Partnerships with the Deans: Delivery of the ‘Whole Product’

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Have you given any thought lately to sharing a campus experience with your colleagues by contributing an article to CAUSE/EFFECT? If so, you’ll appreciate the list of emerging and ongoing issues offered by the CAUSE Current Issues Committee (page 5) to stimulate not only C/E articles, but also online discussions, professional paper proposals, and suggestions for actions or programs you would like to see CAUSE undertake.

Of the myriad issues suggested, two in particular relate to several articles in this issue: (1) the challenge to central organizations to effectively support increasing numbers of faculty, staff, and students using distributed systems and services, and (2) the impacts and challenges of the networked information environment.

**Time to rethink the organization—again!**

Common solutions to distributed computing support challenges in recent years have ranged from dramatic, total restructuring of the IT organization, to creating new programs to facilitate and improve communication and coordination with campus departments, to employing new management techniques within existing units.

Look no further than the University of Wisconsin—Madison’s Division of Information Technology (DoIT) for an example of a totally restructured organization. What is unique about UW’s approach is their consultation with N. Dean Meyer and adaptation of his structural cybernetics theory to their effort. The UW article blends a discussion of the underlying theory and model with a description of the process actually used to establish the new DoIT units, providing a blueprint for change for those with a penchant for the revolutionary.

One of the greatest challenges in supporting academic departments’ use of technology is to understand their needs and provide technology that is responsive to their strategic priorities. At the University of Michigan, a program based on a series of partnerships between central IT staff and deans of academic units not only provides relevant technological support, but also promises to remove some barriers to effective academic departmental planning for IT. The program has been so successful that a new area in the IT division has been created, responsible for the management of customer relations.

How might a campus with fewer resources approach departmental support, especially without making structural changes or redefining or adding staff positions? Pepperdine University’s Information Resources Service Partner Program is a fairly simple solution to a complex problem. It provides volunteer “Service Partners” from within the Information Resources (IR) organization to underserved client groups. Essentially the program is based on voluntary service (with no additional compensation provided), to ensure that the people who function as Service Partners will be enthusiastic about providing the service. Participation also provides an opportunity for job diversity and cross-training.

At the University of Idaho (see Campus Profile), a flattened and more flexible organizational structure has been the key to the Computer Services organization’s ability to adapt quickly to change—that, and the employment of a quality management philosophy and teams approach to services delivery. Formal team training has educated staff to the true meaning of “empowerment” and enabled the approach to be successful.

While the advantages are fairly transparent to staff who have been empowered, it’s not at all clear, say authors Conrad and Murphy, what the benefits are to managers of such staff. Their Viewpoint article raises and answers the question: What is the role of a manager in a teams environment?

**Networked information—policy and management issues**

As communications and converging digital technologies continue to offer opportunities to provide information services in innovative ways, our campuses face mounting policy and management issues as a consequence of a rapidly expanding networked information environment: access and security; privacy, confidentiality, and freedom of expression; applications and support issues. All of these need to be addressed from a campuswide perspective.

The University of North Carolina–Chapel Hill has developed an exemplary policy framework for addressing electronic rights and responsibilities at UNC–CH. The policy framework document is included in its entirety in the article by Graves, Jenkins, and Parker, which summarizes the strategies and rationale used in its development.

Impacts of the networked information environment on academic libraries also are mounting, leaving many information resources professionals in these organizations struggling to plan for a digital future while dealing with the realities of the present. Authors Brodie and McLean teamed up to propose a new information resource provision paradigm based on corporate business process reengineering theory, while McDaniel and Epp relate a less-than-successful venture into fee-based information services that left the University of Hartford’s library and computing services thoughtfully contemplating what went wrong.

We continue to be thankful to all of the campus information resources professionals who take the time to share their experiences through publication in CAUSE/EFFECT. Please consider joining their ranks soon!

*Julia A. Rudy, Editor*
Is There a Picture in Our Networked Information Future?

by Richard P. West

CNI's purpose is to explore ways to use networked technology to deliver information. The information technology that supports networked information continues to evolve at an amazing rate. Not so very long ago, basic text was the extent of the information that could be transferred across data networks. Symbols and images could not be integrated into the text, due to technical limitations of the equipment available. Now, we talk not only of images, but of multimedia—the integration of audio and video as well as images and text. We have come a long way!

To me, the significance of these multimedia and image-based technologies is that these capabilities are now good enough to replace information that has been produced in printed form. By good enough, I mean that networked information technologies can store, distribute, display, and print information in ways that are directly substitutable for their printed counterparts. In some ways, because of the speed of transmission and the ease of storage, the electronic versions are actually better.

At CNI's Spring 1995 Task Force meeting, much of the program focused on the six projects that make up the NASA/NSF/ARPA-sponsored digital-library program. Representatives from all six projects were present at the meeting and shared their ambitious plans and strategies with CNI Task Force members. The projects were awarded in October 1994, and are now moving into their development phase.

Several of these projects plan to create databases of images such as photos, maps, and videos. These are unique resources, now housed in relatively inaccessible collections. The general area of developing image-capable searching, storage, distribution, and printing capabilities on a production, multi-user basis is part of the challenge as these projects implement their prototype system.

Although the federally funded digital-library projects are invaluable efforts, one of the sessions most instructive to me at the meeting was a breakout session regarding the TULIP project. TULIP was spawned at the Spring 1991 CNI Task Force meeting by a publisher’s challenge to higher education members of CNI. The challenge was to cooperatively produce a series of networked journals to show that such things were possible as a real alternative to print versions. As a result of that challenge, Elsevier Science and nine universities started work on a joint initiative. The project focused on forty-three material science scholarly journals, and the project plan called for an image to be made of each printed page of each of these journals. The partners agreed to deploy the image database at each of their institutions with local searching capabilities familiar to their respective campus environments.

TULIP was developed as a technological and economic experiment. It is a technological experiment because it pushes, in a production and robust networked environment, a large set of electronic information. How do users interact with these networked information resources as compared to the print counterparts? It is an economic experiment to determine usage and suggest alternative purchase arrangements for scholarly information rather than the traditional subscriptions for printed journals. At least one institution, the University of California, installed the TULIP database in one location for use by the nine-campus UC system, using UC’s inter-campus network. This implementation of TULIP is particularly interesting because it most closely replicates a national network environment regarding network capacity, varied technological platforms, and a significant number of remote users.

For CAUSE members, I believe the experiences and findings of the TULIP project to date are particularly important. In college and university administration, I have seen a number of applications using image technology that are being sold for specific solutions. Systems that manage specific types of records—admissions, registration, official correspondence, and general documentation—frequently use just a few of the image-based technologies available in the marketplace. Image-processing technology is at a key evolutionary stage, and I believe it is very
easy to invest too much, too soon in these technologies. Earlier technologies such as Sony Betamax videotapes and Wang word processing systems recall good, solid technologies that did not survive in the marketplace. In other cases, many colleges and universities still are dealing with “islands of technology,” due to incompatible technological architectures that restrict interoperability.

The TULIP project, as well as other digital library projects, demonstrate important lessons regarding image processing. Network performance is probably the most significant finding. Image systems require significant network capacity at this stage of development of image technology. Each image is a much more significant amount of information than text, and places significant demands on network resources.

Equally important is a finding that is obvious in retrospect. In key areas of image processing there are no standards, which are needed if broad interoperability is to be achieved. What compression standards should we use to create and store images? What are the minimal display platforms needed to adequately handle satisfactory display of images? What resolution is minimally acceptable for display of images? And, of course, there is the already mentioned issue of network capacity. These are all the obvious questions regarding standards. You may already be developing such standards for image processing on your campus. Nevertheless, the experience from the TULIP project suggests that there remain many surprises when you begin full-scale implementation of an organization-wide image-processing system.

