



# Improving Institutional PERFORMANCE through IT-Enabled INNOVATION

By William H. Graves

In its report *Innovate America*, the National Innovation Initiative (NII) calls for an “innovation infrastructure” as the foundation for the nation’s future productivity and competitiveness. The report notes: “Innovation generates the productivity that economists estimate has accounted for half of U.S. GDP growth over the past 50 years. . . . It’s not only about offering new products and services, but also improving them and making them more affordable.”<sup>1</sup> Though the NII did not ignore nonprofit organizations and even targeted the nonprofit health-care industry, the report is curiously silent on any need for innovation and its byproduct, productivity, in higher education. In contrast, the National Commission on Accountability in Higher Education (NCAHE) called attention to its final report by proclaiming: “Improved accountability for better results is imperative, but how to improve accountability in higher education is not so obvious.”<sup>2</sup> I agree that improved accountability in higher education is imperative, but I take issue with the second part of the NCAHE’s conclusion: the way to improve accountability in nonprofit higher education is clear by now. The key, as indicated by the NII, involves productivity-increasing innovation, and recent systemic increases in productivity in the national/global economy have depended on using information technology to redesign production and service processes.<sup>3</sup> Higher education also can use IT innovatively to redesign academic and administrative services for improved effectiveness and efficiency. Two proven innovation strategies are the common-course redesign strategy and the flex program and service redesign strategy. These strategies use IT innovatively to improve accountability—that is, to improve and account for institutional performance—whenever measurably improved academic results and reduced unit costs are simultaneous goals.<sup>4</sup>

*William H. Graves is Senior Vice President for Academic Strategy, SunGard Collegis Inc., and Professor Emeritus, University of North Carolina at Chapel Hill.*

Deployed on an initiative-by-initiative basis, mission-appropriate variations on the common-course redesign and the flex program and service redesign strategies can support a *strategy of simultaneity* for systematically improving strategic academic results while also reducing their unit costs—thereby holding the line on tuition increases. The strategy of simultaneity requires an institutional culture of innovation that (1) replaces unsubstantiated proxies for quality—proxies such as a low student/instructor ratio—with evidence of quality and (2) embraces the simultaneous pursuit of measurable improvements in academic results and efficiencies in their unit costs. Such a culture requires counterintuitive academic leadership. Only a few higher education leaders have individually called for innovation as a means for measurably improving institutional performance.

**The new day requires strategies for identifying, prioritizing, and proactively meeting the critical performance expectations pressuring nonprofit higher education.**

Larry R. Faulkner, the president of the University of Texas at Austin, is one of the few. In February 2005, at the 87th Annual Meeting of the American Council on Education, Faulkner urged nonprofit colleges and universities to move from a defensive to a proactive position in responding to the rush of outcome-oriented institutional performance expectations coming from employers and the public and, even more urgently, from the federal, state, and institutional policymakers who govern, regulate, or help fund higher education and its students. He noted: “At the typical flagship public institution in America, the academic cost of attendance (mandatory tuition and fees) is now in the range of \$5,000 to \$7,500, or about 11 to 17 percent of median family income. Those figures are up from 1 to 5 percent in the 1960’s. If the trends of the past fifteen to twenty years continue, the share would rise to something like 30 percent of median family income by 2020.” Connecting price to unit cost via this access-compromising trend,

Faulkner added: “We must address costs. More specifically, we must mount serious, effective efforts to limit the *rate of growth* in the educational cost per student. It is in the range of 4.5 percent per year, a substantially inflationary figure, but more important, a figure significantly larger than the long-term growth rate of the economy.”<sup>5</sup>

Faulkner recognizes that “serious initiative” will be required to reduce unit costs and stabilize prices (tuition) in the interest of access, accountability, and competitiveness. Gone is the day when the sole indicator of institutional performance was a mission-reflecting combination of student aptitude, faculty credentials, library holdings, anecdotal evidence of an enriched socio-intellectual environment, modernized facilities for teaching and learning, and low student/faculty ratios. The new day requires strategies for identifying, prioritizing, and proactively meeting the critical performance expectations pressuring nonprofit higher education. Many institutions are now expected to be accountable for learning outcomes, existing programs versus needed programs, and per-student-FTE expenses while also providing affordable, convenient, and high-capacity access. These six expectations are arguably mission *obligations*—which, in some combination and through nuanced emphasis and applicability, can reflect differences in institutional context, mission, and governance. They are briefly described in Table 1, along with examples of performance indicators applicable to each obligation. The indicators, however, are neither inclusive nor universally relevant. They reflect policymakers’ convictions that nonprofit higher education is obliged to monitor, improve, and report performance on an ongoing basis as part of its evolving social compact with the public.

More than two hundred citations are offered as evidence that this evolving social compact calls for higher education to

practice innovation, with productivity as one of its primary goals or byproducts.<sup>6</sup> Each citation is cross-referenced to the six performance obligations in Table 1, as well as to a nationally observable, aggregate revenue/cost pressure (described in the following section).

## The Leadership Catch-22

Higher education leaders who would like to embrace and improve institutional performance often report being trapped in a “catch-22” situation. They are being asked by policymakers to improve the academic aspects of institutional performance, a task they believe will require additional expenditures and, therefore, additional revenues. Yet the same policymakers are also asking them to hold the line on tuition increases and are reducing public funding for higher education relative to other tax-supported needs.

