In the September 24, 2004, information technology supplement to the *Chronicle of Higher Education*, Ira Fuchs, then vice president of the Mellon Foundation, argued that meeting the long-term software needs of higher education required the creation of a coordinating body reminiscent of Bellcore, the telecom industry cooperative designed to set standards and conduct R&D. Supported financially by a large number of colleges and universities, Fuchs’s “Educore” would coordinate the development and maintenance of open-source software for the benefit of higher education, “giving universities and colleges the security they seek, but rarely find, in their relationships with corporate partners—who can raise prices and maintenance fees suddenly, or stop producing or supporting programs with little warning.”
Three major developments that impinge on Fuchs’s original vision are relevant here. First, the dominant paradigm of software is shifting. Software is being reconceived, rewritten, and increasingly redeployed as a service. Even more, infrastructure and entire business processes are now becoming available as services. This development suggests that colleges and universities may be able to radically reconsider how they organize information technologies in support of their missions and the economics of information technology and communications. In a world where infrastructure, applications, services, and processes can be invoked and consumed “on demand,” providers of these services no longer have to operate these services on campus and no longer have to provide sufficient capacity to meet “just-in-case” spikes in demand. Although it is not yet clear whether total IT costs will decline, scale economies suggest that they will and that the shift to a services model will enable IT to behave less like a capital good and more like an expense. Expenses are more predictable, more easily tracked, and—if desired—more easily recovered. The technology architecture enabling this shift in the locus of service provision today is called cloud computing.

Second, since 2008, much of the world has been in a recession. Most economists believe the U.S. recession to be the deepest since the Great Depression. College and university endowments have experienced losses—some substantial—requiring layoffs, furloughs, service curtailments, and a host of other actions in even the most elite institutions. Widespread unemployment has resulted in a flood of enrollments at community colleges and state universities, outstripping the capacity of many institutions to meet constituents’ demands for their services. These developments place new stresses on top of long-term trends in the cost and structure of higher education. Unable to rapidly add capacity and badly in need of realizable economies of scale, institutions of higher learning are looking for new ways to deliver their missions. Supplementing or replacing face-to-face higher education services with services accessible via the Internet is an important class of alternatives under consideration by higher education leaders.

Third, many people throughout the world have become acculturated to taking courses, buying goods and services, engaging in social exchanges, and conducting other activities over the Internet. The emergence of the “apps store” for Apple’s iPhone, the success of the open-source movement, and the rapid embrace of cloud computing by many software developers are fueling both tremendous innovation “in the cloud” and a robust consumer economy for services delivered “in the cloud.” Rapid growth in the supply of cloud services is drawing many students, faculty, staff, and other stakeholders away from institutional solutions and services. This flow of consumer choice represents an even greater IT governance challenge to higher education than does the decentralization of IT services to academic departments and laboratories. The unregulated movement of services off campus will pose a significant set of policy and competitive challenges to colleges and universities. Will academics use cloud-based tools to capture and store FERPA-protected information from classes without the knowledge of institutional leaders? Are service providers’ IT environments secure? Who controls data in extramurally managed environments in cases of contract dispute or mergers and acquisitions?

Fuchs’s original vision of Educore has only been strengthened and extended by intervening events. Higher education costs—including the costs of information technology—must be reined in, and higher education leaders must move to plan and organize an infrastructure, applications, and services portfolio that is both premise-based and externally sourced; if they do not, they will inherit an unplanned cloudscape formed by constituents who have voted with their feet. Finally, the failure to conceive and execute such a portfolio will increasingly consign colleges and universities to mediocrity as the locus of services innovation shifts to the cloud.

An Important Step
On February 9 and 10, 2010, thanks to support from IBM, Pearson, and SunGard Higher Education, fifty leaders from colleges, universities, corporations, professional associations, and state networks met in Tempe, Arizona, to discuss cloud computing and the impending shift in the mix of where infrastructure, applications, and services are sourced. This group identified a set of actions that colleges and universities could take to prepare for what these leaders concluded was a promising, risky, and inevitable shift. Participants also identi-
ified actions that EDUCAUSE, NACUBO, and other higher education associations might undertake to educate their stakeholders and to identify practices that might mitigate some of the risks inherent in sourcing “above the campus”:

- **Draw a map of the cloudscape**: Research the cloud services market, especially in product service areas that are likely candidates for use in higher education, and develop a map that describes by category—Infrastructure as a Service (IaaS), Platform as a Service (PaaS), Applications as a Service (AaaS), Software as a Service (SaaS)—the cloud-based infrastructure, platform, application, and software services that are available and also the service providers that are competing in these categories, beyond the well-known Google Apps and Amazon’s Elastic Compute Cloud (EC2).

