.

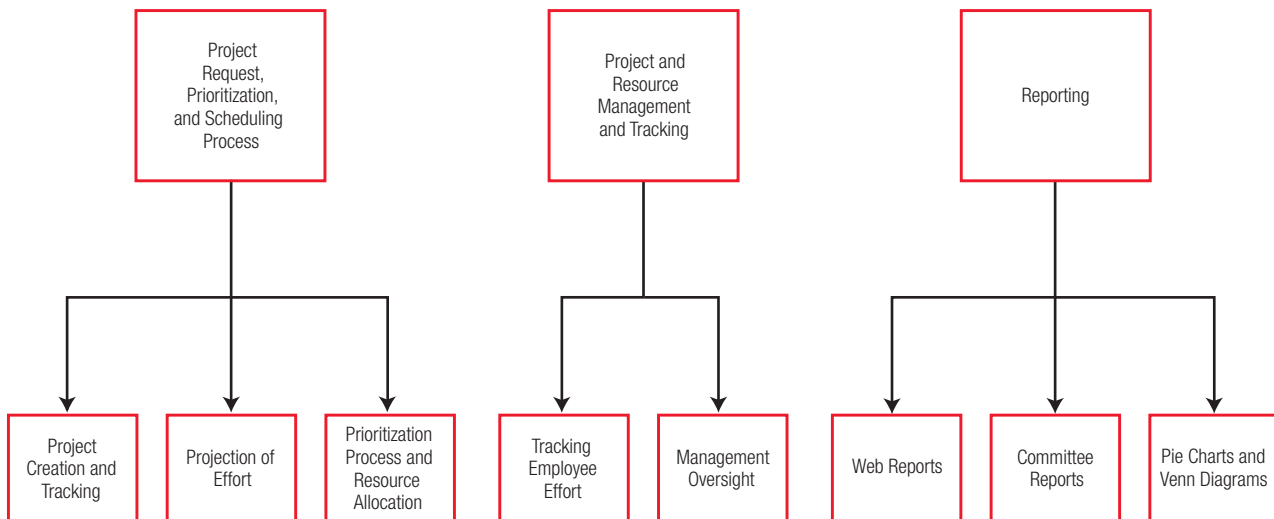
Once PRISM was completed, the CIO championed it and secured high-level support at the System and institution levels. This was critical to PRISM’s success.

**PRISM at Work**

As Figure 1 shows, PRISM is divided into six sets of operating principles:

- ◆ project identification and tracking;
- ◆ effort estimation required for each project;
- ◆ project prioritization;
- ◆ employee effort tracking;
- ◆ management oversight, including monitoring of progress and scope changes; and
- ◆ reporting.

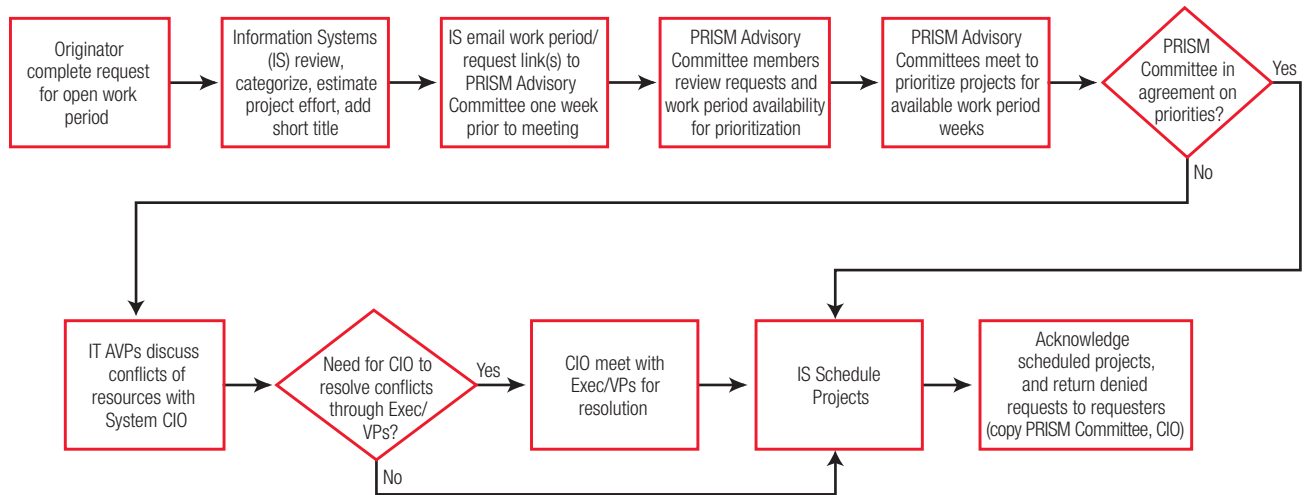
We briefly describe each stage of the process.



