

## What Does Systems Integration Really Mean for Higher Education?

In the past seven years, more than half of all U.S. and Canadian colleges and universities installed commercially vended financial, human resources, or student information systems. Several key needs drove much of this significant technology investment: the need to replace aging legacy systems, the drive to modernize the institution's IT architecture and business processes, and a strong desire to unify the various historical systems and processes that had grown organically over time.

In many ways, the past decade of implementing new and complex systems begs the question of "what's next?" While many technology watchers define what's next in terms of the next big thing (usually a system), those of us responsible for managing information technologies day-to-day understand that IT management can be thought of as a pendulum that swings from construction to integration and back again. What's next (and, in fact, the big payoff) may involve taming the last big thing—that is, integration. In this way, information systems are much like buildings: you do not build them and walk away from them. In order for new buildings to fulfill their purposes, their systems of access, circulation management, environmental systems, and so forth need to be tuned to the demands of their occupants or users.

In the technology world, this tuning process ties intimately to systems integration and the following six principles:

- *Integration is what you're doing when you're not implementing other things.* If the 1990s was the decade of new administrative and course management systems in

higher education, the first decade of this century may come to be remembered as the decade of integration. Integration is the consolidation of minor tactical victories (installing a major system on budget) into major, institution-level victories (altering a core process to improve efficiency or enhance a service). While the investment in new technologies is the precondition to making a change, the integration of these technologies with other institutional systems and processes is what makes change possible and where the real value of the investment can be harvested.

- *The face of integration is changing.* In the 1990s, monolithic information systems moved from host-based or client-server-based architectures to the Web. Enabling these systems with easy-to-use and familiar Web user interfaces has lowered the training and access barriers that kept traditional applications the province of technical or functional specialists. Now college and university professionals throughout the institution can have access to real-time information, and they can display this information in forms that facilitate their work.
- *The new integration strategy and architecture are based and dependent on standards.* As newer, standards-based technologies such as Web Services are deployed and as information systems vendors and others make it possible for these technologies to "dock" with enterprise platforms, this decade will witness the evolution of a new IT architecture. This architecture will facilitate integration by emphasizing and expediting adop-

tion of standards such as XML, SOAP, UDDI, and others. Moreover, this architecture promises to make it possible for new and smaller software components to interact with each other, with ERP systems, and even with older legacy applications.

- *In many ways, the evolving architecture depends more on finding ways to confederate the data inside of systems than on integrating the systems themselves.* Of course, becoming successful integrators in this new environment means that we in higher education need to influence technology suppliers both inside and outside of our institutions on the use of these evolving standards. New styles of IT leadership may need to supplement our existing leadership inventories.
- *We need to understand clearly what it is we're trying to integrate.* IT integration has been defined narrowly in the past to refer to technical or systems integration. If we are really to move from small, tactical successes to large-scale, institutional ones, we need to continue integrating our disparate systems with an institution-wide vision in mind. Our aim should be nothing less than to foster adaptability at our institutions. Adaptability, in IT terms, probably includes: access, mobility, security, real-time information, personalization, and portability. In particular, and with growing urgency, we need to integrate our traditional administrative systems, such as the student information system, with our course management system in order to manifest the goal of adaptability where it will be most immediately beneficial.



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■ *To the extent that our integration efforts can free students and faculty from the administrative folderol of campus life, we will be successful.* To do this, our efforts at integration must also include integration of IT into the organizational strategies and priorities of the institution, an imperative that will place new demands on our IT leadership.

IT leaders are uniquely positioned to understand institutional processes that span organizational boundaries. A key element of integrative leadership is helping to integrate institutional processes and people with the new capabilities of the systems we have installed. Accord-

ingly, it is important that we exercise great care in ensuring that our new systems and processes are well integrated with the dominant values of the academy and with the mission of the institution. New IT capabilities that fail to interact transparently and comfortably within this value system often fail to realize their potential.

Integration, given the idiosyncrasies of higher education, is very much a leadership issue. The promises and perils of integration will demand more of leaders in higher education. Integration will drive fundamentally new IT architectures and operational strategies. It will also bring new pressures on higher education budgets, increasing calls for accountabil-

ity and return on IT investment, and escalating service expectations.

IT management and its integration with the mission, processes, and people of our great institutions must move from the back room to the executive suite, if not the board room. Donald Norris emphasizes this point when he refers to our current environment as one of “tough times, big choices.” In such times, people need to be very careful about what they do with resources, vision, and strategy. More than ever, investment and integration efforts must be aligned with the academic, social, and financial purposes and needs of the institution. And alignment is fundamentally a leadership process.

It is important, and perhaps not surprising, that an article entitled “Six IT Decisions Your IT People Shouldn’t Make” recently appeared between the covers of *Harvard Business Review*. While the title of the article might give offense to successful IT leaders, a close reading reveals the authors’ belief that information technologies have now matured and that their management now demands the active engagement of our general leaders. Higher education leadership is no exception. These times call for effort and results at the institutional level; and, as we know, enterprise-level change demands leadership engagement at many levels of the enterprise, including the presidency.

No rest for the weary. For those among us who have spent a major time implementing new enterprise systems, congratulations are in order. The effort was nothing short of Herculean; the stakes were high and our accomplishments abundant. We need to recognize these experiences and look at ways we can share our best practices and participate more fully in the education community. This, of course, is the essence of what our professional organizations, like EDUCAUSE, strive to promote.

We know, of course, that there is no time to rest on our laurels. The real fruit of our technology investments will be found in how we integrate these systems with our values, purposes, processes, and people.

Tough times, big choices, bright future.

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