Prepare Your Campus for e-Business

Tips for crafting a successful strategy

by **Jill Kidwell, John Mattie,** and **Michael Sousa**

From the boardroom to the executive suite to the music department, campus administrators are engaging in e-business initiatives, enticed by profitable new markets, greater student satisfaction, and potential cost savings. Vendors are capitalizing on the growing sense of urgency gripping campuses to offer technology-enabled teaching tools; put courses online; and provide Web portals for students, faculty, and administrators. The pressure to do something increases each time a new joint venture is announced or a college receives a sales pitch from a new vendor.

While it is tempting simply to sign one of the many contracts sitting on your desk, it is important to investigate first. Even for those who have taken the plunge and are pursuing one or more strategies for doing e-business, due diligence will provide real dividends. These initiatives are new ventures. Often there are no well-established courses to follow. Yet in spite of the novelty of your e-business strategy, you can manage the risks. Whether your e-business initiative is an electronic commerce application, Web-enabled student services, or distance education, your institution will benefit by thinking through the drivers, implications, framework for evolving your e-business strategy, strategies for the future, and lessons learned.

E-Business Drivers

Will e-business applications become widespread in higher education? While these applications are being used primarily among early adopters, it is clear that e-business will garner more than ephemeral attention. According to some, the adoption of such applications in higher education will become pervasive as students and prospective students look to these applications for convenience and institutions seek to expand markets, lower costs, and provide improved customer service. Specifically, what's driving higher education institutions to develop e-business strategies include:

- Rising popularity of the Internet
- Demanding customers and unrelenting expectations for expedited services
- Continuing cost constraints
- Growing opportunities for new revenues

INTERNET POPULARITY

The Internet is fast approaching ubiquitous access, especially among college students because of increasing computer ownership and common use. Specifically, 55 percent of college students own a computer, and more than 92 percent have access to one. Furthermore many of these computer users are active Internet users: Among four-year college students, 85.4 percent use e-mail and 86.6 percent use the Internet.

Current obstacles are expected to dissipate in the future. The biggest complaint today about the Internet—its slowness if connected through a modem—will eventually disappear as bandwidth, particularly to "the last mile," becomes more abundant. Cable modems, ATM (asynchronous transfer mode), xDSL, frame relay, low-earth-orbiting satellites, and an advanced Internet will make this possible.

DEMANDS AND EXPECTATIONS

Today's students are technologically savvy and proficient. They have grown up accustomed to automated teller machines, toll-free numbers, next-day delivery, and the Internet. They can get books, CDs, and even term papers (much to the chagrin of educators) via the World Wide Web and increasingly expect the same type of instant fulfillment of needs and wants. Queues on campus—for course registration, feedback from advisers, financial aid decisions, degree audits, and other services—will be met with disdain and vocal dissatisfaction.

Similarly, because of services they receive from Web-based companies, students—and staff and faculty—increasingly will expect services to be available on a 24/7 basis and to be personalized for their needs and interests. As in other industries, only the Web and associated e-business applications can provide this function for colleges and universities. For example, Amazon.com remembers book preferences and provides suggestions to its customers. Can a student, in the process of registering online, receive suggestions based on past preferences or other variables such as meeting time, professor, learning style, academic area, number of credits, prerequisites, impact on degree completion, instructor and course rating by previous students, preparedness for other classes, or even cost of textbooks? Can a Web-based application recall a principle investigator's area of interest and provide customized information and services accordingly?

Colleges and universities need to understand the function of best-in-class portals (gateways to the Web) and service providers from other industries to anticipate student, faculty, and staff expectations. To research only the current services and plans available at other colleges and universities will be insufficient and shortsighted.

