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ABSTRACT

This document consists of 12 issues, an entire volume year, of "The EDUTECH Report." The newsletter's purpose is to alert faculty and administrators to issues in educational technology. Each issue contains two feature articles, a page of news briefs, and a question and answer column. Most issues also contain brief quotations on education technology topics. The following cover articles appeared from April 2002-March 2003: "The Pros and Cons of IT Grants"; "The Open-Source Movement"; "Assessing IT Investment"; "Winning the Faculty"; "If Information Technology Reports to You"; "Hot Issues 2002: The High and the Low"; "The Campus Gray Market in Information Technology"; "Reducing Costs"; "All Those Systems"; Learning from SEVIS [Student and Exchange Visitor Information System]"; "Information as Product and Property"; and "Campus Partnerships for IT." (MES)

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The EDUTECH Report, 2002-2003

By: Thomas Warger, Ed.

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THE EDUTECH REPORT

April 2002

Volume 18
Number 1

The Education Technology Newsletter for Faculty and Administrators

The Pros and Cons of IT Grants

No campus activity has been more heavily funded and shaped by external grants than information technology. Not only universities, but also colleges and even some community colleges have received significant grants of funding or equipment over the years, particularly in the 1970s and 1980s. Time-shared computer systems, microcomputers, and connections to the Internet have been frequently acquired with grant support from government agencies or corporate gifts of equipment. The influence of the early grants reached beyond the institutions directly benefitting: they also had a substantial effect on setting what became the norm for academic IT infrastructure for all campuses. In more recent years, major philanthropies have also made numerous and generous grants to projects focusing on the implementation of IT in higher education.

Other academic innovations comparable in scope and importance to IT do not owe their genesis to external funding. Academic disciplines and administrative functions have evolved under various influences, some of them external. The major developments in U.S. higher education in the past two hundred years, preceding IT, have been the land-grant university and the research alliance among universities and the commercial and public sectors. They have transformed the traditionally insular academic world, setting precedents for public accountability and partnerships with non-academic institutions.

In the last third of the twentieth century, IT led to a pervasive transformation in higher education infrastructure and research

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"Educators need to rethink how they value IT. In business, we initially said that IT was not improving productivity at all. But we were measuring from the old industrial mode; we were looking at the wrong things. At present, institutions face a similar situation. We are being asked to determine the value of IT, but in order to do that effectively we must redefine the means by which value is attributed. We have to step out of the box if we want to find the real value of IT; I suspect that its ultimate value will be located in the ways that it helps us strengthen lifelong relationships rather than in the way that it automates student records."

"Information Technology and the Future of Education: An Interview with Diana Oblinger"
James L. Morrison
The Technology Source
March/April 2002

NEWSBRIEFS

DIGEST OF EDUCATIONAL STATISTICS

On March 1, 2002, the National Center for Education Statistics released *Digest of Education Statistics, 2001*. This report provides "a compilation of statistical information covering the broad field of education from pre-kindergarten through graduate school." Topics covered by the *Digest* include information on the number of US schools and colleges, teachers, enrollments, and graduates, as well as information on educational attainment, finances, Federal funds for education, employment and income of graduates, libraries, technology, and international comparisons.

See: nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2002130.
Copyright Internet Scout Project, 1994-2002. scout.cs.wisc.edu.

THE WIRED CLASSROOM

Technology in the classroom is nothing new. But the very latest networked technologies, which permit unprecedented interactivity among students and professors, are changing the face of the lecture hall. Universities see wired classrooms as the future of higher education, particularly for science and business courses, and are beginning to build them. Diverse institutions have wired classrooms. Few have committed as heavily as Saint Joseph's University, in Philadelphia, which has spent some $30-million on "smart classrooms," including a room known as the Teletorium. Saint Joseph's and other institutions say the new classrooms give instructors access to new materials and techniques, and are a powerful marketing tool as well. But the technology can also be a distraction and a burden, demanding new investments of time from professors and prompting some students to zone out on Websites or e-mail correspondence in class.

"The Wired Classroom," Colloquy with Malcolm B. Brown, *Chronicle of Higher Education*, March 28, 2002.

FROM FREE TO FEE

Basic e-mail services have begun to charge for extra storage space and message forwarding. The electronic greeting card business has, for the most part, become a subscription-based industry. CNN now charges for the video content on its Website. And some media companies have begun to explore the possibilities of delivering premium content on the Web, including music, for a monthly charge. The new fees can be partly attributed to the difficulties of the Internet advertising market – a market once thought to be the answer as to how a company could generate revenues while offering services and content for free. The woes of the Internet ad market have forced a number of Web-based companies to look for new ways of making money.

Matthew Miller, "More Sites Moving from Free to Fee," *Newsday*, April 9, 2002.

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Pros and Cons of IT Grants

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and instructional methods, accompanied by a significant reliance on outside funding. While we wait for historians to assess this passage in the history of education, we need to be more aware of the policy and process implications of grant-seeking in IT. There are pros and cons that we seldom acknowledge, let alone discuss.

The case for grants

Successful grants bring funding to the winners. But the whole universe of grant-giving and grant-seeking affects all institutions, including those who do not apply or are not even eligible.

Most obviously, a grant brings money where none or not enough is available through internal sources. There are nearly always nominal and actual recipients: the institution and the proponents of the project in question. The participants obtain both resources and validation of their enterprise. The hosting institution derives those same benefits but at the same time incurs obligations, especially for the time after the grant funding is expended. And, the granting agency gets a benefit in influence – having enlisted a recipient to the mission for which the funding exists.

For the university or college, grant-supplied funding has an internal political benefit. Expensive, new initiatives bring a dilemma: divert funds from some existing activity or refuse the request. Most institutions do not have substantial cash reserves available to fund new projects; attracting additional outside funding is a slow and laborious process to be reserved for only core, institutional projects.

Sending the proposer of a new idea out to the grant market is appealing to academic administrators because it extricates them from having to either turn back a good idea or enable it at the cost of some existing program. If a grant is obtained, everyone rejoices in the "gift." If not, perhaps the merit of the project was not as strong as advocated in the campus context.

Outside review

In the largely self-regulating world of higher education, outside review is one of the key forms of evaluation. Every grant application is in effect a professional review of the quality of plans and of the credentials to carry them out. In this regard, the process serves colleges and universities by providing the forum for these outside evaluations. By extension, competitive grants also have the effect of ranking competing projects and approving the stronger ones. The selections made by grantors contribute to the setting of standards for the activities they promote. In turn, those standards lend political strength to institutional evaluations of projects rising internally. Outside evaluation at the end of a project contributes also to decision making inside an institution.

> *Too often one hears the complaint that the administration turned a deaf ear to a good proposal, only to hear from the other side that the proposal was weakly argued and poorly supported by facts, analysis, and planning.*

Many activities begun under a grant are framed as experimental initiatives that if successful will then have a claim on internal funding and continuing support. The grant-covered phase of a project's activity then becomes a test of value, the proof of concept.

Buying time

While the clock is running on a grant-supported project, time has been won to create the internal funding stream necessary to continue once the grant money is gone. In IT, this period has often corresponded to the life cycle of computing equipment.

With the early grants of microcomputers, unfortunately, this was also before anyone had a clear understanding of the costs of maintaining and replacing equipment. Grants for computing facilities often left the host institutions with unplanned costs for upgrades in building infrastructure (e.g., electricity, HVAC) that had been overlooked in the enthusiasm to create a new lab or teaching facility. Since that era most people have learned to be more cautious about anticipating the true costs associated with grants in IT.

Higher standards

Grant-seeking encourages a better quality of analysis, planning, and persuasion. Too often one hears the complaint that the campus administration turned a deaf ear to a good proposal, only to hear from the other side that the proposal was weakly argued and poorly supported by facts, analysis, and planning. There might be a good idea in the proposal, but the case was not made. The application requirements for the typical government or philanthropic grant are clearer and more rigorous than the budget proposal guidelines

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Few of the challenges a CIO faces will concentrate the mind as wonderfully as the prospect of installing a major software system. This may well be the toughest duty on a CIO's watch.

There are other big tasks – articulating an IT vision, unifying IT's disparate constituent groups – that are certainly very difficult, but they are more abstract and indefinite. The software installation is concrete and definite. It is also highly public, involving many people and affecting even more. There is no bigger reputation-maker or career-breaker, period. Making sure this job gets done successfully – on time, on budget, and as promised – calls for all the skills and experience a CIO can muster.

There is no other person or position in campus administration or the IT organization that can provide the many different aspects of leadership that are needed to assure that the installation of an enterprise-wide administrative software system happens successfully. Even when partnering in the project leadership, this is not a job to be delegated down to someone else or entrusted to a committee for management.

Necessity

The challenge begins with helping the institution decide when and why such a big undertaking is necessary. Necessity can be the only reasonable criterion for launching one of these projects. The cost, disruption to campus life, and the pain of the effort are all too great to be justified by anything less. No college or university would adopt a new administrative software system for its incremental advantages over the current system. Nobody has ever thought that any new system of this kind would bring the institution a competitive edge with respect to the competition.

The rationale for proceeding must be that there is simply no alternative. These systems get replaced because they can no longer be supported or cannot evolve to meet new needs. They do not get replaced just to provide new features or take advantage of new technologies. And they almost never get replaced because new senior management prefers something else.

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Consequently, the CIO's job is to take the lead when necessity dictates a change of system. Making the case and overcoming the objections and delaying or diversionary arguments are the key tasks when a system change is what is needed.

High-level buy-in

Establishing necessity has to happen at the highest levels of campus administration. The case cannot be made from the grassroots, although staff at that level might in fact have been the first to become convinced of the need. Nor can the case be made effectively by department and office heads. On even the smallest campuses those administrators do not have standing necessary to argue institutional necessity. Their role of persuasion comes once the senior administrators, alerted to the need, check back to see whether their organizations agree.

A CIO who reports to the president is far better situated for this key task of leadership, as there is just no substitute for being already a trusted member of the highest reporting circle. CIOs who report lower in the organizational chart are at a corresponding disadvantage and will have to work that much harder to carry the argument. There is no alternative to support from the highest level in the administration. If it is not given enthusiastically (it rarely is), it must at least be given with firm resolve. There are many obstacles ahead that only the biggest bulldozer will sweep away, so everyone needs to know that the president believes the necessity and is prepared to act.

Staff buy-in

Senior staff buy-in, critical though it is, is not sufficient. The rank-and-file staff of the campus need to be in agreement as well. Now the CIO's task shifts to the tougher diplomacy of conducting credible and persuasive consultations with at least the mid-level staff. In larger institutions, meeting with all staff is not something the CIO will be able to do personally – other IT managers will need to join the effort, and other avenues of communication (and here is why the CIO needs to be an excellent writer) have to be used.

If the old software really needs to go, then getting the buy-in of the staff should be doable. If it still serves some offices reasonably well, their staff may not buy into the change process, and the whole pro-

ject is in jeopardy. Those staff will be correct (for themselves) in their refusal to go along: if the need is uneven across campus, the necessity of change for everyone is not there either. Then the case has to be made for this change being best *for the institution as a whole.*

Staff buy-in needs to be genuine. These are the people whose backs will carry the project's load. If they are not fully and constructively engaged in the process, break-downs, delays, and even outright failure of the installation are quite possible. Obtaining staff buy-in is probably the hardest part of the whole undertaking; and the CIO may need all of his or her patience for diplomacy at this level in the campus organization. But it is exactly on the point of staff buy-in that most unhappy projects come to grief.

Process

CIOs whose previous positions were in the commercial world are uniformly astounded at the lack of administrative discipline in higher education with regard to process and budget. All CIOs need to make special efforts to ensure that participants at all levels in the project understand and remember the basics of project management – the relationships among time, money, and specifications. If that focus can be maintained, there will be at least a good basis for working through the big and small items of managing the project.

IT projects in the academic world are notorious for running over in time and budget. Typically, specifications are set, budget is then also locked down, and the time line – though published with confidence – is really just wishful thinking. The CIO needs to keep all three of those factors from becoming ossified. As the project unfolds, and runs into the inevitable surprises and crises, keeping all parties aware of the three elements that they can work to adjust the project will be invaluable.

Communications

Good communication in a project this large and difficult goes far beyond delivering news and updates.

Keeping alert to signs of difficulty means talking more or less constantly with those doing the critical work. It is not enough to conduct project meetings or to wait until news of problems filters through to the CIO's office. This is the time for "active listening." Keeping everyone else talking and listening to each other is important also. In addition, the CIO will need to remind everyone why the project is happening and repeat the key elements of the plan. Once the reality of difficult work settles over the participants, the original resolve may begin to unravel and need to be mended.

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It is important to know that basic reassurance and encouragement are vital throughout the project. The toll on morale can be serious, and it will be up to the CIO, as well as the president, to encourage positive attitudes and a proper sense of proportion and perspective.

Repairing breaks

Large information systems are too complex to be replaced or upgraded without significant crises. To some extent these problems can be forecast through good analysis, but only imperfectly. When the inevitable break-downs occur, the CIO needs to act quickly and decisively, and with the full authority of the top administration. There are too many ramifications if unexpected problems threaten all the planning, preparation, and resolve gathered at the outset of the project.

There is no script to follow in these instances; the best expedient is for the CIO to be squarely and energetically involved in negotiating solutions to impasses.

Managing expectations

Through every step of the process there has been a common thread: the need to manage expectations. Good software installs do not turn on product or technology choices, vendor relations, or IT staff management. Those are all important, too, but they are all secondary to the larger need to set, calibrate, and adjust the expectations of everyone even indirectly connected to the project.

Managing these kinds of IT projects is mostly not about IT. Today's CIO needs to have strong skills in diplomacy, advocacy, organizational psychology, writing, and listening, in addition to the more obviously needed strengths in management and IT knowledge. No aspect of a CIO's work is more challenging, more rewarding, or more appreciated when done well. **TW**

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Pros and Cons of IT Grants

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on campus. If the instructions for any of the well-established grant programs were copied and followed by IT organizations when submitting budget and project proposals on their own campus the success rate for those requests probably would be higher.

Grants: the downside

It is still very tempting to think of a grant as a gift. None of the participants in the granting environment has come to terms fully with this misconception.

Grant seekers often do not see the full extent of obligations they take on with their home institution as well as with the grantor. Funded projects are usually compromises forged among those parties and subject to differing interpretations and values. In smooth-running projects, those differences can be papered over. But if the project runs into difficulties or faces an uncertain post-grant future, conflicting values are sure to surface.

Colleges and universities are glad to have the funding and prestige that comes with a grant. But they add to their base of on-going obligations when they accept a grant. The expectations of their constituents are raised by the grant and reversed only with great difficulty. Rare is the project that simply folds up when the grant funding is over, regardless of promises and plans to the contrary.

Grant-givers have learned, too, that the funds they award are not gifts. The recipients have their own agendas. The purposes they mean to advance are sometimes unrealistic or simply subject to changing priorities and enthusiasms.

Attempts to steer curriculum have proven very difficult to carry out, being subject to the interests and judgments of faculty on essentially a one-by-one basis.

Administrative practices have been equally difficult to sway, the small routines of campus life being deeply rooted and resistant to change absent a crisis. Initiatives to use technology to reduce administrative costs or to foster consortium-based savings in IT have had a checkered history at best, due in large part to resistance in the ranks of administrators and staff.

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All of the participants in the grant scenario have overlooked this key test of value: if this is a good idea, why don't we find a way to make it happen anyway? In retrospect, the biggest challenge for IT in its first decades on campus was to win a larger regular proportion of the educational and general budget. In hindsight we can see that the merits of one project or another fade into the bigger picture; the real task, all along, was to discover how IT needed to be seen in context with all the other projects on campus and how budget structure needed to change as a result.

Straying from the agenda

Grant-getting has become an end in itself in academe. While the soft-money world of research is thoroughly geared to work in this fashion, the spill-over influence reaches much farther, and not always appropriately.

In IT, strategic planning has been a more recently adopted practice. During most of the great infrastructure-building era the urge to build outran most thoughts about why and for what value IT was important. We face the challenge now of thinking through the appropriate role of grant support in the on-going work of evolving IT infrastructure, adopting new technologies, and bringing change to teaching and learning.

Opportunism, more often than planning, drives grant-seeking. We still do not do an adequate job of distinguishing venturesome developments from the basic work of mastering and sustaining IT. Only a few universities are capable or interested to undertake real research in IT; the rest have their hands full keeping up with their constituents' appetite for more, better, and faster. Chasing innovations where the lure of funding and prestige outweighs strategic value is a diversion of time, talent, and available funding that few can afford.

Poor partners

To be candid, the higher education community has been a poor partner in IT grants. Equipment manufacturers learned during the 1980s that their equipment grants did not lead to long-term business associations – we changed brands the next

time a good deal came along. More recently, major philanthropies, including Sloan, Olin, and Pew have decided that support of IT projects in higher education is not a good use of their funds: the programmatic change they hoped to influence just did not happen, despite significant grants.

The college and university community turns out to be deeply entrenched in its predilections, conservative with regard to innovation, and resistant to "outside" influence. It is expert at outlasting those who would change it.

Fewer grants now

With the federal government, manufacturers, and philanthropies giving fewer IT-related grants the needed re-assessment of grant-dependency might in fact be under way. At a minimum, it appears we have come to the end of thinking that if only higher education had enough computing equipment it would meet everyone's divergent expectations for new benefits.

Partnerships to develop new technology (such as the Athena project at MIT and "Andrew" at Carnegie-Mellon) promised to set a trend in sustained cooperation, but fell short of expectations and have not been widely replicated. Even high-tech-intensive universities do not have the depth of talent to carry out ambitious developmental projects, falling short most noticeably in the stage of converting experimental technologies into commercial products. As the example of Mosaic suggests, the commoditization of technology happens faster and more effectively outside the academic world, even when most of the development happens on campus.

Business co-development "incubators" have been more successful and more frequently copied as a model. They facilitate the movement of ideas and technologies from laboratories and computer science departments into commercial enterprises on the university's doorstep.

Looking ahead

The search to bring outside money into the campus IT enterprise continues. The profusion of commercial partnerships has not succeeded in meeting two basic needs: adoption of new technologies and support of courseware development. IT budgets will never grow at a rate that supports the aggressive assessment of new technologies; instead they inevitably lag, waiting until new needs are proven.

In the future, grant-seeking will need to be folded into strategic planning and focused on meeting the continuing extraordinary needs. But a first requirement is to think more clearly about how to distinguish between baseline and developmental aspects of campus IT. Grant-funded projects are appropriate for innovation and risk-taking but should not be viewed as a substitute for the funding needed for baseline services.

Secondly, ways will have to be found to cultivate long-term relationships with grant providers. Multi-stage projects and more opportunities to follow successful projects with fast-tracked proposals for new ones would be a welcome alternative to project-by-project match-making and more conducive to meeting shared goals. **TW**

"A lot of my clients ask me if they'll have a honeymoon period when starting a new position. I always tell them no. They must focus immediately on building relationships, understanding the business and delivering a few quick wins. CIOs who can do those things will get credit for a great start. In most cases, three months is a reasonable ramp-up period, and six months is way too long."

Susan Cramm
"The New CIO Mantra: Shut Up and Listen"
CIO Magazine
March 15, 2002

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EDUTECH RESPONDS

Q. What is a good policy for mass e-mail to all or a large part of the campus community? Most of the requests we get sound reasonable enough, but we're concerned that if users receive too many messages they will not feel well served by the policy.

A. *There is good reason to believe this is a touchy subject with users. The efficiency of reaching large numbers of people easily and cheaply is very appealing. But we also know that people react strongly to getting e-mail they do not want. On most campuses, mass e-mailing is discouraged. Some prohibit the practice entirely. Others maintain a few large, official lists but require senders to submit messages for approval and limit permission to cases that appear important. An interesting approach that is not widespread is to allow mass mailings (to official lists) but only by authenticated users. This policy relies on a kind of community self-regulation: recipients have the ability to reply and complain to senders whose messages are not welcome. There are, of course, alternatives such as subscription lists, e-mailed news and events digests, Web-page posting sites, portal environments (which allow people to choose topics for which they want to see information), and online messaging forums. All of these can be promoted to reduce the inclination to direct-mail to large audiences.*

Q. How many different operating systems does it make sense for campus IT to support?

A. *This long-standing question has become harder to answer in the past two years because of the number and rapidity of Microsoft operating system variants (contrasted to Apple and Linux), by the establishment of three and four-year equipment replacement cycles, and by the high percentage of privately owned computers students bring to campus. As a result, while the newest systems might be showing up with XP, there are still some "old" computers in the campus inventory that are running Win95 – which was new when they were. Some campuses require and facilitate upgrades of older machines to an OS standard; others wait until the upgrade cycle sweeps those older systems away. Windows 2000 is the most frequent choice currently for those who encourage migrating to a single standard. The toughest requirement is in computer labs, where operating systems and settings need to hold up through multiple users during the course of a day.*

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The Open-Source Movement

The open-source movement is surfacing more and more often as an undercurrent in the busy flow of discussion swirling around software development in higher education. Most often it comes up for mention as a response to the increasing predomination of commercial, proprietary software in use on campuses. As operating systems, development tools, desktop applications and enterprise software all have become large, complicated, and expensive, an increasing number of IT professionals are looking for not just alternative products and sources, but at a different way to develop and support software. If open-source fulfills its proponents' hopes to even a modest degree, the effect on IT practices in higher education will be substantial.

Open-source can be defined as an approach to software development and intellectual property in which program code is available to all participants and can be modified by any of them. Those modifications are then distributed back to the community of developers working with the software. In this methodology, licensing serves primarily to disclose the identities of all the participants, documenting the development of the code and the originators of changes, enhancements, and derivative off-shoots.

The most widespread and vocal adherents of open-source are the members of the Linux-using community. But projects sponsored by major universities to develop new "open" software are also underway. The most visible of these is the Open Knowledge Initiative, a consortium of American universities led by MIT and Stanford. Their aim is to produce an "architectural specification" for the development of educational software. The Java in Adminis-

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"The most promising aspect of Web services ... is their ability to resolve the differences among shared, networked applications. Under this new, rapidly emerging model for Internet computing, various Web applications can be stitched together: applications from different vendors, of various vintages, written in different languages, and running on disparate platforms can easily communicate and cooperate."

Carl Jacobson
"Web Services: Stitching Together the Institutional Fabric"
EDUCAUSE Review
March/April 2002

NEWSBRIEFS

THE EDUCATIONAL GATEWAY℠

The Gateway to Educational Materials℠ (GEM) is a consortium effort to provide educators with quick and easy access to the substantial, but uncataloged, collections of educational materials found on various federal, state, university, non-profit, and commercial Internet sites. GEM includes lesson plans, activities, and projects from over 320 contributing member institutions and covers school grade levels from kindergarten through college.

The collections are browsable by subject or keyword and searchable by subject, keyword, title, or school grade level. Some of the materials are free, others are available for a fee or require registration. GEM is sponsored by the U.S. Department of Education and is a special project of the ERIC Clearinghouse on Information & Technology.

See: www.thegateway.org.

JA-SIG

The Java in Administration Special Interest Group (JA-SIG) is an independent organization designed to increase the flow of information between educational institutions and companies involved in the development of administrative applications using Java technology. The JA-SIG's goals are to: nurture communication of best practices, new technologies, and innovative methodologies and projects related to Java; increase peer review, collaboration, and group discussion related to institution-developed Java administrative applications; broaden Java technology cross-fertilization between firms and schools on both a functional and geographic basis. The JA-SIG membership is engaged in three activities: sponsorship of a twice-annual conference, the JA-SIG Clearinghouse – a website facilitating the sharing of Java components, and development of a free, open source, open standard portal for higher education called uPortal.

See: www.ja-sig.org.

COLLABORATIVE FACILITIES

Collaborative Facilities is a project designed to collect, organize, and disseminate information about model "collaborative facilities" on college and university campuses throughout the United States. The project is sponsored by the Coalition for Networked Information (CNI) and hosted by Dartmouth College in an effort to assist institutions in planning, implementing, and evaluating these facilities. This web site allows information professionals, administrators, faculty, and other interested visitors to "tour" collaborative facilities online and to analyze documents related to their planning, design, administration, staffing, services, and funding. The site also provides contact information for each participating institution in order to encourage the development of an interactive community devoted to collaborative facilities.

See: www.dartmouth.edu/~collab.

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The Open-Source Movement

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istration Special Interest Group is a large association of academic and commercial organizations sharing Java code and collaborating in the development of uPortal, an open-source campus portal product.

For the most part, the open-source technologies and products existing or under development today are not primarily unique or ground-breaking in functionality. Instead, they are alternatives to commercially well-established software, distinguished more by the way they are owned, operated, and further developed. A college or university buying a commercial portal or operating system agrees to license terms and conditions that almost always prohibit any modifying of the software. The software itself comes only in compiled form and so is not amenable to being changed in any event. Frustrations with those constraints are the basis for interest in open-source.

The proprietary grip

Information technology on campus has settled into a pattern of relying on commercial, proprietary software. Computer, server, and network operating systems were the first to follow this trend, although since 1969, Unix – and more recently Linux – have remained significant exceptions to the rule. Commonly-used desktop applications followed suit.

Later to follow were the administrative applications systems – what we currently call administrative information systems (AIS) software. Many utilities, including those for page definition, data transfer, and media-streaming sprang into the world as virtual black-boxes, their inner workings hidden from those who use them. A kind of backlash has set in and finds sympathy if not universally strong support from many in the IT community.

Technical objections to the essentially closed nature of most of the software now in use seem to grow stronger with each major new release of the major proprietary operating systems. The voices of technical support staff are, however, all but lost between the raucous promotion from the vendors and the opinions of end-users and the popular computer press. With each new release of operating systems software, the IT world waits passively to be re-shaped by the vendors' decisions about what the technology will be.

Open-source technologies and products are not primarily unique or ground-breaking in functionality. Instead, they are alternatives to commercially well-established software, distinguished more by the way they are owned, operated, and further developed.

Each new generation of AIS proves extraordinarily more difficult to install, largely because of complexity of two kinds: the accumulation of local processes, exceptions, and customizations on the one hand and the rapidly-growing set of options carried in the basic AIS packages on the other – and it is the second of these that seems easier to blame. These systems were once welcomed as a great advance over home-written applications, but there is now a growing perception that they are getting bloated and out-sized.

Fitness

Concern over the fit of commercial software with needs as they are viewed on any particular campus is part of what is fueling interest in open-source solutions. A crisis of confidence is building because it is never clear who demanded the rash of new features that bulk up each new release of commercial software, a pattern just as true for desktop productivity suites as for enterprise software. Almost inevitably, the conclusion tends to be that those making the decisions in development of these products are out of touch with real needs or too busily trying to meet a range of needs.

As software companies consolidate, with a few dominating where there was once more competition, they tend to expand the scope of their products, feeling the need to provide solutions for all segments of their market. Selective focus and innovation are strategies for emerging companies. Mature, successful companies wage an all-fronts defensive battle against upstart innovators by adding features at the same time to many aspects of their product, but leave their users less satisfied with the fitness of those products for their needs. For these users, open-source looks like a return to basics, or at least an approach driven by expansion for its own sake.

Cost and license

Another consequence of the shake-outs that follow the rise of several competing, differentiated products and companies is the increase in fees and tightening of license terms and conditions. This fact of the marketplace has held true for all kinds

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Seeing the Way: Vis

Someone has to see and know how the components of technology come together. IT staff with responsibility for parts of the whole picture are undoubtedly the most knowledgeable about their field of activity – and in many cases most likely all but decided for the institution when choices had to be made. But only the CIO carries the responsibility to see the wide view.

No constituency on campus except the IT staff is likely to ask explicitly what that vision is. That question will be always on their minds because they want to know, at a minimum, how their contributions fit into the design. To most others, it is sufficient that things work; they are unlikely to be very interested in how that happens.

The CIO's job description probably contains a line saying something about "technology vision," but very seldom will a senior administrator or advisory committee return to the topic once a CIO has been hired to deal with it.

Principles and policy

IT environments are more than the sum of parts. In fact, an argument could be made that their power comes from their connectedness and wholeness. IT infrastructure and information systems are increasingly decentralized, made up of parts dependent not just on other parts but on the performance and cohesiveness of everything else.

These environments are impressively powerful but also quite vulnerable. Power outages and computer failures were once the most common causes of disruption; now bandwidth bottlenecks and misconfigured network settings at the desktop – failures in the logical space between components – are more often the culprits.

The vision on which current IT infrastructure is based starts with fundamental principles and priorities, most of which have never been articulated, much less aired in public.

Much of the heat generated when the Napster phenomenon began was due to conflicting ideas about campus network purposes and priorities. Policy and technical responses eventually eased the crisis, but it was caused by vulnerabilities resulting from a too-casual assumption that mission-related and recreational uses of the network could co-exist. The crisis could be considered a failure of leadership and vision because, in retrospect, it is clear network management technology and policies were too passive and therefore blind-sided by the advent of shared, networked applications. The network performance crisis also brought into the open the lack of well thought-out and articulated policy addressing network performance expectations. And only after bandwidth-shaping tools were installed did discussion of traffic management priorities get under way. The lesson in the skirmishes over Napster is that IT infrastructure is as much the product of principles for usage as it is routers and monitoring software.

No constituency on campus except the IT staff is likely to ask explicitly what the vision is. That question will be always on their minds because they want to know how their contributions fit into the design.

For the CIO, the challenge in complex, multifaceted infrastructure is the need to spot the conceptual gaps on the technology side and the absence of usage policies and community awareness on the human side. Much remains to be done to lead campus technology users to better understanding of the design decisions, rules, options, and priorities that shape their working environment. That task has not been fully accomplished if there is confusion and disagreement over network performance expectations, operating system upgrade decisions, network storage quotas – the rough edges of daily IT existence.

Details

Technology vision is also vitally important for the CIO in the normal business of getting all the little decisions right. It would be a mistake to think of vision as being only a clear view at some high and abstract level; staying on track through the thicket of ordinary work is just as important. Resisting distractions and keeping perspective are hallmarks of a good leader, and yet another critical skill never mentioned in job descriptions.

There is a never-ending need to see and explain the fit between small decisions. For most staff, management consists of making one right choice after the other. It is unrealistic to ask them to do more than that. The jobs of looking several steps ahead, reconciling competing agendas, and keeping everyone coordinated inevitably move upward in any organization. In IT they are made even more important because of the divergent pulls of technological detail and systems complexity. The CIO needs to be the pathfinder

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for everyone else who is caught up in the specializations and divisions of work.