- **Outline a campus cloud computing roadmap**: Develop a roadmap to guide an institution in the steps to take during the decision of whether to create or operate a premise-based or cloud-based service or infrastructure element.

- **Prepare a guide to writing a business case for cloud sourcing**: Draft a short document that describes the key questions to ask for framing an effective decision about hosting a system or service on campus, or in the cloud. Questions might include the following: What is driving us to consider change? Is it economics? Is cloud sourcing cheaper? Does it offer more functionality? Are cloud options more full-featured? More reliable? More robust? More accessible? More nimble? What are the comparative risks? What is the risk of inaction?

- **Create a costing template**: Identify uniform cost categories in both premise-based and cloud-based delivery alternatives, and recommend preferred guidelines and methods for calculating these costs, when appropriate.

- **Write a risk-assessment framework and guide**: Prepare a document to guide practitioners and policymakers through a risk analysis of premise-based and cloud-based delivery alternatives.

  - **Develop audit guidelines for examining cloud-based infrastructure, systems, and services**: Put together a document to guide auditors through a risk assessment and audit of cloud-based transactions and portfolios.

  - **Determine what campus leaders need to know about above-campus systems and services**: Create a short, strategically positioned document to educate trustees, regents, chancellors, presidents, and senior staff and academic leaders about the opportunities and challenges presented by cloud computing and the migration of infrastructure, systems, and services above the campus.

  - **Identify and promote new skills**: Articulate a new curriculum, and offer new professional development opportunities. IT professionals, business professions, lawyers, auditors, and others will need new skills to manage an infrastructure and service portfolio that is hosted elsewhere or is merely invoked as needed as an Internet service. Skills such as contract management, the creation of service level agreements, and security management change as the portfolio changes.

  - **Establish new IT governance**: Write a guide for the safe consumerization of IT infrastructure and business and academic services. One of the key drivers of the need for higher education to act is the rapid evolution of the consumer market being delivered via cloud computing. Increasingly, faculty, students, and staff are choosing to use a wide variety of consumer services in lieu of the services being offered by the institution. This unregulated movement of IT services off campus may have untoward economic effects and may create undocumented economic effects and may create undocumented risks of security and privacy spills, data corruption and seizure, and FERPA nondisclosure.

  - **Institute model service level agreements**: Prepare a deconstruction or anatomy of a service level agreement (SLA) by defining the purposes of an SLA, the typical areas covered by an SLA, tips for negotiating service levels, and effective practices in managing contractual relations through such agreements. Ideally, this would include examples of effective SLAs.

- **Publish a policy series**: Distribute a series of short policy perspectives with titles such as “Privacy and the Cloud” or “Data Ownership and the Cloud.”

  Most important, the leaders at this February 2010 meeting identified the likely timeliness for catalyzing the emergence of an entity or entities that would aggregate demand for above-campus services. Like Educore, a private higher education demand aggregator would be a coordinating body, achieving coordination through a federated identity infrastructure, a common directory of services, standard contract terms, performance and transparency standards, and so forth in order to aggregate demand from prospective college and university users, simplify the sourcing
process, and lower the mistrust that currently corrodes the commercial sourcing environment. Lowering the trust barrier to the widespread participation by higher education in a cloud economy entails the insertion of a trusted intermediary with community-informed rules of business and governance. Unlike Educore, the scope of this entity would not be restricted to software but might evolve to become an ecosystem, access channel, or broker of software, solutions, infrastructure, and services. Shelton Waggener, Associate Vice Chancellor and CIO at the University of California–Berkeley, described what is needed:

**Going Forward**

The participants at this meeting concluded by asking EDUCAUSE, NACUBO, and Internet2 to evaluate the feasibility of creating or otherwise enabling such a consortium and incubator on behalf of higher education. To this end, the three associations have created a task group to develop a coherent vision of a consortium—such as that anticipated by Fuchs and extended by the Tempe group—to facilitate the adoption of above-campus services by higher education. Included in this vision will be a recommendation regarding the roles, function, and scope of the work and market of this consortium. The task group will identify the network of business and academic relationships that will likely be needed to make the consortium an effective and competitive aggregator/broker of services. The group will envision an operating model for this entity (e.g., “how it works”) and will develop a preliminary financial plan that will include both the initial capital requirements of the aggregator and a *pro forma* business plan demonstrating financial sustainability (self-sufficiency) within a five-year timeframe. The task group will identify strategies for forming the initial capital that will be needed, including specific partners that may be sought. The task group will also evaluate governance alternatives and recommend a preferred strategy for guiding the corporate form that the aggregator entity should take—if the assessment of the opportunity, benefits, and economics supports a “move forward” recommendation. The task group will deliver a report to the presidents of EDUCAUSE, NACUBO, and Internet2 by the summer of 2010. In coordination with this effort, Internet2 is exploring—with the advice of a panel of CIOs and others from the Tempe meeting—specific ways of brokering access to IaaS offerings, such as computing cycles and data storage, over its network infrastructure. This effort, similarly, is moving on a fast track.

“One might think of the modern cloud as hosted shared services on steroids.”

“I want a consortium that facilitates targeted providers and standards [and] makes the provisioning aspects of services customer-friendly. It is a facilitation activity reducing the barriers to usage—all done under contracts I don’t have to negotiate each time.” Marilyn McMillan, Vice President for Information Technology and Chief IT Officer at New York University, extended this visionary mission to accent an incubation role: “I like the concept of trying a number of things at once, but not as a thousand flowers blooming. We need an incubator similar to what we operate on our campuses for small businesses, which would encourage cloud experimentation and bring institutions together.”

Notwithstanding the risks evident (and those not yet evident) in cloud computing and the very real issues that prevent institutions from sharing risk, accountability, and gains, the time for higher education to seize the vision of above-campus services is here. Today, too many colleges and universities are wrestling with the option of whether or not to offer a service at all. Clearly, their IT organizations cannot keep all the trains running while also monitoring and developing those new technologies that will move the institutions forward. The promise of cloud computing and above-campus services is the promise of new capacity—capacity that comes from sharing the work.
Promise and Peril: A Discussion

To gather some additional perspectives on cloud computing and above-campus services, EDUCAUSE Vice President Richard Katz recently discussed the possible promise and peril with six corporate and higher education leaders: Elazar C. Harel, Anne K. Keehn, Michael King, Joanne Kossuth, Darren Wesemann, and Brad Wheeler.

KATZ: Colleges and universities have long considered using hosted or shared services, and e-commerce is already widely in practice among higher education practitioners. What’s new and different about the cloud?

HAREL: It’s not all new and different, but cloud services seem to provide a more granular set of options (e.g., subscribing to only selected services out of a large menu of items), these services can start and end at any time (e.g., a user can get a massive amount of data storage for just a short period of time), and they take advantage of the high-speed networks that did not exist until recently.

KEEHN: Doing business on the Internet is not new. What is new is the ability to use the cloud for very robust mission-critical applications that can support the institution’s business. It is now possible to combine applications and services that create a superior user experience, rich functionality, and reliable service at a fraction of the cost required previously. The burden is to demonstrate that the IT organization offers the stability, capacity, performance, scalability, state-of-the-art data centers, and massive bandwidth needed to meet an institution's needs for trusted service.

WESEMANN: Shared services in a hosted environment are the precursors to the cloud—indeed, hosting that offers shared services can be considered to fall within the definition of modern cloud computing. One might think of the modern cloud as hosted shared services on steroids. That’s because lots of things in the cloud are shared (e.g., network bandwidth, multi-tenant database instances, virtualized computing, and common services such as SMTP, terminal services, BI), but more important, the cloud services and the infrastructure itself are “provisionable” (and even procurable, in many cases) on demand. That means quicker access to computing through a browser and more cost-effectiveness due to the more efficient utilization of resources and economies of scale.

WHEELER: The real potential of cloud computing—I prefer the term above-campus services—is to improve the economics of higher education through economies of scale and leverage of IT services that are beyond the grasp of even large institutions. Sure, some commodity cloud services are no different from the sourcing decisions of past decades, but higher education will miss the true opportunity if we allow a procurement mindset to pursue the elusive fallacy of single-institution optimization for common services.

KATZ: Let’s say that you are a CIO headed into the president’s cabinet meeting at your institution, with a chance to procure significant funding for an enterprise cloud computing initiative. What’s your pitch?

