By John Voloudakis

HITTING A MOVING TARGET

IT STRATEGY IN A REAL-TIME WORLD

It's not the strongest of the species that survives, nor the most intelligent, but the one most responsive to change.

—*Charles Darwin*

Information technology has become a pervasive part of doing business in nearly all organizations during the last decade. It has also dramatically shifted roles, moving from automating back-office processes to becoming a strategic enabler of new offerings and new ways of doing business. Whereas this shift has resulted in many benefits—from a record rise in employee productivity to the creation of innovative new products and services that would have been impossible a decade ago—IT's coming of age has also brought new challenges for leaders.

The ever-increasing rate of change in IT makes it ever more difficult to accurately predict future needs. The capabilities of and connectivity driven by IT have also, in the opinion of many, changed the fundamental nature of business, causing product life cycles to shorten, lowering switching costs for customers, and increasing the overall uncertainty in which all organizations operate. Colleges and universities have not been immune to such technology-driven change. IT has substantially affected administrative areas such as admissions, registration, and academic advising, where self-service has become a necessity and students have far superior access to information than just a few years ago. And IT has transformed the core teaching mission, with applications ranging from interactive classroom technologies to course management to distance learning changing many aspects of how students are taught.

Yet perhaps no area has been more radically altered than faculty research. In environmental, space, oceanic, and atmospheric sciences, the collection of large datasets is more the rule than the exception. These fields are increasingly defined by the development of computer-based predictive simulations and models. More traditional disciplines, such as history and art history, are being rethought with the emergence of resources such as ARTstor and projects such as the *Valley of the Shadow* project.[1] Life sciences research has been completely transformed by the emergence of computational biology and chemistry and of informatics, particularly in the context of human genome research. Here the life cycle of research has truly been shortened.

In such an environment, the traditional strategic planning model, focused on predicting the future for some number of years out and then developing a plan that positions the organization for one or more of these possible futures, falls short. Change will not wait for the start of the next planning cycle, and failure to quickly respond to change leads to missed opportunities or, worse, to irrelevance. A new model for strategic planning is needed.

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The Adaptive Organization

Having given the subject of strategic planning much thought, many corporations, authors, and academics are moving beyond linear, multiyear planning efforts and are instead focusing on the need for flexibility. The result is the "adaptive enterprise." IBM Corporation refers to "on-demand business." Gartner Inc. describes "the real-time enterprise." Whatever it is called, the essential message is that organizations need to rethink how they plan for the future. They need to focus on their strengths and build capabilities to rapidly adapt to changes in customer demand, market dynamics, shifting technology, and other unforeseen events.

The researcher Johanna Woll succinctly summarized this point of view: "The forces propelling organizations toward the adaptive enterprise model are universal: accelerating rates of change and an increasingly volatile overall economic environment. As our global economy becomes more densely connected, we are less able to predetermine outcomes. We can no longer assume one-to-one relationships between cause and effect. Becoming an adaptive enterprise means abandoning our management habits of prediction and control and developing instead the capacity to respond to change."[2]

Likewise, IBM CEO Sam Palmisano defines an on-demand business as "an enterprise whose business processes—integrated end-to-end across the company and with key partners, suppliers, and customers—can respond with speed to any customer demand, market opportunity, or external threat."[3] Gartner says that a real-time enterprise "achieves competitive advantage by using up-to-date information to progressively remove delays in the management and execution of its critical business processes."[4] Deloitte & Touche advocates "strategic flexibility," which it defines as "the capacity to compete today yet at the same time devote energy to developing the capabilities needed to compete across a range of possible futures."[5] Hewlett-Packard calls an adaptive enterprise "one that can flex to handle change without disrupting the business."[6] And the author Stephan Haeckel says: "A sense-and-respond organization does not attempt to predict future demand for its offerings. Instead, it identifies changing customer needs and new business challenges as they happen, responding to them quickly and appropriately."[7]

Strategies to make an organization more adaptive should contain certain characteristics that, together, help the organization react quickly to changes in the environment. One of the simplest of these approaches comes from Theodoros Evgeniou, at INSEAD, who argues that adaptive enterprises need to have both flexibility and visibility. He defines *flexibility* as the ability of individual business units within a larger organization to develop their own responses to particular needs as well as enterprise-level policies that enable and support such activities. He adds that for the organization as a whole to succeed in such an environment, management must have real-time *visibility* into the information held in the local operating units.[8]

Another characteristic of an adaptive organization involves a fundamental change in business strategy focus. This is well summarized in a presentation made by Daniel J. Forno, Vice President, IBM Global Services, who described this change as "Sense and Respond vs. Plan, Make, and Sell."[9] Forno noted that in this model, effective tactics in essence become the strategy. Organizations focus their strategic thinking on how to most effectively respond to anything the market throws their way, rather than planning for one or more specific scenarios.