COST CONSTRAINTS

Even with favorable demographics and unique economic prosperity (and record tax receipts), cost pressures continue on college and university campuses. In the early 1990s, colleges faced deficits that mandated across-the-board cutbacks. Today, instead of cutbacks institutions are rapidly and strategically reallocating funds. Resources are going toward enterprise systems implementations, expanded technology use in the classroom, investments in technological infrastructure, capital improvements, and other mission-critical expenditures. Budget processes throughout the industry are being redesigned to unearth resources from underperforming programs or inefficient

processes to enable reinvestment in higher priority initiatives.

The quest to do more with less will continue so colleges and universities can aggressively pursue strategic opportunities in the midst of increasing competition. To accomplish these objectives, institutions increasingly will look to e-business applications to reduce administrative costs, especially in business-to-business services, by reducing manual activities.

NEW REVENUE OPPORTUNITIES

Universities have diversified revenue streams including research grants and contracts (with an increasing percentage from the corporate sector), fund-raising receipts, advertising, and continuing education students. Each of these areas requires e-business approaches to generate new—even to retain current—revenues.

Technology-based education—e-learning—is growing faster than classroom education, which is leading to a dramatic shift. For example, according to International Data Corporation (IDC), technology-based information technology (IT) training is forecasted to hit 55 percent of U.S. training by 2002, up from 21 percent in 1998, thereby displacing classroom training as the method of choice for delivering IT-related education and training.[1] Admittedly the IT industry is an early adopter of electronic education and training. However, as colleges and universities seek to increase—or even just retain—continuing education revenues, their success will depend on integrating technology-based approaches.

E-Implications

The case for adopting an e-business strategy is compelling and the urgency for doing so will grow. But how will this change in service delivery affect colleges and universities in the short term? We have identified four immediate implications.

- In all areas, multiple vendors with various products will increase confusion as institutions decide whether to "build or buy" and "compete or collaborate."
- The Internet will affect process, organization, and policy.
- The Internet will raise new tax, legal, and security issues.
- Integrating information management will be a crucial challenge for institutions to fully leverage the benefits of doing business electronically.

MORE OPTIONS, MORE CONFUSION

Historically, colleges and universities assumed responsibilities for the strategically relevant activities in which an organization engages, how these components interact, and how they contribute to competitive advantage.[2] The influx of e-business vendors in higher education across various processes will present choices and complexity. Where do core competencies exist? Should an institution build or buy, compete or collaborate? Table 1 illustrates a sample of process areas and new entrants that are providing e-business applications and services. Some of the vendors and applications listed provide colleges and universities with off-the-shelf solutions; others are potential competitors or strategic partners. Researching this ever-changing list of vendors and applications, comparing solutions, selecting the right approach, implementing solutions, managing these relationships, and maintaining institutionwide technology standards and architectures requires time and attention to ensure colleges and universities are identifying the right solution.

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PROCESS, ORGANIZATION, AND POLICY

The promises of reengineering remain unrealized for many institutions. In many instances, large, expensive programs designed to institute change have been only partially implemented, often with less-than-expected results. As a result, it is likely that few fret the passing of the reengineering trend. Many institutions, however, have replaced these process improvement projects with still larger (and order-of-magnitude more expensive) enterprise systems implementations. (These implementations are often referred to as ERP, for their enterprise resource planning approach to integrating student, financial, and human resources systems.) In this context the less-than-warm reception the e-business projects or initiatives are receiving may be partially caused by fatigue from these previous efforts. Conversely, others may be eager to embrace an e-business strategy as the vehicle for organizational restructuring with more tangible and expeditious results.

Implementing e-business applications, similar to the reengineering processes and ERP projects, will require process redesign, organizational restructuring and alignment, new job descriptions, and reviewed and revised policies. As a result, these projects are likely to be met with similar skepticism and resistance. The enabler may have changed—in this case, Internet-based applications—but these projects will require institutions to continue the difficult and often arduous restructuring efforts. However, those institutions that have realized significant progress from previous efforts will be able to leverage these initiatives and should experience a higher probability of success.

