By David Ward and Brian L. Hawkins

PRESIDENTIAL LEADERSHIP

for Information

TECHNOLOGY

Although information technology has played a significant role on college and university campuses for half a century, it was the explosion of microcomputers in the 1980s—along with the evolution of networking and the Web a few years later—that created unprecedented changes and possibilities. This ubiquitous technology and its power to transform every aspect and function within higher education arrived with unexpected and unplanned costs. As a result, presidential conferences and professional meetings today regularly focus on IT issues, distributed learning, and collaborative research facilitated by networks. These issues and many related topics would never have been considered relevant for a meeting of presidents or chancellors just a decade ago.

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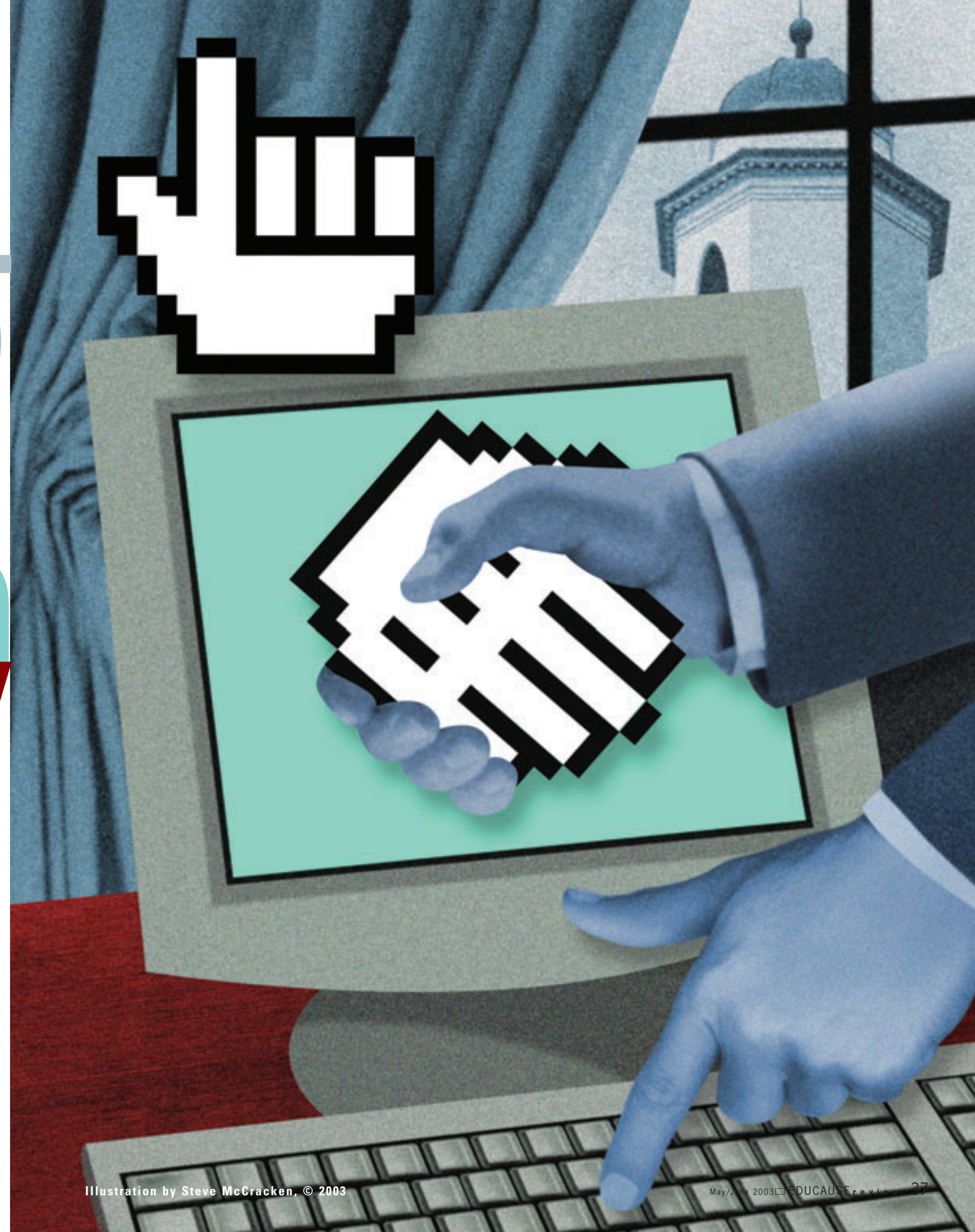
An increased presidential awareness of IT issues is not enough to confront the problems of management and innovation. Considerably more thought and focus needs to be given to the *role* of the campus president or chancellor (as well as that of the chief academic officers and chief business officers) in planning IT strategy. Clearly, the growing involvement of external constituencies in the range of presidential duties has resulted in the delegation of many internal priorities to provosts and other senior executives, but information technology is—without question—one of the limited number of internal issues that must remain on the presidential agenda.