Right now, I imagine that there are a number of image systems cropping up in various user areas of your campus. The registrar has one, the physical plant people are looking at one, and the library is part of a joint image project with another institution. Have we done our infrastructure homework on this next important wave of technological evolution? Or are we just willing to accept the next stand-alone image-processing application that may be tomorrow’s Sony Betamax videotape? Which of these various image projects can garner the political and financial support to enable the others? Initiating a thoughtful analytical work on the current state of development of standards for image-processing systems and the experience of specific projects across all areas of your campus would serve every technology manager and his or her institution well right now. In fact, the sooner such an effort is updated or initiated the better!

NOTE:
More information about the TULIP project can be found at http://www.elsevier.nl/TULIP. The TULIP page at this location also contains a demo of the TULIP Web system at the University of Michigan (found under “universities”).
Current Issues for Higher Education Information Resources Management

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

▶ Integrating Planning for Information Resources with Institution-wide Strategic Planning

Emerging and converging information technologies enable programs that can change the academy. It is now critical that planning for the information resources infrastructure be aligned with the strategic goals of the institution and implemented within the context of cross-functional and cross-program processes. This cooperation and focus can be accomplished when institutional executive officers share a full commitment to strategic planning by their involvement in the process and their assignment of responsibility, authority, and resources.

• How do issues related to information resources—information, technology, and services—get raised to the “boardroom” level?
• As institutions plan to pilot or adopt new programs to meet dramatically changing needs, how should they involve their information resources units in the strategic planning process?
• How can the institution appropriately assess information resources investments that are needed to support these programs?
• What are the emerging challenges to extant policies concerning access, support for end-user innovation, and the development of a cohesive information resources infrastructure across the campus?

▶ Reengineering Our Fundamental Business

Much has been written about the need for higher education to become more competitive, relevant, and affordable to meet the needs of a changing society—one that is undergoing stress as it transitions to a new age of work, family, and community. Some of these changes in higher education shift the emphasis from instruction as a time- and place-bound event to one that is learner-centered and available at times and locations convenient to the “lifelong learner.” This shift in emphasis, as well as the emerging opportunities to re-examine how the business operations of the institution can be streamlined, creates new roles for information technology (IT) on campus. Information resources managers can take a leadership role in the restructuring of both the academic and administrative activities of the institution by facilitating innovation and articulating realistic visions of how IT can cost-effectively support and enhance these new processes.

• What are some of the effective strategies being employed to build the campus vision, guide and support innovation, and develop an action plan?
• What are some approaches that seem to be effective in building (and sustaining) new applications and supporting infrastructure for these evolving (and often distributed) program efforts?
• What are proven ways to initiate and implement successful business process reengineering?

▶ Change Management

We are increasingly aware of the accelerated pace of change and the need for people to understand what is happening and deal with this pace in constructive ways. Another aspect of this challenge is to realize that not all changes, regardless of how technically exciting they may be, are for the good.

• What are some of the processes that are useful in assessing the impact of technological innovations on the academy and engaging people in effectively managing change?

If you would like to suggest topics to be added to the list, send an e-mail message to the Committee’s discussion list: issues@cause.colorado.edu

“What are proven ways to initiate and implement successful business process reengineering?”
• How does the process balance the enthusiasm with the potential reengineering of people, policy, and practice that may be necessary to sustain positive change?

➤ Distributed Computing Support Challenges
Dramatic changes taking place in the computing and communications industries have created a powerful form of distributed information systems on our campuses. As the number and capacity of desktop computers increase, so does the need to support the growing number of faculty, staff, and students using distributed systems and services, along with the need to effectively manage software assets and costs. Still another major challenge of the distributed computing environment is the need for “interoperability” among connected workstations to ensure that networked resources can be shared, that collaboration among users is enhanced, that training and support costs can be minimized, and that new tools can be deployed rapidly when needed.

• When is it appropriate to adopt a distributed architecture, and what are viable transition strategies that allow campuses to introduce these systems into their operations?
• What are effective approaches in managing life-cycle costs of software over enterprise networks?
• What are the challenges to support faculty, staff, and students in this environment of multiple desktop applications, some of which are communicating with legacy systems?
• What role can central IT organizations play in facilitating greater self-support on the part of faculty, student, and staff who use distributed computing?
• What is the potential of a World Wide Web client “front end” for some applications to minimize support issues?

➤ Networked Information Environment
Academic libraries traditionally have been places to collect, preserve, and access scholarly materials, while administrative computing organizations have been entrusted with administrative information systems that support the institution’s business processes. Communications and converging digital technologies are offering opportunities to provide these services in innovative ways and challenge our views of how all information services can best be provided.

• As more information resides in “digital form” on network servers, how does this re-shape the information resources boundaries of the institution?
• How do we extend the cataloguing, organizing, searching, and accessing standards and policies of the library to other campus information resources?
• What kind of policy issues does this emerging environment raise for institutions to address, and who are the key players in shaping these policies?
• How will the networked information paradigm affect scholarly publication and related concepts such as copyright and intellectual property?

➤ The Changing Communications Paradigm
Many see the Internet as the beginning of the National Information Infrastructure (NII). Federal and, in many instances, state efforts now stimulate a move away from regulated monopolies and government subsidized services into a more competitive framework for telecommunications. These efforts are designed to foster innovation and will open new opportunities for campuses to acquire telephone services, provide recreational and educational television to their students, as well as obtain Internet services from an expanding and competitive marketplace.

• What are the approaches/strategies that campuses can adopt to create the necessary on-campus infrastructure for these changing (and possibly converging) telecommunications services?
• What are the issues related to linkages into the local community, state or regional, and national/global networking infrastructures?
• What role(s) can colleges and universities play in ensuring there is an affordable educational “lane” on the “information superhighway” that supports teaching and learning into the inner cities and far flung rural areas of our states?
• What roles can our institutions play in bringing the positive values of the Internet to the benefit of our communities?

➤ Open Systems and the IT Architecture
One of the paradoxes in information technology is that a non-proprietary (“open systems”) architecture helps ensure interoperability among connected systems and increases competition and choice among vendors. However, many of the “breakthroughs” will not fit existing standards, and thus will emerge as proprietary products.

• How do we balance these competing interests, that is, stimulate greater adoption of open systems as well as the development of innovative new products?
• Can CAUSE take a leadership role in the adoption of standards that will serve both our
individual campus needs and the needs of higher education?
• What can CAUSE do to enhance sharing and collaboration among our member institutions in planning and evaluating novel technologies?
• Should CAUSE expand its role as a major “information repository” for applications of technology in higher education?

Network Access and Security
The increasingly critical role that desktop computers and networked applications play in our institutions has increased the level of concern about information access and security. Access and security can no longer be thought of as simply technical challenges. These are issues that must be dealt with as important contributors to the mission-critical processes of the institution. What are those processes and what are the values of the institution that influence them? Knowing that, one can identify the risks to fulfillment, determine how to measure the risks, and finally decide how the risks might be managed. Some of the ways to manage the risks include institutional policies, guidelines, standards, and education, as well as hardware/software technical safeguards. Although access and security may seem like opposing concepts, it is in fact the case that a well developed security program facilitates authorized access by eliminating unauthorized access.
• What approaches have proved successful in developing policy statements, guidelines, procedures, or standards?
• What are the free-speech and privacy policy issues regarding use of the campus network? the Internet?
• Do authorization services, authentication services, encryption, one-time passwords, and so forth provide good technical solutions?
• How can a campus balance a strategy of providing access to information against the constraints of FERPA regulations?