Walter Janowsky, a Gartner analyst, has a different view: "Real-time enterprise is not a business strategy. Rather, enterprises should evaluate their strategies to determine where real-time techniques can offer value."[10] Lord John Browne, Group Chief Executive of BP, offers yet another perspective: "Giving up the illusion that you can predict the future is a very liberating moment. All you can do is give yourself the capacity to respond . . . the creation of that capacity is the purpose of strategy."[11]

An additional thread in the literature and business world is the strategic redesign of organizations—moving from traditional organizational structures toward a componentized model that allows a "plug-and-play" approach, both internally and with strategic business partners, as changes need to be made. This line of thinking advocates that organizations develop strong capabilities allowing them to be best in class and that they find partners to provide best-in-class capabilities for other functions.

The need for speed, connectivity, and access to information is clearly evident in all of these points of view, highlighting IT's strategic importance to the adaptive organization model. Technology gives adaptive organizations the connectivity capabilities to work in real time with an ever-changing web of partners, the business intelligence capabilities to understand their environment as it is evolving, and the predictive capabilities to model and simulate scenarios and develop the ability to respond. Chris Meyer, a business author and a pioneer in research into the adaptive organization, summarizes this advantage: "If you believe competitive advantage lies in the ability to sense change in the environment and respond to it faster than anyone else, and thereby keep your opponents off balance even though you feel off balance because you are operating as fast as you can, then IT can create a competitive advantage by being able to go through the orient-observe-decide-act cycle faster."[12]

IBM echoes this idea, pointing to the importance of making IT an integral part of the process of developing business strategy. Its publication *On-Demand Business: The Executive Guide* advises: "Make IT part of your business strategy. The productivity gains that come from on-demand business are powered by the interaction of IT and strategy: Technology enables business decisions, and business decisions drive technology implementations. You need to get the two working together."[13]
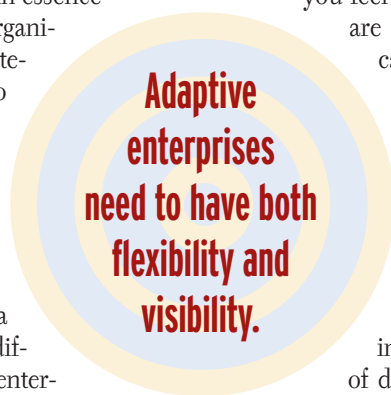
Blending IT and Institutional Strategy

To succeed in a future defined by rapidly changing business needs and accelerating technology growth, institutions must

> **Adaptive enterprises need to have both flexibility and visibility.**

change their traditional thinking about IT strategy development. Figure 1 shows a spectrum of possible models for developing business and IT strategies.[14] The diagram's left side shows a *reactive* approach, whereby a business strategy is developed and IT leaders develop an IT strategy to correspond to their understanding of that vision. This often leads to significant differences of opinion between IT leaders and business leaders as to important areas of focus.

The deficiencies of the reactive approach have led many organizations to the *alignment* model, whereby a business strategy is developed and IT and business leaders work together to develop an IT strategy that optimally supports that business vision. This model has shown itself to be superior to the reactive model; organizations using this approach are more likely to invest in IT initiatives that directly support the organization's business goals.

The third model is a *blended* strategy, whereby business and IT leaders work together to develop a strategy for the organization, taking full advantage of technology's capabilities and understanding its limitations. This model provides several advantages over the alignment approach. It allows IT leaders to contribute to the business strategy discussion by sharing their knowledge of the business capabilities that technology can bring to bear and their view of what new technologies are on the horizon. This can help identify new areas in which IT could provide a competitive advantage. And since IT leaders are involved in the business strategy development, they can move faster to build out the necessary technology capabilities and expand the window of strategic opportunity available to the organization.