This article was prompted by the recent *Harvard Business Review* article "Six IT Decisions Your IT People Shouldn't Make."[1] The authors, Jeanne W. Ross and Peter Weill, argue that it is essential for senior management, especially the CEO, to be directly involved with IT decision-making because information technology is a critical enabler of institutional strategy. The thrust of their article—with which we concur—is that IT issues should not be entrusted exclusively to IT professionals but rather should be the shared and collaborative responsibility of those charged with leading the institution.

The problem in higher education is that when the topic of information technology arises, presidents and chancellors often express concern about the cost of technology, apprehension about their IT departments, confusion as to where IT developments will lead, and anxiety about when these concerns will end. They also tend to attribute the high expenditures and perceived technology failures, such as problems with large administrative system implementations, to the CIO. Thus, when given the opportunity to discuss how they might help to improve decision-making regarding IT investments, presidents and chancellors all too often move

the discussion to the budget crisis in higher education and to the lack of consensus about future developments in information technology.

Unfortunately, this hands-off presidential approach has many ramifications. Other campus administrators, following the presidential example, also refrain from engaging in IT decision-making.

This culture then abdicates responsibility to the technology leaders. By default, they become both the strategists and the ultimate target for blame and culpability if the efforts fail to meet objectives that were never collectively defined or approved. As EDUCAUSE Vice-President Richard Katz has written: "In business, in government, and in academia, information technology has been an instrument of change, and technologists have be-

come the *agents provocateurs* of their organizations, agencies, and institutions. As such, technologists have been lauded when institutional transformations occur (almost never) or vilified when they fail to occur (frequently). Like Imperial Romans, higher education's business owners—the deans, department chairs, provosts, senate leaders, and presidents—

have enjoyed ringside seats to watch as technologists battle in the epic struggle between change and constancy."[2]

At the same time, some CIOs think of themselves as the executives who *should* be making all technology-related decisions. After all, this role was the expressed expectation of the headhunter and the search committee appointed to select the CIO. Traditionally, top-level administrators have not wanted to become

deeply involved in discussions about technology, nor have they wanted to become embroiled in the controversies that regularly erupt regarding IT services and expenditures. The message is: "Information technology is your responsibility; you make the decisions and keep me out of them." From the messages given to the search firms that hire CIOs to the daily messages given to these IT professionals, the underlying theme is that information technology is not an area of direct concern to the top executive. Instead, presidents and chancellors expect the CIO to handle IT problems and to shield them not only from involvement in IT decision-making but also from the political baggage associated with IT issues.

These approaches worked reasonably well while information technology remained in a pioneering phase. Two decades ago, the chief technology administrator on campus was usually the director of a central computer facility and was far removed from overall campus administration and from any role in campus strategy. Today, information technology is inextricably woven throughout the fabric of higher education and has assumed a strategic role in the fulfillment of the campus mission. It is thus imperative that campus IT decisions involve not only the chief technology administrator but also the president or chancellor and his or her leadership team. Information technology is an issue that is as significant as any other major concern currently on the desk of the campus leader. Yet presidents and chancellors are often not informed on IT issues in a manner that is adequate to deal with these challenges. This problem was raised in an ACE/EDUCAUSE monograph on distributed education: "Although the president or chancellor need not be an expert on the subject, it will be important to have enough background—and time for reflection—to be comfortable with the subject and associated issues."[3]