Diversity in Information Resources Management
Many universities and colleges are making bold efforts to improve their ability to function in the more diverse human work environment that will characterize the future, as we move ever more steadily toward a global economy. In some institutions, the information resources units are the least diverse on campus (although there are notable exceptions). CAUSE has identified working toward fostering diversity in our workplace as one of the association’s goals for the coming year. Inclusive organizations strive to create an environment that is welcoming to all people—regardless of gender, race, creed, disability, or other areas of difference.
• What are some of the barriers to achieving inclusiveness in our workplace/profession and how can we work to overcome them?
• What can CAUSE do to raise awareness about this issue in our profession?
• What are you doing on your campus to ensure that your organization is “inclusive,” and what are some of the results to date?

Call for Articles
Share your campus experiences in...
• Overcoming the Barriers to Tying Information Resources Planning to Academic Program Planning
• Successfully Reengineering Business Processes
• Developing Institutional Information Policies
• Addressing Legal and Ethical Issues on the Campus Network
• Managing World Wide Web Sites: Not Just a Technology Challenge
• Supporting/Training Users in a Distributed Computing Environment
• Implementing Standards on Your Campus
• Finding the Balance Between Network Access and Security/Privacy
• Supporting Faculty and Student Needs for Instructional Technology
• Managing the Convergence of Computing, Telephony, and Video to Deliver Education

For information on submitting articles for publication consideration, see “CAUSE/EFFECT Publication Guidelines” in the CAUSE/EFFECT folder on the CAUSE Gopher (gopher://cause-gopher.colorado.edu/) or Web server (http://cause-www.colorado.edu/), or send e-mail to Elizabeth Harris (eharris@cause.colorado.edu)
Partnerships With the Deans: Delivery of the ‘Whole Product’

by Laurie L. Burns and Cheryl Munn-Fremon

The University of Michigan’s Information Technology Division (ITD) began its partnering efforts with one college of the University in 1991. This year, the lessons learned from that experience are being applied as ITD expands the partnership concept to other academic units. While the units’ priorities are advanced and the University’s IT capabilities are increased, the major benefit to ITD is an increased understanding of academic customers and the resulting ability to create “whole products” they will readily embrace.

The University of Michigan (U–M), founded in 1817, is a public research university located in Ann Arbor, with two regional campuses in Dearborn and Flint. The nineteen academic units on the Ann Arbor campus include undergraduate, graduate, and professional schools and colleges, and a large teaching hospital. The total annual operating budget is approximately $2.5 billion. The community includes 25,439 faculty and staff, and 36,845 graduate and undergraduate students. The Information Technology Division (ITD) reports, through the vice provost for information technology, to the provost.

ITD is responsible for the central computing activities in support of both academic and administrative computing, including voice and data networks, campus computing sites, and the administrative mainframe. We still have an academic mainframe, but we are in the process of phasing out mainframe service in favor of a distributed computing environment.

ITD’s partnership program with the deans and directors of U–M academic units officially began in 1993, but in a very real sense it had begun two years earlier. In May 1991, ITD entered into an agreement with the University’s largest academic unit, the College of Literature, Science, and the Arts (LS&A). Going into that agreement, we knew we wanted to work more closely with LS&A and experiment with distributed support. In a more general sense, we also knew that the kind of relationship we were pursuing with LS&A would lead us to better serve our academic customers across the University. What we didn’t know was that it would develop into a new way for us to do business with the University’s entire academic community. Although we were studying total quality and marketing principles, we hadn’t made the leap to under-
standing what these lessons meant for serving the thousands of customers on our campus.

Our examination of total quality and marketing concepts did, however, lead us to look more closely at our academic customers, especially the deans. What we saw gave us many reasons for concern. We found that the majority of the deans were alienated from current information technology activities. Major changes in the computing environment on campus—a transition away from a familiar, mainframe-based system to “new and improved” distributed computing—held potential for even more alienation.

Despite various efforts over the years, the deans had not seen ITD bringing them technology that seemed directly responsive to their strategic priorities. We had little ongoing involvement in their planning for the future, and they had little involvement in ours. Our services were most often provided to departments or individual faculty, staff, and students, not directly to the deans, yet the dean pays the bills for services acquired by departments and faculty. More to the point, the deans hold the political power on campus. It is important that they view our information technology services as benefiting them and supporting their objectives.

Our partnership with LS&A and our continued study of total quality, marketing, and ultimately “whole products,” helped us address the issues we faced. The LS&A partnership, which provided needed services directly to the College, such as on-site UNIX systems administration and instructional technology applications development (see sidebar, page 10), helped us better understand the balance between centralized vs. local control. The study of whole products led us to see the value of providing more than just a core product or technology: for the product to be valuable, it has to be augmented by other services for the customer to get full benefit from its use. Focusing on the deans as “customers” gave us the push to look at value from their perspective, and the partnership program gave us the opportunity to do so.

Markets, products, and whole products

At the same time we were piloting the partnership with LS&A, we were beginning to adopt total quality principles, examine our relationships with our customers, and change our assumptions about marketing, markets, and products. This helped us understand why some aspects of the partnerships were so successful and gave us a conceptual framework in which to develop future partnerships.

To learn more about marketing principles, we studied and adopted ideas from experts such as William Davidow and Geoffrey Moore. Later we discovered a Kodak research publication written by Michael J. Lanning and Dr. Lynn W. Phillips that discussed some of the same issues and concepts.

Reading about and practicing total quality helped us to think of our users as “customers,” but did not lead us immediately to understand how to deal with the large number of customers we serve. ITD has over 40,000 individual and departmental customers to serve and satisfy. We were looking for a way to create products and services that they would choose to use without having to create a product for each customer. And so we began to think about markets. We adopted Moore’s definition that a market is a grouping of customers for particular services or products who have a common set of needs or wants and who look to one another for advice when making a buying decision. But how were we to group our customers into markets?

Markets

One tool we found very helpful was to look at our customers using the technology adoption life cycle. This model distinguishes technology adopters or customers by their characteristic response to the introduction of new technology; it is helpful when used to cluster customers into two distinct markets: the Early Market and the Mainstream Market.

The Early Market consists of technology enthusiasts and visionaries, those who like innovation and enjoy trying new technologies. They will spend the time necessary to get new untried products to work. They have the insight to match emerging technologies to strategic opportunities to achieve a fundamental breakthrough in their business.

The Mainstream Market, by far the larger of the two markets, includes pragmatists and conservatives. Their goal is to use technology to make a measurable improvement in productivity. They may be confident in their ability to handle technology, but prefer a thoroughly thought-out solution to a known problem rather than receiving the “latest and greatest.” Service is critical to this group of customers.

After many lengthy discussions about the application of these principles, we began to understand why some of our products and services were so successful in the beginning, when we were dealing with the innovators and early adopters, yet met so much resistance when we tried to get the majority of our customers to use them. The importance of the product itself and its unique functionality (as compared to the importance of the auxiliary services and the context in...
The LS&A Partnership

The partnership between the College of Literature, Science, and the Arts and ITD grew out of discussions between ITD’s deputy vice provost and LS&A’s associate dean for research and computing about how ITD, a large, centralized service organization, could better serve the particular needs of LS&A, a large, decentralized academic organization. The college itself mirrors the diversity and complexity of the University, with over sixty departments, programs, and centers; 2,000 faculty and staff; and 17,000 graduate and undergraduate students. The partnership discussions identified two primary needs in LS&A: development and use of instructional technology, and on-site (i.e., intra-departmental) computing support for faculty and staff. ITD saw benefits in a closer working relationship with the college and the opportunity to pilot new models for distributed support. ITD and LS&A each committed financial and personnel resources to the following activities:

- **An ongoing program of instructional application development**
  The college assigned an instructional expert to work with faculty on the promotion, investigation, and selection of projects for funding, and with ITD’s Office of Instructional Technology on the development, curricular integration, and evaluation of projects. This arrangement allows the college to make decisions about which projects go forward, and to take advantage of technical expertise in ITD for the development and deployment of instructional applications in the classroom or lab. This model has proved extremely successful and has been replicated in other partnership agreements.

