What’s hot now? What has changed since last year? The sixth annual EDUCAUSE Current Issues Survey has the answers. Administered by the EDUCAUSE Current Issues Committee, whose members review and recommend the set of IT issues to be presented each year, the Web-based survey was conducted in December of 2004. Survey participants—the primary representatives, typically CIOs, of EDUCAUSE member institutions—were asked to check up to five of thirty IT issues in each of four areas: (1) issues that are critical for strategic success; (2) issues that are expected to increase in significance; (3) issues that demand the greatest amount of the campus IT leader’s time; and (4) issues that require the largest expenditures of human and fiscal resources.¹

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Complete details and an in-depth analysis of the 2005 Current Issues Survey are published in the Spring 2005 issue of EQ, the EDUCAUSE quarterly journal for IT practitioners. The EQ article presents detailed demographic breakdowns, offers a 2004/2005 comparison of the top-ten issues in all four areas, and for the first time, provides an organized presentation of the top-five issues in all four areas over the complete six-year history of the survey.

This EDUCAUSE Review article focuses on the first area: the top-ten issues that IT leaders identified as the most important for their institutions to resolve for strategic success. For each issue, we offer a definition and a set of questions. The questions are not meant to be exhaustive; they are intended to stimulate thinking and discussion.

But first, how do these results compare to last year’s?

Three overall findings from this year’s survey are especially notable.

■ For the third year in a row, Funding IT remains the number-one IT-related issue in terms of its strategic importance to the institution. The increasing cost of securing campus information environments, acquiring and maintaining administrative systems, and enhancing network infrastructure, the heightened national scrutiny of the cost of higher education, and the continuing strain on, if not further reductions in, state budget allocations to public institutions all contribute to this issue’s stability at the top.

■ News accounts in 2004 and early 2005 of information security breaches at several high-profile universities underscored the attention placed on Security and Identity Management. Yet perhaps more important than security breaches is the fundamental issue of individual computer vulnerability, which can turn machines into open doors or worse. Without a comprehensive plan to protect institution-owned, as well as personally owned, network-connected computers from virus/worm/malware attacks, there can be no reasonable level of reassurance. In 2005, Security and Identity Management moved from third to second on the list of issues critical to resolve for institutions’ strategic success (and from second to first among those issues expected to become even more significant in the coming year).

■ Business Continuity/Disaster Recovery, having first made the top-ten list of issues critical for strategic success in 2004, has dropped off in 2005, perhaps because such plans have been updated and refined due to the steady state of high attention to Security and Identity Management over the past three years.

With most issues either holding their rankings or moving up or down by only one position from 2004 to 2005, the top-ten issues have remained fairly stable.
Budget reductions, increasing demands for services, unbudgeted mandates, and escalating costs make the funding of IT the most pressing issue facing higher education officials.

important for their institutions to resolve for strategic success.

**Current Issue #1: Funding IT**

Budget reductions, increasing demands for services, unbudgeted mandates, and escalating costs make the funding of IT the most pressing issue facing higher education officials. Dealing with this issue requires that key members of the institution understand the strategic value of IT and the risks associated with IT services that fail or that do not meet expected levels of service. Institutional leaders need to understand the urgency of this issue and need to determine realistic ways to eliminate shortfalls in funding the annual costs of critical resources and services. To provide guidance on IT funding, EDUCAUSE has published an executive briefing, an EDUCAUSE Center for Applied Research (ECAR) study, a “get real” opinion piece about collaborative strategies for dealing with budget challenges, and an EDUCAUSE Review panel discussion.4

Critical questions for Funding IT include the following:

- Do key members of the institution understand the strategic value of IT? Can they cite examples of how IT is being or could be used to enhance teaching, learning, research, and services? Do they know how well IT is supporting the strategic goals of the institution?
- Have key members of the institution identified the primary IT resources and services available in their schools and colleges and campus-wide? Have they specified expectations for availability, currency, and performance?
- Have key members of the institution ranked the primary resources and services by their value to the institution, by how well they meet expectations, and by the risk to the institution if the resource or service does not meet expectations?
- Do key members of the institution know how much is currently being invested annually to support each primary IT resource or service? Do they know what funds would be required to meet service-level expectations and the corresponding gaps in annual funding?
- Have key members of the institution aggressively pursued ways to reduce costs and reallocate savings in addition to increasing revenue? Have they considered cost-saving measures such as eliminating, reducing, or consolidating services or creating collaborations among institutions for shared services such as disaster recovery?