In addition to this involvement of the president or chancellor, the senior campus officers must take responsibility for overseeing the systems that manage the information assets in their specified domains and for working with each other and the CIO to maximize the institutional effectiveness and efficiency in using technology. This engagement means that on most campuses, a significant amount of continuing education needs to be provided so that the entire senior team can assume these new responsibilities. The CIO must be integrally involved in shaping this education, but ultimately the campus strategy and the commitment of the executive team to work collaboratively will be critical. Although higher education has historically been organized in vertical administrative structures, technology is a cross-cutting function, creating horizontal interdependencies that require administrators to manage these campus-wide functions. This interdependent and nonhierarchical characteristic of information technology implies that campus leadership teams need to develop competencies within their own functional areas and need to work jointly in defining the strategic value of IT investments—in short, defining information technology in terms of its instrumentality rather than as a cost center.

Presidents and chancellors must be a part of this process. The involvement of the top-level executive leader in IT decisions is crucial for colleges and universities—just as it is for corporate institutions. Ross and Weill, the authors of the *Harvard Business Review* article, state: "An IT department should not be left to make, often by default, the choices that determine the impact of IT on a company's business strategy." In particular, they identify six questions that, they argue, should not be delegated to IT professionals:

1. How much should we spend on IT?
2. Which processes should receive IT funds?
3. Which IT capabilities need to be company-wide?
4. How good do our IT services need to be?
5. What security/privacy risks should we accept?
6. Whom do we blame if an IT initiative fails?[4]

We will address each of these questions in the context of higher education, providing illustrations from actual campus experience and highlighting the illustrations with advice from experienced college and university presidents.

"Decisions involving digital technology raise very key strategic issues for colleges and universities requiring both attention and understanding at the very highest levels of institutional leadership. Technology is comparable in importance to other key strategic issues such as finance, government relations, and private fund-raising where final responsibility must rest with the president. The pace of change is too great and the consequences of decisions too significant to simply delegate to others such as faculty committees or chief information officers. The road ahead is littered with land mines and tipping points that require informed attention by the executive leadership and governing boards of academic institutions. Leadership on technology issues must come from the president and the provost, with the encouragement and support of the governing board."

—James J. Duderstadt, President Emeritus, University of Michigan[5]

> "We need to approach distance education, as we should all exotic and complex new opportunities, with great mindfulness and with our mission statements before us."
>
> —Nannerl O. Keohane,
> President, Duke University[6]

1. How Much Should We Spend on Information Technology?

Often presidents have few good precedents or exemplary practices on which to base their IT spending. They are also concerned about the growing costs of information technology and the associated infrastructure and about the seemingly unpredictable funding that is required. Most certainly, these costs have risen sharply in both absolute and percentage terms within the overall institutional budget in the last two decades. The explosion of microcomputers, networks, public laboratories, and support has been difficult to handle, since these costs were mostly new expenses in the budget and could not be easily dealt with using the normal incremental funding methods. Additionally, the need to replace desktop computers on a regular basis made such funding a challenging "base-budget" problem that could not be handled with one-time funds and year-end surpluses. Many leaders thus wonder whether this set of expenses is a bottomless hole, capable of absorbing all available funds.

There is no question that IT infrastructure and support are expensive, but the more important focus must be on whether this technology is instrumental in the achievement of institutional goals. The support of information technology in the improvement of teaching and learning has sharpened this focus even more. These issues of goals and key functionality must be the driving forces in determining the extent of the IT investment. If a president or chancellor merely defers to the IT leadership to propose and determine what new IT initiatives to pursue and provides little if any integration with the institutional objectives, costs may well spiral. Technology costs then become a source of frustration and anger for competing campus interests.