- **On-site UNIX systems administration**
  The LS&A UNIX systems administrators are assigned to specific departments but function as a team to work on cross-departmental projects, back each other up, and generally provide collegewide UNIX support. This support, initially provided for nine departments and centers, now extends to eleven.

- **Instructional equipment upgrades for faculty and instructional support staff**

- **A selection committee to advise ITD on instructional software in its central campus computing sites operation**

- **On-site consulting and training for faculty and staff in various topics determined by LS&A**
  This part of the partnership also provided for needs assessment and planning activities.

Three years later, these components have gone from pilots for on-site services to being fully integrated into the college, providing significant and measurable benefits to LS&A faculty, staff, and ultimately, students. In an era of budget constraints and concern over the cost of technology, our work with LS&A gave us insight into how we could balance centralized services with the need for local control. Departments and individuals receive direct services from the instructional and support programs in accord with their particular needs, and economies of scale have been realized through the use of teams and pools of expertise.

which the product is used) is at its highest with the technology enthusiast and at its lowest with the conservatives. We, unfortunately, were creating products as if all our customers were innovators or visionaries.

The majority of the deans, as one could predict, shared the characteristics of the Mainstream Market in terms of the adoption of computing technology for general use in their schools and colleges. If they were going to accept new technology and support the new computing environment, we would need to understand their research, curriculum, and administrative goals; gather their requirements; understand the key value of each product to them; and provide them with technology that was directly related in measurable ways to accomplishing their vision. We had to find a way to walk in the deans’ shoes and understand their schools’ culture, financial constraints, and practices.

**Whole products**

This abstract understanding of what had been happening led us to the next important and helpful concept: complete or whole product. This concept is summarized by Moore:

There is a gap between the marketing promise made to the customer—the compelling value proposition—and the ability of the shipped product to fulfill that promise. For that gap to be overcome, the product must be augmented by a variety of services and ancillary products to become the whole product.

A whole product is the totality of what a customer buys. It starts with the device or service from which the customer gets direct utility and also includes a number of other factors, services, or perceptions that make the product useful, desirable, and convenient. According to Moore, the whole product must be available from the start to satisfy the Mainstream Market.

In ITD, whole product means that for each product or service we create or offer, we must think about the ancillary needs for additional software, additional hardware, network connections, remote access, training, documentation, consulting support, publicity, standards and procedures, installation, and system integration services (accounting, billing, authentication). To get our products successfully adopted by the majority of customers, we must ensure that if any of these ancillary items is necessary to use the product, it is available to the customer. If we cannot provide it directly, we must seek alliances with those who can.

Identifying and understanding our customers in addition to knowing ourselves and our
capabilities is the key to our understanding of the reason a customer buys or uses our products. This is also the key to identifying the ancillary services and products that must be available. We believe we will be successful if our whole products are oriented toward our customers’ processes. Our partnerships with the deans are a critical factor in this understanding.

By working closely with the deans as well as faculty and students on the projects they perceive to be important to their missions, we are able to understand their business, to know their processes, and to assist them in innovations of those processes. Working with the deans is allowing us to refine our “customer characterizations.”

When we go beyond just listening to our customers and learn to walk in their shoes, we can fully understand their requirements and needs and, most important, create the product that will best provide their “must have” benefits. Our goal is not to leave our customers’ success to chance or luck. Rather, we seek, through partnership with our customers, to understand their problems and solutions in their entirety and work to ensure they get the whole product.

The partnership process

ITD’s partnerships with the deans is one approach to the challenge of creating the whole products they will choose. Our partnership program, created to provide customized access to ITD expertise and resources in accord with the priorities of the academic units, has four major goals:

- advance the academic priorities of each school or college;
- create a closer working relationship with the dean and faculty leadership in the unit;
- increase the information technology capabilities of the University; and
- ensure that ITD products and resources support school and college needs.

We identified three essential steps to the partnership process: identify opportunities, create the partnership and negotiate the focus and responsibilities, and manage the partnership. Our goal was to begin the process with five schools in the fall of 1993, but first we needed to get the deans to buy into our plans.

Before we could approach the deans, we needed to sell the idea of partnerships to the provost. This was made easier by the fact that in April 1992, the Working Group for Academic Information Technology (a group of faculty and staff appointed by the provost) wrote:

... the LS&A–ITD partnership model should be made available to all schools and colleges, so that the critical expertise and resources of ITD can be harnessed to meet unit priorities; such partnership arrangements would reflect significant unit responsibility and accountability for information technology investments.

With the provost’s approval, in September 1993 we presented our proposal for partnerships to the Academic Planning Group, which consists of the eighteen deans and one director of the nineteen academic units on campus, and the provost. We clearly stated the intention that they would reflect significant responsibility and accountability for information technology investment on the part of each school or college. Both ITD and the unit were required to invest significant and equivalent resources; financial commitments had to match. ITD and the school or college had to designate an individual responsible for the joint management of the partnership activities. We did not want the partnerships to be viewed as gifts.

Our proposal did not receive overwhelming acceptance at first. While all academic units on campus are coming to understand how critical information technology is to the accomplishment of their academic and research goals, we were well aware that some units were farther along the adoption curve than others. Because our intent was to develop agreements that included matching funds and clearly stated priorities, we chose to invest time up front with some units to develop information technology plans that complemented their strategic research and teaching plans. These efforts, along with direct contact between the vice provost for information technology and each dean, calmed their suspicions and garnered their support. The deans agreed to proceed, and several of them volunteered to begin immediately.

The new partnerships

The deans who came forward had a range of needs and ideas. A few had been working with ITD already on various joint projects and initiatives, and it was a small step to incorporate these activities into partnership agreements. Others came forward with specific instructional and research goals. And others, recognizing that the campus computing environment was shifting from mainframe-centered to distributed and that the technology investment within the school had to increase, raised the need to engage in comprehensive strategic planning. We went into the discussions in January 1994 with a commitment to forge multi-year agreements that would address these varied needs.

“… When we go beyond just listening to our customers and learn to walk in their shoes, we can … create the product that will best provide their ‘must have’ benefits.”

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6 Moore, p. 110.

7 Ibid., p. 94.

8 Ibid., p. 101.

9 Wendy P. Lougee and N. Harris McClamrock, Co-Chairs, Report of the Working Group for Academic Information Technology (Ann Arbor, Mich.: University of Michigan, 1992). Available through the CAUSE IR Library, as #CSD1030. Call 303-449-4430 or e-mail orders@cause.colorado.edu
An instructional technology partnership

The School of Education was the first to enter into an agreement with ITD. Education enrolls 500 undergraduate and graduate students and has roughly 150 faculty and staff. The school had recently invested significant resources in multimedia and instructional technology, and had received a generous gift from the Frechter Foundation that allowed them to develop an interactive multimedia research lab.

The dean saw a leadership role for the school in integrating instructional technology into the higher education curriculum. The partnership, from his perspective, needed to support increased activity among the faculty for the development of instructional applications and increased investment and support for multimedia classrooms and facilities. With ITD planning to move one of its campus computing sites into space in the School of Education building and a corresponding shift in the focus of that site away from general purpose computing and towards multimedia technology, a three-part environment emerged: an innovative multimedia research environment for Education faculty; a cutting edge, well-equipped multimedia classroom for teaching Education students with and about instructional applications; and an open-access, multimedia computing site where products and services could be deployed and used.

The components of the agreement emerged easily from these discussions. Funding was established for:

- an instructional applications development program modeled on the LS&A partnership;
- purchase of specialized equipment and software for Education faculty and, as availability allows, for faculty outside of the school; and
- on-site technical support in the school’s multimedia classroom.