**Current Issue #2: Security and Identity Management**

The increased utilization of networks at higher education institutions provides exceptional opportunities for users but also increases the risks associated with information storage, transmission, and access. Access—together with regulatory requirements, distributed architectures, and hostile elements on the Internet—requires greater expenditures and necessitates new security practices and updated policies. As stated above, perhaps more important than security breaches is individual computer vulnerability. Without a comprehensive protection plan, there can be no reasonable level of reassurance.

Critical questions for Security and Identity Management include the following:

- How will the institution balance the need for security with the tradition of open networking? Will a more secure environment be viewed as intrusive or controlling?
- Are institutional policies up-to-date and enforceable? Do they reflect institutional priorities and strategies, legal regulations, and “best practices”? Does the institution maintain an information security incident response plan?

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**2005 Current IT Issues Web Site**

<http://www.educause.edu/2005CurrentIssuesResources/6323>

- Recommended readings for each of the top-ten issues
- Downloadable PowerPoint presentation on “2005 Current IT Issues”
- Links to EDUCAUSE Resource Center entries for each of the top-ten issues
- HTML and PDF links to the *EQ* and *EDUCAUSE Review* articles

**Top-Ten IT Issues, 2005**

1. Funding IT
2. Security and Identity Management
3. Administrative/ERP/Information Systems
4. Strategic Planning for IT
5. Infrastructure Management for IT
6. Faculty Development, Support, and Training
7. E-learning/Distributed Teaching and Learning
8. Governance, Organization, and Leadership for IT
9. Enterprise-Level Portals
10. Web Systems and Services
More than 60 percent of all institutions responding to the CDS survey reported having implemented or being in the process of implementing an ERP system.

- Do leaders recognize their roles as information stewards? Has the institution developed methods and procedures for classifying, handling, and disseminating information resources? Has the institution assessed its information, data, and services and classified these materials (e.g., as public, confidential, and/or critical)?

- Does the institution maintain a separate funding mechanism for information security? Have the number of security incidents and remedial costs during the past year led to increased funding for staffing and tools? Have these incidents highlighted the risks of underinvesting in security?

- Does the institution have trained staff to undertake the job of security? Is there a Chief Information Security Officer (CISO) or the equivalent to provide the leadership for and a focus on security? If so, do other campus units recognize this role?

- Is the institution properly responding to regulatory issues (e.g., FERPA, HIPAA, the GLB Act, and the USA-PATRIOT Act)? Has it taken sufficient measures to comply with these acts?

- Is the institution actively managing the risk of identity theft and other privacy issues/risks? Has it planned or completed an IT risk assessment to identify and prioritize vulnerable areas and ways to mitigate potential risks? Has it assessed and limited the use of Social Security numbers and other identifying data? Has the institution taken a position on the ownership of identifying data maintained in its systems?

- Are physical security and information security maintained independently? Are security and privacy maintained independently? Is the institution examining the alignment of these functions?

- Does the institution have an information security awareness and training program? Are institutional users aware of—and implementing—security measures to protect their systems, data, and identity (e.g., patches, firewalls, and anti-virus, anti-spyware, and anti-phishing tools and techniques)?

- Does the infrastructure facilitate measures to improve security? Is the institution providing funding to facilitate and support such measures on a campus-wide basis?

- Does the institution have a strategy to manage digital identities? Is the existing system utilizing a centralized repository, synchronization technologies, best practices, and open or prestandard technologies? Does it intend to incorporate developing standards? How will the institution handle noncompliant systems? Has it reviewed/changed practices to minimize the risk of identity management problems caused by inadequate communication of personnel changes?