Academic policies also will require reexamination. Policies and processes related to articulation, faculty evaluation, faculty development, and assessment of student outcomes, among many others, will require review and revision by institutions that expect to succeed in delivering online courses, programs, and supporting services.

TAX, LEGAL, AND SECURITY ISSUES

While there are similarities with previous institutional improvement efforts, new challenges exist as well. Implementing e-business applications will require institutions to examine tax, legal, and security issues. In the area of tax and legal issues, institutions will be forced to examine intellectual property issues, review Internet-based revenues for unrelated business income tax (UBIT), and document legal and audit trails. Security issues, while examined in ERP implementations, will be more important since vendors and other constituents will have expanded access to institutional data and systems requiring firewalls, authentication, encryption, confidentiality and integrity controls, and enhanced management of security breaches. These issues elevate risk management challenges to the top of the agenda for senior management at all colleges and universities.

INFORMATION MANAGEMENT

Colleges and universities, like other organizations, have struggled to integrate information management. Replacing formerly disparate systems and applications to improve decision-making capabilities and minimize shadow systems and resultant redundant data entry and maintenance was the key impetus for many institutions to implement ERP solutions. Examples of systems not integrated—student systems that were unable to share data with general ledger, human resources, advancement, and grants and contracts systems—were commonplace throughout many, if not most, colleges and universities.

E-business applications will once again highlight the need for integrated systems. Without seamless interfaces to administrative systems from Web-based applications, the processes of colleges and universities will once again require redundant data entry, confound data integrity, and hamper decision making.

The simplest example concerns online admissions applications. Many institutions provide this function today. However, many also require manual data entry of information previously input via Web application into the institution's admission systems (because the two lack an interface). The process is convenient for students but more expensive to administer than a paper-based one.

The key technology issue for application integration is how to get applications that are based on different technologies and with differing business processes and data models to work together in a common way on a network. More specifically, how does an organization integrate an e-business application—whether a distance learning course management system, an online student services application, or a procurement application—with what already exists? How can these services be integrated quickly with minimal disruption to everyday operations, not to mention preexisting investment? The solutions, neither trivial nor inexpensive, are crucial for scaling e-business functions. In general, the most complex systems to integrate are the ones that are the most functional and transparent.

A significant portion of the growth for software and services to support electronic business is attributed to systems-

Table 1

E-Business and Vendor Applications

Process Area	Sample of E-Business Vendors
Online admission applications	Embark, CollegeNet, XAP
Online student services	Campus Pipeline, YouthStream's MyBytes.com, Jenzabar.com
Online textbooks	VarsityBooks.com, Textbooks.com, ecampus.com, efollet.com
Online procurement	CommerceOne, Ariba
Online alumni communities, contributions, and merchandising	Harris Publications's Alumniconnections.com
Tools and systems for online delivery and management	Blackboard Inc., Centra, Convene, eCollege.com, WebCT, Eduprise.com
Online content distributors	Caliber, UNext.com, Pensare
Learning portals	Asymetrix's click2learn.com, Hungry Minds, Ziff-Davis' SmartPlanet.com, Blackboard Inc.'s Blackboard.com

integration projects that link companies' Web sites to administrative systems. This category of growth is expected to skyrocket in the United States from $25 billion in 1998 to $104 billion in 2003, according to a study by Input, a market research company.[3] The trend is expected to apply to higher education as well.

Evolving an E-Business Strategy

At PricewaterhouseCoopers we have identified four evolutionary stages for adopting an e-business strategy that are relevant for all industries, including higher education. These four stages include presence, integration, transformation, and convergence.

PRESENCE

The first step to doing business on the Internet is to establish a presence there that represents your institution. Often called "electronic brochureware," this presence usually describes your institution's basic programs, courses, services, and contact information. Examples include online purchasing procedures, campus information catalogs, syllabi, and course information. At this stage risks are small, and so are the likely bottom-line benefits. This is an essential stage nonetheless for experimenting, learning, and building commitment. Virtually all colleges and universities have reached this first stage because it is relatively simple to create and maintain a read-only file of programs, courses, and faculty.