A task too large for the CIO alone but impossible without that person's strong focus is the assurance of levels of quality and service. The highest level of leadership needed for these issues is the mediation between community expectations and the performance of the infrastructure.

The IT organization's fulfillment of its duties in management is only part of this picture. Someone has to take the lead in finding the right balance between service demands and the capability to satisfy them. It is very easy for IT organizations to lapse into bureaucratic or defensive attitudes about service; they run that risk when they focus too much on their own rules. Constant monitoring of service interactions gives the CIO a measure of the support activity – the equivalent of a profit-and-loss record.

The relationship of expectations to capabilities is central (and unique) to the CIO's role. For IT staff, burnout resulting from unreasonable expectations on the part of their clientele is the biggest occupational complaint. They rely on leadership from the CIO to set the standard and to support them in carrying it out. The campus community expects the CIO to stand accountable for IT performance.

But just as importantly, the CIO needs to use the detail of service experience and trends as a basis for planning the evolution of the technical infrastructure. There is no better opportunity to prevent the downward spiral of overloaded infrastructure and declining service standards than to comb the performance record for evidence of strain. In this instance, the vision required is retrospective.

No amount of exhortation or policy adjustments can compensate for infrastructure that is not adequate to the needs of the institution. Failure to keep the technical base solid is the leading cause of IT failing to meet expectations.

In a similar vein, the CIO needs to gauge IT staff training and skills requirements as part of the strategic vision. Too often training decisions are left to be made at too low a level in an organization. Staff development is a key ingredient in IT performance; without an adequate level of competency the usefulness of infrastructure is undermined. Training is not often considered a component of technological vision, but it is as important as any other objective a CIO sets.

There is no better opportunity to prevent the downward spiral of overloaded infrastructure and declining service standards than to comb the performance record for evidence of strain.

Seeing the future

Seeing things as they are in the present is of course the basis for good planning. Vision is not dreaming, nor is it the invention of plans that have no grounding in the present. What is needed tomorrow will largely be forecast as a continuation of the present, making the adjustments that appear necessary. This is the easiest piece of planning. More difficult is the case of planning where there is no bridge from the present to the future. Coping with new starts in technology requires a different approach and calls on a different mode of vision. Here the job is to read the crystal ball.

"Positioning" is one tactic for coping with uncertainty about future developments. New technologies, despite their increasingly rapid progress from laboratory to the field, do not appear without some warning. The IT trade press thrives on predictions and speculation about new products, though they show less interest in the harder task of identifying new usage developments. Positioning consists of making planning choices that create the ability to accommodate what might occur or might not. New buildings to be constructed in the next few years, for example, need to be designed for wired and wireless networks because nobody can forecast reliably today what the preferred installation will be.

An often-neglected element of planning is the discontinuation of technologies and services. The record, particularly for IT in the academic setting, has been to allow the past to hang around too long. The realization that obsolescence is costly is finally asserting itself. Support resources are strained by the need to cover both the new and the old. Failure to clean house also allows old outlooks and skills to stay beyond their usefulness and to obstruct the new.

The bottom line is that the CIO's field of vision needs to take in the present, past, and future, and to connect them smoothly. TW

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The Open-Source Movement

continued from page 3

of software: office suites, library packages, courseware management systems, and ERPs among them. The trend for total costs of ownership for software are upward, and more sharply where competitive pressure among vendors declines.

Software costs have taken over from hardware the dubious distinction of being one of the hard-to-control aspects of IT. So far, most institutions still find staff costs (and the difficulty of hiring adequate technical talent) greater challenges than the rising cost of their standard and familiar software. As long as commercial software appears more affordable than programming staff it will remain dominant. But if the balance shifts – through increasing license costs and constraints, for example – open-source is likely to gain.

Control

Technical staff increasingly serve as the maintainers of commercial software packages. They had no role in developing most of the applications they support and have little ability to change them substantially. As a result, those staff are perpetually caught between demands of the users they support and the vendors who supply the software and retain control over its functionality, shortcomings, and future evolution.

One of the consistently alluring promises of open-source is return of control. As frustrations with the locked-down character of commercial software grows stronger, the open-source idea seems to provide a way of regaining the lost control. Recognizing this line of reasoning, some software vendors have offered to make their products easier to extend and enhance. Blackboard and WebCT, for example, made statements to that effect when the Open Knowledge Initiative project was announced.

Skills you need

Control over software, whether at the level of operating system, development tools, or application, has a strong psychological appeal to IT professionals. There are, however, strong practical barriers to stepping up to that control. One of the reasons that commercial, standard software replaced locally, purpose-written products was that the sheer volume and complexity of program needs overwhelmed the skills of IT staff at many institutions. The reality of the academic IT scene is that relatively few institutions have the on-staff skills to develop software. And even where that capability exists, it is reserved for a few strategic projects. Almost nobody believes today that custom-writing is the best approach for the general run of software needs. Consequently, the realistic prospect of substantial software development activity is limited to projects with special resources or an unusual willingness to take risks.

The history of software-writing has been the transition in outlook from writing code units to engineering complex systems .... The question prompted by this trend is whether a campus IT organization, even if supplemented in its efforts by consortium or commercial partners, can be effective in this role.

Open is not free

The biggest cost in IT is personnel – the time and talent needed to make technology work. Colleges and universities have adjusted their budgeting practices to accommodate the need to sustain the hardware base, which at one time appeared an insurmountable cost. More recently, the cost of AIS software became the new focus of concern. But in the background, the size and skill sets of IT staff under the funding limitations common in the academic world have proven a more fundamental shaper of IT working methods.

The acquisition cost of software is only just the beginning. Because open-source code is available free or at very low cost, there is a temptation to think that cost savings will fund a lot of development work before the balance begins to tip against open-source. The problem in this thinking is that while fast progress can be made in prototyping and initial development, the longer – and therefore more expensive – phase of work still lies ahead in the detailed programming and hardening of the software. As a result, the cost advantage of an open-source solution depends heavily on avoiding the crushing burden of systematic programming.

To build systems

The history of software-writing has been the transition in outlook from writing code units to engineering complex systems. Organizations specialized to work in this manner have all but taken over the development of software. The question prompted by this trend is whether a campus IT organization, even if supplemented in its efforts by consortium or commercial partners, can be effective in this role.

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The likelihood that institutions will reverse the exit that most of them made from primary code-writing appears very small. Few senior administrators will be convinced to return to in-house development of software, especially given the ongoing difficulty of supporting campus IT needs and ambitions as they currently stand.

Influence

Still, despite all the obstacles, open-source has the potential to strongly influence the future of software development and support in the academic world. There are already a few signs that the combination of IT professionals' frustrations and open-source alternatives are making major software makers think about opening their code to the development community.

Nothing in principle prevents software companies from transferring code into the open-source realm. The key question is whether their competitive advantage will be better served by a model of co-development with their client community or by trying to meet all needs by continuing the closed model. To the extent that commercial software companies believe that open-source is a viable option, they will be influenced to allow users more control over the software, at least in the ease of extending and customizing applications.

Focus on tools

Inside the IT organization, one of the big potential benefits of open-source is a new focus on software tools. Linux/Unix, Java, PERL, and SQL – which are not yet in the skill sets of many IT staff – have two types of value that have been only sporadically exploited. They can be used to create valuable new capabilities in the web environment that is the focus of so much backlogged demand. They also provide the foundation for a new level of self-confidence to consider local and immediate responses to a wider range of applications needs.

Open-source utility software is already the basis for sharing across a wide range of IT organizations. By training staff to use these tools, campus IT groups would also be promoting connections with the wider IT community, where open-source solutions are more common than among staff trained on counterpart, proprietary tools.

Using the web

The greatest benefit in open-source could be the opportunity to realize the best promise (and original purpose) of the web: to make an extended working environment where information is accessible to all those involved in collaborations. The prospect of very large communities focused on shared projects offers an intriguing alternative to the prevailing "industrial" model of software development, where a single, formal organization specialized for production is currently the rule.

Very little is known about how this mode of collaboration would work. The academic community is an ideal place for such an experiment – given the dispersion of talent among so many institutions, but it is also a difficult environment for the experiment because of the strong tradition of local independence.

Contributed code libraries are one of the oldest features of the computer era. The big question in open-source is whether it can lead to a new way to organize work on software. **TW**

"To be successful, collaboration needs to be part of how business is done, day after day, month after month. People believe what they experience. When leaders rush to get people involved at the time of the change initiative itself, skeptics and supporters alike feel as if the process is synthetic – a kind of strategic manipulation in the name of openness and participation."

Rod Napier with Patrick Sanaghan
"Achieving True Consensus"
NACUBO Business Officer
February 2002

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EDUTECH RESPONDS

Q. How would we go about coming up with a good decision on whether to lease or purchase microcomputers?

A. *The basics of the lease-versus-buy choice have not changed over the years that this topic has been debated. The advantages to leasing are budgetary and political. Leases are generally treated as line-item, annual operating expenses, whereas equipment purchases might still be treated as capital expenditures. Line items tend to stay in budgets; capital items seem less assured right down to the last minute. Leases also force the issue of removing obsolete equipment from campus before it becomes a support liability. The disadvantage in leasing is the financing charge the lessor builds into the cost. What is new in the past couple of years is that as schools have established fixed replacement cycles for computers they have discovered they can have the benefits of leasing without incurring the financing cost. The trend seems to be away from leasing, especially for the lower-cost hardware that institutions feel comfortable buying for themselves in what is essentially a commodity market. And, while on the subject, the most common lease or replacement cycle is four years.*

Q. What is UCITA? Is this something we need to know about?

A. *The Uniform Computer Information Transactions Act is model legislation, adopted so far by Maryland and Virginia, with the aim of standardizing how state laws govern intellectual property issues in IT. Proponents say UCITA will provide consistency where there are now differences and discrepancies nationwide in commercial code governing licenses and other IT law and regulations. Critics contend that UCITA is skewed in favor of software producers, creating default regulation that diminishes the interests of software users. At issue are whether "shrink-wrap" licenses will become enforceable – an exception to the usual legal principle that terms of a contract need to be presented in advance of requiring acceptance – and the strength of warranty obligations, which might be weaker under UCITA than without it. UCITA has attracted relatively little attention in educational circles so far.*

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Assessing IT Investment

The very large outlays of money that have built IT on campus have been justified in many ways but rarely until recently in classic terms of investment. In the commercial world an investment is made in anticipation of a return in kind – money out for money in – or accomplishment of a well-defined goal. The academic world has been generally reluctant to talk about its financial outlays as "investments." The difficulty is partly semantic, because language of products and services does not fit habitual ways of describing what institutions of higher education return for the money they spend. But the problem is also that the growth of IT was largely uncharted, neither forecast nor evaluated in the planful manner implied by "investment." Finally, IT also poses unique challenges in assessment by transforming the institutions in ways not intended at the outset.

Assessing return on investment in IT has become an increasingly often discussed topic in higher education, addressing one of two objectives: determining the value and effectiveness of IT capabilities developed up till now or evaluating prospective forays into new technologies and services. The first two decades of campus-wide IT (beginning around 1980) were a period of infrastructure and systems building – the time when the field was inventing itself. Since the mid-1990s, emphasis has shifted to settling the place of technology in education and integrating it into the life of educational institutions. Now the prospective analyses have expanded to include new offshoots and directions, as IT moves into a new wave of growth layered on the base established so far.

IT leaders are now expected to justify all costs in terms that conform to the values and rules applied to everything else on campus.

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"Despite the compelling needs in the area of IT, it is critical to take the time to think about educational goals and objectives and their relationship to institutional type and the students being served. Technology must not realign institutional priorities. The challenge is to adapt our fundamental commitments to teaching and learning to the new pace and new opportunities associated with information technology. Rather than homogenizing higher education, technology should enhance respective missions."

"The Technology Challenge on Campus from the Perspective of Chief Academic Officers"
New England Resource Center for Higher Education
www.nerche.org

NEWSBRIEFS

QUESTIONPOINT

The QuestionPoint service provides libraries with access to a growing collaborative network of reference librarians in the United States and around the world. Library patrons can submit questions at any time of the day or night through their library's Website. The questions will be answered online by qualified library staff from the patron's own library or may be forwarded to a participating library around the world.

The service, which is available to libraries by subscription, will enable reference librarians to share their resources and expertise with each other and with their patrons free of charge in unprecedented ways.

See: www.QuestionPoint.org.

SUSTAINABLE COMPUTING CONSORTIUM

The Sustainable Computing Consortium (SCC) is a collaborative initiative among Carnegie Mellon researchers and major corporate information technology users, software developers, suppliers, academic leaders and government agencies to improve software quality, dependability, and security.

It draws on the expertise of its members and research faculty in all disciplines related to sustainable software, including computer science, electrical engineering, security and survivability, information technology management, statistics, economics and public policy.

See: www.sustainablecomputing.org.

MUSEUMS ONLINE

MuseumStuff.com is the one-stop shop for museum information, where Internet users can discover and explore thousands of museums and related resources around the country. This search engine, which features a "broad range of museum 'stuff,'" offers links to various museums, virtual exhibitions, museum events, fun and game sites for secondary and post-secondary students, and educational links.

The museum links are arranged in three separate categories – art, history, and science – and can be accessed from the main page. The virtual exhibition section offers 55 topics ranging from African American, to ceramics, to evolution, to motorcycles, to religion, to zoos/animals. Viewers can search for museum events by organization name, month, and specific day, or perform an advanced search using a combination of selections. On the whole, this gateway to museum stuff provides enough resources to pique the interest of persons in many different areas.

See: www.museumstuff.com.

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Assessing IT Investment

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Proposed expenditures are subject to scrutiny similar to that directed at longer established and more familiar areas of activity. IT planning is now subject to the same need to close the loop between decisions to spend new money and the anticipation of specific benefits. Arguments claiming that IT needs to be developed in order to transform institutions to benefit in ways not yet predictable have become less persuasive.

The stakes in figuring out how to talk about return on investment in IT in higher education are basically to compete successfully for funding now that the gold-rush era has passed – and educational leaders are asking tougher questions about results – and to compare and contrast the value of IT investments to other needs institutions face. The challenge for IT leaders is to assess opportunities in ways that satisfy traditional financial analysis while also speaking effectively in the language that the academic community uses when discussing its core purposes.

Starting behind

The IT community brings several handicaps to the discussion of return on investments. The background expectation accompanying the initial build-up of IT was that it would deliver cost savings through greater efficiency and productivity increases due to the new capabilities staff and faculty would have. The origin of these expectations was the general, industrial model of capital investment already shaping discussion of IT in the commercial sector before colleges and universities began to make comparable investments.

Efficiency is a matter of accomplishing tasks with a minimum of wasteful expense. Technology can lead to improvements in efficiency by reducing the amount of work required to get something done. Productivity is a measure of the cost to achieve a certain result. Here technology's benefit comes in the increased amount of work done by workers.

Initially, the large expenditures in computing on most campuses (with the notable exception of a few research institutions) was in the automation of administrative work. Subsequently, much of the campus IT investment was justified as supporting teaching and research. Forecasts of efficiency and productivity gains were sketchy at best for administrative work and not considered relevant for the academic side. As a consequence, past IT investments are subject to skeptical assessments, not about whether they were good or necessary, but regarding how they were "sold" on campus.

> *The IT community brings several handicaps to the discussion of return on investments. The expectation accompanying the initial build-up of IT was that it would deliver cost savings through greater efficiency and productivity.*

Shifting ground

The growth of IT during the last quarter of the twentieth century coincided with unprecedented expansion of the scope and detail of administrative services on campus. Some of these (e.g., student advisement and counseling) were not related to technology; in total, the addition of administrative workers at the same time that colleges and universities spent money on computers and software seriously muddies the water for any analysis of efficiency or productivity. In a similar vein, during that same era, class sizes and faculty workloads (as measured by courses taught per semester) tended not to changed much at all. Concern over efficiency and productivity in instruction are more recent; if they are applied to an examination of the general build-up of campus IT, they do not reflect well on the investment (leaving aside the matter of that perspective being at odds with anyone's intentions at the time).

The grounds for evaluating the original investment in higher-education IT are slippery: other changes mask those due to technology; the values used in the assessment come more from current concerns and awareness than from the reasoning that prevailed when the investment was started.

A new baseline

A more realistic retrospective on the return due to the investment that produced campus IT as it stands today would need to focus on new assets in information made available for instruction, research, and administration. And although it is a more difficult case to substantiate, improvement in quality of work accomplished in those same areas – if it can be documented – would do much to help recover from lingering skepticism about how much value was gained. Claims of higher productivity are very hard to make when

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Leading t

The chief information officer is the institution's leader in matters of technology, a role that requires concentration on issues and forums outside the IT organization. But the CIO also needs to be the leader of the IT staff.

There are of course some duties – principally in planning, budget, and top personnel decisions – that can only reside at the highest level of management. Just as important are the tasks of developing, guiding, and championing IT staff. Those are activities that nobody else is able or inclined to take on, and therefore are indispensable duties for the CIO. Building a strong staff is a key to durable success in IT management and invariably one of the hallmark accomplishments of long-serving CIOs.

Recruitment of staff

A strong IT staff results from more than just the sum of good individual hires. When candidates come to campus to interview for open positions they look very carefully at potential colleagues, knowing that their own success will depend heavily on the quality of the ensemble.

Strong recruitment results from a consistently high expectations and a good sense of how to blend a variety of individual strengths. Hiring decisions left too much in the hands of mid-level managers can lead to choices made in isolation from overall team-building, in response to time pressures and other forms of impatience, or the natural tendency to replicate one's own characteristics when choosing among candidates.

Candidates are also looking for a convincing statement and explanation of goals and direction for all of IT on campus, beyond the duties they will have and the tasks and objectives of the unit hiring them. Ultimately, the CIO is the keeper of that message – regardless of who actually presents it to prospective new employees.

Once a hire is made, the role of those who did the recruiting shifts to retention of the new colleague. Nothing affects the long-term loyalty of staff more than their sense that the organization that hired them is in fact as strong as it seemed when they accepted the appointment. They will expect to see good and consistent management inside the IT organization, as well as a sense that their work contributes significantly to the life of the institution. The CIO is best situated to ensure that the organization keeps a steady course through the ever-changing landscape of IT and principally responsible for making sure projects are addressing real and important needs on campus.

The CIO is best situated to ensure that the organization keeps a steady course through the ever-changing landscape of IT and is principally responsible for making sure that projects are addressing real and important needs on campus.

Explaining the institution

Many characteristics of educational institutions are difficult for staff to understand. Faculty and students set the tone for the institution. Staff are also acutely aware that their life and work on campus is much more constrained by rules and managers than those of the faculty and students. IT staff have added reasons for feeling alienated within the campus culture: their work seems impenetrably difficult and obscure to most of the campus community – who do not wear their feeling of dependency with grace. All too often, IT staffs seem to have a bunker psychology, feeling beleaguered when out and about on campus and only comfortable back in the "shop."

The CIO, by virtue of being the IT organization's ambassador to the rest of the campus, needs to take the lead in explaining the academic setting to their staff – especially those who have not worked in it before. They need to know that an academic department chair's role is not the same that of the head of an administrative department. They also need to know that student workers tend to be less attentive to their jobs at the middle and end of semesters.

Accommodation is not the only message that needs to be heard. Staff need to know that their managers will confront faculty and students who treat them abusively. By virtue of having high visibility on campus and a degree of separation from the daily work of their own staff, the CIO has the standing to challenge unacceptable behaviors that even IT middle managers might feel too intimidating to confront.

Setting priorities

The harried pace of IT projects and support work takes a heavy toll on staff morale. Even where unit managers do an adequate job of organizing work and coping with the inevitable crises, it is important to repeat frequently and persuasively the prioritization of objectives. All tasks

drift towards one uniform level of urgency unless a strong effort is made to re-assert a scale of values by which the relative importance of different activities is maintained. Otherwise a general sense of anxiety settles in; it is just impossible to give all work the same standard of attention.

The CIO's role in being the master adjuster of priorities is more a matter of modulating expectations, anxiety, and the expenditure of nervous energy. Only someone above the fray has the ability to do this service for a whole organization. The management of expectations is never in anyone's job description but has to rank as one of the essential roles of a leader – something above and beyond ordinary management.

The IT staff also needs the CIO to push back unreasonable expectations that arise in the user community. Someone has to remind students that the first week of fall semester will not always be smooth sailing in IT. And the tendency on the part of some users to lobby for special adjustment in work priorities (in their favor, of course) has to be met with a calm and steady resolve not to be pushed around.

Monitoring workload

IT organizations, regardless of their size, tend to subdivide naturally into functional units. Among these, the workloads are never equivalent. Projects or emergencies cause some of the disparity. Other differences are due to staff shortages – open positions or staffing levels not adequate to the demand. In still other instances, the imbalance might be more apparent than real. The helpdesk is not necessarily busier than the database programming group, just because their telephones ring more often.

Unit managers are not always able to remedy these imbalances. In some cases they are in fact at least partly to blame for them. The problem of differences (real or imagined) in workload carry an unmistakable charge of emotion. For all these reasons, the balance needs to be monitored and adjusted constantly.

There is probably no more common test of a leader's attentiveness, as viewed by employees, than on the issue of workload equity. Staff are looking for someone to intervene with their supervisors to correct imbalances. CIOs risk being thought out of touch if they do not take the workload issue to heart.

There is probably no more common test of a leader's attentiveness, as viewed by employees, than on the issue of workload equity. Staff are looking for someone to intervene with their supervisors to correct imbalances.

Assuring communication

Another malady of IT organizations of all sizes is the surprisingly poor flow of general information and news. Poor communication of specifically-needed information is more likely to result in some correction, but breakdowns of the other kinds are less noticeable and usually get recognized as a problem only after frustrations and embarrassments have built up to an unmanageable level.

Part of the blame for not keeping staff well informed can be traced to managers cutting corners on their responsibility to share what they learn at the meetings they attend. But in a larger sense, they lose sight of their own role in assuring that everyone in the organization shares in the core knowledge and news that makes a true community. But managers are not solely at fault for deficient flow of information. Staff, too, can get lazy about keeping themselves informed. It is easy to close down one's attention to the wider scope of what is happening in their extended organization, to concentrate too closely on tasks and lose perspective on other knowledge they should be acquiring.

Here, yet again, the CIO has to lead by example – being foremost a conveyor of information – and also by insisting on a high standard of attentiveness to keeping everyone well informed.

Mentoring

While setting good examples with their own habits and performance, CIOs also have the responsibility to guide the professional development of the staff. They might not have an explicit charge to mentor managers to become CIOs themselves one day, but that assistance is important for the health of the IT profession.

The care a CIO invests inside the IT organization can pay many dividends. A strong and happy staff will be more successful. It will also make the CIO's life (and career) better at the same time by promoting an immeasurable quality of dedication and resilience in everyone in the organization. **TW**

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Assessing IT Investment

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when more is being done with more, but that has been the reality for IT.

The importance of doing an assessment of the results to date lies in the decisions ahead for new projects. Too much discussion of the current state of IT in the academic world concentrates on how it might still transform the enterprise even more. While that topic is valid and interesting, it leaves unanswered the shortcomings in past assessments, bypasses the opportunity to sort out what gains have been made, and fails to establish a useful baseline for future reference.

Comparative values

During the glory days of IT-building, pressure to invest in other aspects of academic plant and services were growing as well. Financial aid has become the perennial competitor for new money, as colleges and universities struggle to offset the impact of increases in tuition and fees. Insurance costs have also increased alarmingly – and show no signs of easing. New construction and renovation has also been a major sector of investment. That none of these contributes to improved efficiency or productivity is interesting to note but does not lessen the need for assessment in IT spending.

The ability to make a persuasive case for the return on investment in IT might shift to comparisons with other, competing claims on available funding. In principle this has always been true, but in reality IT has benefitted (and still does for the most part) as a special a project able to claim an unprecedented exemption from ordinary cost/benefit analysis. If that status ends, IT will have to compete more nearly head-to-head with other projects. At that point, IT leaders will need to be adept at convincing senior administrators – including the CIO's peers – of the value of IT projects in explicit relation to competing claims on funds. The significance of this change in grounds for justifying IT growth is hard to overstate: until now the case has been how the institution will benefit in a before-and-after comparison for the functions affected by the infusion of IT. Now the focus will be a comparison of IT-derived changes versus gains that other projects promise in completely unrelated areas. The next generation of IT projects will likely face sharper competition from other sources on campus.

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External competition

Because most colleges and universities have by now established their basic IT infrastructure and services, it is reasonable to expect that further expansion will increasingly be assessed in terms of competition with other institutions. Some of these will be the traditional competitors, but there is some chance that new competitors (such as e-learning alternatives) will figure as well. IT leaders will need to be judicious in making arguments of this kind, as these might be viewed as a retreat from the discipline of return-on-investment analyses. There is a risk that IT spending could, in these circumstances, re-awaken old feelings that IT is a black hole of expense.

Still, there are legitimate goals in recruitment and retention of students and faculty for which IT may bring advantages. These kind of arguments will divide between not falling behind or seeking to do better than selected rivals. Either way, these are cases IT leaders have not often needed to make before. As faculty, students, and staff grow more adept at evaluating colleges and universities as IT providers, they may give more weight to it as a criterion in choosing an affiliation.

Today, very few colleges and universities treat IT as a strategic investment – one that determines whether they succeed or fail or that distinguishes them significantly from others. Having established IT infrastructure and capabilities to something approximating an "industry standard," they will need persuasive reasons to make substantial additions to their current, baseline investment. Increasingly, the persuasive rationale will have to be how IT advances other objectives, particularly those that are truly strategic.

Mission and strategy

It would be challenge enough to test new IT projects against institutional mission statements and the non-IT sections of strategic plans. At some level, almost any plan can claim a connection to a mission statement. But to tie a return on investment to results assessable at that level of impact is very rare. Many mission statements, for example, say something about fostering "community." Any IT plan that spends money on network or telecommunications can

claim to be building community and therefore supporting the mission. But for that claim to be worthy of "strategic" importance there would need to be a change at the institutional level. With respect to "community," the result would need to be more like a significant change in student-faculty interactions than greater bandwidth to dormitories. Those interactions have changed, but setting out to transform "community" through planned objectives in IT is still much more the exception than the rule.

For colleges and universities facing enrollment or financial crises, the promise that IT investments could make a difference is an even more difficult proposition – but not unprecedented. The problem is that when resources are in short supply any outlays must go to initiatives viewed as directly affecting the crisis; the lead time generally required for a major IT project does not lend itself to crisis response.

New frontiers

Investments that would redefine the institution's mission are the far frontier of IT potential. Already, distance-bridging technologies for instruction have expanded the student base, quite dramatically in a few cases. The same capabilities are also being explored for their potential for schools to cooperate, sharing academic resources across organizational boundaries as well as distance.

To a lesser extent, IT serves as a zone of overlap with commercial enterprises, through technology transfer and business incubators. In a few cases, this activity includes undergraduate students, whose education is profoundly affected by the practical, problem-solving aspect of linking education with business-building.

Still waiting to be tried are initiatives to use technology to achieve better education. Word processors make revisions of writing easier, but almost nobody claims to be graduating substantially better writers as a result. The same can probably be said for statistical software and computer-based algebra and calculus programs. A few of the more specialized applications, in physical chemistry and geographic information systems can make a substantial claim to training students in skills and areas of knowledge that did not exist previously, which is a major contribution to new knowledge. But by and large, the net contribution of information technology to the curriculum has been modest and uneven in distribution.

Why ROI matters

A more thorough and convincing assessment of the value IT has brought to the academic enterprise is overdue. Evaluating the return on investment in terms that will be persuasive beyond the IT establishment would counteract lingering doubts about the era of build-up that has recently peaked. Looking ahead, the ability to make predictions that prove out conclusively will be critical for future growth in IT investment, particularly as access to funding becomes more competitive. While more stringent accountability for investment results would mean a leaner era in the evolution of IT, it also marks a level of maturity and credibility the field has long sought. **TW**

"You might think that pushing for an aggressive schedule would accelerate the work, but it actually delays it. When faced with an unrealistic schedule, engineering teams often behave irrationally. They race through the requirements, produce a superficial design and rush into coding. This mad scramble to build something – anything – results in a poor-quality product that has the wrong functions, is seriously defective and is late."

Watts S. Humphrey
"Why Projects Fail"
Computerworld
May 20, 2002

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EDUTECH RESPONDS

Q. How would – and should – we go about keeping track of who is using computers on our network and holding users responsible for what they do?

A. *Campuses are exploring different policies and technologies to deal with these issues. Many colleges and universities require that all computers using their networks be identified and registered. Although there are different mechanisms for accomplishing this task, in most cases an IP or MAC (ethernet card ID number) address is matched with a person's username. This approach works best for offices and dorm rooms, where each computer is generally used by one person. And, typically, the "owner" of each computer is held responsible for access anyone else might have and what they do while on the network. In another approach, a network login is required, and the username is first checked against a table of authorized users and then matched with the IP, Mac, or port address for the duration of the logged-in session. A few institutions have gone the farther step of enabling a single login, authenticating the user for the purposes of various services available on that network. Higher ed hasn't yet determined the "best practice" yet, but will before long.*

Q. Is it reasonable to think we could require that all our campus's purchases of computers would be subject to screening and approval?

A. *That policy is one that most institutions would like to have, but experience is quite mixed. Universities, especially the larger ones, have by and large given up on trying to enforce this kind of policy. They find they are too big and decentralized in decision-making and funding. Purchases made with grant funds are even harder to manage. Smaller campuses generally have an easier time of enforcing standards in computer purchases, either by requiring sign-off by the IT department or by compliance-checking at the purchasing office. In almost every situation, however, central rules and authority over computer purchases is strongly resented, and resisted, by offices, departments, and individuals. Many colleges and universities try to achieve the same result – less variety in the installed base of equipment – through specially negotiated purchase and license agreements, hoping to steer buyers to preferred products through price incentives. Whether by rules or enticement, this is not an easy job.*

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Winning the Faculty

Academic governance reserves pride of place for the faculty. Even when faculty do not have a direct role in decision-making, their views and interests are never far from the thoughts of those charged with administration. None of the stakeholders of colleges and universities has anything like the scope and depth of influence wielded by the faculty. No noteworthy initiative can be undertaken without their concurrence or continued in the face of their disapproval. Information technology is no exception from these tests, even though many faculty do not pay much attention to the normal run of IT issues.