The catch-22 reaction is only heightened by a broader revenue/cost pressure:

- **Revenue pressure:** (1) declining percentages of state allocations for higher education relative to state allocations for other needs, such as health care, public schools, and incarceration; (2) declining percentages of institutional revenues coming to institutions, directly or through their students, from state and federal subsidies and grant programs; (3) increasing tuition inelasticity resulting from competition from peer and for-profit institutions; and (4) increasing and, for many institutions, risky reliance on gifts, grants, and contracts (relative to public funding)
- **Cost pressure:** (1) funding more and larger need-based grants from internal nonpublic resources; and (2) escalating (competitive) tuition discounting for less needy but highly qualified students

The catch-22 reaction is not surprising, for academic culture tends to conflate total expenses and total revenues as *the* budget while too seldom identifying and managing *unit* costs. This tendency obscures the high probability that policymakers expect higher education to innovate internally, both to improve the academic aspects of institutional performance and to reduce unit expenses, the latter in order to stabilize tuition

**Table 1. Obligations and Indicators**

| INSTITUTIONAL PERFORMANCE OBLIGATION   | ATTENDANT PERFORMANCE INDICATORS   |
|--|--|
| <p><b>Learning Accountability:</b> Account quantitatively for the quality of learning outcomes, where possible through comparative benchmarking across time of</p> <ul style="list-style-type: none"> <li>■ retention, persistence, and graduation rates (expected versus actual rates) among comparable institutions, and</li> <li>■ broadly accepted independent learning assessments in the large-enrollment courses commonly taught at almost all comparable institutions</li> </ul> | <ul style="list-style-type: none"> <li>■ Participation in the Collegiate Learning Assessment, the National Survey of Student Engagement, or the Community College Survey of Student Engagement</li> <li>■ Independent outcomes assessment of developmental courses, college-level basic skills courses—in math, Spanish, writing, etc.—and the five highest-enrollment introductory-level disciplinary and professional courses</li> <li>■ Expected rate vs. actual rate for key indicators such as retention, persistence, and graduation</li> </ul>  |
| <p><b>Program Accountability:</b> Account for any mission obligations to respond rapidly to economic development priorities and workforce/ professional education priorities by redesigning or developing academic programs to address these priorities</p>  | <ul style="list-style-type: none"> <li>■ Percentage of annual student FTE increase directly attributable to programs created or redesigned to meet identified economic development or workforce needs—for teachers, nurses, biotech workers, etc.</li> <li>■ Percentage of annual increase in noncredit enrollments directly attributable to programs created or redesigned to meet identified economic development or workforce needs—for teachers, nurses, biotech workers, etc.</li> <li>■ Percentage of all awarded degrees that are directly attributable to programs created or redesigned to meet identified economic development or workforce needs—for teachers, nurses, biotech workers, etc.</li> </ul> |
| <p><b>Expense Accountability:</b> Account for the direct expense of instruction and other key lines of service—IT services, registrarial services, financial services, and so on—using per-student FTE, per-enrollment, or other appropriate unit measures of direct expenses</p>  | <ul style="list-style-type: none"> <li>■ Per-enrollment direct instructional expenses and average ratio of enrollments to instructional personnel for development courses, college-level basic skills courses—in math, Spanish, writing, etc.—and the five highest-enrollment introductory disciplinary and professional courses</li> <li>■ Per-student-FTE central IT expense and IT personnel (full-time and part-time) expense</li> <li>■ Similar unit expenses metrics in other lines of service</li> <li>■ Percentage of change in the annual ratio of student FTEs to administrative FTEs</li> </ul>   |
| <p><b>Affordability of Access:</b> Maintain affordable access to academic programs (within mission responsibilities) by limiting the rate of any annual tuition and fee increases to the Consumer Price Index</p>  | <ul style="list-style-type: none"> <li>■ Ratio of the annual rate of change in undergraduate tuition/fees to the annual Consumer Price Index</li> <li>■ Ratio of per-FTE revenues from tuition/fees and subsidies/ grants to per FTE direct operational expenses</li> </ul>  |
| <p><b>Convenience of Access:</b> Provide flexible, integrated access to academic programs and comprehensive support services—<i>flex</i> programs and services—by combining online (asynchronous) self-service course and service options with as-wanted expert help via walk-in service centers and a 24x7x365 call center</p>  | <ul style="list-style-type: none"> <li>■ Percentage of all degree programs that can be delivered asynchronously except for required clinical or lab work</li> <li>■ Percentage of all noncredit programs that can be delivered asynchronously except for required clinical or lab work</li> <li>■ Annual inventory of services accessible asynchronously via a Web portal</li> </ul>   |
| <p><b>Capacity for Access:</b> Adjust institutional capacity after projecting demand for access to prerequisite and priority courses, academic programs, and other services that are critical to mission fulfillment</p>   | <ul style="list-style-type: none"> <li>■ Percentage of qualified applicants refused admission or admitted with delay</li> <li>■ Annual percentage change in total credit hours and in total noncredit enrollments</li> <li>■ Total first-term enrollments (credit and noncredit)</li> <li>■ Ratio of total first-term credit hours to total first-term instructional personnel FTEs and of total first-term noncredit enrollments to total first-term instructional personnel FTEs</li> <li>■ Ratio of total annual enrollments to total seating capacity of the classroom plant</li> </ul>  |

and decrease the need for relative increases in tax-supported revenues. The prevailing academic culture instead perceives a catch-22 vise that is squeezing nonprofit higher education ever more tightly between the revenue/cost pressure on one side of the vise and, on the other, the pressure to meet institutional performance obligations. Many institutions are thus seeking additional per-student direct or indirect public funding while simultaneously capping enrollments (thus reducing the capacity for access) and/or raising tuition (thus eroding the affordability of access). Capping enrollments and raising tuition, however, can readily be perceived externally as a defensive or even arrogant response to the rising expectation for improved institutional performance—a response depicted graphically, in Figure 1, as a worst-case scenario. Moreover, capping enrollments and raising tuition do nothing to reduce unit costs and measurably improve academic quality: lower student/instructor ratios and higher tuition are not necessarily linked to measurable improvements in learning. Instead, such actions tend to freeze unit costs and manipulate enrollments and price to make total costs and revenues match—hardly a strategy for improving institutional performance. A more proactive strategy would start by differentiating expense accountability and the affordability of access—as is done in Table 1—in order to

focus attention on price as a function of unit cost, a relationship often overlooked by nonprofit institutions that have never been threatened with closure through cost overruns.