Numerous organizations already use the blended approach to strategy, and many in the adaptive organization camp advocate it. Tomasz Smaczny, of the Australian Graduate School of Entrepreneurship, describes this approach as fusion: "The IT strategy is developed not separately to business strategy but at the same time. As a matter of fact, the two are intertwined and IT-related ideas might create business opportunities that otherwise would not even be considered and vice versa, business ideas need to be enabled

by IT ideas. . . . If [this] proposition is correct, there is only one strategy, and one set of operational plans that follow the strategy."[15]

In a white paper on what it calls "adaptive IT," Cap Gemini Ernst & Young wrote: "Business strategy and technology capability are now so closely linked that it is impossible to separate them. IT investments should no longer take place after strategic decisions are made and they do not exist simply as enablers of core processes."[16] As early as 1995, Astra Merck Inc. was using such a blended strategy approach. According to then-CEO Wayne Yetter: "We do not consider technology investments in isolation. We look at capabilities, such as developing drugs faster or providing customers with service they can shape themselves. If technology is necessary to make a capability work, then technology investments become part of the package."[17]

## Moving toward a Blended, Adaptive Approach

Anne Keehn and Donald Norris describe a vision of IT planning for higher education that sounds very much like the adaptive organization models being discussed in other industries: "Most institutions use IT planning as an exercise in developing infrastructure to accomplish simple extrapolations of current practices. Rather than enabling a new future, they extrapolate more efficient versions of current practices into the future, five years at a time. Such practices squander a golden opportunity to transform IT planning into a strategic instrument for focusing and mobilizing the innovative capacity of colleges and universities, at the enterprise

level. IT strategic planning should be a continuous developmental process, not a once-every-now-and-again activity. It should be regenerative, engaging campus leadership at all levels from the top (President, CIO, CFO, Provost, Advancement, Student Affairs) to the grassroots around the organizing principals [*sic*] of innovation and value. And it should aim to develop stretch goals, a culture supporting innovation, and the capacity to make sound, expeditionary decisions about the selection and use of technologies."[18]

Although some higher education institutions have moved in this direction, many have not yet begun to take the leap. For example, in the ECAR study on IT alignment, 85 percent of the survey respondents agreed that there was alignment between the central IT organization priorities and institutional priorities. However, only 48 percent of institutions include the top IT executive on the president's cabinet, and only 66 percent of those institutions in which the CIO is not part of the cabinet include IT in the institutional planning process. And despite the fact that only 35 percent of respondents indicated that their organizational climate was stable, only 45 percent indicated that they think of institutional planning as a continuous process, and only 28 percent noted that their IT strategic plans addressed "planning for an unknowable future."[19]

Still, some institutions are already embracing components of the adaptive organization. The University of Central Florida's VP for Information Technologies and Resources, Joel Hartman, describes his IT organization's approach: "All of our IT people are listening all of the time for

Figure 1. Intersection of Business and IT Strategy
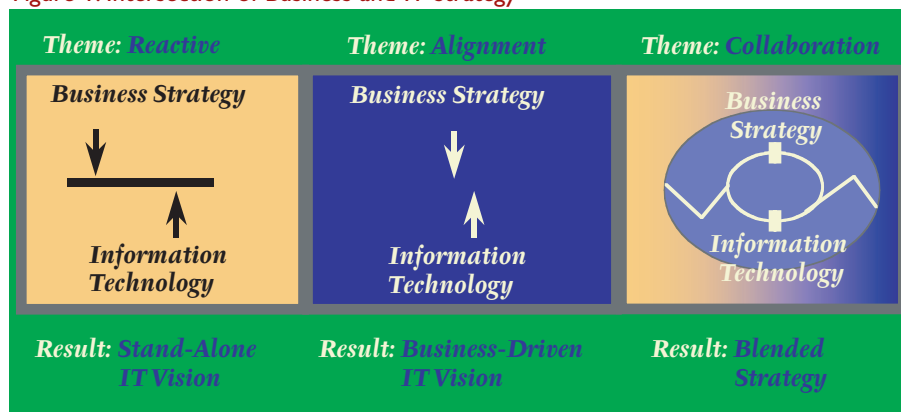
[change] to occur, and we are in a position to rapidly respond and adapt. So to some extent it is a living plan, an ongoing process that involves a great deal of user interaction, collaboration, and feedback. IT also pays a lot of attention to what is going on in an attempt to find out even ad hoc things that occur that are not part of the plan that would need or benefit from a technological response."[20]