INTEGRATION

In the integration stage, an institution connects with its wider network of suppliers and students by extending its reach beyond institutional walls. At this stage your institution will conduct business through the Web, such as allowing students to register for courses online. In addition, you will use business-to-business links with procurement vendors, the Department of Education for financial aid eligibility verification, funding agencies, research subcontractors, benefit administration vendors, and financial institutions.

There are opportunities at this stage to realize efficiency and revolutionize customer service. However, there are challenges in integrating Web-based applications with legacy administrative information systems, providing prompt customer service, competing with nimble new entrants, and allocating resources to significant IT investments. Also, tax, legal, risk management, and audit issues loom larger as you begin to conduct real business online.

Typically in this stage, colleges and universities will:

- **Begin offering online courses**. The institution will experiment with technology-enabled and -mediated courses to test and improve processes for developing and delivering online courses. The objectives will be to generate additional revenues, stay ahead of competitors, and gain feedback in an operational setting to test assumptions and help refine new process, organization, and technology designs prior to full-scale implementation.
- **Provide online student services**. Students will be able to go online to apply for admissions and financial aid, register for courses, monitor progress, check financial status and pay bills, select housing options, and e-mail faculty. Many institutions use packaged applications such as Campus Pipeline, MyBytes.com, or vendor-provided ERP system enhancements.
- **Provide online alumni and development services**. Web-based applications enable online pledge processing, payment processing (with an instant e-mail receipt for acknowledgements), record updating, event registration and reply, and membership sign-up and renewal.
- **Transform the procurement cycle**. Online market sites will dominate procurement, streamlining request-for-proposal processes and ordering and payment procedures. Procurement processes will be radically shortened thereby reducing costs amid plentiful choices and more and better services. For a majority of purchases, staff and faculty will order directly from a Web-based market site that is integrated with the institution and the vendor's administrative systems. Information regarding established contracts—products, prices, use, and so forth—will be immediately accessible and verifiable.
- **Link the entire research administration process**. Research-intensive colleges and universities will seamlessly share information with principal investigators, funding agencies, corporations (funding research and establishing technology transfer arrangements), clinical trial sites, subcontractors, and other constituents. This process will reduce costs, shorten cycle time, improve service, and eventually become required to compete for federal and industry research dollars.

TRANSFORMATION

Process specialization and disaggregation of the value chain drive this stage. With an e-business infrastructure in place, executives can focus on delineating their core and noncore competencies. E-business allows institutions to unbundle operations more easily, retaining only the components with a competitive advantage.

An institution in the transformation stage will outsource much of its noncore activities. Institutions can identify and invest in activities that add value, exploit process excellence by selling to others, rebundle products and services, and develop new entry barriers by developing superior knowledge of customer needs and wants. There are challenges because margins are squeezed and new entrants increase competition. And identifying and partnering with the best vendors may be impeded ultimately if the best vendors form exclusive arrangements with other institutions, leaving some institutions to choose among less-than-optimal partners.

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At this stage, colleges and universities will usually:

- **Form strategic partnerships.** By partnering with vendors, institutions can complement their expertise and resources. While some institutions will develop and provide online services themselves, most will select a partner for online procurement, student services, research administration, advancement, and distance learning. This disaggregation of the value chain will be met with some resistance by various stakeholders, but the results—reduced costs, improved services, and heightened focus on core competencies—will prove beneficial to the higher education industry generally and to individual colleges and universities specifically. Narrowing margins and increasing competition will force even the reluctant institutions to outsource many noncore processes.
- **Deliver technology-mediated education.** Developing a core competency in technology-mediated education will definitely be an advantage. In many instances distance education courses and programs are developed and delivered by a separate organization. In some cases it is a for-profit entity—a university.com subsidiary—similar to what New York University, Columbia University, and the University of Nebraska have already done. These organizations are free from the traditional institution's confines but support the institutionwide mission. Asynchronous options will allow students, not colleges, to determine the convenient time, place, and pace for education, which is ideal for lifelong learning. Students will be able to choose modules from a variety of providers, thereby enhancing consumer choice but intensifying competition.