- Has the institution developed polices and identified or implemented appropriate technologies or partners to support electronic information exchange with external parties? What authentication, authorization, and transmission methods will be employed? How will the institution incorporate pending and new standards? Has it engaged all stakeholders in planning and decision-making?

- Does the institution have the systems, procedures, and policies in place to automatically push or quickly apply critical updates and patches?

Current Issue #3: Administrative/ERP/Information Systems

More than 60 percent of all institutions responding to the most recent EDUCAUSE Core Data Service survey reported having implemented or being in the process of implementing an Enterprise Resource Planning (ERP) system. In addition, the survey shows substantial institutional commitment to other information systems, ones that are not necessarily part of the ERP package, such as library and course management systems. Projects of this scope demand large investments and strong commitment by institutional and IT leadership, both before and after implementation.

Critical questions for Administrative/ERP/Information Systems include the following:

- What are the mission-critical factors driving the institution's position on enterprise systems? What service and process improvements are expected for successful implementation? Are there viable alternatives, such as enhancing existing systems?

- If a decision has been made to implement a new system, should the institution partner to build or buy off the shelf? If the institution is purchasing a
The strategic plan involves more than aligning IT with the institutional goals; it involves supporting and achieving these goals using technology.

Current Issue #4: Strategic Planning for IT

Strategic planning for IT must be driven from the goals of the institution in order for technology to be seen as a vital strategic asset and not as a deployment commodity. Strategic planning needs to address the current and future needs of the students, faculty, staff, and community while incorporating instructional, operational, and research initiatives. It must delineate how technology can promote growth opportunities and innovative ideas rather than focusing solely on operational efficiency or expansion of current services.

The IT strategic plan must be a collaborative, cross-institutional effort with top-level sponsorship and support. The strategic plan involves more than aligning IT with the institutional goals; it involves supporting and achieving these goals using technology. The strategic plan is a continuous cycle of planning, implementing, and reviewing. The CIO’s voice must be one (and not the most vocal) of many in the development of an IT strategic plan that will be supported and championed throughout the institution.

Critical questions for Strategic Planning for IT include the following:

- Does the IT plan have active support from the institution’s executive and faculty leadership?
- Does the planning process include collaborative involvement from all constituencies (faculty, staff, students, and community)?
- Does the IT plan support the institution’s goals? Does it emphasize student learning as well as institutional growth and expansion?
- Is the plan flexible? Can it adapt to changing conditions and requirements? Is it open to mid-cycle innovative ideas or new programs?
- Is the IT plan cross-institutional? Does it include academic/instructional programs, administrative/operational services, and infrastructure improvements?
- Does the plan include short-term projects (<1 year), near-term endeavors (1–3 years), and long-term objectives (>3 years)? Do the short-term projects support the long-term strategic objectives?
- Will the institution be able to provide sufficient funding and resources for both one-time and ongoing ex-
penses? Are staff with the appropriate technical skills and expertise available?

■ Do the project teams include more than just IT personnel? Are project plans and timelines documented and reviewed? What needs to change in the current environment (technical, instructional, and operational)?

■ What metrics will be used for assessment? Is there an annual review to learn from setbacks and to celebrate successes?

Current Issue #5: Infrastructure Management for IT

Managing the campus IT infrastructure is becoming an increasingly complex task. Institutions that seek to maximize their investment need to build in security, reliability, flexibility, and scalability. The push toward integration and services that can bring information to faculty, staff, and students “anytime, anywhere” brings new challenges. More and more, it seems that institutions view emerging technologies as a competitive opportunity requiring the ability to adopt and adapt quickly. Institutions face the enormous challenge of creating a workable information architecture and framework to facilitate the organization of, storage for, access to, and maintenance of strategic data. At the same time, the enterprise continues to press its demands for higher availability, bandwidth, storage, integration, and mobility.