Rearchitecting IT to enable an organization to take an adaptive approach to strategy involves a number of components. The consulting firm BearingPoint has identified six domains, as shown in Figure 2, that facilitate an IT organization's ability to "dynamically adapt IT resources to changing business models and partnerships, enabling business agility and performance improvement through the proficient collaboration of people, processes and technology." Tying it all together is "an overlapping governance structure that links the strategy, sourcing, architecture, program management, development and quality domains. Each domain includes a team of virtual resources from a variety of [business and IT] groups within the organization." BearingPoint calls this structure an "IT Center of Excellence."[21]

The six domains are defined as follows:

- *Strategy*: facilitates business-IT collaboration by integrating strategic planning, capital management, portfolio management and sourcing. Additionally, both business and IT executives prioritize and approve the project portfolio.

- *Sourcing*: defines IT resource sourcing alternatives and the process to determine the appropriate sourcing mix that enables the efficient operation of business services. IT resources include people, hardware, software, and facilities.

- *Architecture*: establishes principles and standards that provide the foundation for the evaluation and selection of the application, data, and technical architecture components used to create innovative business solutions.

- *Program Management*: creates processes for the management oversight that guides programs and projects to success.

- *Development*: establishes processes and tools that enable an iterative development approach that meets industry standards.

- *Quality*: establishes a program that identifies costly defects prior to introducing components into a production environment; also provides the foundation for continuous process improvement.

Although higher education as a whole tends to change at a slower pace than business, many issues compelling the move toward more adaptive strategies in the for-profit world are affecting or will affect higher education. Institutions looking to employ such a strategy will need to implement some building blocks of the adaptive organization, as shown in the six domains above, to make themselves more nimble to changes in their environment.

Although changes are needed across the institution to fully implement an adaptive strategy, forward-thinking IT organizations can begin to lay the foundation by making changes in the key areas of planning and governance, organization, and technology.

Planning and Governance
Some of the most important changes needed for an adaptive strategy to take hold are in the areas of planning and governance. As described in the ECAR IT alignment study, IT planning is an infrequent activity for many institutions, with 79 percent of survey respondents indicating that they update their IT plans every two to three years. As a result, IT organizations may be working toward goals that haven't been updated to account for new conditions or needs. Some organizations try to make up for this problem by using the institution's budget cycle as an opportunity to plan for coming needs. However, most institutions operate on an annual or even a biannual budget cycle, and budgets often must be submitted three to six months in advance, also creating a problematic time delay.

Another obstacle many institutions will face is governance structures that are unclear, time-consuming, or unprepared to make fact-based decisions. The ECAR IT alignment study respondents reported that over 60 percent had a standing academic or administrative IT advisory committee as part of their governance structure, and 83 percent of institutions with more than 15,000 students had an academic advisory committee. Not surprisingly, they rated current IT governance models as only mildly effective on the whole, and fewer than half agreed that their governance model was well understood.[22]

To make IT and, by proxy, the rest of the organization more responsive to constituents' changing needs and environment, most institutions will need to rethink their IT governance structures and IT planning processes. Rather than being a periodic activity, IT planning needs to become a much more frequent if not continuous process. To accomplish this, the organization must be able to sense change as rapidly as possible, both by developing the capability and rigor to conduct periodic