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Figure 1. Projects and Resources for Information Systems Management

The flowchart in Figure 2 illustrates PRISM's first three stages.



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Figure 2. Project Prioritization Flowchart

## Project Identification and Tracking

TTUS's IS work year is split into three four-month work periods: fall (September–December), spring (January–April), and summer (May–August). Three to 15 months before each work period, TTUS departments can submit proposals to IS for administrative system development, maintenance, and enhancements using an online form, which also clarifies the decision-making criteria to be used. The proposals are formally reviewed by one of two PRISM Advisory Committees: the Advisory Committee for Student Systems and the Advisory Committee for Fiscal Systems. Before bringing proposals to committee, IS categorizes them and estimates the resources (staff and time) each will require. Project categories include

- ◆ required support and maintenance,
- ◆ mandates based on federal/state/local laws, and
- ◆ general maintenance/enhancement/development.

The required and mandated categories are automatically placed at the top of the queue.

## Effort Projection

Prior to advisory committee review, IS staff estimate the effort required to complete a project. They estimate work weeks for each staff person involved with the project and summarize them to provide the total effort required (a teamwork period effort). IS also assigns a percentage of benefit for TTU and TTUHSC, on the basis of their estimate of the project's benefit to each institution. To better estimate the required support and maintenance, IS reviews historical time sheet data for each work period.

## Prioritizing Projects

Prioritization is the responsibility of the two PRISM Advisory Committees, which meet three times a year. The committees act as liaisons between their functional areas and IS. At each meeting, they decide which projects IS will handle during the coming work period. During the work period they also evaluate and approve emergency requests and, if necessary, advise on the rescheduling of current work-period projects.

The advisory committees are intended to fully represent the user community. They

consist of stakeholders who can make decisions for their units and who are expected to both participate in the decision-making process and accept the outcomes on behalf of the groups they represent. The committee makes affirmative and negative decisions that form the IS work plan for the period in question. An appellate process is in place, as is one for emergencies.

Representatives are selected from TTU, TTUHSC, and TTUS, and most hold the equivalent title of assistant vice president or higher. Areas represented on the Advisory Committee for Student Systems include

- ◆ business affairs,
- ◆ enrollment management/student services,
- ◆ information technology,
- ◆ institutional research and information management,
- ◆ provost's office/academic affairs,
- ◆ student affairs, and
- ◆ finance office (TTUS).

Areas represented on the Advisory Committee for Fiscal Systems include

- ◆ budget,
- ◆ business affairs/accounting/student services,
- ◆ purchasing,
- ◆ human resources,
- ◆ information technology,
- ◆ institutional research and information management,
- ◆ provost's office,
- ◆ research, technology transfer, and economic development, and
- ◆ finance office (TTUS).

The IS director acknowledges the decision made on each proposal via e-mail to the submitter.

### Tracking Employee Effort

Once the work plan is completed, PRISM requires tracking of staff effort by the quarter hour. The time sheet system includes direct ef-

fort by all employees on the project. Tracking is intended to be easy for the staff to do (less than five minutes per day). It encompasses all related expenses and effort.

### Management Oversight

The IS director, assistant director, managers, and project leaders regularly oversee progress on each project, paying particular attention to customer satisfaction and scope variations, which impact on-time and on-budget completion. If projects appear to be running over time and budget, IS management and project leaders propose resolutions and seek advice from the advisory committees, and projects may be allowed to flow into the next work period.

### Reporting

PRISM is intended to be a fully transparent process, both within IS and beyond. The final component of that transparency is reporting. It is planned to put status reports online, which will be available to the community. The numerous online decision-making reports available to the PRISM Advisory Committees include skill sets needed for each project, available staff skill sets, staff commitments, and projections of annual and cyclical work trends.

### Future Modifications

Although PRISM has been in operation for only a year, stakeholders already recognize that it needs to evolve. PRISM is a learning process. Phillips acknowledged that it is a work in progress and encouraged us to look at PRISM again in a few years, expecting it to be far more robust and sophisticated.

Planned near-term changes include investing in more automation to manage the overhead of running PRISM, which is currently time-intensive for three senior IS managers. It requires intensive use of spreadsheets and e-mail. Although proposals are submitted online and status reports will be published online,

too much of the day-to-day effort is done by hand and on paper. However, Whyburn said it's worth it for now. "The overhead is justified because we get data about activities that can be used to engage stakeholders and manage expectations, which in turn reduce the stress on our staff."

A longer-term issue is maintenance of applications, which will likely become an increasingly large component of the portfolio. Absent growth in resources, increased maintenance required by current enhancements will erode resources necessary for future enhancements. Whyburn acknowledged, "Maintenance is becoming a bigger and bigger part of the pie, given shrinking resources and the investment in new projects."