No academic constituency is as difficult – by reputation and in actuality – than the faculty. They are an association of professionals, an alliance of individuals, more like a very large law firm or medical practice than a corporate or industrial workforce. Faculty are not effectively accountable to any administrative authority, not even to trustees, regents, or legislators. Their scope of responsibility is nominally rather small – centered on their own teaching, research, and committee service – but at their discretion they can expand that range to include almost any topic, even if just temporarily. They do not feel obligated to pay attention to the full range of issues facing the institution. When they rise to a controversial topic, there are no sure restraints on their tone. On more than a few campuses, administrators are intimidated by their own fear of how faculty might react if roused in anger.

Faculty have two modes of awareness for matters not on their own, active agenda: remote observation and reactive mobilization. In some respects, this form of participation in governance is like that of most citizens in the wider society; they choose their own

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"Beyond the physical campus resources that some colleges and universities have already unbundled, the notion of courses will be changed by the information grid as a delivery system. The current idea of a course is a collection of related material that a student is expected to master to some degree in a fixed amount of time. But if one wants to learn basic chemistry, why pick the amount of material that some professor thinks most students can master in twelve weeks as a course?"

Howard Strauss
"The Right Train at the Right Station"
EDUCAUSE Review
May/June 2002

NEWSBRIEFS

STEPPING UP TO INTERNET2

Some college administrators have concluded that they have to do more than just complain when faculty members use the Internet2 project's fast, high-tech networks to do things in the same ways they've always been done. "The technology has gotten ahead of people's thinking how best to use it," says Bruce A. Metz, vice president for information technology at Tufts University. Often it's not a lack of new ideas that prevents faculty members from taking full advantage of their institutions' membership in Internet2, the collaborative effort by higher education and industry to develop the next generation of Internet applications and technologies. Colleges that are connected to Abilene, the Internet2 backbone, frequently need to make other technology upgrades and investments before faculty members can make the best use of the enormous carrying capacity that Abilene offers.

"Planning to Use the Internet2 Network? A Few Other Upgrades Might Be in Order," Florence Olsen, *The Chronicle of Higher Education*, July 5, 2002.

MAPS ONLINE

The David Rumsey Historical Map Collection contains to date over 6,400 maps online and focuses on rare 18th and 19th century North and South America cartographic history materials. Historic maps of the World, Europe, Asia, and Africa are also represented. The collection categories include old and antique atlas, globe, school geography, maritime chart, state, county, city, pocket, wall, children, and manuscript maps. Genealogy and family history can be studied on the maps. The online collection is an expanding cross section of digital images designed to highlight the depth of the collection. See: www.davidrumsey.com.

CURRICULAR ARCHIVES

Some institutions, including MIT, are developing tools for professors and other researchers to add resources including data sets, notes, research reports, and otherwise unpublished papers to large, searchable, digital archives. Testing of DSpace, MIT's archive project, will begin this summer, and officials at the school hope that eventually nearly every professor will contribute to the body of work. Submission to the archive is voluntary, so developers have tried to make the system as simple as possible. Metadata will be included to aid in the organization and searching of the content, though submissions will not be actively filtered or moderated. Proponents say such superarchives could increase communication among scholars and spark greater levels of innovation, especially in the sciences. Some imagine a day when every research university gives its research away through the web.

"'Superarchives' Could Hold All Scholarly Output," Jeffery R. Young, *Chronicle of Higher Education*, July 1, 2002.

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Winning the Faculty

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level of participation in the activities of governance, detached observers much of the time but more active when concerned. Despite the existence of regular, standing committees in which they participate, faculty are generally not consistent in the degree of attention they bring to routine matters of administration and governance.

A different manner

Campus administrators tend to consider faculty slow to act and resistant to change. Faculty deliberations are often lengthy, more open and democratic than processes on the administrative side. In IT matters, the faculty role is typically that of advice and oversight, leaving actual decision-making to administrators. In short, the manner of faculty participation in governance does not lend itself to quick progress. Even in the absence of controversy, moving to quick decisions is not always possible.

IT poses a special challenge for faculty when they are deliberating on policy decisions. They feel uncomfortable in discussing topics outside their expertise; technology still can cause discomfort, even for faculty whose familiarity with it is actually rather good.

The challenge for CIOs and senior administrators when working with faculty in IT decision-making is to bridge the differences in governance style. The perspectives of managers and faculty are bound to be different but have to reconciled in order to get decisions. Being persuasive in the unique context of academic governance processes is one of the hardest tasks for everyone in the IT profession.

Credentials

As for so many aspects of effectiveness in IT governance on campus, the effectiveness of the CIO is paramount. For working with faculty and in the processes where faculty influence is strong, one of the basic requirements is strong credentials. Faculty tend to prefer administrators and leaders who were faculty at some point in their career. While this is still the rule for deans and provosts, it is becoming less common for CIOs.

It's hard to argue that a Ph.D. or teaching experience are objectively necessary to be an effective IT leader. More to the point, those credentials have more to do with faculty perceptions and comfort than with real requirements of the role. Still, the credentials issue is a pervasive problem when trying to get faculty acceptance in decision-making.

IT poses a special challenge for faculty when they are deliberating on policy decisions. They feel uncomfortable in discussing topics outside their expertise; technology still seems to cause discomfort, even for faculty whose familiarity with it is actually rather good.

Institutions have to address faculty expectations for credentials when hiring the CIO. Continuing to honor Ph.D. and faculty work history as prime qualifications for CIOs, in deference to faculty perceptions, does not serve colleges and universities well and probably fails to credit faculty with the ability to recognize other credentials for leadership. IT professionals today include many whose backgrounds are more varied than the stereotype of "former faculty" that was prevalent in the first generations of IT leadership. Senior administrators and search committees need to move beyond what is now an outdated bias when looking for a CIO.

The right skills

Once hired, a CIO depends heavily on speaking ability to succeed in forums shared with faculty. An important part of this skill is sensitivity to the vocabulary and codes of the standard language for public discussion in academic governance. Faculty are highly attuned to how well others (including their own colleagues) speak. Technical jargon is off-putting. Wit is highly valued. Overly simple analogies appear condescending. Good organization and concluding summaries are effective.

Most CIOs overlook the potential of writing as a means to reach and persuade faculty. Planning documents and annual reports are not sufficient, and even these are typically not published in places faculty are likely to find and read them. Articles and essays are typically not part of the expressive arsenal of CIOs but easily could be (if the fear of writing for the public can be overcome) – no other forms of writing carry the same inherent kind of credibility with faculty.

E-mail, too, is a neglected medium for more extensive and direct communication with faculty, particularly those who themselves use e-mail as a way of exchanging thought with colleagues, and not just a tool for communication chores. Faculty are

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Sometimes positive leadership depends on being able to say "no" and make it stick. There seems to be no shortage of second-rate ideas, coming from all quarters: state legislatures, boards of trustees, presidents who have just visited other schools, faculty IT champions, even CIOs ourselves. But easily the most prolific source is our own IT organizations.

The impulse to say "yes," to be liked and admired even more than respected, to hold the limelight – all these are traps for CIOs. The lingering impression that IT is somehow magic does not help matters. If anything, it encourages us to prefer the can-do spirit to level-headed assessments of what we can actually do. IT is still viewed by senior administrators as the field of activity where budgets and deadlines are never met – even though they keep approving the projects.

Inappropriate

The most costly mistake surely has to be the wrong choice of an administrative information system. There are some classic delusions still common today as colleges and universities choose new systems, inappropriate choices to which a strong CIO has to find a way to say "no."

One of these is the notion that our campus is simply unique, like no other, and that no canned package could ever address all our peculiarities. Well, all campuses are unique – by definition. This delusion of uniqueness is usually an excuse invented to explain a high degree of departmental autonomy and maybe the lack of managerial will to insist on standard practices and priority for institution-wide choices on administrative practices.

Another pitfall, this time on IT turf, is to prefer a product whose technological content is appealing and flatters our self-image, but may not be appropriate for other reasons. For example, many institutions have found that industry-standard relational databases are more difficult to manage than they expected. Getting away from a vendor-proprietary database seemed the enlightened thing to do, but they did not have the staff expertise to manage a high-powered DBMS.

Choices can also turn out to be inappropriate because they exceed actual needs, cost too much, and overwhelm users with functionality they do not need or understand.

There seems to be no shortage of second-rate ideas, or worse. These come from all quarters: boards of trustees, presidents, faculty IT champions... But easily the most prolific source of them is our own IT organizations.

In other instances, competitive pressures (or instincts) can give a false priority to an idea. Laptop computers for all students has been an example of this kind of error. Where the faculty and curriculum will lead students to use these devices every day, the idea might be worthwhile, otherwise it is a poor fit and a diversion of resources from projects that would bring better benefits.

In all of these instances the CIO needs to intervene, putting institutional ego aside and saying "no." Inappropriate choices are wrong because they do not fit the circumstances, not because they are bad ideas in themselves. Early intervention is key; once a plausible-sounding proposal gathers momentum it will be harder to turn back, particularly when it has a strong emotional appeal. Sometimes one brave CIO voice is needed to point out that the emperor has no clothes.

Wrong priority

Even more bad decisions can probably be traced to initiatives that make sense in many ways but are the wrong priority for the time and place they are proposed. Sometimes these projects are just out of sequence – requests to build additional departmental labs before problems supporting the existing labs are brought under control. The priority should be to fix problems with what already exists before resuming the expansion.

Initiatives in distance education also risk coming up at the wrong priority. A primarily residential institutions needs to do a lot of thinking about how and why it wants to serve other students before launching into the technology.

The CIO needs to speak up, raising inevitably unpopular questions about whether we have learned to walk before running. Priority is often a matter of sequence, creating a base of expertise or infrastructure before building something bold. Errors in priority can lead institutions off on tangents, or even to dead ends. Once the mistake becomes apparent – facilities that are not used, systems that prove too complicated, technologies that outrun support capabilities – the negative effects are double: resources have been wasted and the planner's credibility called into question.

And, naturally, every constituency that felt by-passed in priority will now ratchet up the pressure to be satisfied next. Slippages in priority become a slippery slope: once the efforts to reach the top of the projects list become a scramble orderly process takes a fall.

Wrong timing

It is not possible to do all projects at the same time. Because IT capital projects are still often funded by budget windfalls, sometimes the money becomes available to do two or more major projects at once. But that good luck almost never extends to staff increases, even temporarily. And so, the CIO once again has to be able to say no to those projects that cannot get adequate time and attention in the work schedule. If extra staffing cannot be funded as well, and if there is no way to bank the money forward, then holding the line with regard to timing of work has to lead to dropping a project.

Timing is sometimes a matter of synchronizing with other, non-IT projects. If a building is about to be renovated, now might not be the right time to upgrade a computing lab. Taking the lab down again while the building is gutted would be wasteful and demoralizing work. Besides, providing a fresh, new lab to coincide with the re-opening of the building will likely be more appreciated anyway. The trick is to see whether that lab can possibly limp through one last season before the building closes.

One of the best-established timing considerations in campus IT is of course piggy-backing on expensive building projects, especially when they involve digging trenches into which network conduits might be added. The expense and disruption of many a network extension has been literally buried in a big-dig project that happens in the right place at the right time. Sometimes IT projects need to be deferred until an allied project is ready to go. Then the CIO needs to convince everyone that the synergy and efficiency of coinciding with that other project are worthwhile

Pacing is another aspect of timing that calls for restraint. IT staff are usually glad to see their projects approved and funded. But the CIO needs to monitor the pace at which

Sometimes IT projects need to be deferred until an allied project is ready to go. Then the CIO needs to convince everyone that the synergy and efficiency of coinciding with that other project are worthwhile.

installation can happen without burning out staff or stretching them too thin to do a good job.

Nobody will want to remember the summer of 2002 as the year we did three summers' worth of dorm wiring upgrades in one – especially if it means poor quality-control, to say nothing of canceled vacations and other plans gone awry. Shielding IT staff from unreasonable workload (and sometimes their own unreasonable forecasts) is something a CIO needs to be ready to do.

Wrong staffing

Projects occasionally need to be turned down or postponed if the currently-available IT staff are not configured to do the work. If the DBA position is vacant, for example, a major database upgrade probably should wait. If the head of technical services is out on maternity leave, re-organizing that department will have to wait until she returns.

The CIO needs to make measured assessments of the skills and productivity of the staff. What makes this task difficult is that almost every IT department has at least some blindness about its strengths, weaknesses, and gaps. Self-esteem and wishful thinking further cloud the ability to make objective judgments about capabilities. In these instances, the CIO has to apply the correcting balance of view, saying no when the picture just is not right.

Wrong cost

Although we are almost reflexively more likely to think we are cost-constrained, there are times when purchases need to be deferred because costs can be forecast to go down in the reasonably near future. An example would be flat-screen monitors. It might be prudent to buy CRTs for one more season, predicting that prices for the newer technology will come down before the next major buying cycle.

Holding back

With so much of the CIO's job seeming an uphill battle, it might seem a paradox to spend time thinking about the times when it is smarter to hold back, to say "no." But we know enough from the (short) history of IT to conclude that over-promising on results, over-running on schedules and budgets, and overloading IT staff are real dangers. The CIO needs to take the short-term heat and say "no" to protect against those mistakes. **TW**

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Winning the Faculty

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primarily writers. They learn by reading what their colleagues write. They think by writing. For them writing is a special form of conversation, and e-mail is now the most prevalent form of writing.

Committee management

Although faculty complain almost ritualistically about committees and meetings, only the classroom is more important to them. Being able to make committee meetings productive is an invaluable skill for CIOs, as much for winning the respect and trust of faculty as for getting business done. The challenge is can be more acute and important when someone else is chairing an important meeting but relies on the CIO to actually carry the agenda.

Most committees dealing with IT issues need to spend a considerable amount of time educating the members on the topics it needs to address. Faculty representatives on policy and oversight committees will often hold back from active participation in the meetings if they do not feel they have an adequate understanding of the matters at hand. But rarely will they ask directly to be brought up to speed so as to feel more competent.

The problem is even more difficult if the committee has a high proportion of administrators, and at least some of them seem relatively better informed. In those circumstances, it is important to take the time to make sure that everyone present has the chance to learn whatever is necessary to participate effectively.

For the actual conduct of meetings, specifying and following objectives is critical. Because faculty deliberations, in their native mode, tend to be open-ended and exploratory it is all too easy for committee meetings to stick in that mode of conversation. Being able to move a committee through the phases of discussion and decision is a skill faculty seem to expect in administrators but rarely take upon themselves.

Follow-up is almost as important to committee success as the actual meetings, and a commonly neglected part of managing them. Few committee members, faculty or others, will do "homework" between meetings. Because faculty tend to think committee work – particularly between meetings – is more appropriate to administrators, they will rely on others to do what is necessary to cement the committee's work.

> *The IT enterprise and all who work inside it are still too insular on campus. More opportunities for informal conversations could do much to ease the free flow of ideas and information and build a stronger bond between IT personnel and faculty.*

Informal consultation

The IT enterprise and all who work inside it are still too insular on campus. More opportunities for informal conversations could do much to ease the free flow of ideas and information and build a stronger bond between IT personnel and faculty. Remembering that faculty work is largely divided among classroom, private spaces for research, and committee meetings, any additional avenues of contact would be valuable contributions to a better sense of community and solidarity. IT personnel need to be more engaged in life on campus, including participation in voluntary activities and attendance at cultural events. Too often IT staff simply do not mix easily with others on campus, and feel out of touch as a result.

Mistakes and pitfalls

The most common mistake in working with faculty is simple inattention. Failure to know and understand their concerns begins with the variety of opinions and degrees of interest found among faculty. There is often no single, official faculty stance on issues; the sum of individual views is more likely what one finds.

Getting a better sense of the faculty is time-consuming work, but there is no substitute for making the effort to hear the range and nuances of ideas and attitudes. An IT organization needs to be attentive at all levels in order to internalize understanding of the faculty as a constituency.

Impatience is another pitfall to avoid. Because their scope of duties is narrower than that of most administrative staff, faculty tend to feel less hurried and driven. As a result, they are sometimes less attuned to deadlines or to the need to juggle multiple projects and priorities – realities of working life for staff, and hallmarks of the IT workplace. Frustration with this divergence in perspectives on work is widespread among IT staff but only contributes to ignoring faculty views.

Prolonged experience of basic differences in outlook leads to defensive attitudes. Faculty feel reinforced in their lingering suspicion that IT is alien to their sense of academic pur-

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pose. IT staff get more entrenched in feeling marginal and disregarded. The differences are real and cannot be made to go away, but perceptions and attitudes should not be allowed to prevent development of enduring professional trust. Faculty have to accept that with the advent of technology on campus, a strong IT organization (with a big budget) is a permanent necessity. IT staff need to understand that faculty are not simply another class of employee: they have a privileged place at the core of the enterprise, and have had that role as long as the modern university has existed.

Necessary changes

The conclusion to draw regarding the importance and the nature of faculty influence in all aspects of academic administration cannot be that the IT side needs to make all the accommodations. Some aspects of faculty-staff relations look disturbingly like class-based prejudice and should not be tolerated. In particular, faculty insecurity about not being fluent in the details of information technology leads too often to strained relations with the IT staff. The most effective intervention for closing gaps between faculty and the IT staff can only come from the senior administration. Deans and provosts, who generally come to their jobs directly from the faculty ranks, are the best situated to build the bridges. Too often they see themselves as advocates for faculty against the IT organization even when it reports to them. At the very least, they can insist on civility in faculty-staff relations and take action against those who do not comply.

The best opportunity for leadership for deans, department chairs, and senior faculty is to set good examples. Being knowledgeable and articulate about at least the basics of IT would be an effective aid from this level of academic leaders.

Effective steps

While assistance in changing attitudes would be useful and welcome, some more substantial measures are also necessary. One of the biggest impediments to faculty-IT cooperation is weakness in the quality of faculty representation on governance committees for IT. Appointed committees are too often populated by the "usual suspects" – the long-standing technology champions who are named repeatedly. The best choices are not always the habitual picks. When faculty elect representatives to committees they need to make sure they are selecting the most effective colleagues, and not deferring unduly to those who seem to "own" the IT issues. These pitfalls are all the more troublesome on smaller campuses, where the influence of a few with strong opinions can be hard to counterbalance.

Changes are necessary in order to give IT leadership the opportunity to win the enduring confidence of the faculty. Along the way, redressing unfair or unreasonable treatment IT staff have endured at the hands of faculty is welcome, but the real objective needs to be winning confidence and making lasting cooperation possible. IT can never truly connect with the core values of academic institutions until it can win the faculty's respect and trust. **TW**

"When a faculty member adopts innovations, he/she must maintain two production tracks – the old one, in case the new method does not work, and the new one, in case it works better. That does involve twice as much work, which is an inevitable part of innovation; institutions must therefore develop strategies to accommodate faculty members who are carrying a double workload."

"Faculty Development That Works: An Interview with David G. Brown"
James L. Morrison and David G. Brown
The Technology Source
July-August 2002

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EDUTECH RESPONDS

Q. Why is there no link to IT services on the main web page of most colleges and universities? Shouldn't IT have a prominent link right from the home page? Why do I so often have to go to "search" the site to find the IT pages I'm looking for?

A. *This absence is indeed something of a mystery and for which there is probably no single answer. But the phenomenon is curious just the same. IT organizations have never been great fans of the web, perhaps seeing it as too user-centered to be one of their core concerns. If this speculation is true, then it could be that IT just hasn't insisted on having an up-front point of access for the public. Libraries, on the other hand, usually do have a first-page presence and properly so, because of their practical and symbolic importance. It is possible that IT has become a taken-for-granted utility, like physical plant and dining services – who are also almost never visible at the top level of institutional web pages. While important to the academic institution, IT tends not to be viewed as an independent activity or source of distinction. It is also interesting to note that when the web came into being, IT organizations were primarily focused on finishing the extension of campus infrastructure – a time of trial and tribulation, when a high level of public visibility was perhaps not welcome.*

Q. Our campus offices use three or four different software tools for creating ad hoc and custom reports from our administrative information system. Is this common? Would it make sense to try to standardize on just one tool?

A. *It is quite typical for multiple tools to be in use on one campus. Usually, one of these was officially adopted when the AIS was installed. Others show up because offices or departments retained consultants to write some reports, and they used their favorite tools. Still others were acquired bundled with free-standing systems for parking tickets or help-desk call tracking. And, although not strictly counted as query tools, spreadsheet and database applications with embedded ODBC links are also widely used to draw out data the AIS does not deliver through standard reports or downloads. But trying to alter this landscape is very difficult, particularly when it entails telling some users their tool is targeted for removal. Almost as certainly, no single tool will suit all needs. The real question might be what central IT users expect.*

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The Education Technology Newsletter for Faculty and Administrators

If Information Technology Reports to You

If you hold the information technology portfolio, being the person to whom the Chief Information Officer reports, it is probably not because you are personally comfortable with computers. The responsibility either came with the job or was handed to you for your superior skills in diplomacy. Historically, where faculty have swayed the decision, IT reports to the chief academic officer or to a deputy in that line of command. In a relatively small number of colleges and universities, the chief financial officer has the honor for reasons that might go farther back in time than anyone remembers. Where an institution has placed unusual emphasis on IT (or has had an unusually rancorous experience in previous leadership) the report might be directly to the president.

None of these scenarios explains adequately how the responsibility at any campus came to be where it is. Unfortunately, the whole story in many cases might not be any more rational or judicious. IT came along well after our commonplace ideas about the division of senior responsibility were settled. It had to reside somewhere in the organizational tree in any event, and that niche never had to be perfect. Information technology is expensive, a thankless task in management, and – finally – indispensable to the whole campus community. These qualities give it high reporting placement but do little to find it a natural home.

Good preparation to oversee the realm of IT is just as hard to come by. With the exception of a few brief training seminars, the school of hard knocks – learning from one's mistakes and those of one's predecessors – is pretty much the rule and the common IT experience of senior administrators. To be fair, the scarcity of prepara-

continued on page 3

"Partnering is necessary to gain maximized return on investment in higher education. This is because of the changing landscape created by the growing e-environment. In order to develop the capacities to bring all the power of technology enriched services and programs to learners, diverse parties must come together in an integrated infrastructure to design, deliver and support the learning enterprise in a far more entrepreneurial way. These partnerships work to complement core strengths, increase agility, and manage costs, yet they are fragile due to the constant competing paradigm of the mainstream higher education institutions."

Ann Hill Duin, Linda L. Baer
"Developing a Successful Partnership Investment Portfolio"
EDUCAUSE-NLII
2002

NEWSBRIEFS

BEST PRACTICES IN ONLINE EDUCATION

The Sloan Consortium aims to create a set of benchmarks for online education so that practitioners will know the effective current practices and incorporate them to meet the goals of the Quality Framework. The discussion and feedback about effective practices will be useful to online educators. In each calendar quarter, a panel of Sloan consultants will select some of the most effective submissions for recognition, and feature the best of the effective practices in press releases.

Sloan-C focuses on five pillars of quality in online education: student satisfaction, access, learning effectiveness, faculty satisfaction, and institutional cost effectiveness. For each of these areas, pillar editors are collecting practices that are innovative and replicable.

See http://www.sloan-c.org/effectivepractices/.

INFLUENCING STUDENTS' WEB USAGE

College and university librarians are acutely aware that usage of their websites and electronic resources is growing. They observe that, since fewer students visit the library in person, knowledge about the needs of their student users is limited. In order to deliver relevant services, academic librarians need to know more about the preferences and needs of these invisible information consumers. To that end, the OCLC commissioned a web survey of the information habits of college students in December 2001. The purpose of this study is to describe the end-user market segment populated by college and university students and to present their views of successful information delivery. The results of this study reveal significant opportunities for academic librarians to improve services to students.

See http://www2.oclc.org/oclc/pdf/printondemand/informationhabits.pdf.

MAKING ONLINE INFORMATION ACCESSIBLE

When providing online information or instruction, web authors should ensure that their web pages are accessible to all individuals, including those with disabilities. For individuals with sensory, motor, or cognitive disabilities, computers can provide equal access to the same types of information and online courses that people without these disabilities enjoy. Section 508 of the 1998 (federal) Rehabilitation Act refers to a portion of the amendments to the 1998 Rehabilitation Act that took effect on June 25, 2001. This act requires federal agencies to adhere to specific guidelines that the Access Board developed on March 15, 2000 to ensure that individuals can use assistive technology to access governmental web pages. The following is a brief description adapted from these guidelines. For a full description and specific examples, please refer to the Access Board Guidelines (these guidelines for the web were adapted on June 21, 2001).

Janna Siegel Robertson, "Making Online Information Accessible to Students with Disabilities," *The Technology Source,* July/August 2002.

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If IT Reports to You

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tion is not unique to IT: many duties of senior administrators are not encountered until in office. Still, information technology has been around long enough so that we can propose some basic pointers and current issues.

What you need to know

Information technology has reached a plateau. After years of headlong growth, the campus infrastructure, equipment base, and support services organizations have reached a level state on virtually all campuses. Though far from static, IT is not as chaotic as even a few years ago, when it was completing the spread from its initial enclaves to every corner of the institution.

There is now a better basis than ever before to study, assess, and plan IT. Enough experience has accumulated to provide a history to examine and study. Professional organizations (EDUCAUSE foremost but not unique among them) are now devoting considerable effort and talent to promoting rigorous research and self-study. The EDUCAUSE Center for Applied Research exemplifies this new maturity in the IT profession, bringing greater expertise and depth of commitment and resources to the task. Beyond its own considerable merits, ECAR signals a new era in IT management. Sharper questions and better-informed discussions will become the standard wherever IT is examined.

But, paradoxically, while IT has come of age at academic institutions, it arrives with its practitioners feeling somewhat lost and beleaguered. In its heady years of growth and self-invention, IT was fun. Now many of the veterans are feeling less comfortable and self-confident. The IT enterprise has evolved from a pioneering project partnering with like-minded faculty and administrators to a universal service organization, and that evolution has often not matched the skills and interests of IT people. There are morale problems in the IT ranks and persistent difficulties in trying to reach a quality of "customer relations" like that credited to academic librarians. So, while IT is in many respects ready to assume its permanent place on campus it needs help in figuring out just what that role is and what is required of those who carry it out.

While IT has come of age at academic institutions, it arrives with its practitioners feeling somewhat lost and beleaguered. In its heady years of growth and self-invention, IT was fun. Now many of the veterans are feeling less comfortable and self-confident.

More accessible

Matters of cost, benefit, options, and alternatives are now more readily understandable than those of the start-up years. Equipment replacement cycles, bandwidth growth, active network management, classroom technologies, web-based services... the technological and managerial issues of today are not as daunting or impenetrable to senior administrators as were the issues of yesteryear: LAN-based computing, modem pool management, and the choice between Unix and proprietary minicomputer operating systems. The notion that only "technologists" can understand the key IT issues can be officially and permanently retired.

Many trends are now clearer, particularly for the price/performance characteristics of commonly used hardware and software.

Good practices are well established for important functions, such as help desks and administrative information systems management.

Track records, at the home institution as well as in peer groups and nationally, can be analyzed. These are valuable sources of wisdom for forecasting and planning. The time required to debug software upgrades or install new computers is more predictable than in the past.

More stakeholders

IT touches nearly everyone now, with the result that the number of stakeholders has multiplied and diversified beyond what we saw before.

More people and groups want to contribute to setting the IT agenda. The old guard of first-wave adopters often do not appreciate (or understand) the needs and interests of the newer constituents.

For even the most mundane deliberations, the field of affected parties who need to be consulted is large and varied. Care must be taken to see that they are not overlooked, even though this wide inclusion in consultation slows the pace of decision making substantially.

Questions to ask

A good question to ask the CIO is, "How are we doing?" And that one should be quickly followed by, "How do we know?" The good answer

continued on page 6

How to Talk About Outsourci

What does a CIO do when someone suggests outsourcing the entire IT operation?

There are still relatively few institutions today that rely on enterprise-wide IT outsourcing, as opposed to the much more common practice of microsourcing particular services, such as PC repair or network maintenance. But there are plenty of institutions where the topic arises at one time or another. This discussion is about what to do while the subject is still at the "why don't we think about it" stage. Handling this explosive idea effectively may be one of the most challenging tests of a CIO's skills.

The CIO is in a particularly sensitive position when the suggestion of outsourcing IT is put forward. On one hand, it is hard to ignore the CIO's self-interest in the topic – oops, there goes my job and the entire organization I have been building. On the other hand, the CIO is precisely the one to whom the institution looks for expert advice on topics like this, questions that involve a strategic and operational insight into IT matters. Ironically, the CIO is perhaps *the* campus expert on the pros and cons of doing away with his or her own position.

The dedicated CIO will want to act in the best interests of the institution, but will also be concerned about the fate of those who work in IT, and may harbor strong convictions that an internal IT organization can render better service at a better price than an outside company. The CIO can act on all those instincts, and still make an important and unbiased contribution to the campus decision-making process. Handled correctly, the emergence of the topic of outsourcing can leave a campus with a stronger understanding of its IT needs and a strengthened relationship between the campus and the IT department.

First and foremost, the skillful CIO will react temperately when outsourcing is suggested. There is a tactical reason for this: defensiveness or pugnacity will effectively cut out the CIO's voice from the rest of the conversation. But there is also a more substantive reason for taking the suggestion of outsourcing reasonably and calmly. The very fact that the subject has been raised is a signal, and the campus has to decipher the signal carefully.

Handled correctly, the emergence of the topic of outsourcing can leave a campus with a strengthened relationship between the campus and the IT department.

It's like a lab test that comes back out of range. It could be something serious or something transient. But it's important to identify the underlying cause. That task falls heavily on the CIO, and the task calls for establishing a careful and thoughtful dialogue. The campus that ponders outsourcing is in need of some important answers. Reasonableness and rational analysis will be essential tools for the CIO and everyone else taking part.

What does it mean that somebody whose opinion matters is thinking that responsibility for IT could best be transferred outside the institution? Does that mean that at least one person thinks the internal IT organization (and the CIO) are failing irreparably? Maybe, and we'll deal with that grim possibility later. But maybe not.