Our negotiations also established processes for decision-making. As with the LS&A agreement, a faculty member was designated to work with other faculty in the school and with ITD’s Office of Instructional Technology, and the half-time staff member identified to provide support for the classroom was brought into the team of existing technical staff in the school, so that efforts could be fully coordinated. An initial equipment purchase had already been made, for a non-linear video editor, and we agreed to continue collaborative efforts on later purchases.

A geographic information systems partnership

The School of Natural Resources and Environment (SNRE) has 600 graduate and undergraduate students and around 115 faculty and staff. A faculty committee in SNRE had been working with staff from ITD for several months on the development of a Geographic Information Systems (GIS) facility to support research and instruction. The GIS discussions became partnership discussions, and by March of 1994 agreement had been reached on funding and priorities.

GIS technology represents a strategic step forward for the school. Remote sensing and mapping were key elements in many of the school’s disciplines, but existing facilities and equipment were outdated. GIS technology is widely used as a resource management tool in the types of public, private, and non-profit organizations with whom SNRE collaborates and where SNRE graduates find employment. It was clear to the dean and to faculty that the school needed to invest in GIS and, at the same time, participate in growing campuswide efforts as other academic disciplines found application for GIS technology and data. The SNRE dean wanted to provide a leading edge facility for the use of GIS and natural resource scientific computing and support for the integration of GIS into the SNRE curriculum.

The SNRE faculty committee, with ITD, had already identified a key element in developing a facility: the space. SNRE and ITD agreed to renovate and refocus an existing ITD campus computing site located in the school. The space lent itself to subdivision—a smaller research area in roughly one-third of the space with restricted access to high-end GIS equipment and applications, and a larger instructional facility in the remaining two-thirds for teaching and using GIS applications and data. The instructional side would also remain an open, general-purpose computing site, which allows ITD and SNRE to leverage existing resources for the maintenance of standard workstation platforms and productivity applications.

The partnership included funding for:

- renovation of the space (removing a closet, building a wall between the research and instructional sides);
- UNIX, DOS/Windows, and Macintosh workstations and servers;
- GIS applications (ArcInfo, Erdas, Atlas GIS, etc.); and
- technical staff support for the research side and coordination with the ITD Campus Computing Sites group on support for the instructional side.

The partnership also included funding for operating costs to pay for site license and software maintenance; supplies and consumables within the facility; and equipment repair and replacement. Fees were established for the research side to recover a portion of the operating costs.
An information resource partnership

The School of Public Policy Studies (SPP), with 135 graduate students, is one of the smallest academic units on campus. With a quantitative social science focus, SPP relies heavily on access to statistical and econometric data and information resources. Several faculty members are already well known for their work in economic policy and the national information infrastructure. The dean designated two faculty members to work with us on the partnership. Our discussions focused primarily on developing an archive of social science and telecommunications research information. The archive would be a well-edited, well-structured collection of policy information, accessible through the Internet.

Such an archive would accomplish two major purposes: SPP could provide its graduate students with experience in the development of information resources and could integrate the envisioned collection into its curriculum, and ITD could collaborate with SPP on the technical aspects of developing an infrastructure for information resources.

The SPP partnership represented two other elements that were echoed in several others that followed. One was the need to invest in the unit’s technology infrastructure in order to take the next step forward. SPP needed to upgrade its graduate lab and replace other workstation equipment. It also needed to increase on-site support available to the lab, the SPP’s LAN, and the UNIX system used as the platform for the archive. The second was the knowledge that there were other areas SPP and ITD could collaborate on, such as garnering funding for campuswide site licenses for commercial resources, like LEXIS and Legislate, and other tools for information resource development and navigation.

Funding was concentrated on four priorities:
- support for faculty to develop the archive;
- equipment funding for a UNIX server and lab workstation upgrades;
- technical staff to provide on-site UNIX systems and network administration for the school; and
- development of other initiatives for the second or third years of the partnership.

A strategic planning and instructional partnership

The School of Social Work enrolls approximately 450 graduate students and has approximately 140 faculty and staff. It is one of the nation’s leading schools of social work and recently acquired an energetic new dean. It was clear to her that the school needed major investment in technology across the board if it was to continue to make innovations in social work curriculum and research. The dean was also highly committed to building an open and collaborative community within the school, and as we began our partnership discussions, she in turn opened them up to a committee of faculty and staff to assist in setting priorities. The Social Work partnership manager, assigned to assist with this planning process, became part of the committee.

The dean set forth a goal of developing the school’s internal resources to take advantage of new technologies for research, instruction, and administration. Thinking long term, the Social Work computing committee conducted needs assessments and engaged in ongoing communication with faculty, staff, and students throughout the school. The list of wants and needs was long; identifying priorities was critical. The top priority emerged early in the discussions: equipment upgrades. A recent campuswide Ethernet project had provided funding for much of the school’s connectivity needs, but the workstations available to many faculty and staff were not capable of taking advantage of the higher-speed network. For Social Work to move forward on its agenda for instructional technology development and integration into methodology courses, development of distance learning projects and research initiatives, reengineering and innovating its administrative data and processes, and taking advantage of the new distributed computing environment on campus for its electronic communication and statistical computing needs, it needed to invest in equipment and support.

As with SPP, the partnership agreement we negotiated with Social Work included the immediate priority of capital equipment investments, with money set aside in the later years of the partnership for other initiatives that would build on the foundation laid in the first year. The Social Work and ITD representatives, including the dean, also established a communication mechanism for ongoing planning as the school’s overall capability was raised. Funding was focused on four areas:
- equipment upgrades, with an additional push to establish a capital equipment replacement fund;
- instructional technology development initiatives;
- process innovation efforts for administrative data and systems; and
- distance learning projects, particularly for outreach to community service agencies and social workers in the field for in-service education.

“Academic units are sensitive to the amount of time it takes to learn and use information technology ...”
Lessons learned about whole products

We are still at the beginning of gaining a solid understanding about whole products for an academic audience. Our partnership relationships are helping us see some of the driving forces in an academic unit—the need to show the link between new technology and academic productivity; the need for faculty to drive the integration of technology into the curriculum and research activities; the need to tap the academic spirit of experimentation and innovation by investing sometimes small amounts of money in a piece of equipment or a demonstration project; the need to keep administrative costs low in favor of building faculty quality; and the effectiveness of ad hoc communication (faculty glean information from each other more readily than from official communication from the top or from outside the unit).

Many academic units look for what they can use of what others have done; communicating about projects within each school or college as well as across all of them cuts down on reinventing the wheel, and takes a burden off individual faculty and individual units to research alternatives and options. Academic units are sensitive to the amount of time it takes to learn and use information technology; the payoff for the time investment needs to come quickly, and the transitions need to be smooth and seamless.

The partnerships often include product and service development activities that will allow ITD to experiment with the right mix of ancillary services. Through the partnerships we are learning more about academic unit processes that technology needs to support and facilitate: class preparation, homework assignments and grading, grant submission, administrative information management. A key factor in this learning is making a connection to the disciplines in each school and college. Wherever possible, we have assigned a partnership manager who understands the main business of that unit and the unique ways in which technology is used there. We have also integrated the support staff assigned to each partnership with other support staff in the school or college, creating a team approach to consulting, training, and other support activities.

The success of the partnerships has brought home the value of whole products in another way. The partnerships are in themselves dependent on factors outside the actual negotiated agreement, and effective management of the partnership often means coordinating ITD’s other efforts to serve that unit. (The dependence of some partnership activities on the completion of Ethernet wiring projects is but one example of this.) In this sense, for a partnership to be successful it must be seen as part of another whole product: the overall service relationship ITD has with that unit.