PRISM has been designed to handle projects of all sizes. However, new and large applications—for example, an upgrade from SunGard SCT Plus to Banner—would likely swamp every other activity managed by PRISM unless additional resources were obtained and dedicated to such a development effort. A Banner upgrade would further test PRISM, although PRISM will have provided a better foundation for discussing such a changeover. We would also emphasize that PRISM is a process for project prioritization and allocation of IS resources for *adding* enhancements and new developments. There appears to be no current process for sun-setting projects.

## Accomplishments

We found consistent praise for PRISM's accomplishments, which are many and significant. We had a particularly insightful interview with the IS line managers (Kerrie Iseral, Manager, TechSIS Teams; Jeff Hagins, Project Leader, TechFIM Team; and Steve Oughton, Lead Prog/Analyst, HR Team). One said, "In the old system, everyone was a loser. Our customers weren't getting what they wanted or needed, and IS staff was stressed out by their role as intermediaries without the ability to

control demands on their time." Moving to a proactive and planned project schedule means staff members can now satisfy collectively set and community-wide accepted goals. The pressure has been taken off the staff. Both staff members and management seem happier since arriving at a common understanding of process, capacity, and output. This has helped hiring in at least one instance, with one employee noting his preference for working in an orderly environment: "We know what is expected of us."

IS managers no longer focus primarily on day-to-day staff oversight but instead can assess available resource requirements, manage project scope creep, and protect staff from ad hoc demands on their time. They are better able to evaluate staff effort and quantify their productivity. According to Hagins, "Managers now have a tool to manage activities and plan work." Since the work schedule is determined in advance for each four-month period, adequate allowance can be made for vacations, training, conferences, and sick leaves. IS staff members know exactly what is expected of them, and management can allow for normal contingencies.

Prioritizing projects and measuring accomplishments are now data-driven processes and no longer anecdotal. Both IS staff and their customers have more accountability. Stakeholders can see what IS is doing and monitor their activities. Hagins and Oughton discussed that project delays are visible to everyone in the institution, so the staff has to be up front and forthright about issues, as there can be no hiding of faults. There is also a better community understanding of collective needs and IS capability and performance. Before PRISM, few could differentiate between enhancements, mandates, and maintenance.

As a communications tool, PRISM has helped TTUS manage customer expectations by providing a much better understanding of overall capacity and available resources. And

this changes behavior. According to Penny Harkey, assistant vice president for budget (TTUHSC), "Having just come off a major project makes us more circumspect about submitting new projects. We are willing to join other projects that have potential value to the office."

With diagrams, charts, and spreadsheets provided in their packets, committee members can easily see how resources are allocated. And this improves the decision-making process as well. Committee members take their responsibility seriously and actively prepare for PRISM prioritization meetings in order to present the requests clearly to other committee members. Many meet prior to the PRISM meeting to strengthen their proposals and better articulate their project's benefits for the institution. Whyburn noted, "Stakeholders have learned that they need to be fully prepared to discuss their projects in public. They have become more analytical and logical about what is really needed."

According to Phillips, there is also a much better understanding of interdependencies, which in turn fosters more-comprehensive and effective solutions. And Chip Shaw, assistant vice president, Information Services (TTUHSC), noted that "PRISM has forced unit leaders to think through their needs cooperatively, since they share system resources."

Project requestors are more accountable in that they now give much more thought to the needs and details of a project request. Their demands are more reasonable and they are doing better planning. Similar offices in different units have begun to collaborate with one another. "Right now everyone is working together," Shaw noted. "Working together has created a synergy in decision making." Offices that persistently change a project's scope or design and thereby cause time and budget overruns are now visible to the community, and substantial peer pressure exists to stay with what was originally

proposed. Customers are reluctant to pursue the emergency request process.

Elizabeth Hall, whose office did obtain an emergency priority that subsequently overran its allotted resources, sensed other participants' frustration in their having used more than an expected share of resources. But she noted that because it was all done in the open, the decision was more acceptable, especially as her office acknowledged the need to try to avoid taking such action in the future. She further commented that "the process took the heat off IS, not having to play the role of intermediary."

Senior management believes they now have better alignment between resources and institutional priorities. Committee membership at the assistant vice president level has improved priority setting around the institution's strategic directions. And shared solutions for both TTU and TTUHSC, using central enterprise systems, have increased the value of their IT investments. Several people spoke of "a shift in the mind set of the administration. We are now much more oriented toward meeting the needs of the System as a whole and not just the squeaky wheel."

The process seems fairer. Stakeholders feel that everyone has a chance to argue the case for their needs, so that it is not just the offices with pull or the squeaky wheels that get service. Several people noted that PRISM is a revolution in terms of organizational dynamics. There is much more balance and give-and-take. A few respondents did feel they needed "more clout," while acknowledging that the process was open and fair. In contrast, one staff member noted that some folks are disengaged: "They are assigned to a process that they are not taking advantage of."