In fact, there are some fairly innocent reasons for suggesting outsourcing. One is sticker shock. When decision makers are confronted with very large budget requests for IT, one reaction can be to ask, "Couldn't we save money by outsourcing this?" The idea may come from examples in the corporate world, where there have been prominent cases of companies deciding to job out their IT operations.

If it is the sheer magnitude of IT costs that is causing discomfort, the CIO has the task of building the financial case better. The CIO has to make sure that the expenditures being proposed clearly match the goals of the institution. If the thirst for technology has overreached the institution's basic needs, that needs to be fixed, and more reasonable goals identified.

On the other hand, if the uneasiness with IT costs is based on the suspicion that the current IT operation is inefficient, then that must be addressed. The cost of paying an outside company to provide IT services is necessarily going to include the actual cost of those services, plus the company's markup, plus the management cost to the institution of monitoring the outside company's performance. If that is *really* going to end up costing less in the long run than what the institution is spending now, there must be at least some significant inefficiencies in the current operation.

For instance, the institution may not have IT staff with the right motivation or skills, or IT may not be using the most efficient practices. If the CIO discovers that these are

the kinds of issues that are driving the expectation that outsourcing will save money, then the best approach is to suggest that those inefficiencies need to be verified, and the cost of fixing them assessed, before the institution can compare its real current cost with the cost of outsourcing.

These are some arguments for outsourcing, and the perceived flaws in the IT area that may lie hidden behind them.

Argument: *Outsourcing will make it easier to acquire highly technical staff, which our institution has a hard time doing because it is located in a highly competitive urban area (or because it is located in a sparsely populated rural area – choose one).* If the problem is low pay scales, why not just raise the salary offers for the hard-to-fill positions? If there are policy problems with differential pay scales, this is something that the CIO has to work through at the top management level. If the institution is considering outsourcing, it is already thinking about big changes, and it would be sensible to consider internal structural changes that may achieve the same purposes, perhaps less expensively.

Another argument for outsourcing is that the vendor will be able to bring in specialized expertise (such as a DBA) on an as-needed basis, and that this will make the outsourcing more cost-effective than trying to maintain the same expertise on staff all the time. If this is the case being made, then the CIO should examine why the internal organization has not already made use of this tactic itself, hiring in expertise and services when that makes sense. Paradoxically, the organization that is most immune to wholesale outsourcing may be the organization that has made the most effective use of microsourcing.

Argument: *Outsourcing will give the institution more control over the quality of services. The vendor will have to deliver to get paid.* If this is raised, the CIO has some soul-searching to do. How could it be that an outside company is seen as more responsive than the institution's own team members? There are some reliable predictors that point to an institution in danger of finding itself in this fix: lack of IT governance involving true participation by the user community; IT staff that believes in its own success, without regular probing of user satisfaction; technical staff making unilateral decisions because "that's the way it has to be, for technical reasons"; IT staff who feel alienated because of the unreasonable demands of users; and, in general, an IT organization that thinks it is the only game in town, comfortable in the belief that users must accept whatever level of service it sees fit to provide. The CIO may not recognize that portrait of the IT organization, but if outsourcing is being proposed, it's time to take a harder look.

> *The CIO and everyone in the IT organization should be making a contribution to the institution's ability to make good choices about how it uses technology.*

Argument: *IT is just a utility. Let's outsource it so we can stick to our "core competencies."* In an outsourcing discussion, a lot of thinking involves weighing the value statements that are implied in this assertion. The tricky part is "*just* a utility." Is IT more than the sum of its parts? Of course, the network has to run reliably all the time. Whether an internal or external group sees to that may not be visible most of the time. But does the internal IT organization also play a significant role in applying the power of technology to the institution's goals? The CIO and, to a greater or lesser degree, everyone in the IT organization, should be making a contribution to the institution's ability to make good choices about how it uses technology. An IT organization that has become "just" a technology provider, without deeper involvement in the ways the technology benefits the users and the institution, has already become an outsourcing operation itself. It is a small step from there to give the work to another group of outsiders.

Thought experiment

Maybe you have especially enjoyed this article because so little of it applies to you. Your institution shows little sign of wanting, needing, or thinking about outsourcing. Outsourcing is a powerful concept, however, and can be useful as a way to bring things into sharper focus. Try this thought experiment. Imagine that your entire operation is transferred to an outside vendor. Try to honestly inventory the ways that things might be different. If there are things that you acknowledge might run smoother, move those up a notch on your list of goals for improvement. But also pay special attention to the values that you think may be lost with outsourcing. Those are things you should reinforce and strengthen. Remember to showcase them, so that others on your campus learn to value them too. **JS**

If IT Reports to You

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would be that we are dedicated and energetic in asking that question all the time, and not just making up self-congratulatory answers when asked by the boss. Surveys have their place and value, but there is no substitute for really and truly wanting to know – and taking many different opportunities to find out.

Too defensive?

Because demand for IT equipment and services still outpaces resources, it is all too easy for a CIO and staff to lapse into a defensive attitude, doing just enough to keep complainers quiet. A good question to ask is whether we are in fact spreading goods and services around primarily to keep the peace despite what our plans say we are doing. The CIO needs to make the hard decisions about where money and attention is truly most needed, where they can bring useful advantages, and who will need to be told "no."

There is a subtle but important distinction between a fair and systematic distribution of resources just for the sake of form (and campus politics) and an allocation process that listens to all needs but then awards resources according to an assessment of where the real value lies. If the last few academic departments without their own computing labs queue up to request theirs in the name of fairness, it will take some firm resolve not to just waive a rigorous evaluation of their case in the name of a general principle of equity – and aversion to causing disappointment.

Pausing points

While the wish list for expanding IT capabilities is limitless, it does not automatically follow that the pace of new spending (and growth of the installed base) has to be constant. Sometimes other needs of the institution will have a higher priority of need for the same money IT could readily consume. A good question to ask is where do we have the chance to pause. The best governance of IT does not always require constant additions to the rate of spending. A good CIO should be able to discuss where it may be possible to defer, reduce, or slow the increases that everyone agrees they would really like to see happen. It should not take a financial crisis to open the conversation about where we could slacken the pace if other priorities need their chance to happen. If IT seems a perennial top priority, out of pace with other needs, a backlash of resentment is bound to build up on campus.

The best governance of IT does not always require constant additions to the rate of spending. A good CIO should be able to discuss where it may be possible to defer, reduce, or slow the increases that everyone agrees they would really like to see happen.

When to speed up

The reverse question is also good to ask periodically: "Where would we benefit from accelerating our investment?" The analysis that can spot places to pause should also help identify the instances where a gradual or phased approach is not best, even though it appears frugal and cautious. In the period when colleges and universities were networking dormitories, some came to the conclusion that wiring several each summer was stretching out the project too long. The campus was incurring disadvantages from being partly wired. The IT department had other projects that needed to be done. Often, extra funding was found to speed the work.

What you need to do

The best contribution a senior administrator can make to good IT management and leadership is to set down the terms and conditions shaping the institution's long-term approach. Too many bad effects have come from the roller-coaster experience of sudden progress and equally sudden halts in the pace of IT development.

A poor practice found (still) at many colleges and universities is to allow the creation of an IT plan that is actually just the sum of all requests to the planning committee. That group makes this kind of plan because they know that budget realities will set the real plan, and force the choices they would rather not make themselves in advance. Senior administrators tolerate this non-planning because they, too, find it easier to invoke budget constraints instead of insisting that the real decisions be made in the planning process. Ending this kind of gamesmanship would be a major benefit for the CIO and good governance.

Cultural assimilation

The second greatest favor the CIO's boss can grant is to assist in the cultural assimilation of IT into the mainstream of campus life. Making sure that IT staff get recruited to campus committees dealing with non-IT matters is very helpful. So, too is making sure to comment on IT in public forums. The campus

community tends to hear IT mentioned in situations of crisis or big initiatives. Only rarely do they get a "normal" view. Incorporating comments about IT where appropriate in public speaking on other topics can help normalize awareness of IT.

Personnel

IT faces particular difficulties in personnel matters and can be assisted importantly by its senior administrator. The best known problem is that of recruiting new staff. Ensuring that all possible salary funding is made available is helpful. But so too is involvement in the search process. A search committee will apply itself with added vigor if given a little extra, personal interest by the senior administrator. Too often IT staff feel their institution is resigned to failed searches and disappointing hires.

But a less acknowledged problem is the widespread weakness in people management found in IT organizations. Performance and discipline deficiencies that would not be tolerated in many operations somehow go unchecked in IT. A senior administrator should step in to insist that the hard work of personnel management gets done, and be done well.

What to require

Insisting (with the CIO) on some basic rules and standards is very important and can prevent needless friction and even serious difficulties. Discussions and plans should make sense in plain language. Technical information needs to be explained; if jargon is getting in the way of understanding, it needs to be challenged. No one should feel too intimidated to stop a speaker to ask what an acronym means.

Return on investment

Despite a lingering aversion to sounding "too businesslike," we need to talk more frankly and more often about costs, benefits, and return on investment. We should make this discussion standard when talking about IT plans. Vague assertions about the value of proposed projects need to be challenged. If we can establish the habit of speaking explicitly about what projects will really cost (in all regards) and what we think the benefits will be, we will encourage all participants to respect the seriousness of planning discussions.

Accountability

Most basic and important is to insist on accountability at all levels in the IT organization. We have grown too comfortable (lazy) with excuses that IT is complicated, too new in some respects to forecast accurately, and that everyone works under a lot of pressure. These assertions are all true, but none of them justifies failure to set goals and keep track of whether they are met.

Senior administrators need to insist on the creation of new habits that, while perhaps not initially comfortable, will in the long run help IT gain and keep credibility. **TW**

"It's very important to realize the power of innovation that can exist outside of your own turf. In an old system, people in companies that wanted to invest in innovation were very secretive about what they did so that they could reap the benefits of their own innovation. But today, if you think about it, one of the reasons you want to buy a Windows operating system is because there are so many applications that are compatible to it. The value of the product depends upon the creativity of many developers that are outside Microsoft."

Annabelle Gawer
"Intel's Inside Track"
Ubiquity
Volume 3, Issue 27 (August 20-26, 2002)

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EDUTECH RESPONDS

Q. What is the scope of information technology these days for small, independent, liberal arts institutions?

A. *One CIO suggests that it is in fact surprisingly large, spreading into many aspects of the life of his institution. While colleges of this kind and size are not usually viewed as "strong" in IT, the truth is that technology is now deeply imbedded in the fabric of the institution. Dictionary definitions of "independent" are a good starting point for understanding just how much transformation has resulted from IT. Merriam-Webster's* Collegiate Dictionary *uses terms such as "not subject to control by others... not requiring or relying on something else... not looking to others for one's opinions or for guidance in conduct." The contrast to the realities of life for any academic institution, let alone those clinging to the "independent" label, is simply astounding.*

Stakeholders, internal and external, have been empowered by information technology. They are increasingly assertive in wanting to shape the college to their expectations. Students do not even need to think about what they expect in information technology – those of traditional college age having grown up immersed in it. Their goals and interests presume any educational institution will be adequately equipped and will stay ahead of demand. Faculty and staff tend to think in terms of minimum requirements. They have seen IT arrive and grow on campus. They know it is expensive and so they are focused on obtaining what they need to do their work. Increasingly, technology resources figure in negotiations to recruit new faculty. Administrators are turning their attention to how IT enables knowledge management and the strategic use of resources. The interests of external stakeholders are no less imposing. With the evolution of the knowledge-based economy in all corners of the nation, even small colleges in rural settings have become suppliers of technologically skilled graduates into the regional workforce. The college is a link in the chain that starts with families and schools and connects to business and employers. These relationships now strongly affect all institutions of higher education, regardless of their original missions, size, and geographic situation.

The Edutech Report *thanks Grover Hibberd, associate vice president for IT at Georgetown College (Georgetown, KY), for sending the thoughts presented here.*

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Providing Information Technology Services to Higher Education

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The Education Technology Newsletter for Faculty and Administrators

Hot Issues 2002: The High and the Low

Annual surveys of hot issues in IT in higher education have evolved some particular characteristics. The responses lean in the direction of high-level topics, a tendency that reflects the maturation of IT as a big and permanent enterprise. Discussion about how to manage and pay for it tends to dominate, pushing down out of view the on-going questions about how to make it work in the best ways. This kind of self-filtering in the responses is probably also an indirect acknowledgment of the changing clientele for the surveys: CIOs – giving the responses and reading the results – and senior non-IT administrators. Surely no one in IT thinks there are no hot issues at the operational level.

Still, there is a big difference between the issues reported in EDUCAUSE's annual posting and discussion of hot topics and the content of its CIO listserv. The survey, in 2002, as in the two previous years of its existence, has highlighted issues of planning, high-level management, and funding. The listserv – currently, as in the past – is filled with queries and responses on "tactical," operational topics. Their immediate context is temporary (what are this fall's bandwidth hogs?), but the basic issues repeat periodically. Within the EDUCAUSE results, a similar divergence shows up when comparing the questions about "strategic" and potentially big issues with the question about what is drawing resources. Infrastructure, basic services, and administrative information systems are still where the money goes.

Those responding to *The Edutech Report's* annual survey of a sample of its readers confirm that there are two levels of issues that are hot: policy, planning, and leadership define one plane; opera-

continued on page 3

"For information technology, the storyline is really important. Information technology projects never take just one investment; they are done in stages. The projects also span technology and business issues. The storyline connects the many, many steps and the many audiences together into a single vision."

Martha Amram
"Beyond Numbers"
Ubiquity
Volume 3, Issue 29
September 10-16, 2002

NEWSBRIEFS

FAST TO THE WEB

A site designed to help academic instructors place their syllabi on the web without devoting tireless hours to transferring their manuscripts into HTML format has been funded by George Mason University's (GMU) TAC program and developed by Paula Petrik, GMU professor in the Department of History and Art Associate Director of the Center for History and New Media. The site provides a brief tutorial on how to successfully turn a manuscript or syllabus into a properly formatted, fully functional web page in as little as ten minutes.

The MS Word to Web Page: An Academic's Guide to Quick Web Page Construction (www.archiva.net/mstutorial3web.htm).

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EDUCATION AND EXPERIENCE

A survey conducted by Statistics Canada reinforced the opinion of Paul Swinwood, president of the Software Human Resource Council, one of the survey's sponsors, that people need both formal education and work experience to find an IT job. The survey covered IT employees in three industries: insurance, architecture, engineering, and related services; and computer systems design. Swinwood advised that students hoping to enter the IT workforce should have a grounding in the "why" of technology, not just the "what," such as a programming language, because the "what" changes every 18 months. He also suggested that students should consider what industry interests them, because IT work is so different from one industry to another, and get some real-world experience in that industry. *ITWorld*, September 5, 2002: www.idg.net/ic_945107_1794_9-10000.html. As reported in *Edupage*, September 6, 2002.

COLLABORATIVE SPACE

CommunityZero™ is an interactive website that allows a group of people to communicate and exchange information over the Internet in their own private and secure area. Within each area, called an online community, participants are provided access to a suite of powerful tools that enable a group to effectively get organized, share knowledge and communicate. Businesses, associations, governments and others worldwide are discovering the many benefits of using CommunityZero as an open channel for organization- to-member and member-to-member communications. Whether it is for work-groups, employees, committees, boards of directors or even larger groups such as customers, association members, volunteers, CommunityZero has proven to be an effective online solution for enabling group communications.

Any group you currently exchange information with is a potential candidate for an online community. It works with two friends or over 100,000 members spread over many communities. See: www.communityzero.com.

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tions, service, and follow-through characterize the other.

The challenge in taking the pulse of IT in higher education is to find the connections between the high- and low-level priorities and urgencies. Seeing how the two fit together can give a well-grounded examination of what is hot today.

Regulatory compliance

The Student Exchange Visitor Information System (SEVIS) is certainly hot. Although under development for a number of years, the September 11th attacks put this on a desperately urgent footing – and made it a requirement.

All institutions face a deadline of January 30, 2003 for the implementation. The major enterprise resource planning (ERP) system vendors are working toward late-fall release dates for enhancements to their systems to add the SEVIS functionality. How well situated colleges and universities will be on January 30th is still far from assured.

Beyond the time pressure, SEVIS is difficult for other reasons. It brings an unanticipated focus on what has been on many campuses a backwater of IT development and integration – the sub-branch of student affairs for foreign students.

But the greater difficulty under SEVIS is the change in role and activities at the offices charged with carrying it out: their business is changing from facilitating the arrival and inclusion of visiting students to learning, tracking, and reporting a lot of information about their activities. Those institutions with very large numbers of non-U.S. students face a considerable hurdle to comply with the requirements that are now mandated.

SEVIS is the hottest regulatory requirement, but not the only one. Bringing classroom and distance education technologies into compliance with Section 504 of the Americans With Disabilities Act remains on the agenda at almost all institutions. It is gaining added urgency in those states that have enacted their own more stringent regulations.

For the future, many believe that regulatory requirements affecting information technology in general and its use in higher education in particular are likely to increase. SEVIS might turn out to be an example of how quickly a major new requirement can jump to the head of agendas already busy with competing calls for resources.

And although overshadowed by other legislative priorities, federal efforts to pin down intellectual property law still leave open the potential for significant consequences in academic IT.

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The growing ERP

Major resources in funds and talent are being poured into enterprise resource planning systems – the administrative transactions and database systems. The years leading up to 2000 (and the Y2K hot issue) saw many institutions install new systems, typically migrating from either a first-generation comprehensive application product or – quite often – from home-developed systems. Others are now buying and installing systems, though typically on a less aggressive schedule.

Survey results suggest that a high amount of new investment continues to flow into even those systems that are fully installed and into related systems.

Add-ons are a strong area of growth. It is not unusual to acquire additional program modules and consulting services once the new system has been installed and settled. Electronic distribution of reports, document-image management systems, e-commerce functionality of various sorts, datamarts, and business reengineering advice are among the options purchased later on.

One-card systems and, on the academic side, instructional management systems, are big-ticket acquisitions in themselves and incur costs to integrate with the ERP and maintain.

Many colleges and universities are finding that both skill levels and staff count need to be higher than projected for the current generation of ERPs. Database maintenance and programming groups are typically supplemented by teams of database

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Are You Goo

A CIO just simply has to be good with money. At a minimum, this means sound budget management – staying within the limits, making proper adjustments as needed and, of course, forecasting and planning well for next year's version.

Other dimensions include analysis and preparation for capital projects. While you are unlikely to be asked to draw up large-project budgets on your own, you will be expected to do most of that work for IT projects and to be a leader and advocate in the process. Grant-getting is another key area in IT funding, particularly for new initiatives. Often, the IT organization seeks grants as a partner with academic departments or administrative offices. In many universities, key projects and staff positions often float on soft money and depend on a constant flow of it.

Business sense

Contract and price negotiations are also important to do well. Knowing how to get better prices through good research and consultations is basic. Increasingly, the ability to use consortium memberships and even ad hoc alliances with other institutions brings significant leverage not available if you are going it alone. Knowing the business conditions the vendor is facing is a tremendous advantage. And critical, but often overlooked, is the need to make vendors compete for your patronage. These are the fundamental skills of business.

Within the campus administration, you will find a dogged perception that IT is a money pit. More than many areas of academic operations, IT has to swim against a current of expectations that it is unreasonably costly, filled with unpleasant surprises, and still very much a risky adventure.

Making the case

Senior administrators will differ in their degree of comfort (or discomfort, even near-phobia) about IT finances. Signs of those feelings might be subtle – delays, requests for redundant studies and consultations, unexplainable mood swings during the discussions. You might be told bluntly that you are on your way to bankrupting the institution.

But don't despair; well prepared and well documented plans and cost estimates are ultimately well received. When you have made a convincing case for the solid value – or necessity – of what you are proposing you will likely carry the day, even in austere times. The tightly argued case invariably gives better results, even when the odds of success seem long. And, sometimes, the shock value of superior cost and benefit analyses coming from the IT sector can be a special bonus.

More than many areas of academic operations, IT has to swim against a current of expectations that it is unreasonably costly, filled with unpleasant surprises, and still very much a risky adventure.

Nowhere in the CIO career path (which is still a largely accidental thing) is there an obvious stop to learn the money skills. In large organizations, you will have opportunities to develop those skills as the head of operating units. In a small-campus IT setting, the CIO might be doing most of that work directly and might not think about its importance in the professional development of others in the department.

Only recently have institutions begun to offer formal training in the duties of professional management, but even in those cases the curriculum may be weak on money matters. There seems to be a fear that if office heads are helped to hone their business skills they will become more aggressive – and successful – in internal negotiations.

Winning the baseline

So many bad things follow if the IT enterprise is chronically underfunded. A minimally budgeted operation on a campus where tightness is the universal rule is challenge enough. When IT is underfunded relative to other offices and services the problem coming from that discrepancy is bound to be a problem in itself, regardless of the amount of resources in question. Better funded units will press their urgent expectations on you – or ignore you and go on their own path in IT. Your community of client offices will spar constantly for your attention and resources, knowing there is not enough for all. And your staff will be seriously demoralized by the incessant pressure from that competition.

Underfunding that continues over time puts everyone in a reactive and defensive mode of thinking. When you do not have the resources to build ahead and make smooth adoptions of new technologies, products, and services, the client departments will begin to think you have no vision and only respond to their demands. Once that perception sets in it is all but impossible to reverse.

The key to success in winning a level of funding adequate for sustained success in IT is actually quite simple: it needs to be advocated and protected by the constituencies that IT serves. The worst trap is set with the sentences, "You're the CIO. You should tell all of us what the IT spending level needs to be." That is flattering to hear, if you are new to the job, but it sets you up to be solely answerable to every individual opinion on what is needed.

Many campuses have learned the hard way that IT is too important to put on the back of only the CIO. Effective governance committees – a single oversight group and two or more constituent-focused committees have proven critical to good IT resource planning and management. And, of course, support at the highest levels of campus administration is indispensable.

Forecasting

Budget and cost forecasting is similar to skeet shooting. If you aim where the skeet is now you are going to miss it because it is moving and the pellets take time to get there. The only way to hit the target is to aim ahead – and that takes skill, practice, experience, and an acquired "eye."

Where are costs going? Some make steady, linear, and even predictable increases. Others seem to be headed for that curve but are actually something like exponential. The costs of computers have behaved within an arithmetic range. The growth of Internet bandwidth usage has been more explosive. Spotting the difference in time is not always easy. You simply have to be on top of the issues and well plugged into the CIO profession's circuits of information sharing and discussion. Still, there is no way to avoid all of the surprises. Frankly, it is safer to stay within the professional consensus when unexpected developments come along.

One area of cost forecasting deserves special mention because it is part of the solution to a persistent problem. This is the topic of staff retention. Making the initial hire (even if it meant an extraordinary campaign to get the salary level up) was the easy part. Down the road, you need a substantial raise for that person, or an expansion of duties for more salary, or the addition of an extra position to offload some of your key player's work, or maybe a special project or training to keep the interest level high. It is very rare to see managers have the savvy to forecast the money needed to carry out a plan to retain key people. More often those managers come to plead for more money because the employee in question is threatening to leave. Foresight works better all around.

Effective governance committees – a single oversight group and two or more constituent-focused committees have proven critical to good IT resource planning and management.

Controlling costs

There is no alternative to constant vigilance and analysis on current expenditures. It is imperative to see which expenses are following expectation and which are doing something else.

You also need to be determined to find the total, true cost of decisions. You might save money by buying different printers for labs and offices, but what of the cost of ink or toner? The total cost per page printed is what you need to know.

Standards help control costs, too, sometimes against people's intuitions. Buying a few models from a single manufacturer often works out better in total cost of ownership than buying off-brands on a bargain-shopping basis, even though the unit prices may be higher.

One runaway sector of cost is the "gray market" of support on campus, where non-IT staff time gets diverted to technology support. This happens invariably where central IT is not able to provide the help when and where it is needed. Sometimes the effort to hold down formal, budgeted costs results in inefficiency through unbudgeted and unauthorized IT support activity.

Positioning

This is the art of planning for that which cannot be planned. Your institution's budget officer will usually not let you keep contingency funds (at least not under that name). Still, there are times when the unforeseen will arise and force you to reallocate funds or draw on some form of reserve.

Less obvious, but also critical, is the need to get out of some functions and technologies. The organization that cannot shed some duties gets bogged down with expensive, low-value obligations.

You need to find ways to create wiggle room in advance. We know that new costs keep coming. **TW**

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administrators and now, more recently, by database-to-web specialists. Staff reductions have, in some cases, been reversed as the need became clear. The higher-than-expected operating costs and managerial complexities for ERPs help keep administrative IT support prominent in the agenda of CIOs.

Campus network

The major construction to extend the network to all working and living spaces on campus is largely past. But networks have become operations almost as big, complex, and expensive as all the rest of campus computing was going into the network era. LAN services, classroom and lab networking, dormitories, and campus-to-Internet bandwidth are all growing strongly.

Management of bandwidth, traffic, and security all remain hot topics at the operational level of IT. And although effective tools and practices have emerged in the past couple of years, the scramble to catch up with the skills needed for active management still continues in many IT shops.

New network technologies are under evaluation on many campuses. Wireless network zones have become quite common. Whole-campus deployments of the technology are still experiments that everyone else is watching. Integration of PDA technology into campus data networks seems to be coming along only slowly, in large part because the handheld devices have yet to break out of the "personal" niche and find a compelling educational or business application.

Internet2, outside the institutions directly involved in its development, remains just an indefinite prospect. Schools that have won NSF grants to join the new network to assist in exploring new applications are just now making arrangements to get connected.

At the same time that network advances are the focus of attention, some campuses are remembering (or discovering) they still have some locations that are served over Category-3 cabling. As throughput increases across the backbone and at the Internet gateway, the expectations of higher performance also rise at far-flung and under-served locations. Almost by definition, those become hotspots as the deficiencies come to light.

Learning new skills and figuring out how to use them to change teaching is probably the longest-running issue in campus IT. The essential problem remains the same: how to enable those not in the early-adopters cohort.

Faculty development

Learning new skills and figuring out how to use them to change instruction is probably the longest-running issue in campus IT. The essential problem remains as it has been: how to enable those not in the early-adopters cohort.

Part of the difficulty is that there is no single version of what is needed. Faculty who already know what new things they would like to do are the easiest segment of this audience; they need some form of training, or at least access to a source of support. A harder segment consists of those who are not sure what they might want to try, whether the needed skills would be within their ability to learn, and where to begin exploring these uncertainties.

The rapidly increasing percentage of faculty using their institution's instructional management systems must include substantial numbers who are either exploring new possibilities in their teaching or have determined that web-assisted additions to their usual teaching methods is their chosen level of involvement. A hot issue to watch is whether joining in the use of these systems is a step towards greater delving into the instructional potential of IT or an end in itself, an add-on and new style.

Online student services

Most colleges and universities have at least brought several services online. These might include course registration, campus debit cards, or access to financial statements. With the trend to online services accelerating, the big issue for IT is how to integrate and consolidate existing and future services.

Many institutions have found that some of their administrative operations have implemented new services without coordinating with other campus services, including the IT group. Sometimes the choice to go alone was inadvertent – nobody realized the ramifications of issuing all students new ID cards and not telling the library, for example. In other cases, campus offices know that if they consult widely their ability to act on their priorities and schedule will be limited.

Beyond the introduction of technology to traditional campus services,

lies the even more difficult field of e-commerce. Online procurement by the institution is currently the most ambitious form of innovation in business practices. Admissions offices, too, are moving towards entirely online processes that are not "commerce" in the strict sense of the term but rely on many of the same underlying technologies and functional requirements, such as secure transmissions, authentication, and built-in tracking of transactions.

In general, the challenge facing colleges and universities is to adopt features of e-commerce that have become standard in the consumer economy, such as direct online purchases and banking.

IT funding

Never an easy proposition, securing funds for IT operation and growth remains a critical focus. Public colleges and universities have been hit hard by funding cuts resulting from reduced state contributions. The economic downturn of the past year showed how vulnerable many institutions are to fluctuations in the economy, particularly in states where revenue shortfalls had a drastic impact on most areas of public funding. But even institutions with very large endowments have announced budget cuts because of reduced income from investments.

Colleges and universities have made substantial progress in normalizing IT budgeting (e.g., equipment replacement cycles and software licensing) but still rely on external and extraordinary sources of funding for growth – exactly the kind that disappears first in times of financial hardship.

Planning and assessment

The scope and impact of IT in higher education exceeds what was anticipated as recently as fifteen or twenty years ago. How much more that importance might grow is hard to forecast, but expectations show no sign of leveling off. There has hardly been time to stop and assess the effects on IT, and the value it has contributed. Many observers feel that learning how to assess that value has just begun.

IT has expanded from its origins in computation and data processing to become the principal way information is handled in all aspects of campus work. That success has also brought some important new constraints on its growth in the future. Its constituent base and outside stakeholders expect to be heard in all planning and assessment.

But as colleges and universities look at the future, they are bringing closer scrutiny and asking sharper questions about IT's contributions to their core objectives and the mission. IT still presents a basic challenge to the conservative nature of institutions of higher education: they do not have the agility to respond quickly to new needs and opportunities, and they are not able to take great risks with their money.

Survey respondents differ on whether innovation or consolidation will dominate the foreseeable future in IT. They tend to agree, however, that the hot topics in all levels of campus IT contain fewer surprises as each year unfolds. **TW**

"I have found that shared-document online conferencing makes collaborative learning work much better than in face-to-face settings. Asynchronous online communication eliminates the excuses of not being able to schedule meeting times while providing a way to document who is doing what and when. Everybody in a group has the incentive to try to contribute equally, because the instructor can see all that they do online."

William R. Klemm
"Extending the Pedagogy of Threaded-Topic Discussions"
The Technology Source
September/October 2002

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EDUTECH RESPONDS

Q. We must be the last campus anywhere without an online room-scheduling system. Can this be true? How have others met this need?

A. *Actually, campus-wide room scheduling continues as an issue on many campuses. Most have by now implemented some web-interfaced system. Unfortunately, that turns out very often to be the easiest part of the solution but just the beginning of issues to be addressed. As with many IT systems, the harder problems are the "human factors"–divisions of responsibility, workflow, and coordination. These considerations are often compounded by unfamiliarity with databases and "systems thinking" among the staff charged with handling room assignments. On small campuses it is not uncommon to find that one longtime employee is resistant to making the changes necessary to work in a computer-based method and, more critically, to opening the process to direct access by end users. Room scheduling typically divides into two domains: classrooms (during instructional-use hours) and everything else. Online scheduling solutions also promote a more comprehensive view of scheduling: for example, capturing a/v needs at the time a reservation is made and coordinating with catering services and physical plant. Many colleges and universities are still working on realigning the human processes behind scheduling applications.*

Q. What changes are colleges and universities making in how they support custom and ad hoc reporting against their central administrative databases?

