Third Annual EDUCAUSE Survey Identifies Current IT Issues

Campus IT staffing challenges have eased, while security management has emerged as an issue of strategic importance

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For the third consecutive year, EDUCAUSE conducted a Current Issues Survey to capture information from members about their most pressing campus IT-related challenges.[1] Nearly 43 percent (550) of the 1,293 EDUCAUSE primary member representatives invited to participate responded to the Web-based survey, which asked recipients to check up to five of 43 issues in response to each of four questions (see Tables 1 and 2).

Two findings for all respondents from this year's survey are especially notable:

1. Security management has emerged as an issue of strategic institutional importance, one that has the potential to become more significant and that has begun to demand campus IT leaders' time. Last year, this issue appeared only on the list of issues with the potential to explode in importance — a finding borne out by this year's results.
2. IT staffing and human resources management, which last year appeared on all four top-ten lists for all respondents, remains only on the list of issues that IT leaders spend time on.

We suggest that both findings are related at least in part to events external to higher education. Although security management may already have begun to be a campus concern before the events of September 11, 2001, it has no doubt increased in importance since then. Because of the downturn in the economy beginning last spring — especially the failure of so many dot-com firms — the job market experienced an infusion of IT professionals. This loosening of the market may well have benefited colleges and universities, which struggle to compete for these skilled workers when they are in shorter supply. But as Hawkins, Rudy, and Wallace point out in their recently published book on educating and managing workers in the digital age, "The IT staffing crisis in higher education may have temporarily subsided, but with the central role that technology will continue to play in our society, it is foolhardy to suggest that it has been adequately addressed."[2] It will, indeed, be interesting to see if the challenges related to IT staffing reemerge as an issue on future Current Issues surveys as the U. S. economy recovers.

Table 1

The Four Questions

1. Which of the IT-related issues below are most important for your campus to resolve for its strategic success?
2. Which of the IT-related issues below have the potential to become much more significant in the coming year?
3. Which of the IT-related issues below are you as an IT leader or administrator spending most of your time addressing?
4. On which of the IT-related issues below is your campus spending the most human and/or financial resources?

2002 Survey Findings: All Respondents

Comparing the top ten issues for all respondents across all questions, two issues rank in the top ten in all four areas:

- Administrative systems/enterprise resource planning (ERP)
- Faculty development, support, and training

As it did last year, administrative systems/ERP earned the top spot on the list of issues that respondents reported to be the most pressing to resolve for their institution's strategic success (Question 1) and the most demanding of resources (Question 4), and second place on the list of how IT leaders spend their time (Question 3). However, this issue jumped from tenth last year to third this year among issues expected to increase in significance in the future (Question 2). It would appear that not only is this issue not waning, but it may be reaching mainstream proportions. Similarly, faculty development, support, and training remained third on the list of institutional strategic issues and sixth in resource consumption, but this year also has moved onto the top-ten lists of issues of increasing significance and how IT leaders spend their time.

Five other issues are on the top-ten lists for three of the four questions:

Table 2

Survey Issues

Administrative systems/Enterprise Resource Planning
Advanced networking
Assessment of technology[1]
Business continuity/disaster recovery
Business process reengineering
Change management
Collaboration/partnerships
Data management
Desktop computing management
Digital libraries
Digital records management[2]
Distance education
E-commerce
Electronic classrooms/technology buildings
Faculty development, support, and training
Instructional management systems*
Intellectual property management
IT funding strategies
IT organization and service delivery models
IT staffing and human resources management
IT strategic planning
IT training campuswide
Java implications
Knowledge management systems
Leadership for IT
Maintaining network infrastructure[3]
Network technologies (emerging)
Online student services
Open-source initiatives*
Policy on campus and Federal compliance[4]
Portals (enterprise level)[5]
Privacy*
Remote access*
Security management
Software site licenses
Standards for hardware and software
Student computing
Support services
Teaching and learning strategies
Ubiquitous computing/universal access
Vendor relations
Web-based systems development and integration
Web management and policy

* This term was new to the 2002 survey grid.
[1] This term was listed as "benchmarking/assessment" last year.
[2] This term was listed as "digital records management and preservation" last year.
[3] This terms was listed as "maintaining network and IT infrastructure" last year.
[4] This term was listed as "information policy development" last year
[5] This term was listed as "enterprise/institutional portal development" last year.

- Maintaining network infrastructure (top ten for all but Question 2)
- Distance education (top ten for all but Question 3)
- IT funding strategies (top ten for all but Question 4)
- IT strategic planning (top ten for all but Question 4)
- Security management (top ten for all but Question 4)

How do these results compare to last year's? Table 3 presents the top-ten issues for all respondents for each of the four questions for 2001 and 2002 for easy comparison. By and large, the survey found more similarities than differences, except for the two major findings discussed above and a handful of other results. Notably, the top-ten lists for Questions 1 and 2 include the same set of issues (although in a different rank order) with one exception: maintaining network infrastructure did not make the list of issues viewed as increasing in significance, while enterprise portals did.

With increasing numbers of colleges and universities cutting budgets, it should come as no surprise that the challenge of IT funding also has risen in importance since last year. It remains in second place as a strategic institutional issue and jumped from seventh to first on the list of issues of increasing significance. At the same time, IT strategic planning rose from seventh to fourth for Question 1, is new on the list for Question 2, and remains the top activity consuming IT leaders' time.

Also worthy of note is the drop in ranking of distance education from fifth to eighth in strategic importance to resolve (Question 1) and from first to sixth for issues expected to increase in significance (Question 2), and its disappearance from the list of issues that IT leaders spend time on. One might interpret this to mean that the issues surrounding distance education are beginning to be less onerous; that other issues have become more significant or strategic; or simply that distance education is hard to "systematize," that is, it has always been more of a series of one-of-a-kind efforts.