An emerging expansion of infrastructure management is end-to-end service assurance, carrying with it a balance between component-centric and service-centric monitoring. Such a balance enables IT staff to be alerted when a service is not functioning correctly, as well as when a component fails. One model of service-centric monitoring would have intelligent agents distributed strategically to launch simulated transactions in order to determine if critical services are available and if they are performing up to the established service-level expectations. End-to-end service management and infrastructure component management are integrally related.

Critical questions for Infrastructure Management for IT include the following:

■ Does the institution have a replacement plan for servers, appliances, network devices, and other hardware? Does it negotiate pre-paid or long-term maintenance agreements for hardware where appropriate?

■ Does the institution have good monitoring and benchmarking practices? Do network and systems administrators have the tools and training to automate problem detection and notification? Is the institution monitoring and managing its network and Internet bandwidth requirements effectively? Is trend analysis performed to assist with capacity and upgrade planning?

■ Does the institution have built-in redundancy for its network and critical applications servers? Does it have the necessary test environments for use when upgrading hardware and software?

■ Is the institution effectively managing the explosive requirement for systems and storage to support the growing information architecture? Does the
Rapidly emerging trends and the general move toward learning management systems underscore the need to rethink faculty-support systems and faculty training.

institution have a plan to deal with the development and growth of more and larger data warehouses, institutional repositories, and digital collections?

■ Is the institution effectively meeting the current demand for both wired and wireless connectivity and infrastructure? Is it managing both environments as efficiently as possible? If VoIP (Voice-over Internet Protocol) is planned for the immediate future, does the institution have adequate power and backup power sources in its environment?

■ Is the institution planning and budgeting for “environmental” upgrades? What are the power, generator, UPS, air conditioning, floor space, and fire-suppression requirements for the next three years or for the appropriate planning horizon?

Current Issue #6: Faculty Development, Support, and Training

Models for faculty development, support, and training are changing rapidly. Until recently, faculty-training programs focused primarily on how to use course management systems such as WebCT and Blackboard. However, rapidly emerging trends and the general move toward learning management systems underscore the need to rethink faculty-support systems and faculty training. According to The Horizon Report, 2005 Edition, six technologies either are here or are emerging for research, teaching, and learning: extended learning (hybrid courses using traditional, online, and mobile technologies); campus wireless environments; intelligent information-management tools; educational gaming; social computing and networks; and context-aware computing. Faculty must now consider how to harness powerful communication tools such as channels and blogs and how to combine multimedia formats such as streaming audio, video, and digital images with traditional scholarly resources for the physical and virtual classroom.

Critical questions for Faculty Development, Support, and Training include the following:

■ What is the most appropriate model for faculty training and support? Do faculty have time to be “taught,” or do support personnel need to consider a production or service model? What are the physical and virtual needs for faculty support?

■ How can rich content, such as digital storytelling and visual literacy, be married with technology and pedagogy? How does the institution evaluate such content?

■ Are different disciplines affected differently by dramatic changes in technology? If so, should support approaches be customized to the discipline?

■ What are the effective organizational structures for deploying faculty-support personnel? Why is it important for a variety of key experts on campus to collaborate to support faculty? How can a team effort be leveraged? What skills and training do support staff need?

■ How should campuses support faculty to integrate emerging (including mobile) technologies for teaching, learning, and research? Are the emerging technologies—and also their integration—scalable?

■ What are the incentives for faculty individually and for campuses collectively to incorporate new technologies into teaching and research? Are innovative reward structures and incentives in place?

■ What are the implications for graduate student education and training as these students prepare for faculty positions in high-tech environments? What are baseline computer and pedagogical literacy requirements for new faculty?

■ What is the role of students in faculty development, support, and training?

■ How can the standards and assessment work of national and international associations benefit local campuses seeking to measure student learning and faculty productivity?