Figure 2: IT Center of Excellence
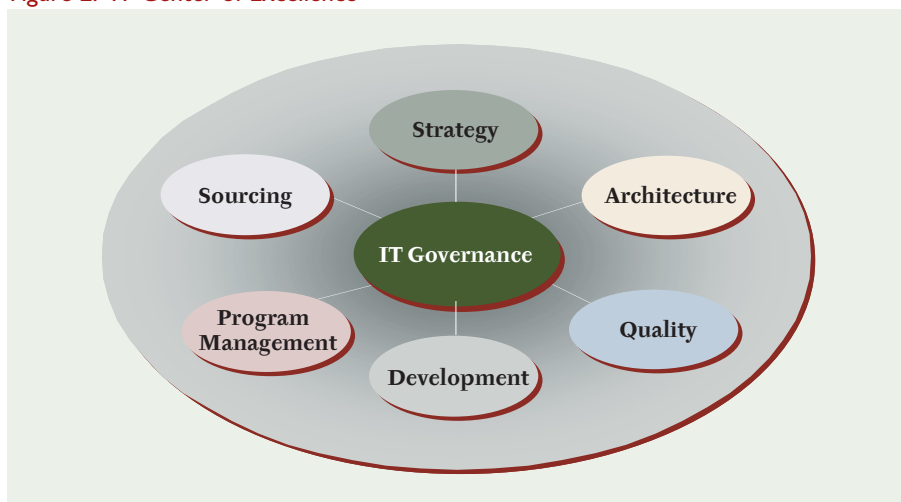
scanning of the environment (internal and external) and by developing mechanisms for collecting real-time feedback on the institution's needs.

Some institutions have already implemented such scanning processes in the technology area. The University of British Columbia, for example, has tasked its IT planning unit with "conducting an ongoing watch of new technologies and help[ing] devise appropriate strategies, as for example, creating a voice over IP strategy for the university. The planning folks will look for and anticipate new technology requirements that the campus may not be asking for now." University CIO Ted Dodds described the value of UBC's approach: "Several years ago when we put together our wireless strategy, we were able to gain first-mover advantage. By doing so, we were able to establish a single, integrated wireless network that enables campuswide roaming. If we had not moved quickly and strategically, we would likely be faced with fragmented, inconsistent connectivity."[23]

IT organizations will also need to have the flexibility to reassign resources and funding to new priorities as they become apparent, which is often difficult to do in traditional budgeting environments. Some ways to gain this flexibility include using the budgeting cycle to plan for broad spending categories rather than line items and allocating funds for specific priorities over time. Also, allowing IT (and other departments) to retain unused funds in reserve from year to year can provide some budget flexibility during times of need. Bridgewater State College's CIO, Bill Davis, describes this approach: "The IT reserve lets us be flexible, lets us be adaptive. There are lots of things that come in over the transom in the middle of the planning cycle, and I can't tell people that it is a good idea but let's wait eight months."[24]

To help ensure that IT is focusing on the correct priorities, institutions must also reexamine the governance model. Even though a committee representing a broad canvas of the institutional culture

The ultimate goal is to build a culture that embraces and thrives in a changing environment.

may continue to be involved in setting high-level vision or long-term priorities, institutions need a structure that can be convened faster and that has clear procedures and genuine decision-making authority to be able to move quickly in the face of changing needs. This group should include key leaders from the units that IT supports and should have access to the appropriate tools and information to make wise (and well-aligned) choices. Enough budgetary flexibility and political engagement should be available to prevent placing IT leaders in the position of having to determine which business or academic priorities must slip in order to accommodate changing needs. IT and other institutional leaders will need to work closely together, as described earlier, to ensure that the decisions being made accurately reflect both the institution's needs and the technology's capabilities and limitations.

Jeanne Ross and Peter Weill, of MIT, highlighted the need for such engaged collaborative governance: "IT executives are the right people to make numerous decisions about IT management—the choice of technology standards, the design of the IT operations center, the technical expertise the organization will need. But 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." Ross and Weill highlight six areas, including setting budgets, setting priorities, and defining service levels, that should be the responsibility of business executives, not technology executives. They also advocate a blended approach: "While we firmly believe that senior business executives err when they abdicate responsibility for these IT decisions, we aren't advocating that any of the decisions be made unilaterally in the executive suite. Although senior managers need to ensure that IT spending and initiatives are aligned with and further the company's strategy and goals, such decisions are best made with input from both business unit and IT executives."[25]

Organization

Some institutions may also need to change how they structure their IT organizations. Many institutions have traditionally had a do-it-yourself approach to IT, building organizations focused on supporting the institution's IT infrastructure and applications. This can leave little capacity for handling special projects or supporting changing faculty needs, resulting in the need to hire expensive external consultants to supplement staff when an unforeseen situation or a large project arises. And the institution's IT organization may not be able to provide support services in the most cost-effective way available.