Other notable findings include the following:

- Enterprise portals, which last year did not make any of the overall top-ten lists, is now fourth on the list of issues expected to increase in significance overall.
- Emerging network technologies has replaced electronic classrooms/buildings on the top-ten list of issues that need to be resolved for an institution's strategic success.
- Advanced networking made the top-ten list of issues that institutions are spending significant resources on but dropped off the list of issues increasing in significance.
- Ubiquitous computing/universal access dropped off the list of issues expected to "explode," where it ranked fourth last year. This issue appears to have dissipated, as it does not appear on any top-ten lists, even those derived from demographic analyses.

Like last year, the issues on which IT administrators spend their time differ somewhat from the issues on the other three lists. Charged with overall leadership for IT and usually line management of the IT organization, the IT administrator must necessarily spend his or her time on management-related as well as strategic and emerging challenges.

Unique issues in the top-ten list for Question 3 include IT staffing and human resources management (interpreted here to relate to the line management role as opposed to addressing a staffing crisis), change management, IT organization and service delivery mod-

Table 3

2001–2002 Comparison of Top-Ten Issues for All Questions

2001 Survey Results	2002 Survey Results
Question 1: Need to Resolve for the Institution's Strategic Success	
1. Administrative Systems/ERP	1. Administrative Systems/ERP
2. IT Funding Strategies	2. IT Funding Strategies
3. Faculty Development, Support, Training	3. Faculty Development, Support, Training
4. IT Staffing and HR Management	4. IT Strategic Planning
5. Distance Education	5. Security Management
6. Teaching and Learning Strategies	6. Online Student Services
7. IT Strategic Planning	7. Teaching and Learning Strategies
8. Online Student Services	8. Distance Education
9. Maintaining Network and IT Infrastructure	9. Maintaining Network Infrastructure
10. Electronic Classrooms/ Technology Buildings	10. Emerging Network Technologies
Question 2: Potential to Become More Siginificant	
1. Distance Education	1. IT Funding Strategies
2. Emerging Network Technologies	2. Security Management
3. Security Management	3. Administrative Systems/ERP
4. Ubiquitous Computing/ Universal Access	4. Enterprise-level Portals
5. Teaching and Learning Strategies	5. Online Student Services
6. IT Staffing and HR Management	6. Distance Education
7. IT Funding Strategies	7. Emerging Network Technologies
8. Online Student Services	8. Faculty Develoment, Support, Training
9. Advanced Networking	9. IT Strategic Planning
10. Administrative Systems/ERP	10. Teaching and Learning Strategies

2001 Survey Results	2002 Survey Results
Question 3: How IT Leaders Spend Their Time	
1. IT Strategic Planning	1. IT Strategic Planning
2. Administrative Systems/ERP	2. Administrative Systems/ERP
3. IT Staffing and HR Management	3. IT Funding Strategies
4. IT Funding Strategies	4. IT Staffing and HR Management
5. Support Services	5. Change Management
6. Change Management	6. IT Organization and Service Delivery Models
7. IT Organization and Service Delivery Models	7. Maintaining Network Infrastructure
8. Maintaining Network and IT Infrastructure	8. Support Services
9. Leadership for IT	9. Security Management
10. Distance Education	10. Faculty Development, Support, Training
Question 4: Expenditure of Most Institutional Resources	
1. Administrative Systems/ERP	1. Administrative Systems/ERP
2. Maintaining Network and IT Infrastructure	2. Maintaining Network Infrastructure
3. Desktop Computing Management	3. Desktop Computing Management
4. Support Services	4. Support Services
5. IT Staffing and HR Management	5. Electronic Classrooms/ Technology Buildings
6. Faculty Development, Support, Training	6. Faculty Development, Support, Training
7. Web-based Systems Development & Integration	7. Web-based Systems Development & Integration
8. Distance Education	8. Student Computing
9. Electronic Classrooms/ Technology Buildings	9. Distance Education (tied)
10. Online Student Services	10. Advanced Networking (tied)

els, and support services. Issues that appear in the top ten for Question 1 that do not appear on the IT leaders' top-ten list of time-consuming issues include online student services, teaching and learning strategies, distance education, and emerging network technologies. New this year on the list of issues commanding an IT leader's time are security management and faculty development, support, and training; missing are distance education and leadership for IT.

For the most part, institutions overall appear to be spending resources in the areas one might expect, with some of those areas not necessarily strategic but routine infrastructure investments: desktop computing, support services, student computing. Also included on the resource-intensive top-ten list but not on the other lists are electronic classrooms/ technology buildings, Web-based systems development, and advanced networking. The first two were also on last year's list for Question 4, but advanced networking is new this year as an issue that is capturing institutional resources.

As noted earlier, conspicuously absent from the list this year is IT staffing and human resources management, which last year was in the top five for resource consumption.

Demographic Similarities and Differences

We thought it would be valuable to look at specific subsets of institutions within the broader membership, to identify any demographic differences in how issues are viewed. For the purposes of our analysis we created four groupings based on former Carnegie classifications: research 1 and 2 and doctoral-granting 1 and 2 respondents were grouped into a category we named research + doctorate (or R+D); master's 1 and master's 2 are collapsed into the category master's; baccalaureate 1 and 2 are collapsed into the category baccalaureate; and the fourth category is associate of arts (two-year colleges).

We also looked for differences by enrollment size: small (less than 2,000), medium (2,000 to 7,999), medium-large (8,000 to 17,999), and large (18,000+). Table 4 provides issue rankings by institution size and control, and Table 5 provides those rankings by Carnegie classification.

Need to Resolve for Strategic Success

We found remarkable congruence across institutions of all sizes, control, and Carnegie class for the first question, that is, issues that need to be resolved for an institution's strategic success. The following issues appear in the top-ten list across all of the demographic categories:

- Administrative systems/ERP
- IT funding strategies
- Faculty development, support, and training
- IT strategic planning
- Maintaining network infrastructure

Other findings include

- Security management is on the top-ten list for every category of school except small colleges.
- Teaching and learning strategies made the top-ten list of every category except community colleges.