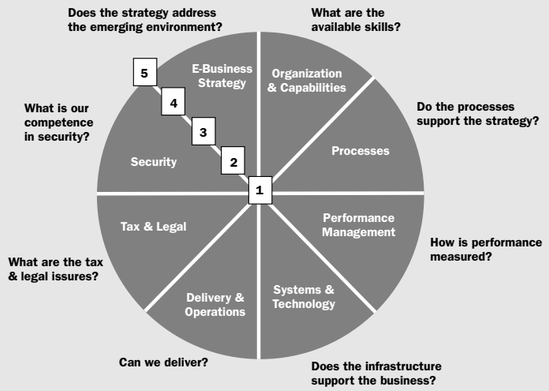
CONVERGENCE

The final stage, convergence, is about more than just the much-heralded union of consumer electronics, information technology, telecommunications, and e-business. Convergence blurs market boundaries. For example, colleges and universities will soon compete with training providers, publishers, software vendors, and entertainment providers as these industries converge into the learning industry.

Certainly there are opportunities to enter new markets with no baggage, exploit skills (for example, superior customer skills), and exploit strong brand name, but there are challenges regarding how to maintain entry barriers for core businesses (that is, teaching and research) and where to focus the brand name. Colleges and universities will find

Enhance Your Chances for Success

At PricewaterhouseCoopers, we have identified eight areas in which institutions should be prepared in order to exploit the e-business opportunities.



In each of the eight areas you will need to assess your institution's preparedness, identify gaps, and develop plans to optimize readiness and improve your ability to provide Internet-enabled services. (See the sidebar on pages 27–29 for a diagnostic process that will help you with this assessment.) In essence, such a diagnosis determines where your institution is and isn't ready for e-business. Armed with this information, you will be able to develop a strong strategic plan for e-business and a corresponding implementation plan. With these two plans your chances for success will skyrocket in the increasingly complex and competitive world of e-business.

themselves competing across industries and geography against the University of Phoenix, UNext.com, Harcourt Direct Learning, the Open University, and even the likes of Thomson Learning, Asymetrix, Microsoft U, and a multitude of accredited corporate universities.

Strategies for the Future

The opportunities presented by e-business preclude the option of waiting for these technologies to mature and the implications to become discernible and lucid. The rising popularity of the Internet; increasingly demanding customers; and unrelenting expectations for expedited services, continuing cost constraints, and emerging opportunities for new revenues will compel colleges and universities to adopt an e-business strategy. Institutions with a carefully constructed plan that considers campuswide implications will substantially benefit from this transition. Others, however, will be left to struggle and fret over why, where, how, and when to move into e-business, placing them at a competitive disadvantage for students, research grants, and contributions in addition to hampering efforts to increase the effectiveness and efficiency of administrative processes.

To transcend the stages of an e-business strategy successfully, institutions must do more than just enable online transactions over the Web. In assessing your institution's readiness or developing a strategic plan for e-business, you mustn't just evaluate the campus Web site. The multifaceted challenges that must be confronted to succeed in e-business span the entire institution, necessitating close coordination among disparate organizational entities. This is the true challenge of doing e-business.

LESSONS LEARNED

In developing this strategic plan for e-business, your institution should leverage its own experience and that of others in the higher education industry. Other industries such as financial services and retail companies (for example, e*Trade, Dell, Schwab, and Amazon.com) offer insights for developing and deploying successful e-business strategies.