Improving academic measures of quality while simultaneously reducing unit costs has not been the norm for innovations in higher education over the years. Most institutions have used grants, both internal and external, to seed innovations responsive to some of the four nonfinancially stated performance obligations in Table 1. Faculty and program development grants, for example, have targeted the improvement of student learning and the timely, market-responsive development of new programs. As ubiquitous access to personal computers, Internet connections, and course management systems was evolving, institutions began to channel such faculty and program development investments into the development of online and hybrid courses, programs, and services. With a few important exceptions, these investments did not directly seek to reduce long-term unit costs and/or

Improving academic measures of quality while simultaneously reducing unit costs has not been the norm for innovations in higher education over the years.

dampen spiraling tuition increases and, not surprisingly, did not do so, whether or not they used technology to enable innovation. As a result, these “innovations” did not increase productivity but instead either added to long-term operating expenditures or proved unsustainable after the loss of special funding.

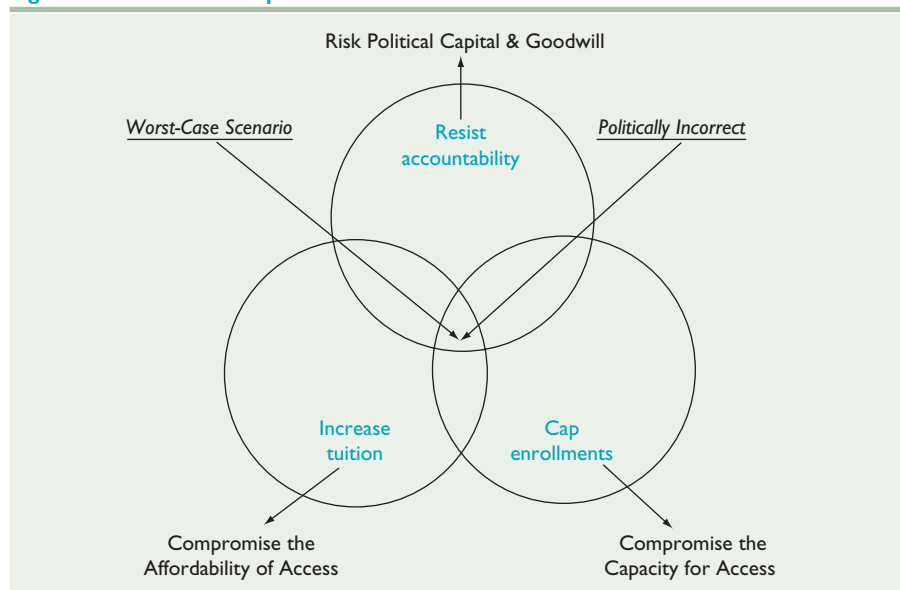
As noted, there have been exceptions. For example, technology has been used to accommodate enrollment growth and improve learning while also reducing unit expenses via a strategy that increased not only total revenues but also the average academic outcome and “profitability” of

each new enrollment.<sup>7</sup> Six specific examples illustrate this and other proven strategies.<sup>8</sup>

### High-Performance IT: Necessary but Not Sufficient

Well-managed and well-supported technology infrastructure has become a competitive necessity in the national economy, not as a competitive differentiator but as a tool to redesign service and production processes as the basis for competitive innovations that can improve quality, unit cost structures, market reach, and customer convenience and satisfaction. For example, today’s banking services rely on a high-performance IT infrastructure and related technical and business support for customers. Banking services are based on a customer-centric and cost-effective flex services model that combines convenient, online self-service with alternative access options for securing expert help when customers need or want it. Automated teller machines are the most familiar form of self-service, but online (asynchronous) banking (from any Web connection) can provide convenient self-service by allowing customers to manage their accounts, set up automatic deposits and payments, apply for loans, and so on. Most banks also provide toll-free or online access to customer-service representatives during extended hours or

Figure 1. A Defensive Response to Performance Pressures



even 24x7x365. And face-to-face help is available during business hours in convenient branch locations and the main office.

Bankers don't market "distance banking" or label customers as "traditional" or "nontraditional." They realize that different customers have different needs and preferences for obtaining services. Banks also know that time-shifted online self-service can reduce costs while increasing customer satisfaction, which is why they frequently offer incentives for self-service. They outsource and merge or partner with each other to lower unit costs and enlarge the customer base to a level commensurate with the ever-growing competitive pressures on profit margins. An investment in high-performance IT doesn't guarantee success, but it does give banks an opportunity to innovate cost-effectively in order to retain customers and compete more effectively for new customers. Some banks will succeed in this increasingly competitive environment; some will not. Success will depend, for example, on other technology applications that can cost-effectively help to track and manage the customer relationship and to gather evidence ("business intelligence") about customers' needs and the effectiveness and internal costs of services. Competitive outcomes will depend on how well redesign efforts and resulting service innovations are executed to offer new services, improve service quality, retain customers, and reach new markets—all while reducing unit service costs.

Just as in the banking industry, high-performance IT is necessary, but not sufficient, for planning and implementing cost-effective, competitively successful service innovations aimed at improving institutional performance in higher education. Technology has become not only ubiquitous in higher education but also a worrisome expense for many leaders precisely because it has largely remained a

necessary expense in response to grassroots demands for "digital-campus" services that only randomly or episodically coincide with innovations purposefully selected and supported to improve quality and access while also reducing unit costs.