A. *All administrative information systems are sold (and bought) on this premise: the new system comes with a "comprehensive" set of standard reports; your end users can also use any query tool to create whatever additional reports they think they need. Several years later the realization sets in that there is a big gap between the standard reports and the reports end users who are not also database programmers are able to make for themselves. This gap tends to get filled by some combination of the following: offices hire contract programmers or they hire their own permanent programmers or the central IT department builds a datamart or warehouse. In almost all cases added resources to cope with custom and ad hoc reporting needs have been spent. Because much of the supplementing has happened in user offices, the total cost is hard to know.*

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The Education Technology Newsletter for Faculty and Administrators

The Campus Gray Market in Information Technology

Every college and university finds that some of its loose money makes its way into IT expenditures that were neither budgeted nor formally authorized. A certain amount of this leakage is tolerated as a kind of grease that allows the gears of the campus enterprise to turn with minimal squeaking. Departments and offices buy printers, scanners, and other cheap peripherals in this way. Computers officially counted as "replaced" through the annual equipment refresh cycle turn up in little clusters in corners of labs and other out-of-the-way places, where they become the tech equivalent of a shanty town – illegal but busy and needing services. A lot of software also comes in the door via occasional purchases – and a fair amount of it is just copied illegally. Sometimes custom programming is done by students, and outside consultants and contractors hired on budget scraps. The sum of these acquisitions could be called a "gray market" in IT goods and services. How big, pervasive, and important it is we just don't know.

Why is this a problem? Should we care? For a number of reasons, this shadow, parallel, or "gray" economy is not a good thing. It is wasteful. It hampers efforts to do things right. And it creates undercurrents of resentment across campus.

Equipment and services acquired outside the usual channels for IT authorizations and budgeting pose some obvious problems. They might not have been evaluated in accord with the standards the campus is otherwise trying hard to establish. It is not unusual to see $3,000 turned into three deal-of-the week PCs from the local

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"A key task of HR and IT managers is to focus attention on the relationship between IT staffing and institutional objectives. Staff skills and competencies should be aligned clearly with organizational needs. Administrators and officers must be given the clearest possible picture of the impact of IT staffing on the institution's ability to provide competitive learning and research opportunities for students and faculty as well as to undertake student recruitment, fund-raising, and other administrative responsibilities."

"Recruiting and Retaining Information Technology Staff in Higher Education"
EDUCAUSE *Executive Briefing*
August 2000

NEWSBRIEFS

SECURING CYBERSPACE

Higher Education will play a major role in advancing the cybersecurity of America. In remarks at Stanford University, where the White House released The National Strategy to Secure Cyberspace, EDUCAUSE Vice President Mark Luker said, "The advanced computer networks of higher education represent the emerging systems of the future ... and successful security solutions in this sector can serve as models for the nation at large." Announced by Richard Clarke, Special Advisor to the President for Cyberspace Security, The National Strategy to Secure Cyberspace contains over 70 specific recommendations for action by the public and private sectors to improve cybersecurity. It highlights government and private sector programs already underway to implement the strategy, and it raises topics and issues for continued analysis and debate that may be included in future releases.

See: www.educause.edu.

PRIVACY ONLINE

There are many people and organizations trying to use technology in an effort to enhance security and privacy online. Some have examined very specific problems, while others have tried to be more all-encompassing. A few solutions are well known and very popular among Internet users. Others remain obscure and underutilized. This research project investigates the realm of privacy (and to a lesser extent, security) tools, systems and services, from the end user's perspective. Encryption tools, anonymous and pseudonymous proxies, virus and Trojan horse detection systems, personal firewall tools, secure deletion utilities, cookie managers, web bug detectors/ filters, checksum tools, authentication and trust systems, intrusion detection systems, backups, and a host of educational products all have privacy features built into them or play a significant role in helping to protect one's privacy.

Benjamin D. Brunk, "Understanding the Privacy Space," *First Monday*, Volume 7, No. 10 (October 7, 2002).

PATH TO TECH-PREP

Community colleges have consistently been faced with answering questions about the nature of their career-vocational or technical education programs. They are essentially being asked whether these are college-level programs. In addition, they are asked whether high school students should prepare for these programs in the same manner they would prepare for entering a four-year college or university. The short answer to the first question has always been yes; they are college-level. However, the second question may now require a somewhat different answer than many community colleges have been giving for nearly 20 years.

Richard Fonte, "Single Pathway For 'Tech-Prep' and 'College-Prep' Essential," *Community College Times*, September 17, 2002.

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The Campus Gray Market in IT

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office supply store – purchased on a credit card that is supposed to be used for expendables and other small items.

Micro decisions

Local initiatives to buy IT goods are often the brainchildren of mid-level staff whose enthusiasm for technology gives them a degree of license within their office. The boss might be grateful that someone is proposing to solve a problem and will give that person the funding to go ahead. In other instances, that person is campaigning to have more hands-on involvement in IT for individual reasons that may or may not align with office needs. The office head approves in order to placate that person. Mid-level entrepreneurs exert a pressure that doesn't square well with managerial discipline.

At the institutional level, local decisions and expenditures from line-item surpluses leach away funding that in principle should be redirected to meet larger priorities. The degree of discretion managers can exercise varies widely even on the same campus. Protocols for authorizing the reallocation of budgeted funds range from tight central control to hands-off. After the-fact justifications often work better than requests in advance. In any event, local ability to make ad hoc buying decisions are at the heart of the gray market.

Accumulated obligations

Every piece of hardware and all the software programs and custom-written code need to be seen as additions to the institution's base in information technology. No amount of official warnings can change the fact that the scattered, "one-time" acquisitions impose on-going obligations and costs that just accumulate.

Software always needs upgrades, with major, new releases sometimes costing as much a new purchase. Computers, as everyone knows, become obsolete even before their plastic casing discolors. And by comparison to new machines, they seem slow and clunky even sooner. These hard-knocks truths about technology are by now well-known, and yet they are typically disregarded in gray-market purchases. Almost never does anyone create a plan to fund upgrades and replacements against future line-item surpluses.

> *At the institutional level, local decisions and expenditures from line-item surpluses leach away funding that in principle should be redirected to meet larger priorities.*

Some of the obligations incurred fall outside the office or department. Calls to the helpdesk or technicians' discoveries when on an unrelated service call are often where the existence of gray-market items first surface. When help is needed, central IT staff are is on the spot to deliver it, particularly if there is an emergency. And, if the computer or software was purchased by someone no longer working at the institution, the successor in that position might not know the equipment was outside the bounds of support – and perhaps not inclined to care. Whether meeting institutional standards or not, equipment and software acquired outside normal processes adds up to a drain on support services.

Muddy water

The job of figuring out where additional IT resources are needed is hard enough when information is clear. When some units of the college or university have taken care of their own needs, the assessment becomes muddied.

One of the common practices in IT management has been to establish "platform" levels for hardware, software, and network across campus. Planning, support, and forecasting of future costs are all easier when the level is in fact level. When local differences begin to add up, the information on which planning is based becomes less reliable.

Users' outlook on the campus IT scene becomes distorted, too, when their department is over-equipped in comparison to the norm or if a neighboring department enjoys that kind of advantage relative to them. On many campuses the advancement office, for example, has newer computers and even amenities such as larger screens (or plasma displays while the campus norm is a standard CRT) that make them better equipped than other administrative offices. If they have a representative on the central IT planning committee, that person might not be aware how strong an issue it is for most other offices just to keep up with the current campus-wide standard.

Unfair

At one time, now quite a few years ago in the IT era, it seemed reasonable to equip offices or profiles of users differently according to what they seemed to need. That approach gave way to uniform standards, driven in part by the realization that most "computing" actually consists of using e-mail, the web, and office

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Evaluating and Pric

by Diane Barbour, Roches

The framework for planning and carrying out information technology

projects has not yet become a fixture in higher education management. CIOs still need to build that structure on their campuses to create the conditions for successful projects.

The memory of disappointing outcomes and flawed processes too often hangs over new IT projects. But from those same experiences the role of CIO has come into its own. Colleges and universities have realized that they need someone who is able to frame and shape the full context for thinking about IT. In the past, too many stakeholders were overlooked in project planning or were allowed to stand and let the IT people go it alone.

The CIO has the responsibility to take the viewpoint of the whole enterprise, to envision and establish the models for good process in IT decision-making. The conditions for success cannot be left to chance but instead have to be built carefully. Like an architect, the CIO has to devise the methods, models, and plans to make something solid from a proposed design. ***TW***

Why do we need a process for evaluating and prioritizing IT projects?

There are four reasons to develop a prioritization/decision model for evaluating IT projects and initiatives.

First, technology-spending trends are changing. With the current weak economy, organizations are taking a closer look at technology spending. After many years of continued growth, spending on technology has reached a plateau. For this reason more organizations are closely examining how, when and why they make technology investments.

Second, the years of major spending to build infrastructure and install major ERP systems are behind us. Now that the infrastructure is in place the focus has turned to using that infrastructure to advance the organization's mission.

Third, organizations have learned some hard lessons from installing costly ERP systems. They now know how important it is to manage expectations and to plan for cultural change as well as technology change.

In the past not all members of the university community felt included in IT decisions.... In addition to recognizing and including all the needs, we need a methodology for determining relative priorities.

Finally, organizations (particularly in higher ed) can no longer compete solely on infrastructure (e.g. most wired, most wireless). Students expect the appropriate infrastructure and access to be there for them. In order to remain competitive we now need to become more creative about how we add value using the infrastructure that already exists.

What are the specific objectives related to developing an evaluation/prioritization model?

In the past not all members of the university community felt included in IT decisions. Many feel that their needs have not always been adequately identified and addressed. In addition to recognizing and including all the needs, we need a methodology for determining relative priorities regarding which systems and strategic initiatives to address first and why.

Some specific objectives related to developing a prioritization and decision model include:

- to make sure the IT organization is fairly and objectively considering the needs of all university stakeholders;
- to make sure that IT projects and initiatives, and the resources needed to accomplish them, fully support the goals, mission, and current strategic initiatives of the university;
- to better understand the non-technical factors, including environmental and cultural, that might impact the success of an IT project;
- to identify and understand competitive pressures and special or urgent needs;
- to ensure that the IT staff has the necessary technical skills and infrastructure to successfully complete a project;
- to make sure that the university is making a sound investment in the right technology at the right time;
- to make efficient and effective use of scarce IT resources; and
- to document how, why, and under what circumstances, technology decisions were made.

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What are the elements of an evaluation and prioritization model?

Alignment with Mission – To what degree will the project or initiative support the university's basic mission and goals? Does the IT initiative support a current university strategic initiative?

Cultural Readiness – Is the campus prepared for this initiative? What cultural factors need to be considered or prepared for before IT pursues this project? To what degree will the system or initiative be enabled or blocked by a cultural factor?

IT Readiness – The degree of IT readiness can be either an enabler or a barrier. Does the IT organization have the necessary skill sets to ensure the project's success? If not, what corrective actions need to be taken before we begin this project?

Sequence – Is there some other project or other preparation that needs to happen before we pursue this particular project? Are all the necessary technical elements in place? Should this system or initiative be advanced or delayed due to sequencing issues?

Urgency – Is there some special need or potential competitive advantage that would make this initiative a high priority? Are there benefits to advancing or delaying this system or initiative?

Once developed, how is the model used?

A subset of the model builders is asked to participate in a scoring group. This group will determine the relative weights to assign to each criterion. They will also learn how to score pending IT initiatives. This scoring process will routinely take place once or twice per year. It will also be activated for urgent or special need initiatives. In addition, measures and sensors will be developed for each initiative.

Measures are the statistics and reports that describe the degree to which each factor is satisfied by the investment. Sensors are the sources of data that support the measures. For example, market share, satisfaction ratings and alignment with current strategies would be measures. Market reports, focus groups and leadership committee review are examples of sensors.

The assessment process should attempt to compare the benefits of a project or initiative to the original objectives. The assessment process should also serve to identify other criteria to ensure a project's success.

The model will be reviewed and updated annually with criterion and weights adjusted if needed. Special initiatives announced during the President's annual address will be added into the model. The scoring group members will remain as a team for a minimum of two years.

A project initiation form is being developed to capture input for the model. This form is designed to be filled out and submitted by both ITS and non-ITS faculty, staff and students.

Faculty members often attend a conference or visit another campus and see a unique system or technology that might benefit their university. Similarly, staff members attend conferences and often come away with ideas (or lessons learned) to share. Students often suggest a new technology initiative. There needs to be a mechanism in place to routinely capture that information.

Once projects and initiatives are aligned with mission, have no barriers due to cultural or IT readiness issues, are of sufficient urgency and are not dependent on infrastructure that is not available are identified, financial factors are considered.

These factors will include the total cost to implement (which would include any cost to overcome cultural or IT readiness issues) and, where feasible, a cost vs. benefit and ROI calculation.

This evaluation and prioritization process is the first step in the IT Project Lifecycle Methodology. The IT organization also needs a plan to design and implement a project assessment process.

The assessment process should attempt to compare the benefits of a project or initiative to the original objectives. The assessment process should also serve to identify other criteria that might need to be considered to ensure a project's success. ■

Diane Barbour is Chief Information Officer at the Rochester Institute of Technology.

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The Campus Gray Market in IT

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productivity software. We also learned that helpdesks and technical repairs are much more effective when the range of local variations in IT goods is strictly minimized. As the single standard became reality, everyone came to infer from it a principle of democracy, even though it was probably an unintended consequence – uniformity was just more practical. Still, the perception remains and is strong. When some offices or departments manage to equip themselves (or even just some of their individuals) better than the norm, a kind of jealousy sets in.

Proper governance

IT governance relies heavily on across-the-board agreement on basic themes. It also works better when trust and consensus provide a foundation for decision-making on the allocation of resources. Nothing undermines good governance as much as wrangling over processes (like equipment renewal) that should be routine and uncontroversial.

When local variations from campus standards create a competitive attitude, all the supportive underpinning for campus IT governance is at risk. Divisions of outlook and objectives within the user community lead to breakdown of trust in the IT organization, even though the departures from the standard levels are not their fault. Central IT is usually aware of the gray market (and irritated by it), but do we stop to realize how much more than just an annoyance it is?

Why is it tolerated?

Financial officers must surely see the amount and nature of spending diversions. They are also routinely asked to authorize expenditures against vacant salary lines – one of the major sources of flexibility in budgeting used by administrative offices (though much less so on the academic side of the house). The transactions in what we are calling the "gray market' are not really invisible, but they do not seem to register as events with a common thread. Nor is their significance in the bigger IT picture something we hear discussed as a topic in itself.

Redirection of budget scraps, windfalls and other resources outside normal budgets and planning are tolerated to some degree as a kind of safety valve. Deans and office managers find that allowing the practice, subject to some degree of control and monitoring, extends their own reach in granting some discretionary latitude to people who report to them. There are few resources in academic budgets to reward initiative or create incentives.

> *When local variations from campus standards create a competitive attitude, all the supportive underpinning for campus IT governance is at risk.*

Giving the nod to spending scraps is a way to placate the aggressive, reward the patient, and console those who've been turned down in more substantial requests. It is also a way to meet legitimate emergencies or genuinely good ideas that can't wait for the next run-through of the planning cycle. But sometimes the approvals come from weakness. Poor managerial discipline typically begins with difficulty in saying "no." Some department and office heads cannot resist the temptation to allow small expenditures, even against their own better judgment, because they are reluctant to turn someone away entirely.

Budgets not spent down to zero are also widely believed to be at risk of future reduction, providing managers an incentive to accommodate ad hoc requests. This motivation can in fact extend to several layers of organization and managers. Mopping up small requests and also bringing in fully expended budgets is considered a sign of good management – an ability to game the system within modest boundaries.

IT is still not "normal"

Unfortunately, IT is still too often regarded as an activity where the ordinary and normal rules of management do not always apply. The Chemistry department stands almost no chance of getting the dean's authorization to paint the hallways a different color – Physical Plant generally has enough influence to enforce its control over plant maintenance and standards. Yet the same dean might authorize purchase of a server with budget or grant remainder money, not stopping to think (or maybe just not understanding) that the IT department has good reasons for not wanting do-it-yourself alterations to the technical plant.

To be fair, there are other notorious categories of sub rosa acquisitions: stationery with variant letterhead, office furniture, and space heaters come to mind. What makes the gray market in IT a problem is its wider scope, implications in deferred support and replacement costs, and the still incomplete assimilation of IT planning and management into campus culture.

What to do?

The most glaring need in regard to the IT gray market is simply to document its scope. We need to have better than anecdotal evidence of its existence. We need to add up its costs – the value of money spent in this way in one year and the direct and indirect costs incurred.

If we could bring an accounting of the IT gray market out into the open, describe it and discuss it, we would be able to curb its worst excesses. There is nothing like a little daylight to expose and discourage poor practices.

Most colleges and universities still do not have a well-established practice of assets management. They have not adequately systematized their inventory of equipment and software. Even those who have made good progress in this regard rarely have that information for all units. Grant-funded labs, profit-center business units, adjunct faculty offices, and student-funded organizations are examples of places that might escape notice even where central management of assets information is in place.

A stronger mandate

An institution seeking to shrink the gray market might start by improving the mandate of governance and oversight committees. These tend to stay close to the agenda of the central IT organization when discussing plans and budget. To reduce gray-market activity, they would have to be directed to discover, analyze, and prioritize at least the biggest of the numerous requests that are currently handled informally at the department and office level.

That task will not be welcomed by committees or the requesters; it will be seen as an intrusion on local autonomy. Only if the financial stakes are shown to be high will the institution find the stomach to insist on this tighter regime.

The reform can be sold more easily if it can include effective incentives. A committee charged with finding and queuing requests that have not come through the normal planning process might be given a fund with which to meet the top-rated proposals it uncovers. With proper high-level administrative support, that fund could be raised as a levy on budget remainders – an approach that would make more rational use of that money source.

Take note

The existence of this gray market, the alternative means for meeting IT needs, is worth considering as a sign that the official channels and processes might not be meeting some legitimate needs. Documenting the gray sector and bringing it to light could ultimately have a double benefit: better management at the fringe of IT decision-making (and funding) and a chance to improve the official system's ability to meet small, scattered, ad hoc needs. **TW**

"When we use the term Web services, we're talking about programs or applications running on different machines to achieve a common goal. Web services implies that the Web is the important part – but the Web is simply HTML, HTTP, and the tools that allow you to publish web pages.... Network computing implies that programs identify themselves, their requirements, and capabilities; communicate and share data among themselves; tell each other what they're doing; synchronize when they need to; and do this in a secure and reliable way. The Web is one small component of a much larger picture."

John Gage
"Exploring Web Services"
Sun Journal
Volume 6, No.1 (2002).

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EDUTECH RESPONDS

Q. Our ERP vendor promises to meet our SEVIS reporting needs. Our International Students Office seems generally aware of the changes the INS has mandated for January 2003. What else do we need to be preparing?

A. *The Student and Exchange Visitor Information System (SEVIS) might turn out to be fairly straightforward with regard to transmitting data to the federal government, but it will bring subtle but difficult changes on campus. Very little of the information you will be required to submit is new, but odds are that it is not yet being kept in a rigorously systematic form. The chores of gathering, entering, and maintaining data for timely, auditable electronic exchange will be something of a shock to many International Student Offices, where the requirements have until now been rather relaxed. Institutions that do not review their processes and information flow regarding foreign students are likely to find it difficult to keep their SEVIS information current. The INS is working towards a central database of information to be available worldwide at embassies and consulates – and at airports and other border-crossing points. While many people doubt the INS will actually have their end of the system ready this winter, the statutory requirement is still binding for colleges and universities for January, 2003.*

Q. Could campus ID card photos be used to enhance the online student and staff directory?

A. *From the technical angle, yes, ID photos (if they are being snapped and kept as .jpg files) could serve as thumbnail-size online photos. You will probably have to export them from the ID-card application and then match them to directory data. But there are some other issues that are more problematic than the technical ones. FERPA regulations require that students be given the chance to decide whether their photos may be made public in this way. You might also want to limit access to on-campus only. Some faculty and staff will object that they don't want their picture publicized either. Sometimes that will because the picture is a poor or unflattering likeness; other times it will be an objection in principle. But having those pictures online can be very helpful for new faculty and staff (and old-timers, too) as they get to know their colleagues and may well help strengthen a sense of community.*

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EDUTECH REPORT

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Reducing Costs

The downturn in the national economy has brought pressure on all information technology organizations to reduce costs. Lower revenues from taxes, among other things, have prompted state legislatures to scale back funding to public institutions of higher education. Private colleges and universities have seen lower returns on their endowments with the plunge in the stock market. Even a rapid return to more prosperous times is unlikely to lead to immediate budget relief. Amid the overall effect on higher education, IT organizations have not been exempt from budget retrenchment and instructions to prepare contingency plans to get by with less.

Everyone's hope is to ride out the recession, knowing that economic cycles come and go. For the short term, making cost reductions without cutting into essential services, replacement cycles, programs, and staffing is the focus of attention. But there is also a challenge and opportunity here to establish ways to moderate costs, permanently for some categories, and periodically (in the future) for others.

Savings in ordinary operating costs are the obvious place to start. Institutions that are not currently charging students for printing from computers are now thinking about how to recover those costs. Computers and monitors that have been running day and night are now being turned off at the end of the day. These improvements in operating efficiency are bound to have only moderate value at best. Some of them, such as increased recovery of printing costs, entail new expenditures on the technology to enable that to happen and continuing costs in administration. But overall, these efficiencies are limited by being tied to expense types that amount to only a small part of the total IT budget.

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"Modern computers and telecommunications systems can be used either to exacerbate current inequities in the distribution of knowledge that leads to prosperity, thereby accelerating the 'digital divide,' or to bring world-class educational opportunities to people of the developing world by creating a digital bridge."

Richard C. Larson
"The Future of Global Learning Networks"
The Internet and the University: Forum 2001
EDUCAUSE

NEWSBRIEFS

COMPUTER POLICY AND LAW

EDUCAUSE, and Cornell University have formed the EDUCAUSE/Cornell Institute for Computer Policy and Law (ICPL). At a time when colleges and universities are aligning their information technology policies with evolving legislation and cybersecurity initiatives, the Institute brings together the association's extensive policy initiatives, online resources, and professional development activities with Cornell's robust six-year-old Computer Policy and Law program. The ICPL Web site includes a library of nearly 750 institutional computing policies, gathered by the combined resources of the Cornell program and EDUCAUSE, that are searchable by topic, keyword, and type of institution.

See www.educause.edu/icpl.

SEVIS RESOURCES

NAFSA, the Association of International Educators promotes the exchange of students and scholars to and from the United States. The Association sets and upholds standards of good practice and provides professional education and training that strengthen institutional programs and services related to international educational exchange. It also provides a forum for discussion of issues and a network for sharing information. NAFSA's information pages on the Student and Exchange Visitor Program (SEVP) and its technical component, the Student and Exchange Visitor Information System (SEVIS) are designed to keep NAFSA members up to date with documents, reference materials, resource lists, and news items relating to the student and exchange visitor monitoring initiative.

See www.nafsa.org.

PERSONALIZED PEDAGOGY

New applications of information technology have provided a variety of choices not only about what is taught and learned, but also about how it is taught and learned. During recent years, there has been much excitement about the new opportunities to use information technology to meet the varied needs of learners more effectively. Individualization, learner-centeredness, anytime/anywhere/anyone education are admirable responses. But there is a fascinating oversight at the center of the movement that has individual differences among learners as its core premise. Why are individual differences among faculty ignored? Weren't most faculty members students earlier in their lives? Does the aging process effectively diminish differences among us? Are faculty members self-selecting to such a great extent that variety among them is negligible on most important dimensions?

See "Good Teachers & Good Teaching," www.tltgroup.org/PersonalizingPedagogy/TeachingGifts.htm.

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Reducing costs

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More substantial savings can only be had by targeting the sources of the largest expenses. The analysis of costs and search for savings usually begins with a look at the IT budget.

At most institutions, sixty percent of the outlay is in personnel costs. The next biggest fraction, at twenty-five percent, is hardware. The sheer size of the personnel budget generally leads to staff reductions in extreme budget crises and hiring freezes in circumstances that are expected to be temporary.

The current down cycle is the first big one to hit since most colleges and universities established regular replacement cycles for equipment, and so there is really no history for how budget austerity applies to this category of cost.

But adequate staffing and timely refreshes of equipment are two of the hardest won achievements of IT in the past decade. Although the temptation to retrench in these categories is undeniably strong given that they account for eighty-five percent of the operating budget, imposing percentage cuts on those budget lines is not the best way to proceed.

Those new initiatives

Some part of the equipment and personnel budgets (e.g., contracted services) are tied to new projects. Sometimes funding for new initiatives is in fact outside the IT budget per se. Postponing or scaling back new initiatives is one way to reduce IT-related costs without cutting into the established base of services, systems, and facilities.

New initiatives that increase the scope of support obligations for IT deserve especially close attention when funding freezes or reductions are anticipated. Not only do new IT assets cost money to establish, they also build in continuing costs, whether assessed and charged or simply absorbed. If the IT organization faces lean times, the added load can often turn out to be harder to bear than was forecast.

Equipment life cycles

Hardware replacement cycles have been an important achievement in IT planning and budgeting in the past decade. Quality of computer and network services and the effectiveness of help desks have benefitted enormously from the periodic sweeping away of obsolete systems. But this progress has also introduced higher costs in equipment acquisitions, as the tendency has been to buy a single standard of computer for everyone, figuring that differences in usage requirements were less important than the benefits of uniformity. Having fewer models of devices has seemed to correlate well to better support.

New initiatives that increase the scope of support obligations for IT deserve especially close attention when funding freezes or reductions are anticipated. Not only do new IT assets cost money to establish, they also build in continuing costs.

But this might be the right time to revisit the balance of costs in computer replacements. Most lines offer a price spread that is keyed to processor speed, hard drive size, RAM, and communications devices. The volume of these devices purchased annually for routine upgrade or replacements campus-wide is certainly big enough to warrant trying to save a hundred or two hundred dollars per unit, particularly if some of the machines will only run a modest spread of applications. Administrative workstations might not miss the higher clock speed needed for running calculations or graphics.

This reasoning carries the stigma of having been used in the past to justify what became an unwieldy mix of equipment on campus. But the differences in configuration and performance within a model type are now relatively insignificant in supporting computers.

The timing of replacements can also be a source of some savings. A year might be added to the cycle, particularly for machines whose operating system will not change during that added year of life.

Somewhat more problematic in net savings – but worth consideration – is the cascading of replaced computers as a way to stretch the replacement cycle. In this process, the oldest computers are retired, to be replaced by the next oldest cohort, moved from one user to another. Two-year old computers from the math lab, for example, could be replaced by new machines, and the old ones moved to offices. But when this migration of computers is undertaken on a large scale, labor costs and slowed delivery rates brought on by the need to refurbish and reconfigure the computers has to be taken into account. Swapping new hard disks into these computers can

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When Yo

Congratulations! You've just begun your new CIO job. You are happy. Everyone is glad to welcome you. For just a while the present seems more important than the future.

The first days and weeks are, of course, a time to listen. All those who are so glad to see your arrival have things they want to tell you. It is smart to take it all in. You don't have to react to most of it, beyond a patient hearing and some acknowledgment. This is not primarily about information gathering; that you will have to do on your own initiative. The listening is instead critical to establishing relationships and winning credibility as an open and receptive person – the qualities that will sustain you through hard times in the future.

Learning what you need to know has to be your own initiative. It consists essentially of asking questions. There will be things to read and people and committees to meet. You will want to discover the range of issues needing your attention and the criteria by which you will set priorities. This activity never ends, but it is never more important to do energetically than when you are new.

Remember that everyone is watching you, trying to figure out how you work. Seeing that you find your way by asking questions will impress everyone as true independence of mind. It also tells them that you are serious about dialogue. Being seen as a good listener establishes your openness; being seen as a questioner demonstrates your determination to involve others in your thinking. No quality endures better in the academic setting than a reputation for thoughtfulness.

First results

Your first days are not too soon to think about first results, those things you want to accomplish just as soon as possible. Some of these can happen on the first day. Your staff will need your decisions on matters that they've prepared carefully and held until you arrive. They will generally not risk bringing you anything messy or risky so soon. So, if you find yourself repeating, "Yes, that sounds reasonable. Go ahead," you should not be surprised. Your staff has been careful to ensure you will have some easy decisions; you are being asked to acknowledge their good judgment. Of course, once life settles down, this quickly gets harder.

Within the first few weeks you will want to describe an outline of the principal things you plan to make happen. This is not a planning document; it is your short-and-sweet list of what the agenda will be. You will want to repeat it widely and often.

Everyone watching you is curious to see whether you are disposed to action. While your skills at listening and questioning are essential, the CIO needs to be the deliverer of results, not an analyst. Making sure to have some early results sends the message that you understand that action is paramount.

It is not at all important that these first accomplishments be viewed as your own initiatives. Making decisions and authorizing things to happen is what counts. You will find your first results by looking at pending projects and seeing which of them are ready to go. The ownership and credit for these results can belong to others; you will be credited for making them possible, and that is one of the key parts of your role.

A basic program

Within the first few weeks you will want to describe an outline of the principal things you plan to make happen. This is not a planning document; it is your short-and-sweet list of what the agenda will be. You will want to repeat it widely and often.

Unless the CIO position has just been created, most of your initial agenda has been waiting for you. Some items will be in your supervisor's list. You probably learned those during the job interviews. Now you need to focus on them and get them into your list. Others are in plans developed by the IT organization through some process and framed by the institution's governance structure. Still others will come to you from your staff.

The basic program is not the whole list. You need to select a few important, reachable items to give everyone a common focus. It governs the time during which you and your new organization get acquainted with each other and set your working methods. The program needs to be modest in ambitions because it absolutely has to succeed. It needs to be adaptable, so there will be room for adjustments in response to difficulties encountered. Above all, it needs to be clear, unambiguous, and understandable.