To make the IT organization more able to support an adaptive strategy, an institution can consider several approaches. First, the institution could evaluate which of the IT organization's tasks are core needs or areas of particular strength and which might be better handled—either from a cost or from a performance standpoint—by an external provider. If any tasks can be outsourced, the organization can redirect the savings to supporting more strategic initiatives.

Another possible approach is to create an internal structure that is project oriented rather than functionally oriented, either across the majority of the IT organization or in one or more units that act as internal consulting organizations. This builds in the flexibility to support changing needs and special projects. Institutions should support their IT staff's continuous learning to ensure the staff develop the skills needed to support the institution in the future.

Alternatively, contracts with external service providers can provide staff augmentation when needed. Such contracts let the IT organization quickly meet the needs of unforeseen projects, providing access to both additional personnel and scarce skill sets without having to go through the time and expense of a procurement process each time a service is required. This approach also lets an organization allocate more of its budget to variable costs, allowing it to scale services up when needed and to pare them down when slow. This is particularly valuable in an environment in which unspent budgets can be retained for future use.

Organizations making the changes described above will also likely need to rethink the ways they measure and reward the success of IT staff. Working in an adaptive environment can be difficult, and the proper alignment of expectations and incentives can help employees understand and focus on what is important. Project-based teams need to be measured not only according to project success criteria, including on time and on budget, but also according to customer satisfaction and creation of business value. Team members in such environments should be rewarded on the basis of their responsiveness to their customers' needs and to the IT organization's changing needs and abilities to contribute to the institution's strategic agenda. Those working in experimental or investment areas should be encouraged to innovate, and work climates should recognize that mistakes are okay in such innovative environments. To support such a system of incentives, an organization needs to develop a measurement architecture, which can be used to solicit frequent feedback from IT customers, to track project outcomes, and to measure progress against the institution's overall strategic objectives. The ultimate goal is to build a culture that embraces and thrives in a changing environment.

Technology

To operationalize an adaptive strategy, institutions must also change how they deploy technology. Although technology itself is not strategic, the right technology architecture and the right tools allow the institution to move more adroitly in the face of new challenges. Traditional technology platforms were selected for the long term and tended to be built around monolithic applications that could not easily be changed. Although this worked relatively well in a static environment, such technologies can be difficult to adapt to even relatively minor changes in the business environment.

Developing technology capabilities to support an adaptive organization requires an architecture that is flexible enough to support frequent changes in user demands, technologies, and business requirements. Attributes and goals of such an architecture include the following:

- *Modularity*: The organization should be able to easily add and remove components of the architecture on the basis of changing needs—without having to undertake complex efforts to do so.
- *Integration*: Systems should be designed to easily connect with one another and with systems hosted by external vendors and partners, as needed.
- *Flexibility*: Organizations should be able to rapidly scale IT capabilities up or down to meet changing demand.

The banking giant JP Morgan Chase has pursued such a strategy to reduce the fixed costs of its IT operations and provide scalable capacity. "[JPMC] is aggressively increasing its cost variability by externalizing a significant portion of its data processing technology infrastructure, including data centers, help desks, distributed computing, data networks, and voice networks. With the help of an external partner, it created a virtual pool of computing resources that can be accessed and

deployed on an 'as-needed' basis. Using this approach, JPMC can not only reduce costs, but also create capacity for growth and accelerate innovation."[26] Higher education's current research and interest in computing grids reflect some of this thinking.

In addition to making core IT services better suited to the adaptive model, IT organizations may need to add some capabilities to let the institution's users and leaders execute an adaptive strategy. These capabilities include business intelligence, feedback loops, and modeling:

- *Business Intelligence*. Business intelligence systems provide an organization's users with the right information at the right time to make the right decisions. They can take several forms. A commonly deployed business intelligence tool is a data warehouse, which helps institutions develop an enterprise-wide view of important financial, human resources, and customer (student and alumni) data. When combined with an ad hoc query tool, the warehouse enables users to run custom queries to quickly find the answers they need. The closer to real time such information can be provided, the more valuable it is in helping users at all levels of the organization make the right decisions. Data-mining tools run against the warehouse can uncover previously unknown relationships and can help leaders make more informed decisions. Another emerging business intelligence capability involves the use of intelligent agents built into key software applications. Depending on the situation, such agents can suggest a course of action to the user on the basis of predefined logic, making it more likely that efficient, consistent, and effective service will be provided throughout a process.
- *Feedback Loop*. A key characteristic of an adaptive organization is its ability to sense and respond to changes in its environment in as close to real time as possible. IT must help users develop the capability to obtain such feedback from its systems, its processes, and the users themselves. Examples include (1) creating, within applications, busi-

ness rules that alert the appropriate person when a particular parameter is abnormal, allowing the person to quickly react to the situation, and (2) incorporating feedback mechanisms into as many of the institution's offerings and services as possible, allowing continued adjustment to better meet demand. Digital dashboards, which present relevant, real-time information to management in a graphical, easy-to-use form, can be a good way for executives to get their finger on the pulse of the organization.

- *Modeling*. Computer-based modeling tools help leaders understand the impact their decisions may have on various aspects of the institution. Such tools can range from space optimization (if we take away three classrooms, what impact will that have?) to process modeling (if we add two more staff members, will that help us reduce financial aid backlog?) to more sophisticated tools that help plan for possible future scenarios. Emerging techniques like agent-based modeling promise to provide even more power in this area, allowing modeling of complex systems such as consumer behavior and giving executives better insight into an uncertain future.[27]

By developing technology infrastructure and capabilities that contain the characteristics outlined above, institutions will lay a strong foundation for the execution of an adaptive strategy without fear that technology will be a barrier to its success.

Table 1: The Evolution of IT Strategic Planning

PLANNING STYLE	TIME FRAME	FOCUS	CHARACTERISTICS
Big Planning	1970s	Long-term planning	● Detailed plans ● Large documents ● Not much action ● Separate business and IT planning
Strategic Direction	1980s	Medium-term planning	● Set vision ● Less specificity ● Project-based execution ● Alignment of business and IT planning
Iterative Planning	1990s	Short-term planning	● Set direction ● Built infrastructure ● Small components delivered quickly ● Joint business and IT planning
Adaptive Organization	2000s	Just-in-time planning	● Focus on sensing, not planning ● Modular infrastructure ● Rapid execution ● Close business and IT cooperation

Conclusion

IT strategic planning has been evolving for many years (see Table 1). It began with "big planning" efforts that generated large binders but little progress. Such plans were focused on the long term, but as Stanley Fish, of the University of Illinois at Chicago, recently wrote, "The trouble with long-range planning is that it almost never works, in part because the object of your analysis will not stand still and wait for the process to complete itself."[28] As a result, many organizations have moved to shorter-term planning methods, whereby IT plans are aligned to institutional planning. The focus is on setting a strategic direction for the institution but not including a level of detail that is overwhelming and likely to be misguided as time progresses.

Although some institutions still use the "strategic direction" model, the for-profit world and some higher education institutions found they needed more-flexible methods. In the mid-1990s, an "iterative planning" approach emerged. In this model, organizations set a direction for themselves and developed a broad architecture that they hoped would support this direction. Results were delivered quickly, in a series of small projects that built on one another and allowed the organization to change direction more quickly than earlier efforts. The University of California's New Business Architecture is an example of such an approach.[29] Over time, the need for even faster responsiveness brought about the "adaptive organization" methods, whereby organizations focus not on planning but on sensing and responding to the changing

environment in as close to real time as possible.

The move toward the adaptive organization strategy appears to be well under way across industries, with vendors and their customers offering numerous examples of how such strategies work in practice. Colleges and universities should watch and understand how such strategy models are developing and should determine, on the basis of their own strategic needs, the right time to incorporate aspects of this more flexible and adaptive approach. *e*

Notes

The ideas and themes represented in this article draw on multiple sources and do not reflect the opinion of BearingPoint or any other single source.