Current Issue #7: E-Learning/Distributed Teaching and Learning

E-learning, also known as distributed learning or online distance education, has become a significant element in post-secondary education: it is predicted that online enrollment in the United States alone will exceed one million students in 2005. Expanded e-learning opportunities are available at colleges and
universities in certificate, diploma, degree, and postbaccalaureate programs. Although e-learning provides many new opportunities, it also presents some unique issues and challenges.

Critical questions for E-Learning/Distributed Teaching and Learning include the following:

- How are faculty best supported in an e-learning environment? What support services are needed to assist faculty, instructional designers, librarians, and media specialists in identifying or developing high-quality digital resources and in using institutional information and learning object repositories? How does the institution support the development of standards for the description of and access to digital resources? How does the institution support the development of standards for the description of and access to digital resources? How does it support students and faculty in the development and use of e-portfolios?

- Whom does e-learning serve on a given campus? How does the institution ensure that students are informed consumers of e-learning experiences and have the personal learning, time management, and technology skills necessary to succeed in a technology-mediated environment? How does it provide students with access to the appropriate support and services?

- How can the institution provide the best-possible infrastructure to support e-learning?

- How does the institution ensure quality in the e-learning experience? How does it assess learning and course outcomes in an e-learning environment? How does the institution build an e-learning assessment model that will take into account educational theory, will recognize best practices, and will be appropriate for a variety of e-learning experiences—including on- and off-campus, fully online, and/or hybrids that integrate some online elements into traditional face-to-face instruction?

- What potential do new technologies—such as VoIP, videostreaming, virtual reality, blogs, and online gaming environments—have for enriching e-learning?

- How is e-learning being incorporated into the classroom learning experience to create blended or hybrid learning? How is this process enriching and/or transforming teaching and learning?

- What e-learning business model, organization, and policy structure will best serve the campus?
Institutions find themselves forced to deal with multiple portal solutions as campus ERP and CMS projects result in the deployment of multiple portal products.

Current Issue #8: Governance, Organization, and Leadership for IT

Technologies are converging, technical solutions to institutional challenges are becoming more integral to the fabric of the campus culture, security threats are requiring increased organizational energies, and the demands for technology to support teaching, learning, and research are increasing. Clearly, CIOs across the spectrum of institutional demographics are expending significant time and effort in evaluating how best to effectively lead and structure their organizations to address these and other institutional and technical challenges.

The effective governance, organization, and leadership for IT facilitate the application of technology for strategic success. But more important than leading and managing technology initiatives, budgets, and staffs, the CIO needs to build coalitions, span silo boundaries, and show how technology can advance divisional and institutional missions. As EDUCAUSE President Brian L. Hawkins noted in a recent article, the CIO is both “an orchestra leader who tries to get various elements within the campus to play together” and “the leader of a jazz ensemble, who coordinates but also improvises, allowing others to express their own uniqueness and making it all up more or less on the fly.”

Critical questions for Governance, Organization, and Leadership for IT include the following:

- Does the CIO sit on or at least interact regularly with the executive cabinet? What access does the CIO have to governing boards, community planning groups, and state legislators to influence technology decisions and priorities? Without such regular access, what can the CIO do to develop insight into how best to address issues of governance in the context of the larger institutional landscape?
- Are the right advisory groups in place on campus to ensure the comprehensive oversight of technology decisions and direction? If not, faculty and administrative advisory groups, an IT steering committee with broad campus representation, and a means of communicating regularly with student leaders should be established.
- How can the institution develop managers and future leaders within IT who are able to support the organization’s governance, organization, and leadership efforts? How should the IT organization use their knowledge, relationships, and insights to collaborate across organizational boundaries?

Current Issue #9: Enterprise-Level Portals

Enterprise portals continue to be a prominent topic across the campus spectrum. Many institutions have embraced portal projects over the past several years; yet achieving the heralded full potential hyped by the growing number of portal vendors presents itself as an ongoing challenge for most campuses. In many cases, institutions find themselves forced to deal with multiple portal solutions as campus ERP and CMS projects result in the deployment of multiple portal products.

