Current Issues for Higher Education Information Resources Management

The CAUSE Current Issues Committee is responsible for proposing a list of current or developing issues and trends that are important to the future of information resources management and use in higher education. The following topics have been identified by the committee as key emerging or ongoing issues. We encourage articles for CAUSE/EFFECT on these and related topics.

► Next Generation Networks
The higher education community is preparing to launch new initiatives in local and wide area networking. The expected change may be more dramatic than the effects of the current Internet on our research, teaching, learning, and administrative processes. These new initiatives include Internet II, which will provide a high-bandwidth network with quality of service guarantees among most major research universities. Internet II isn’t simply a backbone, however. Its applications will require end-to-end connectivity that will lead to major upgrades in our campus infrastructures. The results will be applications enhanced for this network along with new applications only now possible due to Internet II. Other upcoming trends include the merging of voice, video, and data traffic into a common digital infrastructure; the mesh of connectivity provided through wired and wireless connectivity; and increasing mission-critical reliance on links to services provided by other institutions.

Issues we will need to discuss, if not resolve, in the next year include:
• How will we support on our campuses advanced applications utilizing such technologies as virtual reality, streaming video, and others?
• What are the policy, legal, and ethical implications of these new network technologies?
• Is there protection from commercialization if universities take the lead in defining the requirements and implementation strategies?
• How do we ensure quality of service access by applications and users?
• Will this next generation of network technologies truly enable distributed learning/information?
• Can we deploy the necessary standards-based authentication, digital signatures (public-key encryption), directory services, network management, and so forth necessary for inter-institutional collaboration and resource sharing?
• How do we fund the upgrading of our current networks?
• What about “Internetting for the rest of us?” How should the institutions that cannot afford to participate in Internet II position themselves for the future?

► Achieving Widespread Integration of Technology in Teaching and Learning
While some faculty believe it is valuable to integrate technology into their teaching, others are opposed to it. For many others, the jury is still out. Those who are trying it now are the vanguard; they’ve excited others who want to follow, but many of these would-be adopters find they don’t have the skills, can’t find the resources they need to make classroom technology work for them, or find current methodologies too time consuming or too complex. Many students, on the other hand, have been socialized in media-rich environments which have led to high expectations about the use of information technology in the classroom and out.

As information resource managers we have a role to play in encouraging curricular use of information technology and in enabling faculty and students to use it as much as possible. To provide effective support, we will need to address a number of issues:
• Student concerns. Is student fluency with information technology an explicit curricular goal? Who will train students and where (are facilities available)? Should information technology costs be passed on to students?
• Faculty and curricular concerns. Is there institutional commitment to finding ways to moti-
vate faculty to adopt instructional technology and to reward those who do? How effective are peer mentoring programs? What faculty development facilities are needed, and is there a way to make such facilities self-scaling and self-sustaining? What are the support staff requirements, and who will do the training? Who decides which projects to take on and which to turn down when (inevitably) resources get tight? Who will handle copyright clearances and application licensing issues?

- Infrastructure concerns. Are there sufficient numbers of suitable classrooms and labs? Is there sufficient bandwidth available and appropriate projection capability?
- Organizational concerns. Is there a campus office for instructional media or are media service centers distributed? What is the role of the traditional “AV” unit in instructional technology development and delivery? What is the role of the library?

Meeting Insatiable Demands

Increasing numbers of computers and the support required to keep users online results in new challenges for information technologies service organizations in colleges and universities. Campus information resources professionals especially must respond to the management of a distributed user base that demands service in direct support of instruction, often in the face of static or decreasing budgets. This shift towards a new central core of expectations requires us to re-order our priorities and approaches. Strategies might include partnering, rationalizing economic models (investigating student fees, selective service fees for departments, subscription services, outsourcing), managing user expectations, finding ways to economize, increasing user training so that users can become self-sufficient, creating more reliable and more consistent environments, and reversing the “brain drain” (reducing staff turnover). Issues to be addressed include:

- How can we maximize staff and consulting resources to respond to rapidly changing service expectations?
- What new skills are needed to establish new relationships with faculty?
- How can we communicate the need for resources in a complex (i.e., multi-platform, heterogeneous) support environment?
- What methods can we use to demonstrate the entire costs of projects (and manage projects within budgets)?
- How can we set and manage expectations within available budgets and personnel skill sets?