The basic program has a defensive function also. Projects not mentioned in that list need to wait. Later,

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when you are no longer new, the list will be longer and will include the more challenging and risky projects.

Watching for traps

At the outset you have everyone's attention. Openness and creativity will be at the highest levels you will ever see. Patience and generosity will also be abundant. This is the period sometimes called "the honeymoon."

There are some traps to watch for in these early days. You might face pressure to give priority to some high-profile projects that might in fact not be the truest and most important needs. Beware of signs of impatience and haste for which the causes are not clear. If the urgency is real, the reasons should be self-evident and just as real when you stand back and look at those projects with your fresh eyes. Be prepared that your boss might be the person trying to capture your attention and commitment before you have the chance to make your own assessment.

Other projects might sound compelling but turn out, on closer inspection, to be good ideas not yet sufficiently thought through. In the most difficult instances, the projects will be reasonable on paper but unrealistic because the organization does not have some of the skills needed. Plans for new facilities need to be checked carefully for this reason. These are invariably multi-disciplined projects, but are all too often planned without adequate consultation with the appropriate specialists. Only by asking good questions about how the plans were developed will uncover these traps.

Your staff, too, will sometimes set traps. Be wary about raids on staff positions. Typically, a unit manager will come to you proposing some shift of responsibilities that might involve transferring staff from someone else's area. If that idea is a good one, it should stand up in an open discussion with the other unit managers.

Dealing with inertia

While the CIO search was running, and you were still just a candidate, some matters just sat gathering dust. These are typically the difficult things that nobody wanted to face. Maybe they were the reasons that your predecessor left. You are unlikely to uncover these until after you arrive to start work. Almost every search manages to conceal some unpleasant surprises of this kind.

While the CIO search was running, and you were still just a candidate, some matters just sat gathering dust. These are typically the difficult things that nobody wanted to face. Maybe they were the reasons that your predecessor left.

In contrast to those projects you found ready to go, the problem projects often suffer from grave inertia. It will take an unusual exertion from you to move them. For that reason, they are not candidates for your basic program when you are new. More often than not these are personnel problems with a bad history of mismanagement or simple avoidance.

Survival skills

Your first days on the job are not too soon to begin exercising your survival skills. First among these is networking. Allies and resources inside your college or university beyond the IT organization will be tremendously valuable. Colleagues at other institutions are important as well. They help you to set a frame of reference and their detachment from the pressure of your role and immediate workplace will be a useful corrective for your moods once you are fully drawn into your work and feel the inevitable pressures.

You also need to reserve "quality time" for your own staff and organization. This means giving their concerns your full and unhurried attention. If they have gone without a leader for any length of time, they will have accumulated a lot of topics that have to come out in this setting. They will also want to trade information: their experience at this institution for yours at other institutions. They will want to see trust and credibility develop between them and you. They will also need to assess your strengths and weaknesses. All of these transactions will make them strong and loyal teammates.

Your new beginning is a time of excitement and optimism. All eyes are on you. You are, after all, the answer to all their hopes. This is not a time when you will get any good criticism. At times it might seem those around you are afraid that if they let some of the dark things show through, you will change your mind and leave. But this is the time to think about how the things you do right now set the stage for the long run. **TW**

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Reducing costs

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speed this process and give the new owner better confidence that the machine is less likely to encounter the most dreaded of breakdowns – hard disk failure.

Rationalizing software

Software standardization, too, has brought undeniable improvements in the quality of IT support. Nobody would want to return to the seemingly endless variations in configurations that were once very common. But some workstations could have smaller suites, omitting software the owner never uses. Key-serving licenses can also be used to reduce the number of license copies needed for software not used frequently.

Too often, software packages are purchased, installed and then really never used. HTML editors, project management software, and photo/graphics editors look appealing but turn out to be more detail-intensive than needed by casual users. Buying fewer copies of infrequently used software and making it available via a server can reduce the waste of software abandoned in place on desktop hard drives.

Trimming facilities

As the percentage of students owning computers approaches one hundred percent(though not there yet), colleges and universities need to rethink the number of computers they feel they need to make available for general access. It is true that students tend to use computers at several places during the course of a day on campus, but a close watch should be kept on usage levels throughout the semester, with an eye to reducing the total number of workstations needed to meet the need.

Alternatively, multiple small facilities might be consolidated, saving costs in computers, printers, supervision and maintenance. Small public labs with minimal supervision in remote locations have always had a more costly maintenance history and would be reasonable candidates for closure, if usage can be redirected to other facilities.

Because a lot of computing in public facilities is recreational – as a quick walk-through in any of them will show, setting up "cyber cafes" in places where students congregate might be worth trying. These would be equipped with older computers displaced in the refresh cycle and kept for web-oriented use, including e-mail checking. If these proved convenient and succeeded in drawing non-academic usage out of the labs, the number of first-line computers needed to meet overall usage might be reduced.

Small public labs with minimal supervision in remote locations have always had a more costly maintenance history and would be reasonable candidates for closure, if usage can be redirected to other facilities.

What not to cut

Some kinds of cost-cutting can have adverse results in quality of service that outweigh the money saved. For example, reducing help desk hours or downgrading the level of staff serving them would erode hard-won standards of support quality. In other instances, a reduction in initial costs might just result in higher costs later on. Buying computers with inadequate amounts of RAM and disk capacity could result in upgrades before the end of the machine's life cycle. Not only is the hardware upgrade cost deferred in these cases, but labor to install it also needs to be factored in, even if those costs are not assessed and charged. Savings that do not reduce the total cost of ownership over the lifetime of the device are probably not worthwhile.

Fill vacancies

Staff positions left unfilled generally shift work to other staff. This overloading is inevitable and normal in the short run, but when a position is left vacant to save personnel costs, the side effects on those who cover the shortage add up. Staffing level is a perennial concern in IT shops; prolonged understaffing harms not just morale but also the organization's standards in quality and timeliness of work.

Institutional hiring freezes in times of financial restraint are usually inflexibly enforced, for fear that exceptions will be difficult to contain – and resented by others. But when key IT services are jeopardized by being pushed to unqualified staff, some remedy has to be found. Hiring help on a temporary basis might be the only recourse while the hiring ban is in effect.

The strongest argument for keeping staff positions filled despite cost pressures is that the demand for IT support continues strong and does not go down when budgets get tight. Coping with growth of services with a constant staff level is hard enough; allowing decline in staff risks damage to the organization's credibility for service.

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Training

Cutting back on technical training for IT staff is another example of false economy. Acquisition of new skills is vitally important to staff productivity. The constant growth of demand for support services can only be met by increases in the efficiency of response from IT staff. Undertrained workers spend more time on difficult tasks; they need to fall back on trial-and-error methods when they encounter problems that are beyond their competence.

Training is also a strong motivator for staff. If the IT department has taken cuts that increase stress on the staff, the removal of training opportunities only adds to morale problems. If the money is simply not there for commercial training, in-house peer training would be preferable to going without. The better course, though, would be to protect this budget line if possible.

Keep moving

Along with training, new projects are important to morale and staff retention. Sparing some of these from the budget ax is a good way to hold on to a sense that the organization is moving ahead and not giving up on innovation.

Hard times are also the logical occasion to solicit projects that could result in costs savings. These might not otherwise seem worth the priority, but if the benefit outweighs the costs by even just a little, the effort might be worthwhile. Reconfiguring servers to free up disk space needed for other applications would be an example of this kind of project. In normal times, buying new disks is the more cost-effective approach, but foregoing even modest expenditures if the time and skill for a suitable work-around is available would make a worthwhile project when money is tight.

The least harm

The choices among cost-reduction options are important because their impacts can be very different in severity. IT organizations have had to work very hard to reach stability, equipping and networking entire campuses and establishing effective help desks. The communities they serve would be very discouraged to see services slip back to unsatisfactory levels because cost-cutting resulted in reductions in quality. Exploring cutbacks that do relatively less harm is an important tactic for holding on to standards of quality.

Reductions whose consequences can be recouped later are the best choices. Lengthening replacement cycles is a reasonable cut because it does not diminish the quality of the equipment in place. In the past, hardware failures increased dramatically towards the end of a computer's life cycle. In more recent times, the increased requirements brought on by software upgrades (especially to operating systems) has driven the replacement cycle, at the same time that devices such as hard drives and power supplies became longer-lived. In slowing the replacement cycle, there is only a modest risk of greater support costs – as long as software changes are also delayed.

The national economy will rebound, and after a time budgets will grow again. The challenge for IT managers is to analyze their operations to see which projects, services, and equipment are least damaging to reduce for a period. **TW**

"Over-investment in technology development is not necessarily a bad thing. Speculative bubbles of various sorts have played an important role in restructuring economy and in creating new unforeseen and unintended opportunities. Indeed, today we have much computing and information processing capability. The question is what are we going to do with it."

Ilkka Tuomi
"The Lives and Deaths of Moore's Law"
First Monday
November 4, 2002

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EDUTECH RESPONDS

Q. We have had to extend our support hours into the evening and weekends. Most issues can be handled by our help desk, but those that they cannot resolve require a call to one of the professional staff who rotate on coverage. What do other schools do to compensate these staff for time they work outside "normal" hours?

A. *On all campuses the need to provide IT support outside weekday "business" hours has posed some version of the question you are asking. Nobody has a staff large enough to duplicate the standard of daytime coverage during evenings and weekends. Inevitably, some staff members will need to be on call during some hours that they are nominally off duty. Options for compensation vary. If the workers are covered under a union contract, that will be what needs to govern this situation. A few colleges and universities pay a supplement or premium for hours assigned as "on call" regardless of whether they are actually called, but this practice is quite rare. More often, above and beyond answering a phone call is compensated, and then more likely if it involves a trip to campus. Salaried staff ("non-exempt" employees) are typically not paid money for these situations. The more usual form of compensation is time off from the regular schedule, typically taken within a few days and considered a "wash" for human resources/payroll purposes.*

Q. Where should the central IT organization draw the line for its own responsibility when an administrative office wants to acquire a specialized information system?

A. *This question comes up quite frequently now because the proliferation of niche systems for departmental or office needs is a strong trend. Obviously, any of these systems that need to interact with the ERP need to be examined very closely by the IT shop and cannot be considered standalone or unconnected with the central system and the responsibilities of its support group. In other instances, these ancillary systems might include technologies supported by campus IT. If these include network or server operating systems it is impossible to think there will not be instances where these office-level applications systems affect the rest of the campus computing environment and require the intervention of the IT staff. On the other hand, shrink-wrapped, desktop applications are probably easier to consider as being outside IT's zone of care.*

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The Education Technology Newsletter for Faculty and Administrators

All Those Systems

The typical college or university has a half-dozen systems that span the entire institution. These are: ERP, e-mail, library, one-card, course management, and scheduling. Five years ago, the set was only the first three of these. More are on the way. Portal systems are catching on quickly. Departmental systems with a campus-wide clientele are coming into place also: parking permits and tickets, health services, and the bookstore via e-commerce. We are just starting to wake up to a growing problem with these applications: they are all resolutely independent systems.

Most troubling is what we have come to call the ERP (enterprise resource planning) system. This is a misnomer born of the vendors' overreach in marketing. In reality, these are the principal transaction systems for campuses. They have proven notoriously difficult to exploit as tools to understand past performance or to forecast future trends and options. Institutions have had to build data warehouses to make past data available for study. Resource planning is at best a marginal feature in these applications packages. Most colleges and universities extract data into spreadsheets when they work on forecasts and planning models.

Senior administrators at many institutions still think the ERP – and the sizeable investment sunk into it – was most of what was needed to support administrative work. But now much of the activity and cost around the ERP is dedicated to creating data feeds in and out and to implementing "bolt-on" products (e.g., portal and web interfaces, document image management, and non-print delivery of reports). On the IT staff side, the original concentration on applications support and database management has been ex-

continued on page 3

"The number of systems we cope with is a reflection of the tremendous depth and breadth of our institutions.... Higher education needs a next-generation infrastructure that will allow our institutions to be user-centered, to establish and maintain life-long relationships with individuals, and to provide personalized, secure, seamless connections with all constituents."

Ed Lightfoot and Weldon Ihrig
"The Next-Generation Infrastructure"
EDUCAUSE Review
November/December 2002

NEWSBRIEFS

CHANGING THE SURVEY PROCESS

Web-based surveys are having a profound influence on the survey process. Unlike other types of surveys, web page design skills and computer programming expertise play a significant role in the design of web-based surveys and survey respondents face new and different challenges in completing them. This paper examines the different types of web-based surveys, their advantages and challenges, their design, and the issues of validity, error, and non-response. The author also discusses the importance of auxiliary languages (graphic, symbolic and numeric languages), and concludes with the unique aspects of web-based surveys.

See http://firstmonday.org/issues/issue7_12/gunn/.

BEYOND THE BOARDROOM

Once the province of corporate America, electronic whiteboards are popping up on campuses nationwide – to the delight of faculty and vendors alike. Picture this: a chemistry class where the professor fills an entire blackboard with a complex equation while students frantically scribble in their notebooks before the instructor must erase the calculation. Now think about an equation that lives forever – in a digital file – thanks to the "save" application built into an electronic whiteboard. Visualize a professor printing out the written work or saving it to a server, and later posting the equation on a class website. Such scenarios are now cropping up at colleges and universities nationwide. And while the whiteboards – once thought of as a tool for only corporate America – are not as prevalent on campus as projection technology, they are finding their place in higher education. The question right now is: to what degree? The use of the technology is so new to higher education that no definitive statistics are currently available. What observers do note, however, is that the electronic boards are being used on campuses in a variety of ways.

Jean Marie Angelo, "Beyond the Boardroom." *University Business*, December 2002.

INTERNET FILTERING

According to a new study by the Henry J. Kaiser Foundation, antipornography filters are preventing teenagers from accessing useful health-related sites. The study evaluated the effectiveness of Internet software filtering settings and determined that less is more. While most institutions use a more restrictive setting, a less restrictive setting enables access to harmless or useful sites while offering similar protection against pornography. In the contentious climate over censorship versus the right to privacy on the Internet, the study, to be published by the *Journal of the American Medical Association*, is perceived as neutral.

Edupage, December 11, 2002, www.educause.edu/pub/edupage/edupage.html.

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ERIC

All Those Systems

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tended to include developing and maintaining feeds to and from other applications, creation of data structures (warehouse, datamart, or normalized tables), and coordinating with new campus-wide and departmental information systems and applications.

The newcomers

At one time, library and e-mail applications only asked annual loads of "people" information from the ERP. The more recent arrivals – course management and one-card, in particular – want a more ambitious, two-way flow of data. And even library systems now also have modules to exchange financial data for bursar activities.

Course management systems take roster feeds from the ERP and return grades. They also have the potential to cooperate with library systems on functions such as electronic reserve materials. The CMS is in fact rapidly growing as a server-management chore and as a producer and consumer of substantial data storage space.

The full extent to which the CMS will need to be more tightly connected is not yet clear. They offer to serve as portals for a wide range of institutional data and services. The CMS vendors are also forging relationships with content providers, a trend that is bound to intersect with the already extensive involvement of the library in resource licensing. Where and how digital content created on campus will be stored and tended is not yet clear. It is currently divided among the CMS, the library, departmental servers, and individual computers.

In short, the CMS is quickly growing to become the hub of a data universe that will soon exceed that of the ERP. How it will interrelate with administrative, library, and scheduling systems is still largely yet to be determined.

One-card systems often began as dining-hall access controls. They are now well on their way to becoming the universal point-of-transaction application for door-entry, vending, library, and primary ID. One-card is undergoing two kinds of evolution: becoming the common form of authentication for different kinds of transactions and a primary vehicle for e-business. Considerable work still lies ahead for these systems, some of which have key components based on DOS-era program code.

> *The cost and complexity of bringing the disparate applications into even the appearance of harmony and cooperation will remain beyond the grasp of all but the most technologically advanced and ambitious institutions for the foreseeable future.*

But the bigger challenge for IT shops will come when these cards gain onboard processors and memory. At that point they will become potent information systems capable of real-time transactions with the institution's other applications systems.

Scheduling packages have presented their own unique difficulties of integration with other campus systems. Often when one of these application products has been selected and implemented, the institution discovers two unpleasant surprises: that those who control campus meeting spaces see a central scheduling application as a threat to their autonomy (even if they retain approval authority for their rooms) and that competing applications are in place or in the process of being acquired.

A/V departments find general schedulers deficient in their ability to assign equipment. Alumni and development offices are more interested in software to organize events off-campus. Museums have their own special need for traveling exhibits. The operators of each of these alternate event and schedule applications typically expect to be accommodated by the central calendaring system and, of course, to get data feeds from the other schedulers.

The next generation

At some point in the future, surely years and millions of dollars from now, campus systems will actually "work together." (See the article by Lightfoot and Ihrig in the November/December issue of *EDUCAUSE Review*.) Most likely, existing and new applications systems will be integrated through advances in middleware – one of the most interesting and promising fields of development in IT today. But the cost and complexity of bringing the disparate applications into even the appearance of harmony and cooperation will remain beyond the grasp of all but the most technologically advanced and ambitious institutions – essentially a few in the Research I group – for the foreseeable future.

Prototype projects currently under way suggest that new technology to facilitate exchanges among existing applications programs are the likely

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In There For

Around the country, at colleges and universities of all kinds and sizes, are some CIOs who have been in place quite successfully for ten or more years. What are the secrets of their long runs?

Long-term occupancy of the top IT position is no doubt highly appreciated by those institutions with that good fortune, but we almost never talk about the phenomenon. The long-serving CIOs don't call attention to themselves on this point. Their employers are also very discreet. In all likelihood, nobody really wants to openly acknowledge what seems to be a relatively rare and lucky situation.

While respecting the virtual taboo on singling out individuals with long tenure, it is possible to extract a list of shared characteristics from observation of these CIOs. Some are key points in the CIO job description; others run counter to the common wisdom about leadership.

Calm and steady

Yearning for adventure is not part of how most campuses approach IT. Outside of the nation's technical elite, few institutions treat IT as a core or strategic activity, and even fewer would say that they are looking for a riskier path to follow. Stability, steadiness, and calm are the generally unspoken watch-words in the IT outlook at most places.

The long-serving CIO knows how to exemplify those values and, even more importantly, help instill them in campus leaders in difficult times – keeping one's head while all those around are losing theirs. The special importance of this trait for the CIO is that IT still has the reputation of being an uncontrollable sector, costly and unpredictable. And, of course, many administrators and faculty feel intimidated and defensive when IT topics heat up. Knowing how to help others keep calm seems to be a key CIO skill.

Steadiness is also a by-product of integrity. Obvious though it may be, there is simply no substitute for being regarded as a person whose trustworthiness is beyond question, and whose reassurances are consistent with the facts.

Careful communicators

Successful CIOs are not necessarily great communicators. Over a long period of time, the number of occasions where special powers of persuasion are required in the job is probably small. In fact, being seen as being too much a promoter can have drawbacks for a CIO, given the reluctant relationship most institutions have with IT.

Backing words with performance is essential. So also is the ability to prevent misconceptions and ambiguities. Knowing how to be restrained and clear in communication is a good way to minimize discord.

Having a good sense of when to be quiet can be just as important. IT might be able to play a role in solving more institutional problems than others would think, but picking the best opportunities, and letting the others go by has a special wisdom, too. Over-promising happens to be another of the common perceptions the world has of IT and CIOs.

Careful communication, though, is highly valuable. Backing words with performance is essential. So also is the ability to prevent misconceptions and ambiguities that are then subject to varying interpretations after unhappy facts. Nobody likes feeling misled; knowing how to be restrained and clear in communication is a good way to minimize discord.

Finally, the most important word in a CIO's vocabulary has to be "no." Agreeing to too many initiatives, to say nothing of those that are actually bad ideas, leads to chaos – and short job tenure. Having the courage to say no, and the ability to withstand pressure to give in might be in itself the best kept secret of long CIO careers.

A degree of distance

Being too clubby, too eager to be close to those with the greatest influence can be a trap. Longtime CIOs do not stand out as members of the core leadership on campus. Instead, they avoid being viewed as aligned with other senior administrative personalities and roles.

Being equidistant from the constantly competing client groups, and their leaders, gives the CIO some protection from the inevitable ups and downs of institutional initiatives – and crises, for that matter. For IT, the real battle has been to figure out what its contribution to the academic mission can be. Retaining a distance and being selective about enthusiasms to follow is a survival skill.

Not getting excessively identified with projects and personalities also has basically defensive benefit too. When things go wrong, it is impor-

tant to be viewed as a leader who can change direction, adapt to new circumstances, and help the institution find a new path. A CIO who is too enmeshed with the debacle is less able to break free of the failure and lead on to better things.

Smooth transitions

For better or worse, transitions are better if they are smooth. Colleges and universities are inherently conservative, liking a sense of continuity and skeptical about change in the abstract.

Changes in the IT scene tend to be disruptive and rapid. The need to equip everyone on campus with a computer came on quickly and at a very uncomfortable cost. More recently, the need to constantly increase Internet bandwidth – and to manage it actively and in some cases restrictively – arrived as an ungraceful transition on many campuses. Replacements of ERP systems seem unavoidably painful transitions; very few colleges or universities can say they managed that passage painlessly.

The better transitions are soon forgotten. Looking back at those that have gone well quickly shows that superior planning, dogged attention to detail, and solid communications made them possible. The CIO's personal involvement seems the best assurance of the conditions for smooth projects in IT. Even the best teams and internal leadership are hard-pressed to keep a project on target and at the same time manage relationships with the affected communities on campus.

Masters of budgeting

The key to maintaining conditions for IT success is superior budgeting. The long haul in IT depends on an adequate threshold of funding – a requirement that has been notoriously difficult to achieve. Projects get most of the attention in institutional planning and budgeting in IT, but having adequate staff count and quality, an appropriate equipment base, and a robust infrastructure of network and servers is what makes solid IT possible. If the fundamentals are not enabled by successful budgeting, the whole IT scene on campus is perpetually unstable.

Successful budgeting has meant frequent, large increases. The ability to win these necessities has played a big role in sorting the long-term CIOs from the rest. And while the support of senior administrators is undoubtedly critical in IT planning and budget-making, the most successful CIOs have been able to drive the process. Good allies are necessary but will come and go as their own priorities vary.

The CIO's personal involvement seems the best assurance of the conditions for smooth projects in IT. Even the best teams are hard-pressed to keep a project on target and at the same time manage relationships with the affected communities.

Strong senior IT staff

There is no more distinctive hallmark of a long-serving CIO than the strength of the senior IT staff that this person has assembled and developed. Information technology has become so specialized that no individual is able to keep current and competent across all aspects of what is needed on campus. To a large extent, the CIO has to count on key staff members to build the areas of expertise that have to be brought into play.

Senior IT staff, in turn, need to be good builders of dynamic organizations, able to learn and evolve quickly and to survive turnover in personnel. The ability to find and sustain strong staff is without exception a characteristic of CIOs who have built and headed durable organizations.

Campus focus

Longtime CIOs are not necessarily active in EDUCAUSE or other national forums, but they are almost all well networked with peers. However, their clear, primary allegiance is to the home institution. There is simply no substitute for a deep and consistent understanding of the needs of the campus; no involvement in the wider scope of professional activity can compensate for being well-grounded and highly attentive at home.

Vision

Dreamers and visionaries don't have long life lines. What matters more is the ability to see things as they are and to make reasonable forecasts and choices. Where others see a thicket, the outstanding CIO is able to see a path. Ultimately, what is most valuable about "vision" in leadership is the ability to spot problems and solutions sufficiently in advance so that others can see and assess them, and so join in acting on them.

Length of service is not a good thing in itself, but IT in the academic setting has thrived where a long view has guided it. **TW**

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Pros and Cons of Applying to College Electronically

by Mark Clayton, *Christian Science Monitor*

You're running late, trying to make the deadline for applying to college. No problem. Just apply online. Fill out the form on the computer, press the button, and bingo. Sounds simple, and it's an option at 9 out of 10 colleges and universities, according to a national survey conducted last year.

Yet despite widespread availability, online applications are shunned by a surprising number of tech-savvy students. Many choose instead to fill out a paper application, dab it with Wite-Out to blot mistakes, and send it by mail – or courier, if they're late.

When it comes to applying to college online, ease of execution is often trumped by fears of the application getting lost in the electronic ether and never reaching the school. Students also worry about the privacy of their personal information. Or even that schools will not take electronic applications seriously.

Among high school students planning to attend four-year colleges, the percentage who applied to college online dipped to 34 percent this spring, from 38 percent two years ago, according to a not-yet-published survey. That drop was within the survey's margin of error, so the results are "essentially flat – no change" after years of steady increases, says Richard Hesel, author of the study and a principal with Art & Science Group, a higher-education marketing and consulting firm in Baltimore.

He's not quite certain what accounts for the lack of growth. "Personal engagement in the process seems to be more important to students since 9/11," Mr. Hesel says. Even with campus webcams and virtual tours, the campus visit is still the biggest determining factor in terms of where people apply. It's been increasing in importance as technologies become more prevalent.

Another explanation, Hesel says, could be that "there's a certain percentage of students who just don't like filling out forms on a computer. To them, filling out a paper form has a certain appeal, perhaps, because it seems more personal."

Colleges can save time

After some initial foot-dragging, colleges have generally embraced the online application. Downloading students' information directly into databases promises to speed up the process and allow more accuracy than trying to read student handwriting and typing the information into a computer. It could cut costs and increase the amount of time available to review each application.

When it comes to applying to college online, ease of execution is often trumped by fears of the application getting lost in the electronic ether and never reaching the school.

While he's hopeful about the potential of online applications, Michael Griffin, associate dean of admissions at the University of Denver, says the technology takes time to master. This is the second year his school has offered online applications, but the data still have to be painstakingly transferred into another database – there isn't any direct downloading yet.

About 53 percent of his school's early-action candidates this fall applied online, Mr. Griffins says. "Certainly kids today are used to the technology, but when they hit the send button, they still question: Did [the school] actually get it?" he says. "Another thing we've found is that high school guidance counselors sometimes discourage applying online. Some aren't comfortable with the technology. But others feel they're losing some control if Billy or Suzy can apply online and they never know about it."

Still misconceptions

Harriet Brand, a spokeswoman for Princeton Review, says students hold many misconceptions about applying online, including a mistaken belief that colleges still prefer hard copies over the electronic version.

Enough students are at ease, though, that the Princeton Review has seen robust growth in this area. The number of online applications submitted via its website rose to 387,000 last year from 29,000 in 1999.

Still, some technology radicals have softened. In June 2000, the *Chronicle of Higher Education* reported West Virginia Wesleyan College in Buckhannon would soon accept only online applications. But a spokesman says that although the school prefers the electronic versions, it still receives, and welcomes, paper applications.

The full version of this article originally appeared in the December 3, 2002 online edition of The Christian Science Monitor. *It is reprinted here, with permission of the* CSM, *and edited for length.*

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All Those Systems

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means to the desired integration. Re-writing or replacing legacy systems does not appear to be anyone's idea of a solution. Instead, the new focus is on software technology to interpenetrate systems or to create a new space in which inputs and outputs are available to be shared.

But for now

The reality for current planning horizons is that we will continue to live with the paradigm of mostly autonomous systems. Data will continue to be imported and exported. More of those moves will be automated; the building and tending of those feeds will grow as a percentage of IT staff time.

Vendors will probably accelerate their efforts to provide more interfaces between their systems and those that surround them in campus environments. Already, ERP vendors offer gateways to the leading CMS systems, the online student admissions services, and the Immigration and Naturalization Service's SEVIS system – to cite but three examples. How far and how willingly they will go to meet customers' needs to make systems work together will be interesting to watch. Until now, the core business logic for software producers has been to offer more and more functionality inside their applications. Whether that logic will change in favor of building interfaces to "foreign" systems is not at all clear.

One of the great enthusiasms of the current era in IT is the portal. The concept is noteworthy for taking the user-centric view learned through experience with the web and applying it to application systems. The aim of the portal is to shorten the path a user needs to follow in order to use available information systems. But single sign-on and customized aggregation of information from various sources will probably turn out to be an expensive stop-gap while the middleware to more strongly integrate applications gets developed.

Minds to change

The current campus information systems landscape is the way we made it. The map of minimally-connected information sources and processes reflects the reality of how work is organized on campus and how information flows, or doesn't flow.

We already know from experience with ERP installations and upgrades that every campus has uncounted and unsuspected numbers of information controllers. We also know that they have much to say, if sometimes only through passive resistance, in the success of information systems.

Individuals from the highest levels of the institution well down through the ranks tend to own the processes they administer. Many of them are in for a rude shock once the realization of end-user driven system architecture takes shape. Integrated applications will challenge the divisions of administrative responsibility more than anything we have seen in campus IT thus far. **TW**

"When teaching in a classroom in which the students have laptops that are networked, it's important to keep in mind that you actually have two classrooms in one. With the laptop covers down, you have an ordinary lecture room; whereas with the laptops up, you have a computer laboratory. Such a scenario allows the instructor to move seamlessly between these two environments and exploit the strengths of each where and when appropriate."

Lawrence E. Levine
"Laptop Classrooms Present New Teaching Challenges."
T.H.E. Journal
December 2002

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EDUTECH RESPONDS

Q. What is the secret to making effective use of student workers? We hire a fair number of them every year but never feel that we are getting as much benefit from their work as we would like to see.

A. *Most students who work in IT jobs have two main motivations: they want to learn about IT (perhaps to add to their future job prospects, or maybe just because they are interested), and they want to feel they are members of the IT "team." But on most campuses what do you see student workers doing? They are answering phones, making the long trek to distant corners of the campus on whatever service call a "real" staff member was not available to make, or they are doing homework while "baby-sitting" a student lab. These are all relatively marginal, low-value tasks. Those students know that. So does the IT organization. And so do the users. They are more effective and better-motivated if regularly asked to learn new skills in the course of their normal duties. And, they respond above all to quality time from front-line technical staff. Student workers fare better when they work in pairs or small groups. Where students are used effectively you see them working together, not in isolation. You also see them constantly coming and going from the offices of the professional staff, working side-by-side with them on some things, and watching and listening as the really interesting problems get solved.*

Q. How much of a penalty in support costs are we paying for supporting both Windows and Macintosh computers?

A. *Let's call it 20%, if you have a lot of both types. That is a made-up statistic, but here is some thinking to back it up. You probably have some staff who are specialists on one or the other platform. If you had only Macs or only Windows, you would very likely have less duplication in staffing. You would also be more efficient if you were not negotiating and buying from different companies. But some trends are helping to reduce the "penalty." Both Windows and Mac operating systems take care of themselves much better than either of them did in the (five or ten years ago) past. The move to network-centered computing (web, JAVA, TCP/IP-based services) helps by locating many new capabilities outside the realm of operating systems. The worst of the penalty was related to client software, which hit the Macs hard in ERP applications.*

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Learning from SEVIS

The Student and Exchange Visitor Information System (SEVIS) provides a chance to look at a number of constraints we need to manage in bringing new information systems into play. Though a relatively small and minor addition to the college and university information technology scene, SEVIS highlights some old problems we have not yet overcome and some new ones that are just beginning to take shape. They are worth examining because in total they suggest that our progress in building the next generation of campus information environments might be slower and more difficult than we hoped.