The absence of security management from the top ten challenges of small colleges might mean that for schools this size, security is not as complex to manage and thus may be more under control than at large research universities with highly decentralized and autonomous environments. Worth noting, however, is that security management did make the top-ten list of issues demanding resource expenditures for small schools (when it actually did not make that list for medium, medium-large, or large institutions), so perhaps this is a case of security management not being considered critical to a small college's strategic success, but nonetheless important to invest in.

As mentioned earlier, for Question 1 IT staffing made the top-ten list only for community colleges, where it is tenth. Also unique to community colleges for this question is IT training campuswide, which was a unique issue for these schools last year as well.

Interestingly, for medium-sized schools, schools in the master's category, and public institutions, overall content of the top-ten list for Question 1 was identical to the all-respondents list (although individual issue rankings differed).

Expected to Increase in Significance

Four issues made the top-ten list for this question for all types, sizes, and Carnegie classes participating in the survey:

- Administrative systems/ERP
- IT funding
- Security management
- Enterprise portals

In fact, this year administrative systems/ERP ranks as the number one increasingly significant issue for small schools, number three for private schools, and number four for baccalaureate schools, although it did not rank in the top-ten potentially explosive issues for any of these types of schools last year. And IT funding is unanimously the number-one issue of increasing significance for all sizes and types of schools, ranking in the top three for all Carnegie classes.

Although distance education made the top-ten list for all categories except baccalaureate schools this year, it has dropped considerably in the rankings. Last year it was the number-one potentially explosive issue for all sizes, types, and Carnegie classes except baccalaureate schools, for which it was the second ranking issue for this question. This year, it isn't among the top three issues of any type of school except community colleges and more often ranks as low as seven or eight.

Ubiquitous computing/universal access ranked in the top five last year for Question 2 for R+D, master's, baccalaureate, medium-sized, and private schools, but does not appear on the top-ten list for any of these groups this year.

E-commerce made the top-ten rankings for potentially explosive issues last year at large, R+D, master's, and community colleges, but this year is only on the top ten for the latter two Carnegie-class schools. Data management is another issue that appears only among the top ten issues of master's schools and community colleges.

Two new issues added to the grid this year — instructional management systems and privacy — appear on the top-ten lists for large and R+D institutions.

Finally, one might have expected business continuity planning/disaster recovery to appear on the top-ten list of most types of schools after the events of September 11, 2001, but it appears only for R+D, medium-large, and large institutions. However, since it did not make any top-ten lists last year, this may indicate it is indeed beginning to emerge as an increasingly significant issue.

How IT Administrators Spend Their Time

Again, there is much more congruence than divergence in this area when examined demographically. While the rank order varies, IT leaders across all demographic categories report that they spend most of their time addressing the following issues (also the case last year):

- Administrative systems/ERP
- IT funding strategies
- IT strategic planning
- Maintaining network infrastructure

Three other issues demand the attention of IT leaders in all institutional

Table 4

Issue Rankings by Institution Size and Control (Public Versus Private)

QUESTION No. 1: The IT-related issues most important for campuses to resolve for strategic success.

Small	Medium	Medium-Large	Large	Private	Public
Faculty development, support, and training	Administrative systems/ ERP	Administrative systems/ ERP	Administrative systems/ ERP	Faculty development, support, and training	Administrative systems/ ERP
Administrative systems/ ERP	Faculty development, support, and training	Security management	IT funding strategies	Administrative systems/ ERP	IT funding strategies
IT funding strategies	IT funding strategies	IT funding strategies	Security management	IT funding strategies	Security management
IT strategic planning	Distance education	IT strategic planning	IT strategic planning	IT strategic planning	Distance education
Online student services	IT strategic planning	Faculty development, support, and training	Teaching and learning strategies	Teaching and learning strategies	Faculty development, support, and training
Teaching and learning strategies	Maintaining network infrastructure	Online student services	Enterprise portals	Maintaining network infrastructure	IT strategic planning
Emerging network technologies	Online student services	Teaching and learning strategies	Maintaining network infrastructure	Online student services	Online student services
Maintaining network infrastructure	Security management	Distance education	Advanced networking	Security management	Maintaining network infrastructure
Electronic classrooms/ technology buildings	Teaching and learning strategies	Maintaining network infrastructure	Faculty development, support, and training	Electronic classrooms/ technology buildings	Teaching and learning strategies
Distance education	Emerging network technologies	Enterprise portals	Online student services	Web-based systems development and integration	Emerging network technologies

QUESTION No. 2: The IT-related issues with the potential to become much more significant in the coming year.

Small	Medium	Medium-Large	Large	Private	Public
Administrative systems/ ERP	IT funding strategies	Security management	IT funding strategies	Security management	IT funding strategies
Emerging network technologies	Security management	IT funding strategies	Administrative systems/ ERP	IT funding strategies	Security management
IT funding strategies	Enterprise portals	Administrative systems/ ERP	Security management	Administrative systems/ ERP	Administrative systems/ ERP
Distance education	Online student services	Enterprise portals	Enterprise portals	Enterprise portals	Distance education
Online student services	Administrative systems/ ERP	Teaching and learning strategies	Distance education	Emerging network technologies	Enterprise portals
Faculty development, support, and training	Faculty development, support, and training	Business continuity/ disaster recovery	Teaching and learning strategies	IT strategic planning	Online student services
Security management	Emerging network technologies	IT strategic planning	Advanced networking	Faculty development, support, and training	Faculty development, support, and training
IT strategic planning	Advanced networking	Distance education	Online student services	Online student services	Advanced networking
Enterprise portals	Distance education	Data management	Instructional management systems	Distance education	Emerging network technologies
Teaching and learning strategies	Support Services	Emerging network technologies	Business continuity/ disaster recovery	Teaching and learning strategies	Data management

QUESTION No. 3: The IT-related issues IT leaders or administrators are spending most of their time addressing.