Based on our experiences, we have identified five key lessons learned that higher education institutions should incorporate into their strategic planning process:

- **Link e-business objectives to critical business issues**. Your rationale for e-business should be aligned with your institutional mission, strategies, and priorities. Simply put, "e-business" will become business. If your institution's strategic objectives are to enhance academic quality, reduce costs, increase student quality, and improve student service, e-business initiatives should support those institutionwide strategic objectives.
- **Focus on e-business as a business-driven project**. E-business is more than a technology initiative; its impact will be pervasive and should be viewed as a mission-critical undertaking. Brand issues are paramount. Accordingly, sponsorship for an e-business project should emanate from the president, provost, or executive vice president's office to ensure that sufficient importance and institutionwide perspective is embedded in this endeavor.
- **Acknowledge that culture and change are more complicated than the technology**. Once you have determined your e-business objectives and designed the undertaking as a business-driven project, developing an effective change management plan is the next critical activity. Instituting the technology—the infrastructure, applications, or interfaces—is relatively straightforward, although resource intensive. Processes, policies, and organization will likely undergo a transformation. To do so effectively requires a formal change management plan replete with frequent communication of key messages to a variety of constituents.
- **Don't treat e-business as just a "front-end."** If you view e-business as simply an interface, you will miss the transformation opportunities presented. E-business is more than just enabling online transactions. E-business leads to the substitution of network-based technologies and processes for physical locations, manual processes, or other expediting functions that necessitate human attention or increase costs but do not add actual value. In turn, these technologies transform an institution by altering customer service models, enabling personalization of services, providing services at any time, and establishing new relationships with suppliers and other key constituents.
- **Ensure business units take ownership.** Also make sure central leadership, coordination, and development are priorities. In colleges and universities it is likely that various offices have spoken to vendors about alluring applications. While initiative at the business unit level is necessary, ad hoc unmanaged activities will ultimately distract institutional focus and resources. Thus, these individual process-specific decisions must be made only after carefully considering institutionwide objectives and priorities.

E-University

Is your institution ready for the widespread adoption of e-commerce applications and the institutionwide transition to e-business? E-business has already begun to and will continue to dramatically alter all industries—including the higher education industry and individual colleges and universities. Reengineering and ERP initiatives will continue unfettered, incorporating the functions now available online. Strategic partnerships will increasingly be used, further disaggregating the value chain and redefining the roles of colleges and universities.

As institutions successfully navigate the stages of e-business—from presence to integration to transformation and finally to convergence—substantial opportunities will become available for students, faculty, staff, alumni, and other constituents. Benefits will include enhanced and expedited services, reduced cycle time, increased process efficiencies, improved decision making, expanded access for students, alleviated capacity constraints, personalized and customized marketing opportunities, and expanded market opportunities. However, threats will loom, as failure to provide e-business functions will result in competitive disadvantages for institutions. If institutions are unable to connect key constitutions and provide online services easily, someone else will be ready, able, and eager to do so. e

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Is Your Campus Ready for E-Business?

The eight sets of questions below can serve as an initial gauge of e-business readiness. Answer the questions that correspond with your e-business initiative. Distance education strategies, for example, generate different risk issues than e-procurement strategies. And enabling student services on the Web presents still different issues.

To use this diagnostic tool effectively, your institution must:

- ✓ Answer questions honestly by involving relevant constituents.
- ✓ Identify gaps in e-business readiness (based on questions to which the answer is *no*).
- ✓ Determine the causes of the identified deficiencies.
- ✓ Develop a plan and timetable to address deficiencies based on institutionwide objectives and internal capabilities.

1) E-Business Strategy

E-business strategy is more than just determining target markets and developing business plans that describe the return on investment (ROI). It is a comprehensive view of your institution's e-business goals, expected outcomes, rationale, branding, marketing, and launch strategy.