HAREL: (1) Flexible spending pattern; (2) quick adoption of advanced technologies; (3) lower overall cost; (4) high customer satisfaction; and (5) green solutions.

KOSSUTH: The cloud will increase our agility and responsiveness, especially with regard to research agendas and collaborative opportunities. The greatest impacts won’t be savings but, rather, improvements in the research and collaboration areas so that students, faculty, staff, and external experts can innovate quickly and if they fail, do so quickly and restart even faster. The potential for achieving game-changing results is enhanced, and students are better prepared to deal with the world’s
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problems through these experiences. Using the cloud as a platform allows us to use the latest and greatest technologies with limited investment.

WHEELER: Research and education are driven by innovation at the edge—faculty, researchers, staff, and students in the many disciplines that compose the academy. Information technology has unquestioned economies that favor aggregation and scale at the core. An enterprise cloud computing initiative will create greater efficiencies in that core and enable more, not less, scholarship at the edge.

KOSSUTH: We have to work to build effective third-party relationships. Relationships are built on trust, and trust takes time and good-faith investment on all parts. A good start would be to draft effective contractual language that responds to many of the questions that we all have, such as transparency. Where is our data stored, how is it broken down, how are we assured of getting all of our data back if the business is sold or goes into bankruptcy, how is reliability tiered, and what liability provisions are in place? Since we likely will not have all the answers at one time, how do we pilot or try something in this space with a willing partner and then build on that? If these issues cannot be addressed, then perhaps higher education needs to create its own structure from an already trusted group.

KATZ: It seems likely that with cost drivers such as renewable energy and scale economies, the economics favor cloud-based over premise-based solutions. What do the economics look like to you?

HAREL: Cloud services are likely to use less-expensive energy sources and obtain better economies of scale than any college or university. As these services become commoditized, there is less and less justification for premise-based solutions. This does not mean that everything should move to the cloud. Services that are strategic resources to the university may be better provided in-house, and there will probably always be some situations in which distance or network bandwidth limitations require premise-based solutions.

King: There are clear economic advantages for consolidated delivery over larger user communities, as well as the ability to more dynamically provision services for users from a common shared infrastructure. There are clear cost advantages to leveraging scale economies and automation. Cloud computing also
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offers an economic advantage by allowing institutions to focus more resources on differentiating value, as opposed to managing and supporting a full suite of services expected by their constituents. Finally, cloud computing enables the delivery of services that otherwise might not be possible, such as hosting e-portfolios above the institution so that they follow students for life.

WESERMANN: Indeed, the cloud represents a more efficient way of computing. Typical single-tenant hosting scenarios yield very low utilization of the equipment (disk, CPU, network switching and bandwidth), which wastes cycles and energy. However, because the cloud is multi-tenant, the same amount of energy to power a given set of machines in a cloud provides multiple applications and consumers servicing, which yields higher utilization of the hosted equipment, saving energy in the process. Typically, we see at least a two-to-one (often three-to-one) ratio of utilization in a multi-tenant architecture. That’s three times the computing for the same amount of energy.

WHEELER: Absolutely. Institutions will not have the massive capital to invest in the campus-based data centers that are essential to empowering increasingly digital education and research. Our national and regional networks enable geographic arbitrage to aggregate scale near low-cost power. The challenge is to not dilute those benefits through excessive coordination costs (negotiating and contracting) or excessive profits from vendor lock-in.

KATZ: Even though many people use consumer cloud services like Gmail, Flickr, or Picasa, most people do not want their information mined, modeled, profiled, and sold. What can we do about privacy in the cloud?

HAREL: Again, this is mostly an illusion. As long as confidentiality, security, and privacy are maintained and as long as the price is right, why should we worry about others mining generic data?

KEEHN: Privacy is important! Users must trust the environment in order to have successful learning experiences. The trade-off, of course, is with personalization. Although some personalization can occur with anonymized information, at some point users may choose to share some personal information in return for improved experiences.

KOSUTH: Privacy is a major issue whether “on premise” or in the world of cloud computing. Everyone has differing needs for privacy. If most people do not want their individual information identified with them (except for among friends), can we assume that aggregating information addresses privacy concerns for the majority? Does aggregated information drive innovations in technology, especially in the marketing and social software areas? Would we change our minds about personal data if we got discounts from loyalty cards our constituents use? How will technology drive our options in the future, and how can we be protected from the consequences of our own choices?