Small	Medium	Medium-Large	Large	Private	Public
IT strategic planning	IT strategic planning	Administrative systems/ ERP	IT funding strategies	IT strategic planning	Administrative systems/ ERP
Administrative systems/ ERP	IT funding strategies	IT strategic planning	Administrative systems/ ERP	Administrative systems/ ERP	IT strategic planning
IT funding strategies	Administrative systems/ ERP	IT funding strategies	IT strategic planning	IT funding strategies	IT funding strategies
Change management	IT staffing and human resource management	IT staffing and human resource management	Security management	IT staffing and human resource management	Change management
IT staffing and human resource management	Change management	IT organization and service delivery models	Leadership for IT	Change management	IT organization and service delivery models
Faculty development, support, and training	Maintaining network infrastructure	Support Services	Maintaining network infrastructure	Maintaining network infrastructure	IT staffing and human resource management
Maintaining network infrastructure	IT organization and service delivery models	Security management	IT organization and service delivery models	Faculty development, support, and training	Maintaining network infrastructure
Support Services	Support Services	Maintaining network infrastructure	Enterprise portals	Support Services	Security management
Web management and policy	Leadership for IT	Change management	Distance education	IT organization and service delivery models	Support Services
IT organization and service delivery models	Security management	Enterprise portals	Change management	Leadership for IT	Distance education

QUESTION No. 4: The IT-related issues campuses are spending the most human and/or fiscal resources on.

Small	Medium	Medium-Large	Large	Private	Public
Administrative systems/ ERP	Administrative systems/ ERP	Administrative systems/ ERP	Administrative systems/ ERP	Administrative systems/ ERP	Administrative systems/ ERP
Maintaining network infrastructure	Maintaining network infrastructure	Maintaining network infrastructure	Maintaining network infrastructure	Maintaining network infrastructure	Maintaining network infrastructure
Desktop computing management	Desktop computing management	Desktop computing management	Support Services	Desktop computing management	Desktop computing management
Support Services	Support Services	Support Services	Electronic classrooms/ technology buildings	Support Services	Support Services
Faculty development, support, and training	Electronic classrooms/ technology buildings	Electronic classrooms/ technology buildings	Student computing	Electronic classrooms/ technology buildings	Electronic classrooms/ technology buildings
Electronic classrooms/ technology buildings	Faculty development, support, and training	Online student services	Advanced networking	Faculty development, support, and training	Distance education
IT staffing and human resource management	Distance education	Web-based systems development and integration	Desktop computing management	IT staffing and human resource management	Online student services
Web-based systems development and integration	Online student services	Advanced networking	Web-based systems development and integration	Security management	Web-based systems development and integration
Software site licenses	IT staffing and human resource management	Faculty development, support, and training	Distance education	Web-based systems development and integration	Student computing
Security management	Web-based systems development and integration	Student computing	Online student services	Software site licenses	Advanced networking

Table 5

Issue Rankings by Carnegie Classification

QUESTION No. 1: The IT-related issues most important for campuses to resolve for strategic success.

Research & Doctorate	Master's	Baccalaureate	Associate of Arts
Administrative systems/ERP	Faculty development, support, and training	Faculty development, support, and training	Administrative systems/ERP
IT funding strategies	IT funding strategies	Administrative systems/ERP	Distance education
Security management	Administrative systems/ERP	IT funding strategies	IT funding strategies
Faculty development, support, and training	Online student services	IT strategic planning	Online student services
IT strategic planning	IT strategic planning	Teaching and learning strategies	IT strategic planning
Maintaining network infrastructure	Distance education	Maintaining network infrastructure	Maintaining network infrastructure
Teaching and learning strategies	Teaching and learning strategies	Online student services	Faculty development, support, and training
Electronic classrooms/technology buildings	Maintaining network infrastructure	Emerging network technologies	IT training campuswide
Advanced networking	Security management	Electronic classrooms/technology buildings	Security management
Enterprise portals	Emerging network technologies	Security management	IT staffing and human resource management

QUESTION No. 2: The IT-related issues with the potential to become much more significant in the coming year.

Research & Doctorate	Master's	Baccalaureate	Associate of Arts
IT funding strategies	IT funding strategies	IT funding strategies	IT funding strategies
Security management	Security management	Security management	Online student services
Administrative systems/ERP	Enterprise portals	Emerging network technologies	Distance education
Advanced networking	Administrative systems/ERP	Administrative systems/ERP	Security management
Business continuity/disaster recovery	Emerging network technologies	Enterprise portals	Support Services
Enterprise portals	Faculty development, support, and training	IT strategic planning	Data management
Privacy	IT strategic planning	Online student services	Enterprise portals
Distance education	Distance education	Faculty development, support, and training	Administrative systems/ERP
Teaching and learning strategies	E-commerce	Teaching and learning strategies	E-commerce
Online student services	Data management	Maintaining network infrastructure	Advanced networking

types, sizes, and Carnegie classes, with one exception (noted in parentheses) in each case:

- IT staffing and human resources management (at all but large schools)
- Change management (at all but R+D universities)
- IT organization and service delivery models (at all but community colleges)

Finally, three issues appear on the list of only one type or size institution:

- Web management and policy (only at small colleges)
- Electronic classrooms/technology buildings (only at baccalaureate colleges)
- Assessment of technology (only at community colleges)

Last year, issues unique to one demographic category included electronic classrooms/technology buildings (at master's institutions), Web-based systems development and integration (at community colleges), Web management

QUESTION No. 3: The IT-related issues IT leaders or administrators are spending most of their time addressing.

Research & Doctorate	Master's	Baccalaureate	Associate of Arts
IT funding strategies	IT strategic planning	Administrative systems/ERP	IT strategic planning
Administrative systems/ERP	IT funding strategies	IT strategic planning	Administrative systems/ERP
Security management	Administrative systems/ERP	IT funding strategies	IT funding strategies
IT strategic planning	IT staffing and human resource management	Maintaining network infrastructure	Maintaining network infrastructure
IT organization and service delivery models	Change management	IT staffing and human resource management	IT staffing and human resource management
Maintaining network infrastructure	Support Services	Support Services	Change management
Leadership for IT	Maintaining network infrastructure	Faculty development, support, and training	Online student services
Enterprise portals	Faculty development, support, and training	Change management	Distance education
IT staffing and human resource management	IT organization and service delivery models	IT organization and service delivery models	Support Services
Faculty development, support, and training	Security management	Electronic classrooms/technology buildings	Assessment of technology

QUESTION No. 4: The IT-related issues campuses are spending the most human and/or fiscal resources on.