Instead of thinking of information technology as a cost center that competes with other functions and units within the institution, a president is well advised to focus the discussion on the extent to which the investment in technology furthers both subunit and institutional goals. This practice avoids the pitfall of getting caught up in short-lived trends. As John Hitt, the president of the University of Central Florida, and Joel Hartman, the university's CIO, have stated: "The true challenge for current and future campus leaders lies in making critical connections between technological possibilities and institutional priorities and using their vision and influence to chart a successful course. The degree of success that institutional leaders will achieve in meeting this challenge will profoundly influence the future of higher education in our country."[7]

Campuses must not allow competitor schools or benchmarking studies to determine their IT strategy. There is no normative percentage or budgetary ratio that can specify what should be spent. It is becoming increasingly apparent that institutions cannot fall into the trap of defining quality solely on input measures, since institutional outcomes regarding student learning, research, and other assessment indices will increasingly become our "bottom line." Institutional leaders need to embrace a new conceptual framework to assess the next steps required to sustain progress. This framework must articulate goals that integrate information technology within the institutional strategic plan, align planning and assessment at all levels, and focus on outcomes.[8] Then—and only then—can the entire executive team collectively have a reasonable discussion on how much should be spent on information technology.

"To state the obvious, an overall institutional plan should drive the information technology (IT) plan and budget decisions—whether that means increasing distributed-learning courses, making transactions from billing to registration available on the Web, or offering advising via videoconferencing."

—Carol Cartwright,
    President, Kent State University[9]

2. Which Processes Should Receive IT Funds?

The decision about which processes and which units should receive IT funds should be a direct outgrowth of the strategic discussions noted in the previous section. Ross and Weill suggest that the most common strategy taken in business today is to parcel out some IT resources to all constituencies, satisfying everyone a little and no one completely. This kind of "political" allocation of resources is perhaps understandable, but it is certainly not strategic.[10] This practice is particularly common in higher education institutions, which have complex governance, multiple goals, and often a weak understanding of and commitment to a focused and yet comprehensive mission. These processes put presidents, chancellors, and their cabinets in the unenviable political position of being responsible for outcomes while often not being completely in charge of the decision-making process.

Who is responsible when it is unclear who is in charge? Where does the IT organization turn for guidance? Who is responsible for system failures in functional units? Who is capable of articulating the role that information technology should play in the processes associated with the institution's fulfillment of its mission? Higher education is experiencing a mounting toll in organizational disruption caused by the naive assumptions that powerful new technologies can be introduced without making major changes in organizational conventions, processes, and structures. The sunk costs of ineffective new systems, the growing pressure from students and parents for Internet-based services, and students' and faculty members' expectations that they will work in an active, technology-enriched and technology-enabled learning environment necessitate that executives in all areas take responsibility for those IT decisions that directly affect the ability of the institution to serve its community.

Higher education must also reconceptualize the roles and expectations of its leaders and appoint high-level administrators who know how to incorporate the strategic role of technology into the execution of the institutional mission, who understand the value of the information assets in their arenas, and who are able to communicate that role to the campus community. This assertion does not mean that various functional areas should go off and develop their own IT organizations or support structures. These decisions need to be made in concert with the CIO in developing strategies that are efficient, cost-effective, and consistent with other campus architectures and standards. There may well be a case for creating a distributed unit, but such a decision must be made collaboratively and not in isolation. If various functional unit managers have taken on this responsibility, inevitably the desire for systems and support will exceed the available resources of the institution, and the president and the cabinet will be forced to prioritize based on perceived campus needs and goals. Presidents and chancellors must appoint people who will assume responsibility for effectively using technology within their functional areas. In executing this new dimension of their jobs, they must not allow academic decisions and the responsibility for their associated outcomes to remain with the CIO alone.

> "The increase in computing support costs is modest because of standardized software and hardware, with users left on their own to find support for any additional software they prefer. Initially controversial, software standardization is now accepted as an advantage for communication."
>
> —Ellen Chaffee, President,
> Valley City State University[11]

3. Which IT Capabilities Need to Be Company-Wide?

The *Harvard Business Review* article stresses the trade-offs between instituting widespread standardization across the organization, for efficiency, and allowing subunits to have the autonomy to select their own hardware platforms and software options in order to customize and optimize subunit responsiveness. There is ample evidence that on college campuses, standardizing specific hardware configurations and software options increases the efficiency of IT support, creates greater compatibility, and allows better service and support. Nowhere is such standardization and efficiency more apparent than in the network strategy undertaken by a campus. Networking is a utility that is most effective, efficient, and secure when a single architecture is used throughout the campus. A campus needs to define in what areas the commitment to a given standard is warranted and in what areas standardization will unduly restrict creativity and intellectual pursuit.