WESERMANN: Because cloud computing includes the sharing of infrastructure and services, the data for each tenant can be kept secure. Most cloud service providers institute strong safeguards and security to keep data secured while it resides in the cloud and protected when it is in transit. An easy way to bypass the concern is to leverage cloud computing for the services that don't require persistent data (of which there are typically plenty of scenarios in any given enterprise system). For those scenarios that require data, ensure that the cloud provider follows strict security controls, implements standards, and allows audits of its security operations.

KATZ: One of the key arguments for moving to cloud computing is to alleviate the risk of vendor lock-in. Does sourcing infrastructure, platforms, software, or applications in the cloud reduce, eliminate, or perhaps amplify the risk of lock-in?

HAREL: There is always a risk of lock-in, whether the service is external or internal. Therefore, systems and data should be designed in modular fashion.
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and using industry standards so that transition from one vendor to another is as “easy” as possible. Unfortunately, it’s rarely easy.

**KEEHN:** Lock-in, of course, is not a risk that is limited to cloud computing. The risk of lock-in depends on the cloud provider and also the license service agreement you have with the vendor. With SaaS-based license agreements, you have more flexibility than with the old perpetual license models that were popular over the last twenty years. Another option for ensuring flexibility is that cloud users can insist on standards-based APIs that leverage reliability for core functions and allow for the construction of rich applications from other suppliers—commercial or open. This strategy not only reduces the risk of vendor lock-in but also promotes learning ecosystems.

**KING:** One of the enablers of cloud computing is open IT standards that allow easier integration and reuse of technology. The future enterprise service-delivery experience will include services that are specific to the institution and that add unique value, integrated with “above the institution” services that provide more standardized function. The integration of these private and public cloud services will be the responsibility of the enterprise IT department but will lead to better services for users, delivered at lower cost.

**KOSSUTH:** It is not clear that the cloud will alleviate the risks of vendor lock-in. In fact, given the current players in the cloud, one could make the counterargument that the cloud players are merely locking institutions in at a different level—and perhaps at a riskier level. The risk involved would be in the storage, distribution, and protection of our data. In my opinion, if the interoperability standards do not exist, then the risk of vendor lock-in remains the same.

**WESEMANN:** Certain cloud providers offer proprietary coding and configuration (as either an option or a requirement). Cloud lock-in occurs when those offerings are embedded in the applications hosted, since that makes the applications nonportable. As long as the application placed in the cloud follows popular standards with no proprietary extensions unique to the cloud service provider, there is little risk of being locked-in.

**WHEELER:** I’m with The Economist on this one when it wrote “Beware the Cloud.” Switching costs will rise rapidly as institutions move from Infrastructure as a Service (IaaS) to Platform as a Service (PaaS) to Software as a Service (SaaS). There will be no incentives for cloud providers to ease switching to other vendors. My colleague James Hilton offers the essential question for any agreement: “What’s my exit strategy?”

**KATZ:** What about integration? More than ever, an institution’s web presence needs to look and feel well integrated and needs to create a user experience that builds loyalty and a sense of affiliation. How will a mixed portfolio of premise-based and cloud-based services affect this need for integration?

**HAREL:** This is likely to become a difficult trade-off. The integration issues can be somewhat alleviated by using common core services such as a single sign-on, a single portal, a single content management system, and so forth. Fortunately, the younger generation is now accustomed to variety in “look and feel,” so this may be less of a problem in the future.

**KOSSUTH:** Integration of services is among our largest challenges and likely takes most of our time and resources. I do not see that changing. If anything, the availability of new services in the cloud and the drive to incorporate those services will increase the integration challenge. Standards will play an important role in easing the integration concerns, especially if service providers commit to true and unadulterated standards. New technologies in authentication and mobility will provide tools, as will social networking software evolutions. We will need to be responsive to customers’ demands (including deciding what we will no longer do) and...
provide the most adaptable, personalized approach to integration possible. Much of the savings from utilizing cloud technologies may very well be spent on the continuous integration of emerging tools.

WESEMANN: The key to integration is found in web standards. If the common services offered by the cloud providers, as well as the applications hosted there, adhere to interoperable standards, the extensibility of the application in the cloud becomes manageable. Some cloud providers offer tools to make this easier, but beware of vendor lock-in if the tool does not export portable bits. The best scenarios are those in which an institution’s own tools work with the cloud.