Research & Doctorate	Master's	Baccalaureate	Associate of Arts
Administrative systems/ERP	Administrative systems/ERP	Administrative systems/ERP	Administrative systems/ERP
Maintaining network infrastructure	Maintaining network infrastructure	Maintaining network infrastructure	Maintaining network infrastructure
Support Services	Desktop computing management	Desktop computing management	Desktop computing management
Electronic classrooms/technology buildings	Support Services	Support Services	Distance education
Desktop computing management	Electronic classrooms/technology buildings	Electronic classrooms/technology buildings	Online student services
Advanced networking	Faculty development, support, and training	Faculty development, support, and training	Electronic classrooms/technology buildings
Web-based systems development and integration	IT staffing and human resource management	Web-based systems development and integration	Support Services
Student computing	Student computing	Software site licenses	Faculty development, support, and training
Security management	Online student services	Security management	Teaching and learning strategies
Online student services	Distance education	IT staffing and human resource management	Software site licenses

and policy (at small colleges), and information policy development (at large institutions).

How Institutions Spend Their Resources

When it comes to IT spending, again, we saw more similarities than differences across institutions of all types and sizes, and from last year to this year. The following made the top-ten list for all categories:

- Administrative systems/ERP (ranks number one for all)
- Maintaining network infrastructure (ranks number two for all)
- Desktop computing management
- Electronic classrooms/technology buildings
- Support services

Other issues demanding institutional resources in at least seven out of ten of the categories are Web-based systems development and integration, online

student services, and faculty development, support, and training. These issues are comparable to those that appeared on last year's top-ten lists in the demographic analyses.

A couple of notable differences are that last year only baccalaureate schools reported spending significantly on software site licenses, while this year this expenditure appears in the top ten for small and community colleges as well. Also, last year R+D institutions' top-ten list uniquely included data management, but it does not this year. The only unique issue in the resource expenditure category this year is the ranking of teaching and learning strategies in the top ten for community colleges.

A Final Observation

Whether because of funding or staffing issues, more time spent on planning, or the "OBE" (overtaken by events) phenomenon, the overall IT focus seems to be on striving to do fewer things, better. Even a campus ERP implementation is an attempt to make large-scale strategic investments to eliminate many smaller, often shadow, systems.

The EDUCAUSE Current Issues survey is conducted annually to take a snapshot of what campus IT leaders think are strategic, emerging challenges related to information technology, issues that demand time and institutional resources. The survey summary can help you understand these challenges in the broader perspective of higher education in general and compare your concerns with those of your colleagues. Participation in this year's survey was up from last year, which makes the results more valuable. We thank those who responded this year, and urge those who did not to please take the time next year to share your thoughts.

We also encourage you to check the EDUCAUSE Current Issues Web site (http://www.educause.edu/issues/issues.html) for resources on the latest issues and for a link to a list of articles, papers, and books that can help you explore these issues further.

Top Ten Current Issues Defined

So what are the top ten issues for 2002? Below, members of the Current Issues Committee describe the top-ten IT-related issues you've told us are the most important for your institution to resolve for its strategic success. We've also included the one unique issue of those you said had the potential to become much more significant in the coming year, that is, enterprise portals (see the sidebar).

#1: Administrative Systems/ERP

For the second consecutive year, the Current Issues Survey identified administrative systems/ERP as the issue that respondents think is the most important to resolve for their institution's strategic success. Not surprisingly, this issue also demands significant institutional resources and an increasing IT leadership focus. The number of institutions implementing administrative (especially ERP) systems has grown, and many institutions that have completed such implementations are moving into the ongoing support phase, which raises a different set of challenges.

Some questions we need to ask in this area include

- How great is the need to implement new administrative systems? Are service and process improvements necessary? Is there institutional leadership, vision, and true commitment for major systems change? Is the time right, and are there sufficient resources available?
- If a decision has been made to implement new systems, should you build, buy, or integrate? If you are purchasing a commercial product, will the functionality of the system expand to accommodate integrating and interfacing with courseware systems, portals, and so forth? Will changes in the product, mode of operation, delivery cycle, support cycle, and cost structure be monitored?
- Should software drive or constrain the business processes? Are current and desired processes known and documented? Are new functional and system requirements realistic? Will customizations to the delivered software be allowed or kept to a minimum?
- Will the implementation include participation by a broad representation of stakeholders? How can their expectations be managed effectively? Is the transformation of processes and work culture being communicated and understood?
- Are internal personnel resources adequate? Do you have an implementation partner with sufficient higher education experience, seasoned staff, and a proven track record of successful implementations?
- Has the impact on existing technology been thoroughly explored? Does the system integrate with campus technology? Have back-up, storage, and security issues been addressed? Are both functional and technical organizations working together and sharing responsibility?
- Has a support plan been created that identifies the roles and responsibilities of technical, functional, and user groups? Does the plan include training and support for users of the system?
- If you have completed your implementation, is your institution now getting more timely and intuitive access to information, especially for strategic planning and decision-making? Have reengineered processes improved operations and increased efficiency? Has the system optimized services for students, faculty, staff, and administrators?

#2: IT Funding Strategies

The need for realistic, innovative strategies to fund information technology has never been greater. Even institutions that have recognized the strategic importance of IT and invested accordingly are increasingly hard-pressed to allocate sufficient resources to accommodate accelerating demand for core and new services in the face of disappearing income streams and increased costs for service delivery and infrastructure renewal. To address these issues, administrators are asking tough questions about the value of IT investments, how IT plans and budgets align with

Enterprise Portals: Will They Become More Significant in the Coming Year?