Sample diagnostic questions to assess readiness include:

- ✓ Do you have an e-business strategy?
- ✓ Do key stakeholders buy into the plan?
- ✓ Have you clearly defined the goal of your strategy?
- ✓ Do you have a robust implementation plan for this strategy, including key milestones?
- ✓ Have you created a feedback loop and a time at which you will review the results and reevaluate the strategy? (Market conditions may change and negate your strategy.)
- ✓ Have you developed strategic alliances or partnerships with any vendors for Web-based applications?
- ✓ Have you determined your strategy's ROI? Have you defined success and set clear milestones to gauge progress? Have you considered an exit strategy should market conditions change?

- ✓ Have you developed a funding plan? Do you have a plan to recoup up-front investment?
- ✓ Have you developed your strategy based on input from current and prospective users? Are you building sites that meet their needs? ►

✓ Have you developed a brand for your institution and a corresponding process to maintain, protect, and enhance this key asset?
✓ Have you developed a promotional campaign for your Web strategy?
✓ Have you adequately identified the downside risks? Do you have a plan to address them?

2) Organization and Capabilities

There is far more to e-business than creating a Web site and online processes. Each unit that implements e-business requires dramatic change. Often referred to as "e-engineering," e-business means that organizational structures change, new positions are created, roles and responsibilities are dramatically altered, and new ventures are launched. For many institutions, requisite skills are in short supply and they turn to outsourcing arrangements to accelerate the transition to a new way of doing business.

Diagnostic questions to assess readiness include:

✓ Have you clearly identified business leaders and administrators who are responsible for e-business?
✓ Are the appropriate people in the organization responsible for e-commerce?
✓ Have you appointed Web designers responsible for the look and feel of your Internet applications?
✓ Have you communicated e-business roles and responsibilities across the entire institution?
✓ Can you be entrepreneurial?
✓ Can you move rapidly enough to achieve your goals on time?
✓ Have you appointed Web architects whose roles are to turn business requirements into a system design with capabilities for online transaction processing (for students, principal investigators, alumni, and vendors) and related services?
✓ Does the organization have access to appropriately qualified resources?
✓ Do you have a plan to retrain staff?
✓ Have you rethought human resources performance and reward systems?

3) Delivery and Operations

The IT support area in your organization will go through its own transformation as it supports e-business initiatives. Not only will the roles of your IT professionals change, but new organizations will develop to take on new quasi-IT tasks such as converting content to online formats. This area includes the following topics: backup and continuity planning, content development and management, service provider management, systems failure prevention, systems maintenance, Web site development and implementation, database administration, interfaces and messaging coordination, network management, and service management.

Diagnostic questions to assess readiness include:

✓ Are there processes for Web content creation, publication, evaluation, and quality assurance?
✓ Have you defined uniform Web design principles to be used institutionwide? Have they been communicated to all schools, divisions, and departments?
✓ Do you have a backup system to allow access to your Web site should the primary system fail?
✓ Has your institution established lode balancing and fault tolerance on a multisite architecture?

4) Processes

Yes, e-business means e-engineering processes. You cannot simply put your existing forms online. To take full advantage of the Web, the underlying processes must be completely rethought and dramatically changed. You'll need links between existing systems as well as support desks. Don't forget to plan and implement upgrades. And, at the same time, put proper controls in place.

Diagnostic questions to assess readiness include:

✓ If you plan to offer full programs (degree or nondegree) via the Internet, do you have the concomitant supporting processes in place?
✓ Has your institution developed Web-based applications so services and transactions can occur online (for example, online applications, online registration, and online alumni pledges)? If so, have you developed the plan to change the process?
✓ Have you linked these new processes to existing systems? Do these Internet-based applications feed data directly into your core administration (for example, student, financials, human resources, or research) without manual intervention?
✓ Do you have online links with suppliers for functions such as ordering goods and services, remitting payment, and submitting proposals or quotes?
✓ Do you use offline methods to promote your Web site?
✓ Do you offer a 24/7 help line to assist customers with technical problems encountered while using your Web-based applications?