Meanwhile, IT expenditures have moved beyond baseline *technology infrastructure* to encompass an *information infrastructure* in which institutional data have been unified and integrated across a number of different systems: the student information system, the financial system, the human resources system, the course management system, and a variety of systems representing various vertical lines of service at the institutional and departmental levels. The individually customizable, self-service portal is the visible metaphor for the emerging information infrastructure. But reliable self-service access to inte-

grated data does not, in its own right, provide the knowledge required to plan and manage the future using available data about the past, present, and various institutional constituencies. Increasingly powerful analytical software tools will power a next-transition phase toward an *analytics infrastructure*, which will provide the technical and analytical foundation for selecting and investing in the kind of innovations that are designed to improve institutional performance in a way that reduces unit costs. The result will be an *innovation infrastructure*. In all four phases, the word *infrastructure* is used to connote not just the technical infrastructure but also the mission-appropriate governance, planning, and resource allocation models that support the identification and tracking of institutional performance priorities and the allocation of IT and other resources.

A surprising number of colleges and universities continue to struggle with the baseline technology infrastructure and

the information infrastructure. Whether internally or externally staffed, operated, and managed, a high-performance baseline technology infrastructure supporting an information infrastructure is characterized by (1) high levels of user satisfaction and (2) competitive per-student-FTE (or per-student) IT expense at a predictable annual level to cover the following:

- Ubiquitous access to the campus network and the Internet
- Baseline network and server-based (back-office) systems, such as the administrative system, the course management system, security systems, back-up and disaster-recovery systems, and the campus network with its connection to the Internet
- Hands-on technical support and training, as required, for centrally supported desktop, lab, and classroom technologies and for the applications of the above systems
- Technical integration services to implement and manage an individually customizable self-service Web portal providing single-logon access to a unified set of application services based on the above systems—the basics of a reliable, accurate, and easily accessible information infrastructure
- 24x7x365 monitoring for all the above systems
- 24x7x365 technical help desk for all students and faculty/staff members
- Assessment, planning, selection, conversion, and upgrade processes for all the above systems, managed within budget and to meet planned schedules

Figure 2 summarizes the technical and organizational infrastructure associated with the transformation from support for the baseline technology infrastructure to support for the kind of innovations enabled by collaborative, blended, adaptive planning and cultural models focused on improving institutional performance.

### Overcoming the Barriers

There are two necessary conditions for using technology to improve institutional performance. The first is the effectiveness of the central IT organization in

**A surprising number of colleges and universities continue to struggle with the baseline technology infrastructure and the information infrastructure.**

support of planning, implementing, and managing a high-performance baseline technology infrastructure that has expanded, or is expanding, to support an information infrastructure. The second necessity is institutional leadership committed to supporting IT and to including the IT organization in an institutional transition toward an innovation infrastructure. This process must permit and require academic and administrative units to work together daily to (1) identify mission-critical performance obligations and related indicators for measuring improvement objectives, (2) assign academic and administrative “owners” to the selected performance objectives, and (3) fund and support service process redesign strategies and innovation projects designed to meet the selected objectives. Although most executive and IT leaders understand this second necessity to mean that the IT strategic plan must align with the institutional strategic plan, John Voloudakis argues that more is needed—specifically, a *blended, adaptive planning model* is needed to achieve focus and nimbleness on a continuous initiative-by-initiative basis.<sup>9</sup>

First, however, the president or chancellor must ensure that the IT organization itself is not a barrier to progress, exhibiting weaknesses such as the following:

- *Dysfunctional human resources:* weak internal management, service mentality,



and leadership; staff recruiting and retention difficulties

- *Lack of resources for IT and IT projects:* inadequate IT infrastructure and support services and coverage (24x7x365); limited capacity and/or expertise for system planning, selection, conversion, and upgrade for key systems and for services/systems integration (Web, portal, and other projects)
- *Unpredictable or unsustainable IT costs*
- *No economies of scale from outsourcing or from being part of a system, district, or consortium*

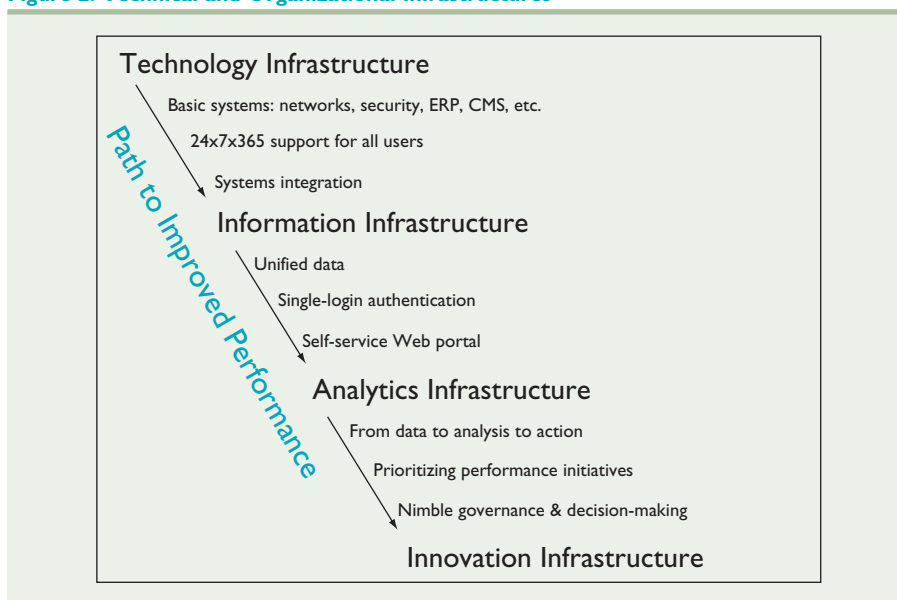
If modest adjustments to current IT practices and the relationship of the IT