SEVIS is not just another regulatory requirement; it is itself an information system. Although its origins pre-date the September 11th attacks, its pace of development has been accelerated and the urgency of implementation strongly increased in the context of national security. It is still evolving, even as it goes into effect. Information required by most government regulations is static and historical. But SEVIS entails interaction with an information system that is intended to provide current and accurate information for United States visa controls worldwide. The need to furnish data to a high-priority national information system is the most distinctive challenge and one that ripples through many of the other issues in SEVIS compliance.

While some universities, particularly those with large numbers of international students, have written their own software to address SEVIS needs, most institutions have looked to their ERP vendor for a system add-on module, bought software from a company specializing in the visa-information niche market, or elected to use the Immigration and Naturalization Service's web-based, manual

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"Simply put, the organizational structure of most of the institutions of higher education is prohibiting them to benefit from information technology.... In technology-based organizations division of labor allows the entire institution to benefit from what technology has to offer. In the case of faculty, such division of labor is usually not available. Faculty who would like to teach at a distance have to perform tasks that ought to be carried out by a team of specialists."

Fred Saba
"Connecting the Dots: Cost of Education, Reduced Resources and Distance Education"
Distance-Educator.com
January 2002

NEWSBRIEFS

CREATIVE COMMONS

On December 16, 2002, Creative Commons released version 1.0 of its Licensing Project, and the first release of content under its Founders' Copyright. These are the first two projects in a series that Creative Commons will launch, all designed to help expand the amount of intellectual work, whether owned or free, available for creative re-use. The Licensing Project builds licenses that identify works as free for copying and other uses under certain conditions. Its aim is to substitute "some rights reserved" for the more familiar "all rights reserved" approach to copyright protection. The Founders Copyright Project will make content available under the same initial terms as the framers of the United States Constitution did – just fourteen years. Authors wishing to place their works in the public domain will also receive assistance to ensure that their writings retain that status.

See: creativecommons.org.

AMERICAN COUNCIL ON EDUCATION

The American Council on Education, headed by David Ward (the former Chancellor of the University of Wisconsin), "seeks to provide leadership and a unifying voice on key higher education issues and to influence public policy through advocacy, research, and program initiatives." To this end, their web site is a vast repository of papers, research initiatives, and newsletters for those working in higher education administration, or those with a general interest in trends within American universities and colleges. While many of the publications listed are available for purchase, users will also find helpful working papers available at no charge, such as "Crucial Choices: How Students' Financial Decisions Affect Their Academic Success" and "Gender Equity in Higher Education: Are Male Students at a Disadvantage?"

See: www.acenet.edu. Copyright Internet Scout Project, 1994-2002. http://scout.cs.wisc.edu/.

CAMPUS COMPUTING PROJECT

The annual *Campus Computing Survey* is the largest continuing study of the role of information technology in US higher education. Each year more than 600 two-and four-year public and private colleges and universities participate in this survey, which focuses on campus planning and policy affecting the role of information technology in teaching, learning, and scholarship. Begun in 1990, the Campus Computing Project's national studies draw on qualitative and quantitative data to help inform faculty, campus administrators, and others interested in the use of information technology in American colleges and universities.

A summary of the 2002 Campus Computing Survey is available online at www.campuscomputing.net.

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Learning from SEVIS

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data-entry interface. The ERP-following strategy avoids the need to write a new application (and is the only real alternative for most college IT shops and many at universities as well) and counts on the vendor to integrate the new feature with the rest of the ERP package, even if that has to come in a future revision. As usual, the downside characteristics are: slow delivery, surprisingly complicated installation, and bare-bones functionality.

Non-ERP options

The third-party, specialized software to meet SEVIS needs have more detailed features and built-in reports. But whether these companies and products will win enough market share to stay commercially viable is hard to predict. They had a reasonably strong installed base before SEVIS; the key question is how many schools will count on them for what is now a mission-critical application. And, of course, adopting free-standing software always leaves open the question of how (or whether) to tie it back to the main information system.

The INS REI, "Real Time Interface," (manual entry via the web) is being widely used by institutions that do not have a large number of international students. Its principal advantage, obviously, is that it does not cost anything in software acquisition or systems modification. But it keeps no local data and no history of transactions, which could be serious shortcomings in the long run, particularly in the case of individuals whose information changes frequently.

In some cases, the REI is serving as a temporary solution while a college or university waits for INS rules, ERP solutions, and the travails of other institutions' early implementations to settle out. A year from now, the comparative merits of compliance options should be clearer. The inconvenience of hand-entering data via web forms should also be more apparent by that time and spur a fresh look at automated approaches to tracking and reporting the required information.

Technical process issues

The most significant technical issue raised by SEVIS is the need to work with data from multiple sources. What comes as something of an unpleasant surprise in the ERP solutions is that student-related data is kept in so many different tables. SEVIS-required data needs to be assembled from places that are just not in the normal flow and process in the system. It is probably unfair to expect that system designers should have foreseen that demographics for international students would need to be related so closely with course enrollment, campus address, and other current-status data elements. But the lesson in discovering how difficult it has been to associate all the required data should be a warning about how unwieldy the ERP systems are becoming.

One has to wonder how many other coding and classification tables will need attention in the future, as applications originally conceived as independent systems now have to inter-operate. Some of these will need to be converted as standards or regulatory requirements emerge and compel compliance.

Another unpleasant discovery has been the incompatibility of some tables of codes, e.g. country names and academic majors. The issue here is that codes that are usually internal to a campus (or vendor) system now have to be translated to those specified by the INS. A surprisingly large proportion of the help-seeking inquiries in SEVIS and ERP listservs are tied to table conversions, format discrepancies, and code correspondences. One has to wonder how many other coding and classification tables will need this kind of attention in the future, as applications originally conceived as independent systems now have to inter-operate. It is quite possible that some of these will need to be converted as standards or regulatory requirements emerge and compel compliance.

Another surprise incidental to SEVIS compliance has been the arrival of XML as new reality. XML is not exactly new, but it is a skill that is still rare in most IT shops. The need to exchange data in this format in the future is widely recognized, but for many institutions SEVIS is the first time it has arisen for the core IT programmers. If XML expertise exists on campus, it is more likely to be in the web programming area than in the core database shop. In some instances the administrative systems environment is not yet XML-enabled and requires an upgrade or add-on.

Business rules

SEVIS requires a tighter degree of inter-office coordination than had been necessary under previous INS enforcement of visa-related regula-

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Who Owns

All suffering information systems have one thing in common: nobody has a good answer for the question, "Who owns this thing, anyway?" It's the CIO's responsibility to see that the question gets resolved long before it is asked in a crisis. It is amazingly hard to get people to step forward and say, "I am the sponsor and owner of this system," even at the beginning of a project and long before the problems have begun.

There are many bad answers for the ownership question.

Small fry

The project manager is almost never the owner. Only a small and easy project is going to be undertaken by someone who has no greater stake in it. If the project manager gets tagged as the owner of anything bigger, then it must be in such trouble that everyone is trying to walk away from it. In any event, "the project manager" cannot be a true answer – unless the project is simply unauthorized, which is a rather extreme case.

A common true but bad answer is someone too low in the organization chart to be truly in charge. This situation comes about fairly often. It can happen when an aggressive mid-level administrator wins approval for a project that is not genuinely backed by the department head.

If things go wrong with the project, that person has no effective support from the home department, perhaps just insistence that the IT group make good on its commitment regardless of the project's flaws (or dubious merit). And so, the office head steps in to save face, but without making a real contribution to getting the project modified – much less canceled.

Not the CIO

By far, the most common bad answer is that the CIO or the IT organization is the owner and champion. On most campuses, the ERP choice and installation is widely reported to be the work of the CIO. And, too often, that answer is more or less true.

It is a bad answer for core application systems because these require the mobilization of too many participants to be managed on the CIO's say-so. Those who have to provide resources (particularly staff) for a project need to be the owners, or to report to the project owner.

> *It is amazingly hard to get people to step forward and say, "I am the sponsor and owner of this system," even at the beginning of a project and long before the problems have begun.*

Smaller projects, such as those benefitting one office or functional area also cannot be owned by IT or the Chief Information Officer. In this case, the project is likely to be one of several taking place at the same time. The CIO's proper role is to balance the IT resources that get divided among projects. And so it is logically impossible (or at least not a good idea) to be also the chief advocate for any small project.

Not the President

Well, on rare occasions the president is the project owner. Still, this is a bad answer. If the project is really important and worthwhile, then someone else should have thought to champion it. If it really was the president's idea, then someone (and, again, not the CIO) should have stepped forward and taken ownership, because presidents have bigger things they should be doing and almost never have the time or patience to actually manage things – least of all an IT project.

Don't know

Very often nobody seems to know who owns a project. A roomful of people agreed that something (a new institutional web site?) was a good idea and should be done. But then the discussion moved on quickly to what it should look like. Now that it is in trouble, or nobody likes the look of it, everyone is starting to ask, "Who owns this, anyway?"

Sometimes the question about ownership starts a process of after-the-fact rationalization. If it is a web project, it must be the PR department's project – and of course their fault for it being a mess. They are used to being blamed in this way, but that history does not bring us any closer to the truth.

The ways of nature

Because the word "management" is studiously avoided in many forums on campus, especially those with any faculty representation, it is in fact quite easy for a whole committee to discuss something, arrive at an approximate consensus, adjourn, and think they've launched a project. In this context, those who are competent, interested, or needed are simply expected to step forward and do their part in a project as if it were just "natural."

To many on campus, things just seem to happen, and nobody can say

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why or how they get done. Rarely is anyone rewarded for a good job or punished for a bad one. There are too many natural incentives to remain faceless and very few for being known as the responsible party, particularly for an IT-related project – which is considered an inherently risky proposition, and one that can always be blamed on the IT department if it goes badly.

Symptoms of no owner

Usually the most glaring indication of no ownership is that staff resources – quality time from the right people – is not provided. The most time-consuming and difficult part of any project to acquire or install a new information (application) system is the working out of process rules and the verification that the new program carries those out properly. Nobody likes doing this work. If nobody is making staff do that work, odds are that the project is headless.

Less blatant, but just as telling, is schedule slippage. The existence of a schedule is an encouraging sign that someone seems to care enough to organize the work. But schedules only have meaning if they compel people to get work done and stay on the task.

Projects and schedules never stay on target voluntarily, someone has to move obstacles, exhort the reluctant participants, get angry and noisy from time to time, and generally push these things along relentlessly. And so, schedule slippage has to raise questions about whether all of that management is actually happening and, if it is not, whether anyone actually cares, or cares enough to do something about it.

Tests and evaluations never get done except when someone is really concerned about getting things right and wanting credit for a job well done. It is axiomatic (second law of thermodynamics applied to projects) that energy will leak away, quality will slip, and things will start to fall apart. We all expect these things to happen. Resisting those tendencies takes a special effort, one that casual participants and mere time-servers just do not make. When a project is allowed to sink to some natural ("oh well, that's they way these things go") level of disappointment, this is another sign nobody cares enough to intervene and boost the standard back up. And, again, it is easy enough to blame the IT staff for yet another shoddy job – reason enough for the CIO to be concerned where there is no apparent owner. A good project owner will put pressure on the IT staff, but everyone will be happier when the project actually succeeds.

The CIO's personal involvement seems the best assurance of smooth projects in IT. Even the best teams are hard-pressed to keep a project on target and at the same time manage relationships.

Despite good plans, every project eventually turns up some unanticipated questions that someone has to answer. These typically come along once the project is well under way, and all the casual, pseudo-owners have walked away from it. If the questions are not answered promptly, then the project probably has no real owner. When questions crop up, or the project needs to be modified or re-directed, all those who were present at the outset need to be brought back to the table. This is a thankless task and a true test of a project-owner's character.

Lack of communication is a charge eventually leveled against every project – and usually blamed on the project manager. But that blame is misplaced. The owner of the project needs to handle the dissemination of information (good, bad, or boring) about the project, particularly if there are multiple stake-holders who need to be informed and should be kept interested and supportive. But on this point, too, there seems to be a natural law that causes communication to dwindle once the project gets well along.

How can this happen?

The short answer is, "quite easily." We see it all the time. Even a brief, three-line dialogue can result in a project without a proper owner. It starts with the question as to whether X can be done. The answer (often from the CIO or some IT person) is, "Yes...," bringing the clinching statement, "Then let's do it." Both parties think the other just took ownership. The conversation can proceed to budget and schedule, oblivious to the failure to clarify who is going to prosecute the project.

In other cases, time passes, interest wanes, and ownership just floats away from the project. The planning was fun, but the 80% of the project that is just drudgery drains away the will to stay on top of things. The CIO, unfortunately, is often the last one left around if the owner walks. **TW**

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Learning from SEVIS

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tions. It is now necessary to discover and report changes in student information data items maintained by several administrative offices. Changes of address or enrolled credits now need to be reported promptly. In the past, these could be ruled insignificant and not reported. And even when they were reported, often no response ever came back from the INS.

Closer tolerances

The new emphasis on closer tracking of international students will require multiple campus offices to alert each other (and the SEVIS compliance officer) when reportable changes occur. At a minimum, information needs to get entered into the system promptly. Then there has to be some way to flag changes so that the person responsible for reporting to the INS can see and evaluate the data.

Because an institution's ability to host international students could be suspended if it fails to comply with SEVIS, the quality of internal processes, records flow, and communications needs to be higher than in the past for information about these students. The affected offices have differing degrees of experience with this kind of pressure. Most important, someone now needs to ensure that a tight chain of change-tracking gets set up and maintained.

Staying on top

As always in the past, making, articulating, and communicating business rules is the hardest part of building an information system, regardless of its purpose or urgency. We seem never to get past the delusion that good systems make good processes, when the truth is the other way around. The most likely point of failure in SEVIS compliance is likely to be in breakdowns of internal communication. Information that is somewhere in the campus systems (or sitting in an e-mail message or a paper document) will be the cause of lapses in compliance and will be the biggest source of stress in relations among the cooperating offices.

The INS regulations and the details of SEVIS will change and expand as time goes on and operating experience accumulates. Keeping abreast of these developments will require that the campus project team for SEVIS compliance will need to stay together indefinitely. Once the pace of changes slows, it might be possible for one designated person to track the evolving regulations and alert others when adjustments to process and information systems are needed, but that time is probably at least a couple of years in the future.

As always in the past, making, articulating, and communicating business rules is the hardest part of building an information system, regardless of its purpose or urgency. We seem never to get past the delusion that good systems make good processes, when the truth is the other way around.

Communication with international students and, in fact, the whole campus community is another important facet of ensuring that all affected persons are aware of the changed regulatory environment and the consequent changes in campus processes.

Attitudes towards compliance are at some risk of being caught up in controversy about other governmental initiatives to investigate international visitors on campuses. Special attention to keeping the SEVIS-related information flow intact and shielded from flare-ups over things like FBI interviews with individuals will be necessary.

Directions and tactics

For SEVIS and other new regulatory requirements, the schedule for implementation is likely to be influenced by the pace of software development by the ERP vendors. It seems inevitable that few institutions will be able to comply faster than their vendors can add new functionality to standard packages. There is a kind of safety in staying within the customer cohort for the major vendors: those institutions will face no greater time pressure than their peers, and the interval the vendors need to add new code will constitute a form of push-back against regulatory demand.

Within IT organizations, it will become necessary to budget some level of annual staff time to analyzing and acting on regulatory matters – just as has long been necessary for annual tax rate and tax return processing. Data feeds to and from the ERP have already become a standing commitment and time-slice for the programmers; now regulatory compliance might rise to that same level of need.

Solutions requiring a lower level of integration with the ERP might be an alternative to expensive and

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time-consuming system modifications. Once XML mark-up becomes a standard skill in programming groups, the writing of data exports in that format might prove more attractive than incorporating new code into the ERP package.

Tinkering with applications is still one of the most expensive activities an IT shop undertakes. To the extent that data interchanges can take place in ways that do not involve system interoperability or internal rule changes, the work of satisfying the information needs of other institutions can be minimized. The INS has recognized this principle and adopted it for itself – making the XML-formatted interchange its method for interacting with the nation's numerous academic information environments. In the next generation of ERP systems, middleware will probably reduce the need to alter the application system for the purpose of supplying data to other systems, but that stage of development is just beginning now and will not bring relief in the near term.

Echoes from the past

There are some ways in which SEVIS recalls the Y2K experience. Deadline pressure has dominated both of these projects, bringing a degree of anxiety to the work and also sweeping other projects off the active agenda.

The laboriousness of changing information in far-flung parts of applications is another characteristic these projects have shared. Date information turned out to be much more dispersed in software applications than we had realized. So, too, student demographics are less compartmentalized than one would have hoped. In both cases, programmers have needed to delve into parts of the systems that had been quiet backwaters and rarely required any intervention.

Off-mission

Without touching on the political dimension of growth in regulatory requirements, it is fair to say that compliance efforts represent a detour from plans institutions of higher education and their system vendors have for the evolution of the ERP. The primary goal in recent times has been to re-cast these systems to be user-centered. To some extent, that movement is being slowed by the need to accommodate other needs.

In addition to SEVIS and other new regulations (such as Common Origins and Disbursements), the proliferation of "ancillary" information systems (schedulers, course management systems, parking stickers and tickets) is encumbering the ERP and its support staff. Other notorious productivity drains include the perpetual need to root out duplicate data records and the near-constant work of preparing and implementing routine system patches. SEVIS gives us a fresh opportunity to look at the challenges we face in trying to control the priorities and investment we want for the ERP. **TW**

"The question is, How do you create enough incentive to produce that resource if everybody can take it without paying for it? That's where excludability becomes important. Once I give a bit of information to the world, it's hard for me to exclude anybody from getting access to that information. Intellectual property deals with the problem of non-excludability by saying, We're going to give a government-backed monopoly right for a limited term to assure there is enough incentive for people to produce. But it shouldn't be expanded so broadly as to create a false protection for rivalrousness."

Lawrence Lessig, interviewed by Jesse Walker
"Cyberspace's Legal Visionary"
Reason Online
June 2002

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EDUTECH RESPONDS

Q. Every year, it seems, we make the same mistake of thinking we will get more accomplished in January – between semesters – than we actually do. And very year, we end up disappointing a large part of the user community. What are we doing wrong?

A. *January is a notorious time trap, particularly for work on facilities and systems related to semesters and instruction. The now almost universal shut-down of campuses between Christmas and the New Year breaks concentration. Staff take vacation time to extend the holidays (and because they can't take their full four weeks in the summer – the other time trap). Add in a snow day and some utility-related crisis, and even more time slips away. If you are rushing to install a new facility, perhaps the furniture does not arrive on time, or the walls don't get painted.... So, plan to do less. Buffer schedules by having the dean warn faculty not to expect to use technology in new facilities until the third week of the semester. Take a hard look at what kinds of work (e.g., delivering faculty computers) can actually be done just as well after the semester begins. Equip and reserve a "swing" space to use in instances when a new facility might not be ready in time. That proposal will go nowhere the first couple of times you propose it, but if you are consistently missing start-of-semester deadlines, eventually you will get it approved.*

Q. If a software company thinks I am using an unlicensed copy of their software on my office computer and threatens to sue me, the college will defend me, won't it?

A. *Maybe. Maybe not. The college will have to make a choice. The short answer is that it probably will defend you (that is, provide a lawyer) if you are reasonably within published rules or general practices at the institution. If you are far outside those practices and clearly in violation of not just copyright law but also the published policy of the college, then they might not. Until now it has been very rare for copyright holders to go after faculty or staff of institutions of higher education. There are signs, though, that this might change. It is now technologically easier for software companies to detect when duplicate copies of software are being used. And the gradual strengthening of federal law on copyrights in favor of the owners is leading to some more aggressive challenges to users. So, this is a good time to be extra careful.*

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Information as Product and Property

The current academic year has seen a number of intellectual property controversies make national headlines. RoweCom, a major subscription service for scholarly journals, encountered "financial difficulties" that left many academic libraries in doubt as to whether their journal subscriptions would be honored. Elsevier Science withdrew journal articles and then after expressions of concern from scholars adopted a new policy for online noting of retracted articles. The Sonny Bono Copyright Act, which extends the term of copyright to the life of the author plus seventy years, was upheld against challenge (Eldred v. Ashcroft) in the U.S. Supreme Court. Webcasters, including some college and university radio stations must now participate in a royalty payment service. The Recording Industry Association of America (RIAA) is seeking out P2P infringers on campus networks and sending notices to senior administrators.

The intersection of law, commerce, and technology is raising multiple, simultaneous challenges to how information flows through institutions of higher education. Colleges and universities have found that publishing interests and lawmakers have been more highly motivated and organized on these matters than the educational community. Generally, the movement in law and commercial practice has been in the direction of solidifying the treatment of published materials as property. While the technology of copying has grown strongly, the holders of copyrights have responded, in some cases vigorously, to block copying via legal constraints. In the case of library periodical subscriptions, the possibility that large amounts of aggregated fees may be lost is focusing attention on

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"With the emergence of the Web as a new space for instruction, the focus of most analyses of teaching and learning has been on process – overhauling what faculty and students are doing within the learning experience. The organization of what is being taught and its availability in various formats – the structure of the course content – has received much less attention."

Judith V. Boettcher
"Designing for Learning: The Pursuit of Well-Structured Content."
Syllabus
January 1, 2003

NEWSBRIEFS

RIAA "INFORMING UNIVERSITIES"

The Recording Industry Association of America (RIAA) has stepped up its initiative aimed at college students in an attempt to make some impact on illegal file-sharing and downloading. An RIAA spokesman told internetnews.com that the trade association has been "informing universities" about the problems of illegal file sharing and "encouraging them to take steps to do something about it." The latest initiative comes after RIAA's legal win, in which a court ordered Verizon to comply with an RIAA request to flush out an individual who allegedly made available more than 600 copyrighted music files over the Internet.

Beth Cox, "RIAA Trains Anti-Piracy Guns on Universities." *InternetNews*, http://internetnews.com, January 30, 2003.

NUTS AND BOLTS OF COLLEGE WRITING

Despite the relatively high levels of literacy among the general populace of college students in the United States, many of them have difficulty with writing clearly and effectively. A new web-based writing primer has been developed by Michael Harvey (a professor at Washington College in Maryland), and will be of great help to many students who find themselves grappling with writing college-level assignments and papers. The homepage for the guide contains hypertext links to various sections, including those dealing with style, structure, evidence, and paper mechanics. From the main page, students and educators can access any of the primer's many sections quickly, such as those dealing with the use of the historical present, finding a voice, and nominalizations. All of these sections are complemented by a profuse number of examples that illustrate the different writing tools and potential pitfalls that students may encounter. This online guide is a welcome addition to the web resources available to students seeking to become more effective and compelling writers. See http://nutsandbolts.washcoll.edu.

Copyright Internet Scout Project, 1994-2003, http://scout.cs.wisc.edu/.

ROI AS A MATTER OF PRIORITIES

Technology is often sold based on its ability to achieve dramatic improvements in speed and productivity. Remember Moore's Law, which states that computing speed and capacity itself doubles every 12 to 18 months. However, a system can only achieve throughput equal to that of its bottleneck. Applying faster technology to a system that has slow, ill-conceived or non-adaptive processes will not achieve desired returns. Technology is rarely a bottleneck, and more and faster technology, by itself, is rarely a solution.

Michael Atherton, "ROI is a Matter of Setting Priorities: And Remember, It's Not Just About the Technology," *Darwin Magazine*, January 2003.

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Information as Product and Property

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the vulnerability of scholarly assets when the acquisitions process leads through a few high-volume fiscal agents.

Behind these headline stories are extensive issues of information as product and property. Most of the attention has gone to commercial publication: paper and e-texts, music, images, and video. The authors of most of these materials are not academics. But with the advent of digital production technologies, increasing numbers of faculty and students are joining the ranks of authorship in these same media.

Makers and users

In the public marketplace, producers and consumers tend to be distinct. Gradually we have come to accept that expressions and forms of information are like other manufactured goods. The case is clearer for books and CDS, less so when the same works are network-accessible and within our means to copy.

In education, the distinction between readers-users and authors-makers shows signs of becoming less polar. Most scholarly work and increasing amounts of artistic work as well is produced or at least represented and stored in digital form. These works see little use or visibility beyond the circumstances where they were created. Still, term papers and senior theses – many abandoned in place on academic web servers – are still retrievable, typically without the author's awareness. Faculty class notes, article drafts, online discussion texts, and online instructional materials all have potential lives beyond the immediate needs for which they were made.

The movement of intellectual property, copyright, and fair use law toward of stronger producer-consumer distinctions is not a good match for the direction that intellectual work is taking through today's technologies. Those in education, both teachers and students, want wider and easier access to others' information. At the same time they are becoming copyright holders, though perhaps not yet thinking about themselves in that way. Students, in particular, have grown up with an extent of information access that they find uncomfortably constrained by concepts of ownership and the illegality of copying at will.

Most scholarly work and increasing amounts of artistic work as well is produced, or at least represented and stored, in digital form. These works see little use or visibility beyond the circumstances where they were created. Still, term papers are still out there online.

Institutions and finance

Colleges and universities are finding themselves in roles in the intellectual property struggle for which they are ill prepared. They have not responded enthusiastically to the need to raise student awareness of the increasingly restrictive copyright laws. And they have been reluctant to examine the electronic files kept by students and other campus community members. The chore of policing copyright is not settling well. So far, in response to RIAA challenges, most schools are confronting individuals found with copyrighted files in a P2P environment but have not yet launched pro-active campaigns to find others not reported by outside sources. These institutions find themselves in a bind because they have created high-bandwidth campus networks and reasonably good connections to the Internet. For the most part, individuals using these networks do so anonymously and in virtual privacy. Network sign-on authentication is still more the exception than the rule. The files stored on individual computers – whether privately or institutionally owned – are treated as private. No college or university is searching out MP3 files on its own. Although the threat has not yet been raised, colleges and universities could next become the targets of lawsuits seeking to force them into a more active role in detecting improperly used copyrighted materials.

Caught between roles

Another mismatch of institutional roles in the stewardship of intellectual property becomes more apparent as the number of periodicals titles and their subscriptions costs grow. Institutions of higher education are largely content to let their faculty publish as individuals – finding their own book deals, signing away copyright on articles, and sometimes even needing to subsidize journal publication. Then the college or university buys books and subscriptions through the library at prices it finds increasingly uncomfortable. In this way, cost avoidance at one end of the chain of publication comes back in the form of costs over which control has passed outside the academic world.

University presses and journals are probably the closest higher educa-

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Five Excuses

There is no shortage of ready, prudent-sounding reasons to do nothing. The field of IT is blessed and cursed at the same time by the sheer abundance of ideas waiting for action. Technology seems to be the answer to every shortcoming on campus, as long as you – the CIO – can be talked into agreeing.

Every CIO can come up with a list of "glad I said no to that one" stories. Of course it is true that knowing how to say no and make it stick is one of the best talents you can have, but somewhere there is a line between being inclined to solve problems and seeming determined to avoid them. Leadership is basically about making choices. There are all too many excuses not to face them.

1 - Too busy already

Busy people and busy organizations are the only ones that get anything done. But busy or not, everyone claims to be out of time for anything new. Everyone keeps up a certain guard against becoming overloaded. We all fear eroding our effectiveness through losing focus, draining away energy, and making unrealistic commitments.

Being busy becomes one of the deadly excuses when it means refusing to listen. Other people's needs and ideas have an inconvenient way of cropping up at just any time. There's no guarantee that the conversation can (or will) wait for some less busy time, whenever that might be. IT, at its best, leads us to rethink what we are doing. CIOs miss good opportunities to promote changes and innovations if they are not available and willing to participate in exploratory conversations.

Our reluctance to get into new discussions comes from fear of being drawn into new commitments. The line between listening and agreeing is often not clear; feeling busy or harried makes holding that line all the harder. Knowing how to carve out time to hear something and still keep enough reserve and perspective to avoid being drawn into new obligations is a good talent to cultivate.

2 - Tried that once before

New CIOs hear this one from their new staff all the time. Staff re-organizations, outsourcing some support function, co-locating IT staff, dispersing staff to various locations, leasing equipment, making more ambitious use of student workers... so many ideas bring the same reaction, "We tried that once before, and it didn't work."

Busy people and organizations are the only ones that get anything done. Everyone keeps up a certain guard against becoming overloaded. We all fear eroding our effectiveness by losing focus and making unrealistic commitments.

We tend to think that ideas fall into only two categories: good and bad. In reality, initiatives succeed or fail for many reasons; it is only afterward that we lump them as successes or failures. It is not just in comedy that timing is everything. How many projects to take a physical inventory of computers on campus never got finished? Many of these seemed like an ideal summer project but ran up against too many locked doors, key staff taking vacation, and the fact that summer is always shorter than we think. So, the next time the boss suggests an inventory, eyes roll. But with budget reductions putting pressure on refresh cycles, now we really need an accurate inventory.

The challenge for the CIO is to discover why the new wish calls up a bad memory. Is the association actually valid? If it is, what went wrong before? Can a past error be avoided this time? Will the idea just not work? Or have conditions changed so that the time is now right?

3 - Did that already

The counterpart "historical" response to a new suggestion is that "we did that already." A CIO will hear that all administrative staff were trained to use the ERP that was new five years ago. Never mind that turn-over in those offices might approach 30% over five years. Or, maybe, classrooms were wired for data jacks ten years ago. Of course we did, but a close check will inevitably show that seminar rooms were skipped, the jack was put in the wrong end of a classroom, or the wire was category 3.