5) Systems and Technology

E-business depends on adequate systems and technology infrastructure to support your objectives. Systems and technology include back-end systems, front-end systems, middleware, and transaction processing as well as an overarching IT strategic plan to update capabilities continually to meet e-business requirements.

Diagnostic questions to assess readiness include:

✓ Does your institution use accepted Internet standards for both internal and external systems?
✓ Have you assessed your IT technical resources for e-business?
✓ Has your institution implemented automatic systems to check the consistency and quality of Web sites?
✓ Are the technologies supporting e-commerce suitable and scalable?
✓ Are the current electronic delivery channels appropriate for user preferences?
✓ Is the organization able to respond and capitalize on rapid changes in underlying technologies and delivery channels?
✓ Are the e-commerce services implemented to minimize additional investment and duplicated business logic?

6) Performance Management

You will need to establish and monitor tailored criteria to evaluate e-business effectiveness. These criteria will also help you manage and continuously improve e-business initiatives, which should be linked to institutional objectives and priorities. Measures can be strategic (for example, student satisfaction, impact on learning outcomes, and impact on research productivity), financial (revenues generated and impact on process costs), or transactional (Web site availability and user profile and use).

Diagnostic questions to assess readiness include:

✓ Have you considered how you will monitor the success of Internet-based services and function (for example, improved services, increased enrollments, reduced costs, reduced queues or cycle time for registration and other transactions, and increased revenues)?
✓ Do you have a plan to regularly collect and analyze information and data (for example, feedback from students and business partners, press coverage, traffic, comparison of achievements with original Web site objectives, improved communication with all stakeholders, and image)?
✓ From a user's perspective, is the e-commerce application providing satisfactory service?
✓ Are service levels and use monitored regularly?
✓ Does the organization have a way to monitor and report on key performance indicators and business benefits?

7) Security

It's true that e-business exposes your campus to new security risks: cybercrime, loss of data, and privacy concerns. However, proactively identifying and addressing security risks can mitigate these concerns and instill confidence for all campus constituents.

Diagnostic questions to assess readiness include:

✓ Has your institution appointed a security officer responsible for e-business security?
✓ Have you established security standards and communicated them to the entire institution?
✓ Have you implemented some form of authentication (for example, logon IDs and passwords) to control access to sensitive areas of your Web site?
✓ Have you created controls (firewalls, for example) to protect the underlying network infrastructure and Internet connections?
✓ Have e-commerce projects selected the appropriate security systems?
✓ Has the organization minimized the potential for a security breach?
✓ Have you implemented confidentiality and process integrity controls throughout your e-business application?

8) Tax and Legal Issues

E-business-related tax and legal issues abound. It is important to involve your legal department and solicit the advice of tax consultants as part of the e-business planning process. It would be risky not to. Failure to do so can result in unfortunate and unforeseen circumstances, some so dramatic they can stop a strategy in its tracks.

Diagnostic questions to assess readiness include:

✓ If your organization generates any revenue from sales on the Internet, have these revenue sources been reviewed for exposure to unrelated business income tax (UBIT)?
✓ If your organization receives fees for providing any services on the Internet (such as Internet access, e-mail, or search services), have these activities been reviewed for exposure to UBIT?
✓ If your organization has any online publications that include any advertising (such as advertisements, placards, and running banners), have these activities been reviewed for potential exposure to UBIT?
✓ If your organization's Web site has a chat room, are discussions monitored for content that could jeopardize your tax-exempt status?
✓ Does the e-commerce system keep adequate legal and audit trails to support its transactions?
✓ Has the organization developed a policy on intellectual property that stipulates content ownership and revenue-sharing procedures?

For institutions to capitalize on the promises of e-business, they must successfully navigate many challenges. These challenges are pervasive and require an institutionwide approach to assessing e-business readiness, identifying deficiencies, developing a strategic plan, and implementing the plan.