organization to other units have proven futile, then more systemic changes to the current IT staff and organization, its per-student-FTE funding, and/or its practices should be pursued. According to a recent study by the EDUCAUSE Center for Applied Research (ECAR): “As new needs arise, institutions should consider the broadest range of sourcing options, including collaboration with other institutions, ERP or other vendor software, outsourcing, and open source technologies. Both one-time and ongoing support costs and benefits should be considered. . . . IT organizations will not be able to achieve more flexible, stable funding by seeking additional budget dollars alone, and flexibility and agility will not come entirely from cost cuts. The CIO must lead efforts to rethink personnel strategies, sourcing strategies, process improvements, and project prioritization in order to ensure that the climate encourages IT innovation and provides maximum IT value to the institution.”<sup>10</sup>

Leadership barriers, on the other hand, are usually more cultural than tactical. The prevailing shared-governance culture of higher education can easily collide with the culture of evidence required to identify, track, and report performance obligations, especially as they relate to the outcomes and expenses of instruction and other academic services. Agreeing internally on mission-appropriate formulations of institutional performance standards and metrics can be difficult in the presence of the following leadership weaknesses:

- The faculty and the executive leaders are not collaboratively aligned to meet performance obligations.
- Leaders lack experience with or have resistance to the service redesign strategies that can improve academic and service performance—including IT service performance—while reducing unit costs.
- The strategic plan or planning methodology lacks institutional performance indicators and goals to guide daily work, track progress, and revise goals/indicators based on evidence or changing priorities.
- The CIO is excluded from the president’s cabinet.

Figure 2. Technical and Organizational Infrastructures



- There are dysfunctional relationships within a cabinet that includes the CIO.

Creative leadership is required to correct any such institutional weaknesses and to lead the process of establishing a culture of innovation.

### Leadership Creativity

In higher education, the creative lead the creative. Higher education administrators, like their faculty colleagues, have usually demonstrated their creativity through scholarship and research in a disciplinary or professional academic specialization. They adapt naturally as leaders and managers to the tenure-based institutional management model designed to catalyze the creative, unfettered pursuit of knowledge development and dissemination and to protect it from external political and ideological forces. If traditional academic creativity is not to become its own worst enemy, however, higher education executives will have to lead and manage in ways that are sometimes counterintuitive in a culture based on shared governance and tenure-based academic freedom. Leaders will have to help faculty channel some of their creativity into solving today's pressing institutional performance challenges. The question is: how creatively disruptive will higher education leaders have to be for technology to be applied innovatively to instruction, academic programs, and various support services to improve institutional performance?

Will higher education leaders have to dismantle tenure? No, but they should invoke academic freedom only to defend what it was intended to defend: the politically and ideologically unfettered pursuit of knowledge development and dissemination within the professor's scholarly and instructional obligations to the institution and the discipline/profession. Academic freedom should

**L**eaders will have to help faculty channel some of their creativity into solving today's pressing institutional performance challenges.

not be invoked, for example, as a reason for rejecting opportunities to make instruction more effective (as measured by learning outcomes that can be publicly reported) and efficient (as measured by direct instructional expenses that can be reported). Nor should academic freedom be allowed to hinder an institution's migration to more flexible program-delivery models that give students the same kind of options enjoyed by customers of other service organizations: (1) fewer requirements for real-time interactions in any medium (classroom, office, interactive video, Internet); (2) a portal-accessible array of customizable online self-service options for matriculating, registering, studying, interacting with teachers and other students, accessing records, paying bills, and so on; (3) 24x7x365, toll-free, first-line support services; and (4) in-depth expert academic and staff help provided as needed and as conveniently as possible during business hours by phone, through chat sessions, or in main- or branch-campus centers.

Will higher education leaders have to become technology experts and innovators? No, but they will have to ensure that technology is (a) well managed and cost-effectively supported by an internal or outsourced central technology unit and (b) innovatively applied, with expert help, to redesign academic and administrative programs and services to improve institutional performance.

Will higher education leaders have to turn their backs on general education and its tenure-protected goals of critical thinking, open discourse, reasoned debate, and learning to learn? No. The technology-enabled common-course redesign strategy is a proven method for using technology to improve and account for student learning outcomes while simultaneously reducing the direct costs of instruction in high-

enrollment general education courses.

Will higher education leaders have to become relentless cost-cutters in response to unrelenting pressure on traditional public and private sources of revenue? No, but they will have to differentiate key unit costs—such as costs per credit, costs per graduate, and so on—from aggregate revenues, and they will have to learn to use technology to redesign services to improve quality, capacity, and flexibility while simultaneously driving down unit costs.

In its use of technology, higher education has creatively moved from supporting random acts of progress (serendipitous grass-roots successes) to supporting pockets of progress. The time is right to align executive and academic creativity to move toward systemic progress in improving institutional performance.

### Innovation Strategies

Academic leaders dedicated to using technology to improve institutional performance first must identify their performance indicators, establish the tracking and improvement of these indicators as an institutional priority, and support and oversee the management of a high-performance IT organization that is collaborating daily with other units in support of an innovation infrastructure and culture. Then they must use their identified performance indicators to select and support redesign strategies and initiatives that can directly affect the indicators. This is the point at which the two process redesign strategies come into play: (1) the program and service flex redesign strategy and (2) the common-course redesign strategy.