KATZ: What happens if higher education—or a campus—chooses to sit this one out?

HAREL: Sitting in one place is a comfortable position. But it starts hurting after a while.

KEEHN: I think those institutions will be missing out on an opportunity to improve their IT budgets, provide business continuity, and take advantage of a new way of supporting their virtual and hybrid learning environments with a more reliable, flexible, and scalable infrastructure. Our clients not only realize those benefits but also receive world-class services that support their programs, faculty, and students. The type of at-risk reporting and assessment that is available from a cloud application, as well as the opportunity to improve pedagogy with rich media, is extremely valuable to improving student engagement and retention.

KING: Cloud computing is a major industry transformation, similar to the shift toward client-server computing, and it will have a profound impact on IT service delivery, as well as on business operations on campus and between educational institutions. Cloud computing will change the basic economics of IT service delivery, will enable new business processes and models, and will create a new level of user interface and expectations for services. Institutions that try to “sit this one out” will find themselves increasingly outpaced by their competitors, both economically and in delivery value to their constituencies.

WESEMANN: The downside to ignoring the cloud is the missed benefits of greater efficiencies. The cloud doesn’t need to be adopted wholeheartedly to reap some benefits. For example, a small service or two can be outsourced to the cloud, and over time utilization can grow. Starting small is good advice for most new things anyway; get a couple of early wins, and prove the benefits before going deeper.
WHEELER: I don't think anyone can sit this one out for the long term. The issue may be early and late adopters. This is an IT evolution but also an economic evolution. No one sat out the PC era forever, and there are few Departments of Word Processing these days.

KATZ: What differences do you think we will see in the world—and especially in higher education—in ten years as a result of cloud computing?

HAREL: I can't think about information technology in ten-year increments. It will look very different for many of us in only five years. We will no longer have data centers on campus, we will not provide office services (e.g., e-mail, calendar) internally, and many of our administrative services will be hosted elsewhere.

KEEHN: Amazon spends millions and leverages data, models, and good science to help customers find a movie or book. The cloud can bring that degree of personalization to the ways we learn through prescriptive content, learning paths, and personalized experiences for each learner. Telepresence technology, simulations, holographic images, and 3-D will add up to a more multimodal and Internet-delivered learning environment. Some of this is available now, so in ten years anything is possible. By embracing cloud computing now, institutions, faculty, and students can explore new ways of learning, and funding can be shifted to those areas more core to teaching and learning.

KING: The obvious benefits from cloud computing are reduced costs in IT operations by leveraging economies of scale and improved support to the user community from the wider availability of world-class services from the cloud. However, the biggest impact on education from cloud computing is likely to be the transformation of the education industry to a more student-centric model in which cloud computing will provide for the deployment and consumption of “above the campus” business processes. New services—such as e-portfolios, cross-institutional collaboration, and lifelong mentoring—will create a new model that is centered less on the institution and more on the students and their progress through a career of lifelong learning.

KOSSUTH: How can higher education provide its services at a lower cost? Tuition increases are unsustainable, and for-profit competitors have figured out how to provide a comparable education for less. The cloud must help us consolidate and collaborate. A higher education cloud might act as a repository for modular courses that institutions can use or build on, making it possible to reduce redundancies. This cloud might precipitate shared repositories for transcripts and financial aid and might make the entire K-20+ education experience seamless and accessible for all. Ten years from now, higher education should be a more collaborative, innovative place where unique resources are readily available to all students—which will change the financial model and the modes of delivery of higher education.

WESEMANN: Ten years is an eternity in computing. I think it's safe to assume that we will see more components on-demand. Similar to the case of buying a book today on Amazon, enterprise components will be easy to consume and perhaps even more automated. The accessibility of functional components will definitely improve, as will the interoperability of components into solution compositions, all from the cloud—which ultimately means less equipment on-site to worry about and more direct value.

WHEELER: The greatest potential for change is in the mindset of IT staff. Today, when something new—for example, emergency notification systems—captures attention, institutions spend about five years of complex, one-off institutional adoptions by leaders and then by laggards. Our industry can't afford that approach. In ten years, we should be looking at provisioning a few above-campus services whenever a common need arises. Our historic obsession with institutional differentiation for common IT services is unsustainable.

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