Specific academic (and sometimes administrative) units will often complain that a campus standard restricts their academic freedom to pursue appropriately the current state-of-the-art in their discipline or specialized area. There are certainly a few areas in which this flexibility is appropriate, but more often than not it is a matter of personal preference rather than disciplinary need. Some campuses agree to variance from the set campus standards, with the clear understanding that those who sought the exemption are responsible for meeting their own support needs. In other cases, there may be a significant need for variance from a standard, and specialized IT support is authorized for a given unit (this is increasingly the case in large, complex institutions). The questions are, who should be making the decisions on support and standards, and for whom do they speak? Usually it is the central IT unit that defines a standard (often in consultation with a campus committee), but exceptions can be a function of the shrillness of the complaints made by those who dislike being confined to a given standard.

There may be sound academic reasons why a given academic department would better serve its students or conduct its research by doing something that is outside of the standard. This flexibility, however, becomes an academic decision. The costs for any specialized labs or additional support personnel will ultimately land on the chief academic officer's desk. These issues should therefore be considered as an academic decision, rather than as the imposition of a given standard or the granting of exceptions on an *ad hoc* basis by the IT unit. However, these decisions will require the early involvement of a dean, vice-president for academic affairs, or provost. So too should their involvement be part of the process of defining (or redefining) standards, since the authority of the decision should be based on a campus-wide consideration of the financial costs of software and support personnel. These decisions require a comprehensive view of academic needs, financial costs, and technical knowledge about the standard and the proposed alternatives. Most of all, they depend on the legitimacy of the academic leader's office to establish and maintain standards.

Making campus-wide decisions will often result in ridicule, criticism, and unhappy faculty, a predicament well-known to CIOs who have implemented such plans. These negative reactions are almost inevitable, but standards are necessary if costs are to be contained. There will certainly be exceptions: who will make them, on what basis will they be made, and do such decisions reflect an institutional position or the view of only the central IT organization? The decisions need to reflect the entire organization, and key senior officers other than the CIO need to be informed, be part of the decisions, and have the courage to be part of a public commitment to these decisions. Only then will the decisions be perceived as legitimate and important.

"Creating a detailed IT operating plan . . . assumes two preconditions. First, the institutional leadership must have credibility with IT, and second, IT service levels must have credibility with the users. IT leaders should always be involved in the issues of assessment, just as the technological infrastructure should always meet the requirements of users. Users need reliable equipment and software, regular system checks and maintenance, adequate training, and strong support. IT leaders need consistent interaction with, and support from, the institutional leaders. This is a team effort, and the foundation of mutual credibility and sound infrastructure must be in place."

—Lee Higdon, President, College of Charleston[12]

4. How Good Do Our IT Services Need to Be?

Determining how good a campus set of IT services needs to be can easily become an exercise in chasing an incredibly expensive and elusive ideal. What should not be permitted is defining service levels to allow the creation of an "IT showcase." Information technology is not the end; it is the means to achieving campus goals. As with most other issues on campus, we strive for excellence, but the key question here is, at what cost? The *Harvard Business Review* article discusses the need to determine the level of uninterrupted service, reliability, and backup necessary for business systems and networks. For a large investment firm on Wall Street, high reliability, especially during the trading day, is essential to achieving business goals. For a college or university, on the other hand, there may be a large outcry when a network goes down, but it is not clear whether a network interruption really affects the mission and objective of the campus. For some campuses, this disruption may prohibit a faculty member from teaching his or her online course, and that would be serious. If, on the other hand, a system failure only delays some campus e-mails or results in a student having to wait until after lunch to register online, then the costs are less compelling. Before making a decision that a given level of service should be maximized, leaders should examine the service in light of the trade-offs between costs and goals. Decisions about acceptable levels of service— for example, the availability and reliability of network access to library resources or a course management system—have policy implications as well as budgetary and technical components.