The *program and service flex redesign strategy* redesigns academic and administrative services and programs to provide options for individual customization while eliminating or relaxing inflexibilities and inconveniences in their delivery. The goals align with the performance obligations for expense accountability, program accountability, convenience of access, and capacity for access, as follows:

- Reduce requirements for real-time interactions between students and faculty/staff by providing (1) more instruction and other study and service

opportunities delivered in online, time-shifted (asynchronous) self-service modality, with as much option for individual customization as possible; (2) less contact-hour instruction, regardless of whether faculty/students are in the same classroom or are interacting in real time online or in a tele-video classroom; (3) fewer face-to-face or scheduled noninstructional service transactions; and (4) expert service interactions with faculty/staff when needed or wanted by the individual

- Increase students' options for conducting service transactions, scheduling courses, studying, getting expert help, and completing a degree program
- Increase enrollment capacities
- Reduce the unit expense of services
- Reduce dependency on the semester model

The flex redesign strategy applies to almost all noninstructional services and selectively to academic programs. The customizable, self-service portal captures the concept of flex services and promises to integrate administrative and academic services while increasing service access and flexibility. Many colleges and universities have implemented a campus portal, typically after migrating their administrative "back-office" systems—financial, human resources, and student information systems—to the latest technologies to create an information infrastructure. In the systems migration and integration process, some of these campuses redesigned key administrative service processes in order to avoid bolting the new system onto old service processes at additional, ongoing expense. When system migration and redesign are accomplished together, the benefits include the following:

- Better integration of data and services between departments (e.g., the admissions and business offices)
- Administrative staff reductions or increased administrative capacity to serve more students, either of which means reductions in unit expense
- Improved satisfaction among students, alums, instructors, and staff members
- Opportunities for evidence-supported

academic decision-making via a next-phase analytics infrastructure (e.g., projected student performance profiles, admission yields, net revenues from tuition, per-credit expenses)

The academic focus of the flex redesign strategy is typically on redesigning entire degree and certificate programs or important course clusters for flex delivery to students who cannot (or prefer not to) participate in curricula that require a significant amount of real-time interaction. Target programs are often those in high demand or those that respond to economic development, professional, or workforce needs—the performance obligation for program accountability in markets demanding convenience of access. Such programs might include business, nursing, teacher training and certification, college-preparatory programs, and general education clusters.

To be successful, the institution must understand the delivery and pricing factors that will allow a selected program to compete in a targeted market, while also balancing these factors with any necessary requirements for real-time student/instructor interactions. Any effort to develop a flex academic program is likely to fail unless it carefully addresses a number of success factors:

- Understanding the targeted student audience profile
- Understanding the delivery modes preferred or required by the targeted students
- Assessing the competition and tuition elasticity
- Providing appropriate marketing and recruiting services
- Applying instructional design practices that have proven effective for flex programs
- Providing professional instructional design and course development support for faculty members and instructors

- Providing all the instructional and administrative flex services required to support flex students and their instructors

The second redesign strategy, the *common-course redesign strategy*, is used to improve learning while also reducing direct instructional expenses for common courses, which account for a significant percentage of all enrollments. This innovation strategy therefore addresses the performance obligations of learning accountability and expense accountability and can also address the performance obligations for the capacity for access and the affordability of access.

If all of an institution's courses are listed, starting with the highest-enrollment course (counting all course sections) and ending after cumulative enrollments account for 40–50 percent of total institutional enrollments, two striking discoveries will be revealed. First, only twenty to thirty courses will be on the list, despite rather expansive course catalogues of hundreds of courses. Second, almost all of the courses on the short list will be ones taught at al-

most all other institutions. These *common courses* include developmental and basic skills courses, required introductory courses from the general education program and a few high-demand degree programs, and high-demand general education electives.

The significance of common courses lies not only in their contribution to institutional expenses but also in their impact on retention and graduation rates. Their significance justifies using the redesign strategies pioneered by the Center for Academic Transformation—now the National Center for Academic Transformation (<http://www.thencat.org/>)—through its Program in Course Redesign. With funding from the Pew Charitable Trusts, the center awarded and supported grants to thirty institutions, as each redesigned

**The significance of common courses lies not only in their contribution to institutional expenses but also in their impact on retention and graduation rates.**

one general education course. The results demonstrate that such courses can be redesigned to improve and account for student learning while simultaneously reducing per-enrollment *direct* instructional expenses “by about 40 percent on average, with a range of 20 percent to 84 percent,” according to Carol Twigg, director of the center.<sup>11</sup>

Three assumptions should be used to model the institutional expense-reduction potential of the common-course redesign strategy:

- The common courses accounting for 40–50 percent of all enrollments are systematically redesigned over a period of years.
- The average savings in direct instructional expenses is 40 percent (as reported above).
- Direct instructional expenses account for at least 50 percent of all operating expenses—with the percentage adjusted according to the institution.

Taking the product of the three default percentages assumed above reveals that the common-course redesign strategy could save 8–10 percent of the overall institutional expense budget—while also measurably improving learning outcomes. Of course, instructional expenses necessarily vary across both disciplines/professions and level of study (undergraduate to graduate). Nevertheless, common courses often fall short in their outcomes, and the common-course redesign strategy is an opportunity to improve both the academic outcomes and the unit-cost structure in a way that significantly reduces institutional expenses.

How are these performance improvements accomplished? Although there is no one-size-fits-all model for common-course redesign, the National Center for Academic Transformation has aggregated various practices into five basic models.<sup>12</sup> The common denominator is a collaborative effort by a faculty and administrative services team, for each course, to (1) ensure the academic quality and integrity of the effort, (2) plan the redesign, pilot a redesigned section or two, and then implement the successful redesign across *all* sections of the course, and (3) learn from the growing body of experience in course



redesign when planning and piloting the redesign, for example by

- focusing on the course, not its course sections,
- emphasizing active and collaborative (social) learning and mastery feedback assessments,
- assigning learningware and other digital materials for self-study, to supplement or replace traditional text materials,
- customizing to students' unique needs, to the extent possible, with guided study and assistance from faculty members and instructional assistants,
- documenting differences in course learning through before-and-after or in-parallel comparative assessments,
- using common assessments—perhaps externally prepared, graded, and peer benchmarked—and other quality-assurance strategies, as appropriate, and
- realigning faculty tasks without increasing faculty labor.