PRISM's success resulted in IS's getting six new FTEs, presumably because senior management recognized IS's need and achievement.

In short, engaging senior leadership and ensuring decision making and process transparency do seem to work.

## Lessons Learned

What lessons can we learn from the TTUS case, and is PRISM portable to other institutions?

We believe PRISM can serve as an IT project management model for many higher education institutions—provided certain conditions can be met. And these conditions derive from lessons learned about how and why PRISM works at TTUS.

Perhaps the most important condition is the presence of senior-level sponsorship and engagement. Our respondents agreed that Phillips was critical to both PRISM's creation and the effectiveness of its current operation. Phillips recently added the position of TTUS CIO to his previous position as CIO at TTUHSC. He thus moved from being an observer of the former dysfunctional process to a position where he was empowered to effect a totally new process.

The participation of the provost's office and the CIO at advisory meetings lends credence to the process by enhancing its significance to the institution and the perception that firm decisions will be made that will stick. Their presence also improves the quality of discussion at meetings because the representatives' performance and contributions are visible to senior management. Because PRISM involves cultural change, senior leadership—and especially academic leadership—plays a critical role. It is hard to lead such change from the middle of an institution's hierarchy.

A second key condition is that the committees act as decision-making bodies, not simply advisors. Stakeholders need an incentive to participate. Knowing that getting their projects approved and implemented depends on the quality of their business case and presentation to the committee, combined with

the committee's decision-making authority, provides such an incentive. It's also key that decisions normally stick and are seldom preempted by emergency requests or successful backdoor appeals to senior management.

The credibility of the process depends also on IS's producing quality results—that is, completing projects on schedule and within budget for the stakeholders. Hence, the upfront "costing" of each project is critical, as is monitoring staff effort during implementation. An implementing institution would need the ability to cost-out projects with some degree of accuracy. Failing this would result in a loss of credibility in the process. TTUS could accomplish this because its technical staff were experienced and long-time employees.

Trust relationships are essential. Collegiality between institutional departments and trust in the process are key. To achieve an acceptable level of trust, an implementing institution must be willing to make all parts of the process open to public scrutiny. The process has to be predictable—no surprises—which means the process is perceived to be fair and the calendar is stable. Moreover, the players must behave: no behind-the-scenes games and deals. There is no plausible deniability at TTUS. The parties need to accept the level of accountability the process requires. Here, the institution's size may play a role. The players generally knew each other before the process was initiated.

A robust data collection and analysis effort is mandatory. Rich data and sound analysis support the quality of committee discussions and decision making, as well as the ability to demonstrate accountability. An open process, by definition, requires that all stakeholders have easy and timely access to accurate and well-presented information. PRISM is a very data-intensive, data-driven process, so the analysis and presentation must be designed to support all its phases.

PRISM is sensitive to the TTUS culture because its designers consulted the community

extensively before implementing it. Also, the designers understood their customers' needs and were realistic about what could be done with existing resources.

Significant, too, was the investment in technical training for committee members before priority setting began. This helped make the non-techies more comfortable, made the discussions more meaningful for them, leveled the playing field somewhat, and improved the discussion's overall quality by ensuring generally informed participants.

Although these aren't easy conditions to meet, they are doable: they certainly were at TTUS.

### **Acknowledgements**

ECAR gratefully acknowledges the time and effort that the staff at TTUS provided during the preparation of this case study and during our interviews on campus. Particularly, Kay Whyburn facilitated all of the on-campus aspects of this study. TTUS interviewees were

Kay Whyburn, Assistant VP, Information Services (TTUS); Linda Ricks, Director, Information Systems (TTUS); Joe Bilbro, Assistant Director, Information Systems (TTUS); Kerrie Iseral, Manager, TechSIS Teams, Information Systems (TTUS); Jeffrey Hagins, Project Leader, TechFIM Team, Information Systems (TTUS); Steven Oughton, Lead Prog/Analyst, HR Team, Information Systems (TTUS); Dr. Elizabeth Hall, Vice Provost for Faculty Affairs, Provost Office (TTU); Chip Shaw, Assistant VP, Information Services (TTUHSC); Michael Phillips, CIO (TTUS) and Vice President, IT/CIO (TTUHSC); Penny Harkey, Assistant VP for Budget (TTUHSC); Nancy Whittaker, Assistant VP and Comptroller, Financial Affairs (TTU); Lisa Mills, Section Coordinator, Budget Office (TTU).

### **Endnote**

1. P. Goldstein, *Information Technology Funding in Higher Education* (Boulder, Colo.: EDUCAUSE Center for Applied Research, Research Study, Volume 7, 2004), <<http://www.educause.edu/ers0405/>>, publication scheduled for December 2004.