Conclusion

As of spring 1995, ITD has negotiated partnerships with seventeen of the nineteen U-M academic units, and discussions have begun with the remaining two. By the end of 1995–96, we expect to have nineteen agreements. We have seen common themes emerge, many of which fit with ITD’s long-term strategic priorities, such as investing in infrastructure and equipment, developing instructional applications, developing distance learning initiatives, information resources management, and process innovation services. We have seen a major trend away from general purpose computing sites towards more specialized ones (Education and SNRE are just two examples), which will have implications for how students do their computing in the future.

We went into the partnership program with a vision of being able to make exponential leaps in the use of technology for academic purposes. It quickly became clear that in many units, investments had to be made in basic needs such as equipment upgrades and local networking, and in developing a planning structure, to get us to what we all saw as the real starting line. The schools and colleges at the University of Michigan, as in many places, vary greatly in terms of available resources, and in the degree to which existing technology is seen as giving the disciplines within any one unit an edge in achieving their instructional, research, and administrative goals. The investments made in building a foundation of technology use are the critical first step, and still have been done in the spirit of partnership.

Challenges have abounded, and will continue to do so. We have had to balance the need to invest in the future with the need to invest in right now. As we near the end of the negotiations and move into managing these agreements, we will need to continually revisit priorities. Most importantly, we have established closer working relationships with our academic customers and the deans. By working together on specific planning, development, and support activities, we can understand their world and shape ours to fit it.
The University of North Carolina at Chapel Hill, like many other universities, is attempting to manage an unprecedented demand for electronic information in myriad forms. Issues of availability, responsibility, confidentiality, privacy, and security are not easily resolved when accountabilities intersect across non-intersecting central organizations. This article summarizes the strategies and rationales employed in creating a coordinating council to develop a policy framework articulating the electronic rights and responsibilities of the university community and the public, and includes a copy of the current policy.

The purpose of this article is to report the evolution and current status of the policy framework for electronic rights and responsibilities at the University of North Carolina at Chapel Hill (UNC–CH). The framework was developed by a partnership of information technology, library, and administrative leadership at the University. This description of the framework and the processes that shaped and continue to guide its implementation may prove useful to others who recognize new, technological windows on old issues in the following scenarios:

- A teenager dials into a machine at a university in his city. From that connection, he establishes a connection to another machine at a distant university. This machine allows him to establish an Internet connection and thereby a connection to alt.sex. His father and the press in his city express outrage that the two universities separated by miles have conspired electronically to lead America’s youth astray.
- The FBI, suspecting that a nefarious hacker has broken into a machine in the physics department at a college, demands a copy of that machine’s fixed disk from the department chair. The chair seeks legal counsel and is advised to comply with the FBI’s demand. The FBI now has a copy of many files considered private by their creators in the department.

“The overall goal is to make the information needed by the University’s various constituencies as accessible and useful as possible.”

Bill Graves, as Associate Provost for Information Technology at UNC–CH, chairs the University’s Information Resources Coordinating Council and, on the national front, chairs the planning committee for Educom’s National Learning Infrastructure Initiative. He is also Director of the Institute for Academic Technology, Professor of Information and Library Science, and Professor of Mathematics at UNC–CH.

Carol Jenkins has been the Director of the UNC–CH Health Sciences Library since 1986. She has held similar positions at the Oregon Health Sciences University, University of Virginia Medical Center, and University of Maryland at Baltimore. She serves on the UNC–CH Advisory Committee for Information Technology and the Information Resources Coordinating Council.

Anne Parker has twenty-seven years of varied experience in information technology, with over nineteen years of providing research and instructional support at UNC–CH. For the past three years, she has been OIT’s deputy director, and also represents OIT on many committees including the Information Resources Coordinating Council.
A state auditor advises a university chancellor that the university should have a special university policy to guide the personal use of university-owned computers and related electronic property, including e-mail. The tenor of the advice is (1) that all personal use should be prohibited, even if it adds no incremental cost and possibly contributes to professional development and an environment of open expression, and (2) that digital technologies demand special personal-use policies different from those formulated for other university-owned property.

An administrator finds herself having to respond to requests for large amounts of data from administrative files, for public use, in the format requested. How can she cost-effectively respond to such requests, mandated by law, while doing her best to provide data that accurately describe the college, are not misleading, and protect individual privacy?

Libraries and other campus agencies have leased network access to commercial databases. How can licenses for access to such databases reflect the broadest access possible to meet information needs of campus users, avoid costly duplication, and be enforced and supported through user support services?

University administrators from units all over campus search for information to support reaccreditation and find that institutional data were not readily available when the need arose.

Individual departments and schools at a university create World Wide Web home pages because the technology is available. Little, if any, consideration is given to the quality of the information, how it will be maintained, or what standards should be incorporated.

Each of the above scenarios is based on an event that informed or continues to inform UNC–CH’s work on the policy framework. In fact, new examples supporting the need for a coordinated institutional approach to information policy arise almost daily.

An overview of UNC–CH’s policy framework

The policy framework developed at UNC–CH is appended to this article in its present form as Appendix A. It describes the nature of the University’s network and proposes a set of overarching University-wide rights and responsibilities for both consumers and producers of networked information. The overall goal is to make the information needed by the University’s various constituencies as accessible and useful as possible. The document is only a policy framework, a statement of philosophy, but it should be read with the understanding that unit-level producers/providers of information resources will be required to develop policies and practices consistent with the new University-wide framework. Indeed, the framework document proposes several new directions that depart from current practice at UNC–CH:

1. The University will have ultimate responsibility for all official, institutional information generated at unit levels. Current policy, in contrast, places this responsibility solely at the unit level. The University will expect units to act as responsible stewards of the information that they generate. Stewardship will include the responsibility to prepare and manage information in compliance with University-wide standards and practices.

2. The University will expect the units to “publish” institutional information in a comprehensive manner on the University network with enough searching, browsing, and “mining” capabilities to provide aggregate information about the people and other resources of the unit. Such information includes, for example, information about students, faculty members, unit expenditures, and other fiscal activities. Many units will choose to use electronic publication to provide information about the content and direction of their academic programs and activities, but academic work remains the private property of individual scholars, students, and staff members except as dictated by external funding agencies, state and federal policies, or various contractual arrangements. The intent is to “open” official, institutional information at the unit level to all members of the University community and to anyone who has Internet access from anywhere. Current practice, in contrast, exhibits much less openness. The formats of the electronic presentation of information will be carefully designed to be broadly useful, permitting the University, within the scope of the law, to reject requests for information in other formats that are not easy to accommodate.

3. Information embodied in University-owned digital storage and transport media will be considered private property except when specifically intended to be an official University communication or record or when otherwise treated by a contractual arrangement or federal or state laws. This includes non-official electronic mail, which presently is not consistently viewed as private.

The first two directions are an attempt to open the University’s “official” institutional
records to a broader audience, especially within the University. Open access to information is increasingly important to the University’s competitive position at a time when intellectual capital is encroaching on physical capital as the driving force in the world economy and order. Indeed, openness is becoming the expectation in North Carolina, as this recent statement from Governor Hunt suggests: “Members of the public and the media need to have access to this computerized information about their state government, and we should make those records as accessible as possible.” In contrast, the third direction is an attempt to put a “privacy” stake in the ground in an area where the law is unclear and is often uninformed on the nature of the digital revolution.

Nor is the University immune to the pressures forcing all institutions—public, non-profit, and commercial—to become more accountable and cost-effective. Academic governance for years has modeled the “flat” structures touted today by the corporate world as essential to competitiveness. But the effectiveness of the flat model is dependent on the open flow of information. Now for the first time, paper-moving impediments to openness can be mitigated by capturing, storing, and sharing information across digital networks. The new technologies can advance educational quality in a timely, cost-effective manner by improving collegial decision-making with the support of nimble administrative and business processes and an open information policy that addresses key issues.