Faculty tasks are often realigned by applying strategies that, *à posteriori*, happen to increase the student/instructor ratio and thereby reduce per-enrollment direct instructional expenses. Such strategies include the following:

- Offload course management functions to a course management system
- Use testing software to deliver and grade practice quizzes and required exams
- Institute team-teaching, in which instructors “divide and conquer” the syl-

labus instead of taking individual responsibility for the entire syllabus

- Use lower-paid course assistants for functions that do not require faculty expertise or experience
- Focus faculty expertise on motivational and integrative activities, on difficult subject matter, and on interactions with those students who require or desire faculty assistance

The common-course redesign and the flex program and service redesign strategies are not mutually exclusive. For example, enrollment capacity can be significantly increased by applying both strategies to the cluster of the twenty to thirty highest-enrollment courses to increase faculty capacity through course redesign and increase classroom capacity through flex redesign. Common-course redesign focuses on quality and costs, whereas flex program and service redesign focuses on flexibility/convenience and costs. Together, the two strategies—when applied to courses, programs, and other services—can improve quality (outcomes), increase capacity and delivery flexibility for the student, and reduce unit expenses, surely a holistic trinity of institutional performance obligations.

## Conclusion

As a ubiquitous, commoditized asset and competitive necessity, IT is here to stay at every nonprofit college and university and should be expertly managed and collaboratively but determinedly *applied* to improve institutional performance. IT makes it possible, and selectively desirable, to turn the traditional higher education paradigm upside-down by bringing the resources of a college or university to the learner rather than bringing the learner to the campus or to its physical extensions. Determining when to apply such flex services and whether/when/how/to what degree to displace their traditional counterparts involves institution-by-institution decisions. Open and creative but disciplined leadership can establish a culture of innovation that values measurable, affordable performance improvements over unsubstantiated proxies for performance or unrealistically expensive plans to improve performance. Leaders would do well to follow the lead



of students, who know that technology is a difference that *can* make a difference.

Indeed, a study from the EDUCAUSE Center for Applied Research confirmed a common belief about “millennial” students (aka “digital natives”): they expect a ubiquitous IT environment, and they heavily use technology in their studies and everyday activities for reasons of convenience and immediacy (time savings). They attribute improved learning, however, only to the “good use of technology in the classroom,” and interestingly, few reported “good” uses in their classrooms—a compelling reason for adopting and adapting the common-course redesign strategy for measurably improving learning outcomes (even in courses that are not common courses). Students also notice that academic and administrative services too often retain the substance of the traditional process requirements after “bolting on” new technologies to effect service improvements.<sup>13</sup> The result is an increased institutional expense structure seldom justified by the resulting lowest-common-denominator service improvements.

Rethinking the “technology bolt-on” process is the essence of using technology-enabled innovation to redesign a service process—that is, to change the service process in substantive ways to improve its quality, flexibility, and unit cost structure. The time is right for higher education to embrace the opportunities of the Internet revolution systematically by responding to performance obligations and their challenges with strategies that are coun-

terintuitive to tradition-bound strategies. The two redesign strategies described in the previous section, when combined mission-appropriately and simultaneously over time, can lead—from both an internal and an external perspective—to the proverbial win-win. For example, applying the common-course redesign strategy to any course can measurably improve learning outcomes and, in the case of a common course, also simultaneously reduce per-enrollment direct instructional expenses (typically through a posteriori increases in the student/faculty ratio). Services and programs, including the general education program cluster of common courses, can also be redesigned for reasons of flexibility, convenience, and capacity to rely less on required synchronous interactions and more on on-line self-service and 24x7x365 online and call-in support complemented by interactions with the expert faculty/staff when assistance is required or desired during the normal working day. It is the ongoing *simultaneous* and *purposefully determined* application of these redesign strategies that can lead to the high-performance result depicted in Figure 3.

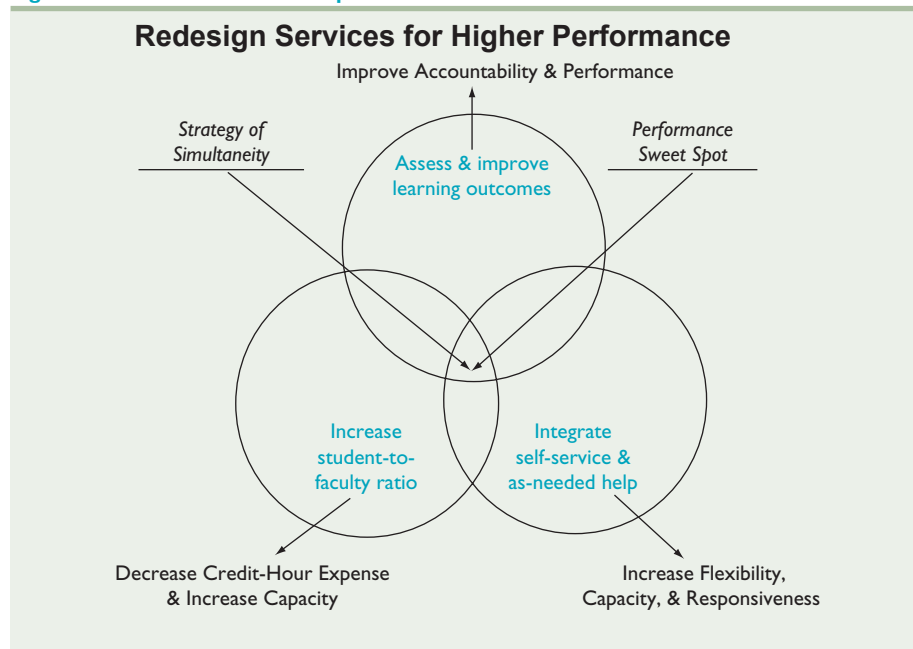
Those colleges and universities that are willing to fund and manage IT in support of innovation are laying the innovation infrastructure and the cultural foundation for becoming high-performance

institutions capable of commanding their own futures. Their leaders, both executive and academic, will