1. On ARTstor, see <http://www.artstor.org/collections/brief.jsp>; for the *Valley* project, see *The Valley of the Shadow: Two Communities in the American Civil War*, <http://valley.vcdh.virginia.edu/>.
2. Johanna Woll, "Not All Adaptive Enterprises Are Alike," *Perspectives on Business Innovation*, issue 9 (January 2003): 28. Woll was a researcher at Cap Gemini Ernst & Young's now-defunct Center for Business Innovation in Cambridge, Massachusetts.
3. IBM Corp., *On-Demand Business: The Executive Guide*, <http://www-1.ibm.com/businesscenter/us/resources/whitepaper.jsp?contentId=9568>.
4. Walter Janowski, "The Real-Time Enterprise at the Customer Front Line," *Gartner Group Management Update*, Note Number: IGG-05282003-01, May 28, 2003.
5. Deloitte & Touche, *Strategic Flexibility in the Communications Industry*, 2001, <http://www.deloitte.com/dtt/research/0,2310,sid%253D1012%2526cid%253D19673,00.html>.
6. Hewlett-Packard Corp., B*uilding an Adaptive Enterprise: Linking Business and IT*, <http://www.hp.com/large/globalsolutions/ae/pdfs/HP_whitePaper_v19.pdf>.
7. Stephan H. Haeckel, *Adaptive Enterprise: Creating and Leading Sense-and-Respond Organizations* (Boston: Harvard Business School Press, 1999).
8. Theodoros Evgeniou, *Building the Adaptive Enterprise*, June 2002, <http://www.dmreview.com/white paper/WID399.pdf>.
9. Daniel J. Forno, "Personal Experiences in Using Adaptive Management Principles in IBM," presentation made at the Adaptive Enterprise Transformation conference, Arlington, Virginia, February 2, 2003, <http://www.afei.org/brochure/4af6/#presentations>.
10. Janowsky, "The Real-Time Enterprise."
11. Quoted in Cap Gemini Ernst & Young, Point of View: "Winning in a Volatile Economy: Creating the Adaptive Enterprise," 2002, <http://www.ch.capgemini.com/servlet/PB/show/1004752_l1/Winning%20in%20a%20volatile%20Economy_E. pdf>.
12. G. H. Anthes, "Chris Meyer on the New Sciences, New IT," *Computerworld*, February 9, 2004.
13. IBM Corp., *On-Demand Business*.
14. From J. Voloudakis, K. Lasczych, and M. McDonald, "Positioning the Supply Chain for eCommerce," Ernst & Young LLP, 1998.
15. Tomasz Smaczny, "Is an Alignment between Business and Information Technology the Appropriate Paradigm to Manage IT in Today's Organisations?" *Management Decision*, vol. 39, no. 10 (2001): 800.
16. Cap Gemini Ernst & Young, Point of View: "Adaptive IT: Permanent Volatility," <http://www.cap gemini.com/adaptive/media/AdaptivePOV.pdf>.
17. N. Venkatraman, "Beyond Outsourcing: Managing IT Resources as a Value Center," *Sloan Management Review*, spring 1997, pp. 51–64.
18. Anne K. Keehn and Donald M. Norris, "IT Planning: Cultivating Innovation and Value," *Syllabus Magazine*, November 2003, pp. 11–16, <http://www.campus-technology.com/article.asp?id= 8454>.
19. Bob Albrecht, Bob Bender, Richard N. Katz, Judith A. Pirani, Gail Salaway, Toby D. Sitko, and John Voloudakis, "Information Technology Alignment in Higher Education," *EDUCAUSE Center for Applied Research (ECAR) Study*, 2004, vol. 3 (key findings available at <http://www.educause.edu/Research Studies/1010>).
20. Ibid., 131.
21. D. Mesaros, "IT Center of Excellence," BearingPoint Inc. white paper, June 17, 2003.
22. Albrecht et al., "Information Technology Alignment."
23. Ibid., 132.
24. Ibid.
25. J. W. Ross and P. Weill, "Six IT Decisions Your IT People Shouldn't Make," *Harvard Business Review*, November 2002, pp. 84–91.
26. IBM Corp., *On-Demand Business*, 16.
27. Anthes, "Chris Meyer on the New Sciences."
28. Stanley Fish, "Plus Ça Change," *Chronicle of Higher Education*, April 2, 2004.
29. See *UC 2010: A New Business Architecture for the University of California*, <http://uc2010.ucsd.edu/about/index.htm>.