**Issues to be considered in an institutional information policy**

An information policy should acknowledge that there are complex legal, ethical, technical, governance, and economic issues that need to be addressed. Defining these issues does not necessarily mean that the way to deal with them is clear. Networked access to electronic information is still a new phenomenon to many users and institutions; thus an institutional policy should provide some guidance, but be flexible enough to allow the lessons of experience to mold practice. Some basic assumptions and operating principles set the stage for defining the institution’s role at UNC–CH. These may ultimately be incorporated into official policy, if they are supported by the University community. With these assumptions and operating principles in mind, a committee defined issues in three key areas: legal/ethical, technical, and governance/economic. We abstract these basic assumptions, operating principles, legal/ethical issues, technical issues, and governance/economic issues below.

**Basic assumptions**

Four basic assumptions provide the foundation for defining key policy issues:

- It should be possible to provide timely access from a desktop workstation to needed information, regardless of its location and format, for members of an institution’s community. This assumes the availability of a network infrastructure, including distributed computing resources and communications, and also assumes external and internal compatibility.

- It should be possible to find a balance between the rights of individuals, as authors and as users of information, and the responsibilities of the institution to make information available to support scholarship, instruction, and service. This is a fundamental balance between privacy and access.

- It should be possible to adopt universal standards of data access and integrity to help achieve this balance.

- It should be possible to define different classes of users of institutional information, each with different access privileges, and to regulate such access accordingly.

**Operating principles**

Three operating principles define how the institution will behave in fulfilling its policy obligations:

- The institution will define the information that it is responsible for making available electronically, putting itself in the role of electronic publisher/distributor. This will require (a) a robust network infrastructure and a policy governing access to it, and (b) publication of the information on the network.

- The institution will not regulate access to networked information for which it is not responsible. This will be the responsibility of authors and readers. However, the University will support unregulated access to networked information under conditions specified by its authors.

- The institution will define access privileges to its information for classes of users.

**Legal and ethical issues**

The key legal and ethical issues revolve around concerns for protecting an individual’s right to privacy and the rights of authors and distributors. Any policy must address individuals’ privacy and identify classes of information protected by law and federal regulation. Policy must recognize, for example, protection currently in place in federal grants involving human research subjects.

Policy must also be sensitive to the needs of
the community of both knowledge creators and users, protecting the legal rights of authors/distributors, protecting contractual agreements in software licenses, and facilitating and complying with archival requirements. Many of these issues currently are being debated nationally in an attempt to find a common ground for ensuring that information in electronic form can be made readily available to support scholarship and discovery in a manner that protects the ownership rights of authors and distributors while taking advantage of opportunities for improved access via networks.

Policy must respect the basic rights of authors and distributors and the confidentiality of sensitive information. This raises both ethical and legal issues. Authors and distributors have the basic right to acknowledgment and the right to determine the form, manner, and terms of publication and distribution of their work. An institutional information policy should provide mechanisms for safeguarding these basic rights. Further, any policy will need to balance the institution’s role in protecting access to sensitive or potentially objectionable information and its role in supporting an individual’s right of free expression. These are some of the most difficult issues to tackle in any environment that at present allows highly unregulated access to academic information, while tightly controlling access to most administrative information.

Technical issues

Institutional information policy should support the adoption of technical standards and practices that ensure appropriate accessibility and security of data and appropriate data integrity. Policy must ensure that data are reachable in a usable format by authorized users. Standards for connectivity will address access to data through both direct (e.g., ftp) and indirect methods (e.g., “sneakernet”). Standards for authorization will suggest methods for authentication and encryption of data to protect its accessibility by eligible users. Standard data formats should be recommended to ensure the widest possible readership. To assure quality control and data integrity, policy must ensure that data are stored, backed up, and transmitted according to standards and protocols that preserve data integrity. Standards and responsibility for archiving and accurately transmitting institutional data should be guaranteed.

Governance and economic issues

If an institutional information policy defines the institution’s role as publisher/distributor of certain kinds of information about the institution, then it also should identify which units are responsible for guaranteeing access to that information. Some of the key questions about governance include:

- Which officer or group is responsible for ensuring appropriate access to institutional information? This role incorporates the legal, ethical, and technical responsibilities outlined above to promote appropriate access to, and availability of, institutional information. It also includes educational and consultative responsibilities to promote the appropriate use of institutional information. In addition, it includes fiduciary responsibility for providing and maintaining information resources.

- What is the institution’s responsibility for access to non-institutional information? UNC–CH’s information policy framework suggests that schools and departments that are responsible for the content of information can also be responsible for all of these aspects of access to that information, given a strong policy and a robust, pervasive infrastructure.

- Which officer or group determines the rights and privileges of different classes of users? This question also raises the issue of whether access to electronic information should be free or fee-based.

Developing a policy framework

In 1992, the University’s Advisory Committee for Information Technology (ACIT), responding to events such as those described in the opening scenarios, appointed a subcommittee to outline key issues and considerations that a University-wide information policy could help address. (The University’s two chief academic officers—for Academic Affairs and Health Affairs—created the faculty-based ACIT to advise the associate provost responsible for the University-wide network and the University’s central investments in academic computing and classroom technologies.) The subcommittee drew upon campus expertise as well as the experiences of other universities in defining the assumptions, principles, and issues described in the preceding section. (A list of references used by the committee and subsequent groups working on the policy framework is included at the end of this article.)

During the subcommittee’s deliberations, the two academic officers and the University’s chief financial officer created the Information
Resources Coordinating Council (IRCC) to coordinate the management of pan-University digital information stores and technologies distributed across organizational boundaries that intersect only at the level of chancellor. The Council includes library leadership, academic and administrative information technology leadership, and the chair of ACIT. ACIT then decided that the work of its subcommittee on information policy was more appropriately the domain of IRCC.

After reviewing the key issues and guiding principles articulated by the ACIT subcommittee, IRCC decided that the development of information policy or policies would be a long-term process that would benefit from a policy “framework” document. IRCC proceeded to develop a framework document and then “proofed” the document by applying test cases to its key concepts. The test cases derived from a discussion of the current electronic mail environment, a meeting with the University Registrar to discuss the framework’s compatibility with current practice and planned direction for student information, and a meeting with representatives of a grass roots staff initiative aimed at coordinating and developing standards for document imaging initiatives. The policy framework was demonstrated to be highly compatible with the desired directions in the areas tested. Thus far, the only omission exposed by case testing is a lack of archiving considerations. Some current practices for electronic mail, however, contrast in minor ways with the philosophy stated in the document and are being revised accordingly.

The resulting version of the framework was then presented to a group of University vice chancellors—those responsible for University academic, research, and business matters. The vice chancellors voiced strong concern about protecting the privacy of academic research conducted over electronic networks. They agreed that using the term “institutional information” would help clarify how the University wishes to distinguish between public and private information. They recognized that many difficult issues would surface again during implementation of the framework and the evolution of a governance structure to resolve disputes. The meeting ended with an agreement to obtain feedback on the policy framework from deans, faculty, administrative officials, and perhaps the grass roots staff-based Employee Forum.

Gathering support and gathering feedback
IRCC has sponsored presentation/discussion meetings with several important constituencies: a group of ten faculty members, the deans in Health Affairs, the deans in Academic Affairs, the Executive Committee of the Faculty Council, the Faculty Council, the Division of Business and Finance, and the Chancellor’s Administrative Council. With the exception of the session with the Faculty Council, these meetings were conducted as small focus-group sessions framed by a presentation. Well in advance of each meeting, each participant received a copy of the draft policy framework and a letter describing what was to happen at the meeting and why the policy framework was important. A few days before the meeting, invited participants received a list of potential benefits and a list of questions to consider for the discussion.