Historically, these issues have been left with the CIO, based on his or her perception of what was appropriate and needed. If the CIO made a decision that was unpopular or inappropriate, then it was the CIO and the CIO alone who was held accountable. However, with the consensus nature of campuses, it is often easier to make a decision that will result in the least amount of criticism and complaint. Faculty advisory committees sometimes will shoulder a portion of this responsibility, but often they are not concerned with—or even charged with—the economic consequences of their decisions. With almost limitless faculty desires, and with the most prestigious or most vocal faculty having an eclectic impact on decision-making, it is quite possible that campuses are making maximal, not optimal, choices about service levels. By and large, IT leaders—no matter what their title or organizational level—are not particularly empowered to say "no" to a demanding user. This limitation is especially true at the help desk and at lower levels in the IT organization. With a desire to serve and with no ordained ability to say that a request goes beyond an affordable service level, IT personnel are often overworked in providing a level beyond that which was budgeted or planned. Alternatively, the IT department agrees to provide a level of service that it cannot possibly achieve with its current budget and staff. There has seldom, if ever, been a complaint that IT services are too good, although there are frequent complaints that information technology consumes too many resources.

Many campuses have begun setting service-level agreements that clearly define what the community can expect and what service the central IT organization can provide. Service levels need to be set by the users of the service, but it is important that the appropriate senior officers on campus review these, understand their implications, and be aware of options. It is the CIO's responsibility to identify these trade-offs, costs, and options so that an informed set of decisions can be made. This consultation cannot be relegated to the loudest or the most cantankerous member of the community but needs to fit with broad institutional objectives and be backed up with the authority of the academic leadership, not just the perceived arbitrariness and capriciousness of the CIO. The trade-offs regarding reliability, customization, and responsiveness on IT matters must become campus decisions.

"Colleges and universities are not, by definition, secretive places. They thrive on the free exchange of ideas and on open debate. But nor can we afford to be Pollyannaish about the real changes that have occurred in the digital world in which we live and learn. Thus we must strive for a sensitive balance between openness and security, between access and control. We need both. And if we are to get both, and if we are to maintain the balance, we must ensure that academic institutions and faculty are well represented at the table as these issues are discussed and as protocols and standards are developed."

—James Wright, President, Dartmouth College[13]

5. What Security/Privacy Risks Should We Accept?

The new environment of higher education will require increased security, and new procedures may mandate changes in practices that have been used for many years. Some of these changes will not be popular and will necessitate an increased level of involvement and leadership by all senior officers of the campus. With security issues, the parties that may need to be involved are potentially quite different from those that were involved in past years. Philosophical and ethical values such as privacy rights will now be the trade-off, not just cost savings or technology choices. These are institutional matters that demand the involvement and the imprimatur of the president or chancellor, although the CIO must, once again, be intimately involved. IT security issues are more complex than any of the issues thus far discussed, since security matters may well have ramifications for the CEO, the chief financial officer, the campus legal counsel, and the risk management office, among others. In addition, in today's connected world, security issues stretch beyond a single college or university, because access to a specific campus system often provides access to a wide range of other systems through the Internet. Institutional leaders need to assess not only the security of their own information but also the threat that someone on their campus might disrupt the networks of other systems to which they are connected. National defense and homeland security issues also will raise the level of liability for security and will increase government oversight of campus practices. These decisions do not fall neatly into the traditional silos of responsibility on campus, and they certainly extend well beyond the IT organization. The campus executive clearly has a vested interest in defining the institutional direction with regard to security.

The technical aspects of security are relatively simple compared with the legal and policy ramifications. The campus faces exposure from computer attacks, especially if it keeps credit card numbers for students and/or donors, if it continues inappropriately to list and use social security numbers in its administrative systems, or if it holds other sensitive data. The campus may also be held liable for system attacks that emanate from its computers. Colleges and universities have some of the most powerful and ubiquitous computer resources in the country, and as a result they have a special responsibility to society, as well as to themselves, to manage these resources carefully. How secure must a campus be? How much attention should be paid to security issues? These are questions with which each campus must wrestle, and even then it is possible that the most secure environments may be vulnerable to attacks. Computer security exposures necessitate top-level involvement in defining acceptable risk, in setting policy, and in helping the campus accept the practice and policy changes that are needed if high-level exposures are to be avoided.