Information technology has presented a new challenge to educators and IT professionals alike. Gathering pertinent information is no longer an issue; locating and storing it is the challenge. As we wade through vast stores of data, integrating campus information into an e-business strategy continues to pose serious questions. Fortunately, for those campuses stepping into the realm of Web portal development, institutions that have already been through the process have valuable lessons and documentation to share. Building an enterprise portal is an extensive endeavor with important issues to consider before commencing.

- Many universities have developed distinct information structures within their schools and departments, each with its own set of rules, governing methods, and different opinions as to what information is relevant to a portal. Is it possible to address, with one campuswide portal, the needs of all campus systems, units, and constituents?
- Portals are touted as the "sticky" desktop, a dynamic window to an organization's key resources. Does your institution need sophisticated search engines capable of accessing multiple databases and bringing that information to the desktop, with built-in knowledge management tools and conversion capabilities that sort and distribute information tailored to meet specific needs? What are some of the more effective approaches to developing portals? Is it feasible for your IT department to build a portal of its own?
- What costs and capabilities should be addressed when looking at portal software? Are collaboration, personalization, tracking, application integration, scalability, security, content management, and universal search and index functionality important to your campus? Do you have more unstructured information sources than structured and, if so, how difficult will it be to access or locate those sources? Does your campus infrastructure provide enough security to bring sensitive information across the network?
- Will your campus be receptive to portal technology? The very nature of an enterprise portal dictates community involvement and the need to "educate the educators" on its value. Portal technology is ready to take on the task of organizing the plethora of information scattered throughout the university. The question facing educators, administrators, and students is whether they are ready to commit to coming together as a community and sharing in the responsibility of gathering information, presenting it so that it is useful to all concerned, and supporting the dynamic nature of a portal once it is in place.

institutional goals and strategies, and whether IT costs are being managed effectively. Conversations focus on issues such as

- How do we measure the value of IT to the institution? In academe, is return on investment measurable? How do we demonstrate that IT makes a difference? When is it appropriate to sunset an IT service and to not invest in emerging technologies? What mechanisms are in place to measure the efficacy of outsourcing?
- Is IT investment aligned with institutional strategies, plans, budgets, and resource allocations? How can we institute lifecycle funding for IT within the framework of school and departmental plans?
- What are the current IT funding sources, and what new sources are possible? Is there an ideal balance among operational budgets, capital investments, and fees for service? To what extent should institutions fund IT through debt financing, bridge funding, tax structures, or for-profit subsidiaries?
- What is the total cost of ownership (TCO) of IT across the institution? What factors should be considered when measuring TCO? Who is responsible for overseeing TCO measurements and for advising on ways to minimize costs? Under what circumstances should IT equipment and services be leased rather than purchased?
- What are the policy implications of, and how much effort should be put toward, raising new IT monies from grants and gifts? To what degree are IT costs reflected in grant proposals and capital plans?
- What attributes determine which IT costs should be covered centrally, which distributed to schools or departments, and which assessed on a fee-for-service basis? How do we map IT costs to the recipients of the benefits?
- How can we predict price trends in a volatile IT marketplace? What are today's "smart" investments that will position us well for the future? Have we learned anything from the September 11, 2001, terrorist attacks that might inform our IT investment strategies in the future?

#3: Faculty Development, Support, and Training

In the world of IT, "faculty development" means empowering faculty to enhance teaching and research through effective uses of technology. IT advocates, much like research and student

affairs vice presidents, believe that faculty inattention to "their" cause could be quickly overcome by a few well-placed motivators like salary supplements and lower teaching loads. This isn't going to happen; pleaders for such bribes are too numerous, and faculty interest isn't for sale.

Prerequisites for successful faculty development programs are (1) understanding faculty culture and its contrast with the IT culture; (2) recognizing that various academic disciplines turn to technology to meet different needs; and (3) gaining faculty interest and respect by recruiting advisors who are known to share discipline values. Thus, effective faculty development programs are sensitive to questions such as

- How can we reconcile the differences between the faculty and IT cultures in terms of felt urgency, fear of failure, preference for standardization, and the centrality of technology?
- What are the differing needs of faculty in various areas (humanities, social sciences, natural sciences, professional schools)? Can we possibly afford to hire a full-time technology advisor into each academic department?
- What are the "killer apps" most likely to motivate faculty to get involved with technology? How can we better publicize the high-benefit/low-effort deployments of technology as a means of interesting mainstream faculty? What are effective paths for involving faculty?
- How can the responsibility for faculty development be shifted from self-interested administrative offices to the academic deans, department chairs, teaching and learning centers, and leaders in the academic disciplines? Can we encourage the latter to inspire their colleagues?
- Do faculty have adequate access to reliable networks, help-desk advice, professional course design, appropriate software programs, well-articulated academic policies, and training upon request?

Innovations in faculty development programs include partnerships between IT departments and faculty excellence centers, contracts for intensive support of clusters of faculty from the same discipline, faculty endorsement of a preferred course management system that will be fully supported by IT professionals, faculty training upon request, and the employment of full-time technology specialists with (like many library professionals) degrees in both technology and an academic discipline. The key to success in all faculty development programs is honoring faculty norms. Joining them is better than fighting. Best of all is a balanced partnership.

#4: IT Strategic Planning

In an era of almost universal financial exigency coupled with a continued rise in expectations regarding IT-based services, it becomes imperative that the evolution of campus IT be consistent with a strategic plan. That the IT landscape continues to change rapidly argues that any campus IT plan be a living document. The demands for efficient use of institutional resources and continued assessment of return on investment mean that the campus IT plan must be closely linked with the overall campus strategic plan.