How can we demonstrate that our work is aligned with institutional priorities and strategies?

Virtual Universities

To discuss “virtual universities” one needs to define what is meant by this term. The most common definition contains terms such as distance education, lifelong learning, and open university. For the purpose of this synopsis, the virtual university is defined as an institution, or a set of institutions, engaged in a delivery of degree granting programs in higher education, using technology and methodology outside a traditional classroom. For example, a single institution offering courses at a distance by use of technology can be said to encompass a virtual university, as students are not required to attend classes at their home institutions. However, a more representative example of a virtual university involves a collaboration of at least two or more institutions. Issues that need to be addressed include the following:

- Technology and support infrastructure. Who is responsible for the “server” and “client” technology? Who is responsible for the network service between two or more points? What are the budgetary and staffing implications?
- Distributed information. Who owns the information? How will libraries, electronic or otherwise, respond in a timely manner to the needs of the students attending a virtual university? Most of the virtual university’s delivery mechanisms depend on electronic information. What are the implications of copyright and intellectual property laws on the virtual university’s ability to provide rich research resources?
- Virtual universities with multiple partners. Who grants the degree? What institution will students be affiliated with? How will decisions be made regarding course delivery across member institutions, and which institutions’ standards will be adhered to? Who will determine the virtual university course fees and who will administer these? How will faculty be compensated for teaching at a “remote” location or teaching through non-lecture models?

Information Policy in a Networked Environment

Three areas where information policy issues arise in a networked environment are: responsible user behavior, policy enforcement, and the impact of changing technology on policy.

- Responsible user behavior. Policies setting
forth expectations about and limits to user behavior will need to be institutionally based, that is, developed and promulgated within the institution providing access to network services. Such policies will need to be developed within a set of doctrinal parameters regarding such matters as academic freedom, privacy, intellectual property rights, freedom of speech, and so forth. Such policies will also necessarily reflect whether an institution is public or private, and in public institutions such policies will need to reflect relevant and applicable public law—for example, state and possibly also county or municipal law.

- Enforcement. Policies that describe responsible user behavior will require enforcement. Some enforcement will occur as provided in the policies, but additional enforcement will result from cases and/or litigation, including instances where an institution may be defendant as well as victim or plaintiff.
- Rapid technological change. Technological change will require frequent review and revision of user policies. Some technological changes will render some policies unnecessary; other changes will present need for new policies. For example, given the digital telephony proposals from the FBI, what will be the position that postsecondary institutions can or should assume regarding the increased surveillance these proposals would enable?

### Replacing Administrative Systems

In many cases, the replacement of administrative systems on college and university campuses is being driven by an institutional commitment to business process reengineering; the need to replace systems that are unable to meet our customers’ desires for more flexible systems enabled by and interfacing with the World Wide Web; and/or the “Year 2000” challenge—the inability of many legacy systems to accommodate the new century’s date. Areas where issues arise include:

- Process. We need a process that ensures user buy-in. This implies that we set agreed-upon implementation priorities and identify the required financial commitment before starting. We need to communicate about the change and what it will mean to individuals, and thus manage user expectations.
- Strategy. There needs to be agreement on the strategy for “replacing” systems, beginning with defining whether this means selecting or building a new product(s) or upgrading or reworking existing systems. There needs to be institution-wide discussion and agreement on the strategic direction of the institution, with the goal of implementing new or upgrading current systems to support the agreed-upon strategy.
- Justification. There needs to be a business justification, or cost-benefit analysis, for the new systems. The justification may be provided by expected improved service, by the cost of not doing it (which includes the cost of shadow systems), or by the need to support institutional strategic directions.
- System selection. Should we buy, build, or partner? Should we do business process reengineering before or after selecting the system? How should we coordinate the redesign of business processes with the implementation of the new information systems?