Security must be a centralized function, and all functional managers must understand that variance from the campus standard in this area is not an option. New authentication and authorization procedures will need to be incorporated into many systems, undoubtedly causing a change in processes and potentially causing some inconvenience. Here, "best practices" may be an important guide to individual campus initiatives.

Perhaps what will emerge as the most controversial issue related to security is the complex interrelationship between security and privacy. When systems can collect information about who is searching what databases and can authorize members to access various Web sites and library holdings, personal privacy can be violated in a manner that is not possible when a person is physically browsing the stacks. Privacy and academic freedom are critical components of campus culture; it is vital that decisions on policies and practices regarding security and related issues be carefully vetted, understood, and authorized by both the highest levels of the campus leadership and the representatives of the campus community. The executive role in all of these matters is crucial if internal dissension and unnecessary strife are to be avoided.

"It is important for the president, as well as members of the executive team, to understand and own IT issues, rather than assume that these are exclusively the purview of the CIO or technology officer. It is no longer possible for a college or university president to safely delegate all technology-related decisions to the CIO. The costs are too high, the risks are too great, and the opportunities are too significant for the president not to be personally aware or involved."

—John Hitt, President,
    University of Central Florida[14]

6. Whom Do We Blame If an IT Initiative Fails?

If an IT initiative fails, campus leaders must carefully discern exactly what failed. If the project failed to achieve business objectives, then the problem was likely a management failure. If the goals were defined by the IT professionals, then CIOs probably did not have enough guidance on, or had misguided notions of, how the institution wanted to focus its IT efforts or what objectives and goals were important to achieve. Technologists often focus on the capabilities of the technology; indeed, few IT projects are technical failures. Most so-called IT failures are the result of the organization's inability to cope with the operational and structural changes introduced by technology. No matter what the reason for failure, in today's higher education environment, it is likely that the CIO will be blamed. Without executive involvement, CIOs are almost inevitably set up to be the scapegoats when an IT initiative fails.

With the critical role that information technology is currently playing—and will increasingly play—in allowing institutions to achieve their strategic goals, it is imperative that the business managers in charge of various areas also be in charge of their own IT initiatives. It is they who must define the value to be accrued from an enterprise resource planning (ERP) implementation, for example. It is they—not the IT professionals—who must decide whether some business practices need to be reengineered and how the roles of staff in that area need to be redefined to achieve efficiencies. It is the business managers who must decide whether it is worth the significant expense to modify a vendor's application to accommodate a given campus's unique and historical way of handling various processes. And it is the executive cadre who must examine whether such efforts are important to the achievement of the campus mission and objectives. If there is a need to find a responsible party to blame, it is important to place each project under the "ownership" of key functional unit leaders and to ensure that they have taken responsibility for their information assets.

The CIO and the technology people should be responsible for delivering information systems on time and on budget. They should be responsible for identifying pitfalls, options, and directions to the business unit leaders, such as the CFO or the director of admissions, but they ultimately are in a support role to the primary academic executive. Information technology certainly can and will be part of the problem, but if the senior management has not been involved in the decisions of the CIO and the IT staff, it is highly naive to blame the technology people when an IT project does not live up to expectations.

Conclusion

When higher education leaders fail to engage in IT decision-making, and fail to identify information technology as a key responsibility of functional-area executives,[15] their colleges and universities miss countless opportunities to make strategic use of the technology, the campuses make unwise investments, and the institutional budgets bleed from IT expenditures. No one is satisfied, and valuable administrative energy is expended on soothing political eruptions centered on any number of campus IT woes.