In the distributed network services world in which we now operate, IT planning has multiple dimensions. There must be an overarching framework to give coherence. In the end the plan must cover a full range of issues, including technical, services, resources — both human and financial — organizational, and policies. Some key planning issues are

- What planning process should be used during creation and maintenance of the plan? Is there an accepted campus planning and/or policy development process? What benchmarking processes are currently used? Is there need for external consultants to facilitate the planning process?
- Is there an articulated institutional vision together with broadly accepted goals and objectives that IT is intended to support? If not, can IT planning work in a vacuum? Do senior campus leaders understand and support the potential for IT-enabled transformation?
- Who are the stakeholders in the planning process, and how can they and/or their interests be included? Is there an established IT advisory group and/or should there be ad hoc taskforces?
- Is there a pre-established budget into which the plan must fit, or is the plan driving funding levels? What are the expectations for IT developments and services on the campus? If unrealistic, how can priorities and funding be aligned? How can the IT planning process be integrated into the campus planning process so that allocation and use of resources are mutually supportive?
- What new technologies can IT deploy to support institutional goals and strategies? What are the critical skills required? How can we measure organizational benefits and outcomes from these new technologies?
- If there is an existing IT plan, is there a process for assessing outcomes or maintaining and modifying the plan?

#5: Security Management

Computer and network security has emerged as the predominant challenge of the information age. Within higher education's generally open environment, greater use of information technology resources along with the increasing reliance on advanced networking capabilities integrated into the larger, complex domain of the Internet has made security particularly difficult to manage. To develop an effective strategy for dealing with security in the complex environment of academe, institutions should consider the following issues:

- How will your institution integrate the need for security with the tradition of open and free networking within the academic culture? Is it possible to isolate and secure the mission-critical areas of your network? How will a secure network impact the relationships of trust that exist among departments at your institution and other networks?
- What policies are currently in place at your institution with regard to security? What policies are critical for a secure network? What strategies can be used to increase the buy-in from leadership and the community required to implement a secure network?
- How does your institution deal with

computers and networks owned and managed by students or by relatively autonomous departments? Have you established security standards for such systems? Do you facilitate and/or mandate security tests on distributed systems?

- How will your institution react to a known attack? Do your policies include mechanisms for engaging appropriate law enforcement agencies? What actions are permissible within your campus policies for securing the campus from a known attack? Has your campus considered the liability issues associated with the failure to secure the campus network from use by the hacker community?
- How will you prepare your institution for the increased resources needed to establish a secure network? Will increased buy-in from leadership solve this problem, or will it be necessary to explore partnerships or other alternatives?
- Many campuses are developing Public Key Infrastructure (PKI) technologies as a means of authenticating the identities of users of the network and authorizing their access to licensed content and other valuable resources. What role can these PKI technologies play in the security of the network itself? Why is system and network security important for the successful operations of PKI?
- Security is a difficult problem requiring careful and competent administration. Has your campus designated a security officer with appropriate authority and resources? Has your campus established a broad-based security team with experts in the law, policy, incident response, student services, the campus judicial system, and other relevant areas?

#6: Online Student Services

Today's students routinely shop, arrange for travel, find entertainment, manage their finances, communicate with friends — in short, conduct most of their commercial and social interactions — on the Internet. It should be no surprise that they would expect the same kinds of online convenience and services from the college or university that will deliver their education.

Higher education institutions increasingly aim to provide online services and sites that are nonlinear, user-centered, customizable, and truly interactive with quick and personal responsiveness, but the scope and use of online student services varies from campus to campus. While there are many instances of innovation and creative applications in this area, it is and will continue to be a daunting task for most institutions to integrate all of the pieces into a comprehensive approach to the way that they do business. Integration of online student services into the overall campus e-business strategy is critical.

Developing a campuswide, student-centered approach raises a number of key questions:

- How will our institutions align the priority of online student services with institutional strategic goals and directions, and how will the costs of such services be incorporated into the institutional budget?
- What are the roles of the various stakeholders, and what process works best to ensure that decisions are informed by stakeholder input? How can we make sure that the IT organization is engaged so that campus technology architecture and systems integration issues are taken into consideration when these decisions are made?
- What can we do to ensure that campus strategies for these services are student-centered rather than driven by administrative processes and procedures, and that students receive the same level of service whether they are on campus or at a distance?
- Should we be considering the development of a portal approach for student services? If so, what are the most effective processes for solving the build-versus-buy question? What does a customer relationship management (CRM) approach mean on a campus, and what office should be responsible for coordinating CRM efforts? What role, if any, will outsourcing play in helping to develop and implement dynamic online student services?
- How will we evaluate the cost/benefit relationship of student online services and the strategic impact of their use and availability?
- Are we anticipating and planning for some of the unintended outcomes of the growth of online student services?

#7: Teaching and Learning Strategies

As the shift accelerates in 2002 from traditional classroom teaching styles to more student-centered, network-based teaching and learning, a generation of technologically sophisticated faculty members is transforming higher education. The potential of new technologies, institutional emphasis on student learning outcomes, and opportunities to develop pedagogically distinctive instructional designs are just some of the factors that combine to create a fluid and dynamic situation. In such an environment there are a number of critical issues being addressed:

- Will innovative teaching and learning strategies enhance the competitiveness of colleges and universities? What are the goals of innovative teaching strategies — increased interaction between and among faculty and students, additional collaboration, customized learning opportunities? And how are they best realized?
- How can faculty (content specialists) be encouraged to work collaboratively with instructional designers, librarians, and other faculty to assure optimum learning outcomes? How can new teaching and learning strategies be used to develop course content appropriate for the learning styles of students who have grown up "digital"? What is the impact of Web-site design on student learning?
- Is it best to experiment with more than one instructional management system vendor or to choose a single system to simplify support issues? Can a course management system accommodate sophisticated Web tools? What venue do faculty have for influencing the instructional management system product?
- Will faculty members be more likely to adopt new teaching strategies as standards (course objects, data ele-

ments, exchange) become generally available? Will vendors design systems capable of incorporating course objects? Who is working to establish the metadata standards required for efficient access to repositories of course objects?

- How best can we evaluate educational theories to take full advantage of their potential value in aiding and predicting the usefulness of new teaching and learning strategies?
- As the potential of technology-mediated learning becomes more apparent, what is the most effective way to assess teaching and learning strategies? How can assessment be made iterative, a process that promotes recurrent improvement?
- What opportunities do new technologies such as wireless, personal digital assistants (PDAs), video streaming, and virtual reality environments offer to teaching and learning strategies? How can we take advantage of the flexibility, interactivity, and individualized learning potential of new technologies to improve student learning?