- moderate the randomness of grassroots, cost-ineffective innovation with the determined discipline to fund cost-effective innovation initiatives of verifiable institutional value,
- source those initiatives to achieve stated strategic performance objectives with a sense of urgency,
- monitor the results using quantitative institutional performance indicators, and
- ensure that those indicators have been embraced externally by policy and oversight bodies and then report progress regularly to those oversight bodies and the society and constituencies they represent.

Leaders who act on this advice will join the “flatteners” described in the book *The World Is Flat*, by the *New York Times* columnist Thomas Friedman.<sup>14</sup> Those who do not act will risk being “flattened” by the competitive forces already unleashed (by today’s networked technologies) on the challenges of achieving organizational and individual success. Friedman explains the role of technology in the innovative collaboration and sourcing models that are changing the responsibilities of

**Figure 3. A Counterintuitive Response to Performance Pressures**



governments, commercial and noncommercial organizations, and the individuals who lead and who work for these governments and organizations. Most educators who read Friedman's book will understand the urgency of the original thesis of this article: technology is a necessary ingredient in systematically and measurably improving institutional performance in higher education, and the time is right for

creative leadership in the interest of technology-enabled innovation focused and designed to improve the quality, flexibility, and expense structure of a "higher education." *e*

#### Notes

An earlier and longer version of this article is posted on the SunGard Collegis Web site: <<https://www.sungardcollegis.com/pages/203.asp>>. The author's blog on institutional performance can be

found at <<http://institutionalperformance.typepad.com>>.

1. *Innovate America: Thriving in a World of Challenge and Change*, final report of the National Innovation Initiative, Council on Competitiveness (December 15, 2004).
2. *Accountability for Better Results: A National Imperative for Higher Education*, final report from the National Commission on Accountability in Higher Education, State Higher Education Executive Officers (March 10, 2005), <<http://www.sheeo.org/account/accountability.pdf>>.
3. Vikas Bajaj, "Reprogrammed: Blazing Gain in Productivity Means Some Jobs Are No Longer Needed," *Dallas Morning News*, October 10, 2004, p. 1D.
4. See William H. Graves: "Order the Change, and Change the Order," *Campus Technology*, vol. 18, no. 3 (November 2004): 24–26, <<http://www.campus-technology.com/article.asp?id=10204>>, and "Strategies for Using Information Technology to Improve Institutional Performance: An Interview with William H. Graves," *Innovate*, vol. 1, no. 2 (December 2004/January 2005), <<http://innovateonline.info/index.php?view=article&id=21>>.
5. Larry R. Faulkner, "The Changing Relationship between Higher Education and the States," 2005 Robert H. Atwell Distinguished Lecture, 87th Annual Meeting of the American Council on Education, February 13, 2005, <[http://www.utexas.edu/president/speeches/ace\\_021305.pdf](http://www.utexas.edu/president/speeches/ace_021305.pdf)>.
6. See Appendix 1 in the online, html version of this article: <<http://www.educause.edu/er/ERM05/ERM0564.asp>>.
7. See the description of the Rio Salado project in Carol A. Twigg, "Improving Learning and Reducing Costs: New Models for Online Learning," *EDUCAUSE Review*, vol. 38, no. 5 (September/October 2003): 35, <<http://www.educause.edu/ir/library/pdf/ERM0352.pdf>> (for evidence that learning outcomes can be enhanced while increasing the instructor/student ratio, thereby potentially accommodating more students).
8. See Appendix 2 in the online, html version of this article: <<http://www.educause.edu/er/ERM05/ERM0564.asp>>.
9. John Voloudakis, "Hitting a Moving Target: IT Strategy in a Real-Time World," *EDUCAUSE Review*, vol. 40, no. 2 (March/April 2005): 44–55, <<http://www.educause.edu/ir/library/pdf/erm0522.pdf>>.
10. See Philip J. Goldstein and Judith Borreson Caruso, "Key Findings: Information Technology Funding in Higher Education," *EDUCAUSE Center for Applied Research (ECAR) Study*, 2004, vol. 7, <[http://www.educause.edu/ir/library/pdf/ecar\\_so/ers/ERS0407/ekf0407.pdf](http://www.educause.edu/ir/library/pdf/ecar_so/ers/ERS0407/ekf0407.pdf)>, p. 7.
11. See the discussion of average cost savings in Twigg, "Improving Learning and Reducing Costs," p. 30.
12. *Ibid.*, pp. 30–38.
13. Robert B. Kvavik, Judith B. Caruso, and Glenda Morgan, "Students and Information Technology, 2004: Convenience, Connection, and Control," *EDUCAUSE Center for Applied Research (ECAR) Study*, 2004, vol. 5, EDUCAUSE Center for Applied Research (2004), key findings available at <[http://www.educause.edu/ir/library/pdf/ecar\\_so/ers/ers0405/Ekf0405.pdf](http://www.educause.edu/ir/library/pdf/ecar_so/ers/ers0405/Ekf0405.pdf)>.
14. Thomas L. Friedman, *The World Is Flat: A Brief History of the Twenty-First Century* (New York: Farrar, Straus and Giroux, 2005).