Each campus will need to reshape its political landscape to reconcile its notion of shared governance with its need to execute administrative decision-making processes expeditiously, competently, and with a demonstrated command of the strategic implications of technical decisions. Higher education leaders must possess the knowledge base, the technical competence and confidence, the courage, and the ability to communicate the strategic consequences of IT decisions. This role constitutes a new definition of the executive responsibilities for leadership in higher education. Consequently, any finger-pointing that occurs when technologies fail should aim in the direction of the entire leadership cadre, not just the CIO.

The focus cannot and should not be on the technology per se. The president or chancellor, along with the executive team, must be actively involved in defining the goals and objectives of the campus and how these relate to key IT initiatives. All senior officers must assume responsibility for the information needs, the IT infrastructure, and the support level that they need for their areas. Clearly, senior officers should not create separate IT units or support areas; instead, they should understand their IT needs and then work in harmony with the CIO to ensure that adequate resources are provided for their areas. In many cases, they should support requests for more central IT funding at the expense of other initiatives.

The shared ownership of information technology—driven by the open discussion of campus goals—is essential if campuses are to move ahead strategically and economically. At a time when the focus of

the presidency is on external constituencies, it is critical that information technology be included among those limited internal priorities over which a president retains some direct engagement. Without such ownership, higher education risks falling into the trap that Henry David Thoreau warned against many years ago: "Our inventions are wont to be pretty toys, which distract our attention from serious things. They are but improved means to an unimproved end."[16] *e*

Notes

1. Jeanne W. Ross and Peter Weill, "Six IT Decisions Your IT People Shouldn't Make," *Harvard Business Review*, November 2002, 85–91.
2. Richard N. Katz, "Childhood's End?" *EDUCAUSE Review* 38, no. 2 (March/April 2003): 8–9.
3. Diana G. Oblinger, Carole A. Barone, and Brian L. Hawkins, *Distributed Education and Its Challenges: An Overview*, ACE/EDUCAUSE monograph series Distributed Education: Challenges, Choices, and a New Environment, no. 1 (Washington, D.C.: American Council on Education, 2001), 27.
4. Ross and Weill, "Six IT Decisions," 86.
5. James J. Duderstadt, Daniel E. Atkins, and Douglas Van Houweling, *Higher Education in the Digital Age: Technology Issues and Strategies for American Colleges and Universities*, ACE/Praeger Series on Higher Education (Westport, Conn.: Oryx Press, 2002), 181–82.
6. Nannerl O. Keohane, "Going the Distance," *EDUCAUSE Review* 35, no. 4 (July/August 2000): 11.
7. John C. Hitt and Joel L. Hartman, *Distributed Learning: New Challenges and Opportunities for Institutional Leadership*, ACE/EDUCAUSE monograph series Distributed Education: Challenges, Choices, and a New Environment, no. 3 (Washington, D.C.: American Council on Education, 2002), 21.
8. Brian L. Hawkins and Carole A. Barone, "Assessing Information Technology: Changing the Conceptual Framework," in Polley A. McClure, ed., *Organizing and Managing Information Resources on Your Campus*, EDUCAUSE Leadership Strategies Series, no. 7 (San Francisco: Jossey-Bass, 2003).
9. Carol A. Cartwright, "Today's CIO: Leader, Manager, and Member of the 'Executive Orchestra,' " *EDUCAUSE Review* 37, no. 1 (January/February 2002): 6.
10. Ross and Weill, "Six IT Decisions."
11. Ellen Earle Chaffee, "Finding the Will and the Way," in Mark A. Luker, ed., *Preparing Your Campus for a Networked Future*, EDUCAUSE Leadership Strategies Series, no. 1 (San Francisco: Jossey-Bass Inc., Publishers, 2000), 85.
12. Lee Higdon, "Moving beyond the Rhetoric," *EDUCAUSE Review* 37, no. 6 (November/December 2002): 10.
13. James Wright, "Digital Security in a Free Society," *EDUCAUSE Review* 37, no. 5 (September/October 2002): 15.
14. Hitt and Hartman, *Distributed Learning*, 13.
15. Ross and Weill, "Six IT Decisions," 87.
16. Henry Thoreau, *Walden*, chapter 1, section D: "Economy," in *The Thoreau Reader* (EServer.org: <http://eserver.org/thoreau/walden1d.html>).