The dizzying array of application-specific portal products has been complicated further by the lag in development of interoperability standards. David Gootzit, Gene Phifer, and Ray Valdes have observed that although the advent of Generation 3 portals has moved institutions toward an enterprise solution and has helped to achieve a degree of unification in a single portal framework, campuses are still left with the challenge of how to successfully integrate internal portals on different frameworks and then extend that integration to portals outside of the enterprise. While the development of interoperability standards continues to evolve, Generation 4 enterprise portal solutions may provide a tactical alternative...
to meeting these challenges. Generation 4 enterprise portal solutions will more frequently incorporate evolving architectural components, such as application platform suites (APSs) and smart enterprise suites (SESs). As the enterprise or horizontal portal product marketplace continues to mature in the context of rapidly incorporating these key architectural components, campuses will continue to be confronted with a large array of products from which to choose. The three authors document no less than twenty-one separate solutions, with eight being identified as “leaders” in this important product niche. In the meantime, campuses confronted with the challenge of portal deployment and integration should be mindful that this product niche will continue to evolve.

Critical questions for Enterprise-Level Portals include the following:

■ What is the portal product market segment, and what is the likely survivability of the institution’s proposed or current vendors? What are the TCO (total cost of ownership) implications of these vendors’ technology?
■ Given the stage of maturity of the institution’s enterprise portal, what is the best strategy to address low-cost operations and high user satisfaction?
■ What are the best practices for portal development deployment and support for the institution?
■ How can the institution build/enhance a portal to be the unifying platform for the future—today as part of a portal ecosystem and tomorrow as the portal fabric?

Current Issue #10: Web Systems and Services

Web services are an evolving breed of Web applications based on a Service Oriented Architecture (SOA) that facilitates the integration of software components utilizing a standard set of protocols. They are modular, self-descriptive, self-contained applications that interoperate over the Internet/ intranet in order to publish, locate, and initiate specified functions, which can range from small single-service functions to sophisticated business procedures.

Web services are rising to prominence because they can provide long-awaited opportunities for applications running on different platforms, programmed in a variety of languages, and custom-built or vendor-acquired to interoperate and satisfy organizational processing requirements. Web services depend on a series of standards: XML (eXtensible Markup Language), which describes the information to be processed; SOAP (Simple Object Access Protocol), which is the communications protocol that defines the rules for interoperability; UDDI (Universal Description Discovery and Integration), which is a directory of available Web services; and WSDL (Web Services Description Language), which describes the capabilities and interoperability
functions required for a Web service to work effectively.

Web services promote the use of “best of breed” software applications. They eliminate the necessity of moving data and electronic processes into a common operational environment in order to realize integration. Web services are expected to play a dominant role in future Web-based system architectures, minimizing the complexities normally associated with application integration.

Critical questions for Web Systems and Services include the following:

- How can Web services provide optimum return on existing investments and provide enhanced scalability?
- Can the institution make modular/iterative development of Web-based applications, a hallmark of Web services, sustainable and less costly?
- Although Web services and the required standards are still evolving, what can the institution do to test the waters now and ensure that Web services are an integral part of future strategic plans?
- What will it take to utilize a Web services approach when developing new Web-based applications?
- What are the availability and the flexibility of Web services in new vendor applications that the institution is evaluating?

Summary

There are few surprises in this year’s survey results, suggesting a measure of stability in higher education IT issues. As colleges and universities continue to experience tight budget exigencies after the dot-com bubble burst and continue to receive increasing calls for measurable accountability, Funding IT remains the number-one IT-related issue in terms of its strategic importance to the institution. Meanwhile, Security and Identity Management ranks high in all four of the survey areas, inching closer to the top in strategic importance. Hopefully, the 2005 Current Issues Survey will contribute to a better understanding of the broad context of IT-related issues and will foster college and university leaders’ recognition that these issues are challenges not just for individual campuses but for higher education as a whole and as a community.

Notes

1. Of the 1,653 EDUCAUSE primary member representatives who received an e-mail invitation to complete the 2005 Web-based Current Issues Survey, 603 (36.5%) responded.