### Information Resources Organization and Job Restructuring

Technology is revolutionizing the workplace, enabling new work processes, and radically redefining traditional jobs and work skills. Information resources organizations are not immune to the changes brought about in human resources and organizational structure by technology. In fact, information resources organizations face new vulnerabilities as the marketplace becomes more competitive and staff turnover increases in high-demand areas. Our organizations are also expected to have a natural organizational agility to adapt to technological change. Technological transition is not painless or natural in some areas of information resources management. Without a doubt, the players, rules, dynamics, and requirements for organizational and professional survival and success in our industry have changed. How does an information resources organization reshape itself to address these new human resources issues? Issues include:

- Retention of skilled personnel
- Staff development and retooling of skills
- Demand and expectation management
- Wide-banding job classifications
- New leadership roles
- Support from the campus human resources department for hiring, firing, reconfiguring organizations, and diversity
- Rewards and recognition through compensation and beyond
- Effects of outsourcing and collaborations (internal and external)
- Changing roles of information resources personnel
- Staff ability to adapt to the sometimes-abrupt cultural/social change in the workplace, especially the change from a gatekeeper/control model to a service-center model
• Organizing and staffing to provide support in a distributed, networked environment
• Effectiveness of a teams approach

Support for Distributed Computing

How can information resources professionals, especially those in central technology organizations, support distributed computing? We must address the following issues:
• Standards maintenance. Support for a homogeneous environment is many times cheaper than support for a heterogeneous environment, yet strict enforcement of standards is counter to the technology needs of many users and prevents the technology organization from adopting an effective customer service orientation. What are reasonable standards? What incentives are powerful enough to attract adherents; what level of flexibility is sufficient?
• Institutional property. With databases managed on departmental equipment, how is access assured for other departments with need for the information? How can management activities such as backup, access control, and disaster planning be coordinated centrally when the data are distributed? Who sets the standards? How are they audited/enforced?
• Tiered support. Distributed support implies that support providers are “out there” in user departments. Who pays them? What is their relationship to their users? If they’re the front line, what are the appropriate roles for employees of the central organization to take in supporting them? What roles do we take in organizing and focusing primary support providers on common technology and service standards? What is the proper role for tertiary support providers (in operations, production control, etc.)?
• Infrastructure boundaries. Where does the central information technology unit’s responsibility for infrastructure begin and end? Do we manage the network but not the routers? the routers but not the data jacks? the data jacks but not the network interface cards? Do we provide the network but not the servers? the servers but not the client software? the client software but not the server content?

Enterprise-Wide Management of Information Resources/Assets

Colleges and universities are quintessential information-age institutions. From the scholarly information held in library collections to the administrative information stored in structured databases to the information accumulated throughout campuses in other applications, faculty research, and instructional material, higher education institutions amass an astounding collection of information. Increasingly this information is available in digital form and accessible through a campuswide technology infrastructure. Many institutions are moving toward the World Wide Web as a common platform for information and information systems delivery, but is this being done within a comprehensive, strategic effort that is engaging all of the stakeholders throughout the campus in an articulated plan? How are institutions approaching the management and use of electronic information resources? Are there institution-wide strategies for coordinating activities related to these assets? Some of the issues that need to be addressed include:
• Is there a planning process linking institutional program strategies and directions with budget allocations for information resources?
• Does the institution have an institutional information assets policy that addresses such issues as data administration, ownership, access, privacy, and archiving?
• Does the institution have a plan to leverage its information assets?
• Have enterprise-wide information architectures, both for the information (data models, entities, processes) and the technology platforms to support them, been established?
• Do organizational structures facilitate or present obstacles to taking an enterprise-wide approach to managing information resources?

Enterprise-Wide Management of Information Resources/Assets

CNI Report…

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strategies are under way. (See Gerry Bernbom’s article in this issue on the latter project.)

Joan Lippincott and I invite your comments or suggestions for CNI’s future as well as names of possible candidates for the executive director position, by phone or e-mail.1 The support for CNI has been gratifying during this time of unexpected and substantial transition. Your continued support is critical to carrying on the work that has been started. A fitting tribute to Paul is a healthy CNI program focused squarely on the future.

1 Contact Joan Lippincott (joan@cni.org, 202-296-5098) or Richard West (richard_west@qmbbridge.calstate.edu, 310-985-2734). A position description is available on CNI’s Web site at http://www.cni.org/CNilexec_profile.html