#8: Distance Education

Despite a number of departures from the market, pressure to provide educational services at a distance has not abated in the past year. Some institutions have discovered success, while others have been unable to find a profitable niche. Even though there are many IT-related issues in the following list, it is still crucial to ensure that leadership for distance education initiatives stays firmly in the academic community.

- How will we react to two- and three-fold price increases in the courseware delivery systems market? Will the home-built and group-built systems provide an acceptable alternative?
- What is the successful implementation model? Which things work in which environments and into which communities? Should distance education be part of every department, or will Continuing Education (which has the most experience) gain academic recognition and be legitimated as the deliverer?
- Will increasing collaborative behavior push libraries to develop more widely held digital holdings? How will we fund such activities? In the broadest sense, will the primary focus continue to be related to standards of local service or move to best practice in the use of information technology to support all learners?
- How do we deal with rights management for information resources available to virtual learners? Will IT units develop a successful authentication model for services, and will we be able to convince vendors to use it rather than static IP addresses?
- Since distance education also increasingly means asynchronous delivery, how will we cope with 24 × 7 support? Do we still need it? Is there a subset of services we can provide by appointment?
- What percentage of our students will choose to take up our distance delivery offerings for scheduling convenience, rather than out of necessity? How will this strain our resources?
- Will the various commissions and accrediting agencies develop complementary policies to guide us in the provision of services? Will systems and consortia have flexibility in designing programs around available courses? Will the inevitable reporting requirements represent a bearable burden?
- All of this begs the question — if our students need not be on campus, need our faculty be on campus? Will we evolve to an educational model even more distributed than the one now being tested?

#9: Maintaining Network Infrastructure

As technology infrastructures evolve, we seem to be shifting the "weakest link" from one component to the next. As we create gigabit Ethernet campus backbones, our T-1 or T-3 Internet connection becomes the bottleneck. Creative and superfluous applications are still being crafted faster than we can control their use of our bandwidth. As much time is spent repairing the infrastructure from misuse and abuse as is spent on network design and management.

Keeping ahead of the resource requirements curve requires institutions to expend large sums on equipment and many hours of staff time. This struggle leads to questions such as

- What information do you use to size your network technology infrastructure? How do you make sure you include the right variables in planning? Who determines the applications that will be running on the infrastructure? How much excess capacity is enough?
- When we experiment with emerging network technologies, when do we institutionalize them? How do we carve out time and money to pilot these advances? Who determines which ones to test?
- How do we integrate the funding of the network infrastructure into strategic planning and budgeting for the institution? Are all parties with influence on its use included in the planning? What are the best methods to fund this ever-growing entity? Do we use a cost-recovery model, by charging per packet of use or by class of service? Do we create technology reserves to handle those unexpected costs from the surprises?
- Do we staff our infrastructure support at the same rate we expand the infrastructure and its capabilities? How do we balance staff's time for planning, maintaining, monitoring, and implementing? Is funding for ongoing training of the staff a priority? Do we add tools to their tool chest to reduce the time needed for monitoring and maintenance?
- Where does the network infrastructure fit in the institution's disaster recovery or business continuity plan? With ever growing concerns about security, how much and to what degree do we fund and secure this infrastructure? How do we balance the increasing demand for access with the requirement to keep it all secure? Do we shift sparse human resources from other areas to beef up security?

#10: Emerging Network Technologies

Gartner Group defines an emerging technology as one that is immature, yet promises to provide significant capabil-

ities. According to Gartner, the doubling of the density of chips every 18 to 24 months will be a major driver for most information and communications technology. The company also predicts that by 2010 network convergence will be nearly complete, with a single advanced IP network handling the majority of the world's communication needs.

User expectations are fueling this type of network convergence. No longer is Web-based e-mail sufficient; users want unified messaging, storage area networks, and interfaces to their PDAs. Web service deployment with appropriate security, wireless communications, and mobile computing will transcend hype and potentially move into frenzy.

- What procedures will evolve for justifying the cost of investing in emerging technologies? Will total cost of ownership skyrocket? What about the challenges posed for our traditional return-on-investment strategies? Historically, ROI algorithms are used to communicate the business value of proposed projects. Unfortunately, they are singularly focused on financial calculations and ignore competitive, functional, process, relationship, strategic, and technical values. Should "return on value" be the new measure?
- What legal and security management issues will affect the adoption of emerging network technologies? We have already begun to experience the threat of lawsuits when a university server delivers an e-mail that infects a computer. Will virus walls become part of the norm?
- Public Key Infrastructure (PKI) is becoming an essential foundation for many network services. How can we most effectively implement this complex mix of technologies and policies?
- Streaming video has great potential, but how will this and other advanced networking applications evolve, and what will their overall resource needs, both human and technological, amount to? Will an entire redesign of the network infrastructure be required to ensure sufficient bandwidth and that servers are sized to meet the system requirements?
- Will integration of all applications be required for the educational enterprise? The current focus on portals may simply be the tip of the iceberg. Will we need to move to a point where all systems are integrated? Will storage area networks facilitate the integration?
- What impact will wireless technologies, PDAs, webPads, and wearable computing devices have on campus network planning, communications and teaching strategies, and security management?
- What is the importance of XML standards to data and information exchange on campus networks? *e*

Endnotes

1. The Current Issues Survey is monitored by the EDUCAUSE Current Issues Committee (see the sidebar), whose members review and recommend the set of issues to be presented each year.
2. B. L. Hawkins, J. A. Rudy, and W. H. Wallace, Jr., *Technology Everywhere: A Campus Agenda for Educating and Managing Workers in the Digital Age* (San Francisco: Jossey-Bass, 2002). The book is Volume 6 in the EDUCAUSE Leadership Strategies Series (http://www.educause.edu/pub/pubs.html), and a complimentary copy has been sent to each EDUCAUSE member campus.

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