There is a natural tendency (or at least a form of wishful thinking) to exaggerate the durability of completed work. On one level we know that IT accomplishments are short-lived and have to be revisited sooner than we'd like, but on another level we tend to think the important work is all new. The campus has been wired, everyone has been trained, policies have been written, the help-desk established, student workers trained, and faculty/curricular needs assessed. What's next? Odds are good that every one of those accom-

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plishments needs to be brought back for re-examination and fresh work. Done once just doesn't cut it.

4 - Don't go to that meeting ——
Nobody will admit to liking meetings. IT staff are notorious for the view that meetings unproductive at best and dangerous at worst. Meetings tend to produce action lists, which means more work to do. If they only review and rehash current work but result in no new assignments they seem an obvious waste of time.

CIOs generally know better but still have their own reasons for avoiding some meetings. The problem is not so much with the standing, mandatory meetings – we all learn how to cope with those. The more difficult category are other groups' new project meetings, crisis gatherings, brainstorm sessions, or the dreaded "we haven't talked for a while" occasions. The thread of difficulty running through all of these is that they seem a threat to agendas and priorities that have already been settled and have become the basis for current work. But these meetings have a special importance that needs to be recognized: they are opportunities to see (and influence) the emergence of new, potential agenda items.

The CIO's challenge in these situations is to be there and be attentive, open-minded, patient, and "constructive." Bringing those qualities to the meetings is not easy because we are trying at the same time to be wary and skeptical. But the cost of not showing up or of appearing too negative is that next time we won't be invited and will just have to deal with what those who do attend decide.

It is too easy to let caution about open-ended discussions and run-away enthusiasms reduce our horizon of awareness, vision, and planning. The CIO cannot expect to be the convener of every planning forum. Knowing how to be an effective participant in a wide range of meetings called by others is a key skill and an important form of leadership.

5 - The cost is too high ——
Here is an excuse that gains special strength when the national economy is down, as it is now. There is an understandable tendency (reinforced by financial officers) to call a moratorium on new initiatives. The reason runs roughly: "we need to cut expenses; that means reducing budget lines and avoiding new projects that would cost new money." From this attitude, it is only a short step to thinking, "we'll take a break from doing anything new."

It is too easy to let caution about open-ended discussions and run-away enthusiasms reduce our horizon of awareness, vision, and planning.... Knowing how to be an effective participant in a wide range of meetings called by others is a key skill.

Hard financial times are actually a good time to bring forward new IT projects, even those with high cost tags. In normal times, requests for new information systems tend to be additions to existing functionality. These get shelved when money is tight. But another category of projects gain in potential – "return on investment" is a very persuasive case when IT growth is otherwise out of the question.

Projects (investments) that will enable reduction of staff count can still win approval in the face of a "no new projects" edict. Offices that fear they will lose staff anyway might be interested proposing projects leading to operating efficiencies. The trick, though, is to be sure that there is really a net savings for the institution. Reducing printing costs in one office, for example, might not be a net gain if it costs new servers and staff elsewhere to go paperless. And, in any event, the IT organization will want to be very careful about being seen as the instigator of economy measures that cost other offices staff or other resources.

Gauging risk ——
Each of the five "excuses" has at its core a good reason for being cautious. Departing from agenda, overcommitting, and losing budget discipline are common downfalls that these do-nothing reflexes help to hold off. The problem, of course, is that they also shut down important opportunities to stay on top of developments just outside the already-agreed scope of IT activity.

The CIO needs to conduct a nearly constant survey of risks surrounding the IT agenda. Some of that risk arises from potential errors or overreach, but much of it lies in failing to stay alert to changing attitudes and expectations on campus. Those developments need a good hearing at least, if not immediate action. It is also too easy to forget that everyone expects IT to be empowering and forward looking, even in tight times. **TW**

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Information as Product and Property

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tion has to a example of participation at the front end of scholarly publication. These presses often have precarious economic viability. That they might serve as models for ways to publish a wider range of work originating on campus is probably a long shot.

Process and production

Publishers exist because there is work to do to edit, manufacture, and distribute books and other materials. Editors and layout designers need to be paid. Printing to paper is essentially an industrial process. Sales and distribution are a business in themselves. Yet there is good reason to ask whether in an era that has seen audio studios challenged by microcomputer-based production facilities and page layout software become an off-the-shelf common product, how much of the industrial side of publication is still strictly necessary.

Editors and designers increasingly work free-lance. Already, editorial review boards do much of their work via e-mail. Bookstores and libraries purchase online and receive shipments via common carriers. At the same time, publishing houses find their profit margins thin for the materials wanted by the academic community. Is a paradigm change at hand?

Faculty are normally compelled to sign away to publishers their copyright. Academic libraries then pay those same publishers for the right to obtain and circulate those articles. Hard questions should be asked now about whether the production circuit that leads off campus from faculty and comes back in through the library serves institutions of education.

In the past twenty years research universities have set up "technology transfer" enterprises for potentially lucrative intellectual work/property. While these have at most just skimmed off a few projects they are worth examining as ways of using the resources of the institution to develop intellectual property in a space that is neither purely commercial nor academic.

MIT's Open Knowledge Initiative is perhaps the most original instance of a university exploring a new role as a disseminator of academic information, essentially by-passing the creation of products, and entirely setting aside the usual sense of "property."

There is good reason to ask whether in an era that has seen audio studios challenged by microcomputer-based production facilities and page layout software become an off-the-shelf common product, how much of the industrial side of publication is still strictly necessary.

And, maybe it is also time to bring back the oldest artifact of cooperation in academic IT: the shared code library. Some who work in support of instructional technology are talking about ways that clearinghouses for code modules might be established as an outgrowth of the open source movement.

Precedents and models for publishing, distributing, and sharing key academic information are plentiful. What is not yet at all clear is whether any of them can become mainstream practice.

Gaps in the scheme

On most campuses there is at best a loose connection among IT services, the faculty, and the library. Roughly speaking, IT's role is provide the technology to support instruction and administration. Faculty make use of parts of that technical base and infrastructure. The library remains largely the steward of materials acquired from outside.

Despite years of effort, IT organizations have not become partners of the faculty in developing intellectual works. In rare occasions these collaborations do occur, but those are exceptions. IT is principally viewed as the "fix my computer" crowd, not welcome to participate in the actual work of instruction and the preparation of teaching materials. Faculty have proven very insistent that only they will control the process and the products of technically-assisted instruction.

In equal measure, faculty have not been very interested in enlisting the assistance of libraries to organize and preserve those same materials. But without some concerted help vast amounts of teaching materials – lecture notes, quizzes, classroom graphics, bibliographic and web resources, student writings and correspondence – will continue to disappear, as they have in the past.

Unlike the past, today many faculty and students amass large amounts of information involving classwork. Between IT and the library there are ample resources and expertise to save and catalog many of those materials. The experience developed in that effort could then lead to ways to publish selected work.

New realities

The new technological defaults are store, transmit, and copy. Students now have grown up with these capabilities and do not have to be urged to use these capabilities. These are in fact the very survival requirements that scholarship has faced as long as civilization has existed. Our problem now is that educational practices, to say nothing of commercial and legal codes, are failing to evolve ways to use these capabilities for intellectual work.

What does MP3 piracy have to do with using technology to support the work of the mind? In two words, wasted opportunity. Students know how to use information technology, and they also spend vast amounts of money in the consumer economy. Why has nobody figured out a way to sell commercially-produced music via the new medium?

Variant forms of licensing and copyright are being explored outside the mainstream of the publishing industries. These would govern usage in ways flexible enough to meet the range of needs that fall short of outright possession or permanent access. It happens that many of these instances occur in the process of instruction.

When will there be a workable arrangement to show in class or in an online module a film clip longer than the snippet allowed now under fair use? Why can't we distinguish between an instructional use and a lost opportunity to sell a whole copy of the film in question? If law and marketing do not find ways to channel technological capabilities into new, more flexible uses they will drive a new cycle of technological development that will focus on filtering communications, monitoring the contents of storage devices, and blocking the ability to copy.

The problem is that new realities on the technical side are outpacing our ability to revise commercial and legal frameworks, leaving higher education a growing obligation to enforce usage restrictions.

The role for IT

IT organizations seem to have gone to ground on campus. Rarely do they even appear in the top-level web pages; they've become something akin to janitorial services. At one time they seemed destined to or help transform instruction and research, or least lead the campus in an interesting adventure. Is it not possible to regain a role in deliberating on how colleges and universities deal with the "information" issues in information technology?

IT organizations can find opportunities on every campus to play a stronger role in shaping how intellectual products and property will evolve. Authenticating and securing the traffic of network users can lay a foundation for a new level of trust with licensors. Developing storage and access archives for instructional materials would help reduce the waste and loss that discourage many faculty. Partnerships with libraries – at the campus level – to build digital collections would get IT back on the front page. **TW**

"I tend to work a lot with budgets and personnel and strategic planning, which are organizational matters. I think that's one of the things that happens as one grows older: if you stay in the same field, you see an opportunity to do things by putting resources in the right place and by helping the bright young people who have new ideas pursue them. Any success I enjoy today is less a product of my own ingenuity than that of the creative and innovative people I am shrewd enough to hire and manage. "

"Talking with John Stuckey"
Ubiquity
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EDUTECH RESPONDS

Q. Is the current economic downturn leading colleges and universities to re-think the length of the desktop computer replacement cycle?

A. *The question is hard to answer because the issue is out there anyway and has been as long as standard replacement cycles have been in place. It would be unfortunate to let budget pressures too easily stretch the cycle in the face of technical considerations. Several issues taken together need to determine the length of the cycle. The institution's baseline ability to fund the replacement cycle will have more effect than any other on whether that cycle is three years or five. A true baseline should not fluctuate too drastically: going up too much in flush years or down drastically in lean years. If it does, it is not a useful baseline. The second most influential factor in deciding on cycle length needs some better scrutiny than it usually gets: a forecast of time-to-obsolescence of the operating systems supported on campus. Much of the urge for short replacement cycles comes from memory of the disastrously short cycles from DOS to Windows 3.1 and then to Windows 95. That pace has slowed in recent years. Can you buy enough processor speed to carry the OS you want for three, four, or five years? Lastly, replacement cycles can also be longer if you are willing to absorb the labor cost of shifting computers to lower-need users when you replace the computers that need a shorter cycle in computing-intensive uses. But tight budgets alone do not provide a good reason to think a longer cycle is going to be successful.*

Q. Who should do the programming work to provide new, office-local applications on campus, the central IT department or the end-user department?

A. *There is no single answer for this one that everyone will like. Still, the range of options is fairly small. If central IT has one or more programmers it can assign to work on a queue of requests, that is one approach – but it is rarely the case. The most frequent method is that the offices in question add programmers to their own staff and look after their own needs. Those who cannot afford that solution end up paying a student worker or an outside consultant to do the work. In those cases, though, the IT department will eventually get a call for help. The student has graduated or the consultant has vanished and the program needs some kind of attention. The challenge: how can IT be more involved in the local solutions?*

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Campus Partnerships for IT

Partnership means the harmonious combination of allies who are not likely to succeed by themselves. Colleges and universities have learned that information technology requires partnership, but does the organizational structure for IT on campus do what it needs to promote unity and cooperation? This is not primarily about organizational charts. Most institutions have, on paper, a schema that might work under some circumstances. There are better and worse forms of organization – and the better ones do promote better governance, but key elements of the real framework affecting IT do not show up in the usual org chart.

Divisions of administrative responsibility were settled long before IT, the new player, arrived on the scene. So, too, were faculty roles in governance and advisement in administration. For many years it was not clear that IT would be any more than just a specialized activity, limited in scope to data processing in support of some forms of records-keeping and, symmetrically, to number-crunching in support of some work in some academic disciplines. Now, of course, computers and networks are ubiquitous, the entire campus community the clientele, and expectations still very much on the rise.

Only more recently has the wider importance of information technology become clear and accepted. The transition from marginal to universal is incomplete; not all the consequences of IT's big role on campus have been recognized and addressed. Where the adjustment has been difficult, people tend to focus their concerns on the IT organization, its relations with those it serves, and sometimes where the CIO fits in the institution's top governance structure. But there are other factors influencing partnership for IT.

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"Colleges and universities often undertake projects that seem discrete and self-contained. However, in many cases a single campus project is not an isolated, contained effort. Most academic communities are neither cloistered nor remote from the business and technological world. The ripples of change, however small, have an impact on every facet of the institution -- its academic program, its financial health, and the day-to-day operations of its physical plant."

Stuart Gulley and Jeff Floyd
"Campus Triage: Planning for Comprehensive Change"
The Society for College and University Planning
2002-2003

NEWSBRIEFS

ALEXANDRIA LIBRARY PROJECT

A project at the new Alexandria Library in Egypt hopes to make virtually every existing text available online. The Alexandria Library Scholars Collective uses software called CyberBook Plus designed to link archives of digital texts from around the world. In addition to offering a single point of entry to access most of the world's texts, the software includes virtual lecture halls, a hub for international scholars, and a gateway for ordinary readers. David Wolff of online-learning venture Fathom noted that doing any one of these successfully would be challenging.

Edupage, March 3, 2003.

E-LEARNING STANDARDS

There is a revolution going on in the way eLearning specifications and standards are being developed. This is not a newly discovered way to provide features for online education. Instead, it is the result of the increasing collaboration and cooperation between key organizations to share the workload and build on the accomplishments of others. Among the five key organizations developing specifications and standards for eLearning are: the IMS Global Learning Consortium (IMS), the Open Knowledge Initiative (OKI), the Advanced Distributed Learning (ADL) Co-Labs, the Schools Interoperability Framework (SIF), and the IEEE Learning Technology Standards Committee (IEEE LTSC).

"The Standard Bearers Close Ranks," *Syllabus Magazine*, March 1, 2003. See http://www.syllabus.com/article.asp?id=7359.

CORNELL TO METER NETWORK USE

Cornell University officials have developed a new billing system that will charge students and employees incrementally for Internet use as a way of controlling what officials call "irrational consumption" of bandwidth. Cornell's cost for providing Internet services – currently about $1.4-million a year – are going up by more than 40 percent each year, and the University says it had to do something to moderate that spending, or at least to find a fairer way to recover its expenses. The problem of sharply rising bandwidth consumption is especially acute at Cornell, which pays more than some other institutions for bandwidth because of its distance from Nysernet, the New York State Education and Research Network, in Syracuse, where it connects to the Internet.

The new billing system, referred to as "pay by the drink," which Cornell expects to begin using July 1, is more equitable than the one it replaces, officials say; it is also more complicated. The new system incorporates data collected from network-router logs. The logs provide an irrefutable record of which departments and users are consuming the most Internet bandwidth.

The Chronicle of Higher Education, March 6, 2003.

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Campus Partnerships for IT

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Some of these considerations have to do with the qualities needed for good partnership among the obvious participants. Others involve a closer look at the contributions needed from groups whose roles are more peripheral and, unfortunately taken less seriously by all concerned.

The IT shop

The information technology management group is the only entity on campus that thinks about IT all the time – 365 days a year. It knows more about what happens in this field of activity on campus than any other organization. But translating these advantages into a strong basis for partnership is not easy.

As extensive as that collection of knowledge might be, it often seems to be not as complete, accurate, and up-to-date as it needs to be. Blind spots develop. For example, the average IT shop knows little about what the Computer Science department is doing, what their strengths and weaknesses are, how well they are equipped to meet their needs, and what they might contribute to the IT picture on campus. In fact, IT and CS typically maintain at best an uneasy truce – an agreement that they are not partners and need to steer clear of each other – and at worst are open adversaries and competitors for resources.

But on a lesser scale, the IT group's intelligence about the needs and capabilities of many of its constituents is often not as good as it needs to be in order to speak authoritatively about the state of IT on campus. When this lack becomes visible to others in institutional governance, such as when there is a marked disagreement between the IT department and the user department about whether the users are being "well served," the IT organization's influence and leadership is weakened.

Complacency is the insidious problem that does more than anything else to undermine the IT organization's abilities as a partner. It is too easy to make blanket assumptions that are not true, especially if those assumptions reflect the IT department in a positive light. A low volume of calls to the help desk, for example, cannot be taken at face value as a sign that user problems are few and service is good. Poor service leads to fewer calls also (why bother to call if my question will never get answered?); knowing the difference is crucial.

Complacency is the insidious problem that does more than anything else to undermine the IT organization's abilities as a partner. It is too easy to make blanket assumptions that are not true.... Conversely, having a really good read of how everyone is faring in IT is the bedrock of good credibility.

An IT organization that thinks it is doing a good job but in reality has a poor reputation for service severely undermines its own ability to be taken seriously as a partner in the bigger picture for IT. And the more widespread that reputation is on campus, the greater the challenge.

Conversely, having a really good read of how everyone is faring in IT is the bedrock of good credibility. And, as long as that knowledge is used honestly and openly, it is one of the best bases for partnership.

In a similar way, the unity of the IT organization is very important to cultivate. Dissension within the staff is always much more visible and disconcerting to the campus community than the organization imagines. While individuals will inevitably hold different opinions, a staff that gives out conflicting information, seems to be working towards different goals – or just is not well-informed and united in what they are doing – breeds mistrust.

The IT shop has to earn its credibility as a partner every day. It is simply not enough for it to assume that because it is charged with the widest role in support that it will receive the respect it needs to work with everyone cooperatively.

Senior administration

On the other hand, being designated as the authority over IT matters does not guarantee a senior administrator all the necessary capital for partnership in IT governance. An important issue is whether the officer and office to which IT reports have the interest, experience, time, and patience to play a strong role. Very little in the career experience of those who hold senior administrative positions prepares them for IT oversight.

Contrary to common wisdom on campuses, innate interest or skill in technology is probably not the key characteristic in the administrator to whom the CIO reports. There

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Getting Good Mana

Where does the CIO look to find the information essential to good leadership?

Forget the irony of a job title that, if taken literally, means you know better than anyone where to find the facts, ideas, questions, vision, plans, and wisdom. There are many sources but few reliable guides to the quality of what is available. Instead, it makes sense to talk about the different characteristics of the information available from the various, competing origins.

The effective CIO has to know good sources of information and, just as importantly, be able to filter, assess, and counter-balance the biases and qualities that come with each source.

The indispensable record

The *Chronicle of Higher Education* merits special mention and emphasis because it has become the daily, authoritative record for information technology – as well as all other issues in higher education. Almost all CIOs are readers of the *Chronicle*. They know that their administrative colleagues, and a significant portion of the faculty, expect that "everyone" has read the *Chronicle* – and that now means the daily online version. It is equally remarkable, and should be a cause of concern, that many mid-level IT managers are not readers.

The *Chronicle* covers an impressive range of topics and presumes a high level of knowledge about IT among its readers – higher than the most prominent national magazines and newspapers. The articles tend to be geared to a combined readership of IT professionals, faculty and administrators. Their strongest attribute is attention to the significance of IT topics for the rest of the campus. The value of this perspective is double: it helps explain IT to the general run of readers and to remind IT professionals that these topics are more widely understood and followed than even five years ago.

Periodicals

Like most other academic and administrative disciplines, IT's principal medium for written information is the periodical: journals, magazines, and newsletters, both print and electronic formats. The EDUCAUSE publications, *Quarterly* and *Review*, are virtually required reading, but the field fragments somewhat after them.

Publications consisting of one-paragraph digests have proven very useful.... The brevity of these summaries also seems to encourage readers to cut and paste them into e-mails forwarded to colleagues, which extends their reach, but sometimes breaks the chain of attribution.

Many of the monthly publications CIOs receive are no-cost subscriptions, paid by advertisers. Consequently, these tend to focus on commercial solutions to many of the topics and problems they address. Read with that predisposition in mind, these sources can provide valuable leads to technology and product choices. The articles tend to favor topics for which a selection of options already exist and most of the articles are filled with product names. *University Business*, *Syllabus*, and *Converge* are three examples.

Publications that concentrate on a brand of technology present a similar blend of strengths and limitations: a short path to good information if you are already interested in that set of solutions, but a narrowed scope of selections.

A third category of periodicals typically read by CIOs consists of publications from organizations concentrating on a specialized branch of IT: instructional technology, computer security, computer science, distance education, and many others. These provide valuable assistance in tracking developments (or doing a quick catch-up) for topics that you do not ordinarily follow closely. Their very existence serves as a reminder that the field of academic IT now consists of many subspecialties, each with its own direction and pace of development.

News digests

A great time-saver for those without the opportunity to monitor a wide range of publications, publications consisting of one-paragraph digests have proven very useful. An excellent example of a news digest is NewsScan Daily (www.newsscan.com).

Their value is strongly increased by the URLs typically imbedded in them, allowing the reader to click through to the original source. The brevity of these summaries also seems to encourage readers to cut and paste them into e-mails forwarded to colleagues, which extends their reach, but sometimes breaks the chain of attribution (and stretches the boundary between citation and outright copy).

A potential draw-back in these brief items is the reader's tendency to select and react to the extremes: views that already fit one's outlook (and confirm it) or notices that raise alarm. This format also tends to be an attractive nuisance for those of us who are easily distracted or suffer from an overly broad range of interests.

But not books

One of the open secrets of the IT profession is that the shelf of influential books is very short. A CIO's office book shelves are more likely to reflect personal interests – including works from that person's pre-IT academic orientation than a substantial set of book-length studies of topics in IT administration.

There are some excellent books available on various aspects of IT, including the management of IT resources, and one especially useful source for publishing, writing, and citation is, again, EDUCAUSE. But compared with other disciplines, the number of books is few.

Some of the excuses we hear for this defect are that the IT field changes too quickly for the medium of the book: by the time it is written and published it is stale. One also suspects that people drawn to IT are not really inclined to be writers – and maybe not readers, either. Whatever the reasons for books not being a leading form of information for the profession, their absence could be seen as a missed opportunity to establish a core of shared thinking about the field – thoughts that CIOs would have as a common base of experience.

The web

This has become the first recourse in almost any search for information. It is excellent as an encyclopedia – just type in a phrase in a good search engine. It is also superb for access to online publications. Its major (and notorious) limitation is that the quantity of spurious, shallow, and derivative information is appallingly high in proportion to the good stuff.

The web has also not yet solved the problem of volatility: even good sources of information can be short-lived or even just subject to being re-organized in ways that make later retrieval of the same pages difficult (accolades to Google for proving the "cache" feature which alleviates this problem somewhat). And, of course, "surfing" for information is a desperate and highly inefficient way to find anything at all.

Anyone who has tried to find the organization chart, planning documents, committee minutes, and project reports about another institution's IT activity knows how little is available, and what a fine opportunity is wasted right at the core of our profession.

Most of all, the web gives an impression of copious information but never seems to live up to that promise. Anyone who has tried to find the organization chart, planning documents, committee minutes, project reports and other useful information about another institution's IT activity knows how little is available, and what a fine opportunity is wasted right at the core of our profession.

Colleagues

The predominant source of IT management information turns out to be other people, namely other CIOs and IT professionals. Listservs do a brisk business, particularly within consortium or other affinity groups. The CIO seems to be a very peer-connected breed, perhaps in response to the lack of unified and authoritative information sources in the field.

The typical CIO also relies very heavily on staff members as information providers. Technical information has to come through individual specialists – a trait that sometimes dismays non-IT colleagues who still assume that high placement in the organizational pyramid correlates to high knowledge of every aspect of the organization's work. In reality, the CIO has to be comfortable with the necessity of relying on staff knowledge – and on their ability to learn constantly and rapidly. In how many IT shops is the CIO the one figuring out all the details of LDAP?

Consultants, too

Until rather recently, consultants were called in when troubles exceeded the capacity of local leadership, senior administrators needed special persuasion, or a fresh perspective was thought to be necessary. But today, colleges and universities routinely look for consultants as specialists on many of the projects they undertake, as a supplement to local knowledge.

The CIO needs to be able to draw information from many sources, keeping perspective on the values and drawbacks of each. **TW**

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Campus Partnerships for IT

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are, naturally, extremes. Those who assume the CIO is really the top person who has to understand technology just do not have the interest needed to be a partner in IT leadership. And, those who fancy themselves amateur CIOs and cannot resist micro-managing IT soon wear out their own effectiveness.

Senior administrators who ensure a good hearing for IT needs and advocate effectively for them at the table where the big decisions are made are the best partners for IT interests. This is the typical view of the CIO, and it is not wrong.

Executive skills

But there are some more subtle qualities that are just as important. Every executive-level administrator spends a lot of time hearing and sorting out conflicting calls for time, attention, and resources. Being able to challenge weak cases, send lone operators back to find allies, and put the best cases on a fast track for action are the qualities that separate the best administrators from the rest. The skill to sort and reduce the competition for resources is especially valuable in IT governance because expectations run high and insight into the real costs are rare: everyone wants more IT capability, but few have any notion of the real costs of what they are asking for.

A good executive also knows enough to make as few independent decisions as possible. Everything that can be decided by an administrator or group closer to the issue at hand is better handled at that lower level of organization. Having the self-discipline to avoid making others' decisions for them is an invaluable way of conserving the political capital that is better saved for a few tough decisions that nobody else is going to make.

So, paradoxically, the best practices for senior administrators to whom IT reports consist often of filtering and channeling petitioner's requests and prompting other administrators to make key decisions. The strength of the executive position depends largely on staying out of quagmires and making sure others are doing their jobs. The best senior partner is one who will be there when nobody else's power and influence will suffice, but being there often means staying out of unnecessary business so as to conserve political capital.

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Committees

Here, too, the popular wisdom is mostly wrong. Committees are not evil; they embody the values of consultation and collegiality that are culturally required in academic governance. And, there are not usually too many committees when it comes to IT matters; more likely they are too few, and some of them have the wrong members.

IT oversight and advisory committees typically have too broad a charter to be effective. They often suffer from a weak agenda and a lack of focus with an appropriate sense of urgency. Their unspoken charge is, "keep an eye on the IT crowd." The missing directive is, "help clarify and articulate what we need to happen in IT." The general-purpose advisory committee with mixed administrative and faculty membership just cannot do justice to the list of matters that need to be deliberated. Multiple committees with better-delineated agendas might be more able to serve as IT partners.

Having more committees would also solve some long-running complaints about membership. More specialized groups would lead to the appointment (or election) of people with a good match of interest and skills. The general committees tend to draw the "usual suspects," the same people all the time, because their peers defer to them as the experts. More committees and membership slots would break the pattern of sending out the same representatives all the time.

Project groups

The ad hoc project-oriented group is one of the more problematic partners. If the project arises within the IT organization or the committees, it should be able to fit into the structure of partnerships fairly well. The more challenging situation comes when the projects are outside those groups. For example, one-card systems got started on many campuses without the involvement of anyone in the IT line of organization or governance.

On the academic side of the house, grant-funded projects typically get developed under the authority of the dean or provost – and that executive might not think (or choose) to include the IT organization in the partnership. There is a natural tendency to not build wide partner-

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ships when grant-seeking, simply for fear that every partner will expect a share of the money and so dilute the value of the grant. But experience has shown that failure to build partnerships around grant projects often leads to bickering later about who should be lending support and is not.

For faculty, grant funding is one of very few opportunities to bring new funding to their activities and govern their own project. As a consequence, they tend to steer clear of standing committees, "unnecessary" administrators, and the IT organization – all of which seem a threat to the cherished autonomy supplied by the grant and, in the university setting, all of which will be looking for a share of the funding in their efforts to recover costs.

A general, *a priori* policy on how project groups should work in partnership with the IT organization (and other potential partners) might go a long way towards reducing the reluctance of these groups to work cooperatively. A reserve of funding to set incentives for project groups that work with standing governance committees would also help curb the bad effects of go-it-alone entrepreneurship and create partners instead.

Peer units

Organizational charts give no hint about the potential for partnerships among administrative units that are peers of the IT organization. Among these peers are: the library, physical plant, dean of students offices, and the various centers of IT support and expertise that can be found in some academic departments and administrative offices.

Generally, how well these partnerships are developed is left to the initiative of personnel, and often at the mid-staff level. Rarely are expectations for relations among these various groups set out explicitly, much less written into their mission statements or planning documents. IT organizations have learned the necessity of forging partnerships with peer units but seldom invest much thought, planning, or resources into ensuring that they happen and become permanent.

Beyond operating-level coordination is an opportunity to form a united front for strategy, planning, and advocacy.

A better org chart

A chart of partnerships might be an enlightened alternative to the standard organizational chart. It would look more like a process-flow diagram, rather than a simple accounting of authority and responsibility. The very exercise of drawing it would document important relationships already in place and would prompt thinking about how to form still more. TW

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"Risk of using Social Security number for ID"
Knight-Ridder Tribune
March 12, 2003

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EDUTECH RESPONDS

Q. What steps should we take to make sure that we really own the copyright to any software we pay a consultant to write?

A. *The short (and best) answer is that the ownership of copyright should be covered explicitly in a contract between your institution and the consultant. Ideally, you will want to specify that the code and the copyright for it are your property (and you may have to negotiate this). Under that agreement, the consultant's work is like that of any of your regular employees – the property of the institution. This is easier to do, of course, when the consultant is working on a small task or is writing a program that you have specified down to a fine level of detail. Ownership becomes somewhat harder to clarify when the project is larger, the content is developed in the course of the work, and the details are mostly left to the consultant. In this situation, the consultant is more likely to assert at least a share of the ownership, especially if the contract has not been written to be clear on this point. If you anticipate that the consultant will try to exercise a degree of independence and creativity, you might negotiate and write the contract so as to retain rights to use and copy the program while at the same time, allowing the consultant-programmer the right to further develop the code in other employment.*

Q. Whatever be came of the code-sharing practice that was prevalent in the early years of "data processing"?

A. *In the commercial world, code-sharing seems to have faded away as IT resources came to be viewed as competitive assets. In other circles, the tradition survives. In the scientific community, for example, computational code continues to be shared, improved, and passed along. Of course, the proliferation of software environments and coding languages has also created a "Babel" effect: code from someone else's shop might not be as easy to re-use as in the past. But interest in sharing is on the rise again. ERP-support programmers need to write ever more applications around the edges of the big systems. Instructional support programmers face an impossible wish-list of new applets, interfaces, and instructional objects. Taking a page from the open-source book might be worth a try for these applications. Of course, someone will have to actually tend the libraries of contributed code which will likely add to the cost.*

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