With the exception of the Executive Committee of the Faculty Council, each group had difficulty separating the policy framework from the issues that will have to be resolved during implementation. Concerns common to all groups fall within three primary areas: (1) financial support, training support, and other infrastructure support for implementation of the framework; (2) definition of “institutional” information; and (3) privacy.

Given the budget constraints of the University, some faculty questioned whether the expectations raised by the policy framework were realistic, while others, noting the growing amount of institutional data already online, wondered about the need for such a policy. Many faculty wondered if they would be able to utilize online resources without time, incentives, and support from department chairs and deans to familiarize themselves with new technologies.

Many participants from each group asked for a specific definition of “institutional information”—an example of participants’ difficulty in differentiating conceptual framework from implementation. In response, IRCC members reiterated their hesitation to determine what should and should not be “published” online without input from departments during the implementation process.

Deans echoed these concerns and also suggested that the central administration adopt a pan-University “vision” of the use of electronic information. They were very receptive to the idea of the Internet as a marketing tool for their programs, but some worried that making more information available would increase individual workloads through requests for more details or requests for services. The deans clearly wish to be involved in determining the scope and nature of institutional information and want a high-level commitment to addressing the cost issues. They agreed that this is not solely a technology issue.

Privacy and appropriate use issues arose but not as a pressing issue for most faculty members.

“The deans clearly wish to be involved in determining the scope and nature of institutional information .... They agreed that this is not solely a technology issue.”
Most agreed that a proactive stance on these issues would help guide the University’s decisions on policies in the future and would place the University in a stronger position in case of a legal entanglement over these issues. There was, however, strong agreement among the deans that faculty and other University employees need to be made aware of the unique qualities of electronic mail as a means to create, send, and store information. The deans expressed concern that many people still look at e-mail as a secure and highly protected medium.

The presentation/discussion meetings revealed that people have a hard time “getting into” a discussion about something that is abstract and outside their experiences. The scenarios presented in advance of the meetings were beneficial, but more was needed. Additional stage setting might have helped people understand why information policies are important. Futuristic scenarios might have been helpful if balanced against today’s scenarios. What would it be like if the policy framework were in place?

Providing participants with a brief summary of the follow-on implementation issues (legal, ethical, technical, governance) also might have helped focus discussion on the framework itself rather than on implementation. Participants focused almost exclusively on departments as providers of information, rather than as consumers. It might have been valuable to inquire specifically about departments’ information needs.

Nevertheless, reviewers generally accepted the policy framework and agreed on the need for, and utility of, a set of defining principles to guide development of future policies and practices. They also recognized that early involvement of the highest levels of the administration would encourage more sound and consistent policy decisions in the future. Toward this end, IRCC recently asked the Chancellor’s Administrative Council to endorse that policy framework, and the Council did so.

Implementing the policy framework

With the endorsement of the Chancellor’s Administrative Council in hand, IRCC has commissioned several working groups to begin the evolutionary implementation process. IRCC is usually represented on these working groups, but their membership is broadly representative of all interested constituencies.

One group is concerned with the scope, integrity, and presentation of “official” institutional information, such as financial and enrollment data. A different group is coordinating departmental and special-interest Web pages that are deployed primarily for academic marketing and public service. Another group is charged with recommending institutional standards for imaging applications. Another is developing a policy to guide the personal use of the University’s digital resources and services. Privacy is the focal point for yet another group. A subcommittee of IRCC is developing a framework to guide faculty-based academic publication on the net. The provost has commissioned a committee that includes IRCC representation to investigate copyright issues. The policy framework thus has spawned a flurry of information policy activity at the University.

Conclusion

The overall goals of UNC–CH’s policy framework are (1) to educate the University community to the opportunities and obligations inherent in a pervasive digital networked environment, and (2) to make information as accessible and useful as possible to the University’s various constituencies. These goals can be met only if individual units are guided by a consistent philosophical framework for establishing policies and practices. The IRCC central management partnership representing information resources and information technologies successfully navigated UNC–CH’s highly decentralized and complex environment to produce a policy framework that has coalesced fragmented interest in the role of digital information and information technologies into a healthy community of interest and action.

For further reading:


Frost, Renee Woodten, and John Gohsman. “Implementing a Data Administration Function and Strategic Data Planning at the University of Michigan.” CAUSE/EFFECT, Fall 1993, pp. 37-46.


APPENDIX A
A Policy Framework for the University’s Network

Electronic Rights and Responsibilities
at the University of North Carolina at Chapel Hill

The University develops and manages a physical and social learning infrastructure to the economic, social, and cultural benefit of the state and the nation. This learning infrastructure increasingly depends on information in digital form and on digital technologies for communicating, sharing, and analyzing such information. Indeed, digital infrastructure is fast becoming a prerequisite, not only for a more effective and efficient University, but for a better informed and more responsible citizenry.

For example, a centrally supported digital network provides a means to publish much of the University’s official, institutional information for the benefit of both the University and the public. The University, acting through its central administration, is responsible for this information, but centrally coordinated infrastructure and guidelines for publication shift the locus of responsibility for publication and stewardship to the academic and administrative departments that are the sources of most of the information. Similarly, the central administration and academic and administrative units share responsibility for the hardware and software used by the University community to analyze institutional information and other information accessible through the network. Digital infrastructure thus becomes a primary medium in a federal model for balancing responsibilities and encouraging collaboration and public service.

This federal model enables, and the University is committed to, an open flow of information within the University and between the University and the public. The Information Resources Coordinating Council, as the font and guardian of this philosophy, coordinates the development and management of the implied centrally supported digital infrastructure and related services. The Council also formulates the institutional policies that frame the related rights and responsibilities of the institution, those who serve it, and those whom it serves. All members of the University community are responsible, along with the institution, for good citizenship and informed stewardship in a digital democracy. The Council prepared this document to describe these institutional and individual rights and responsibilities and to provide a framework for governing the University’s digital infrastructure and implementing the operational practices that determine its utility to the University and the public.

I. THE NATURE AND PURPOSE OF THE UNIVERSITY’S NETWORK

The network

The University of North Carolina at Chapel Hill operates, through its central administrative offices, a wide-area (inter-building) digital transport network that interconnects local-area networks operated by academic and administrative departments that have agreed to adhere to the University’s Uniform Wiring Policy and to the network management policies coordinated by the Office of Information Technology. The resulting network of networks is the “University’s network.” It is one of the institutionally-operated networks that make up the global Internet and that adhere to the open standards and protocols adopted by the Internet Engineering Task Force. In addition to an Internet gateway, the University’s network also includes a gateway to the North Carolina Information Highway. Through its gateways to the Internet and the North Carolina Information Highway, the University’s network becomes an extended global network that provides access to information and information processing technologies, only a fraction of which is under the stewardship of the University. This extended network and the resources accessible through it serve two primary purposes in the framework of the University’s mission.

✔ To enhance institutional effectiveness and efficiency

By having access to the University’s network and its resources, to include its gateways to the Internet and the North Carolina Information Highway, the faculty, the staff, and the student body can communicate and collaborate among themselves and with their counterparts elsewhere who can connect to the Internet or the North Carolina Information Highway. Network connections are a starting point for internal collaboration and efficiencies, for extending the reach of the University, and for expanding the resources available to the faculty, the staff, and the student body. But the University’s network is a powerful lever for institutional effectiveness and efficiency only to the extent that network connections are easily established and broadly available, are accompanied by easy-to-use services and accessible and reliable mission-critical information, and are based on the standards that guide the development of the Internet and the North Carolina Information Highway.

✔ To publish institutional information about the University

The network’s gateways to the Internet and the North Carolina Information Highway are the primary means by which the University meets its responsibility to the public to publish much of its institutional information in useful
digital formats. By publishing this information via the University’s network, mostly in the form of institutional databases, the University not only meets a public obligation, but serves its own goal of continuous quality improvement in a distributed management model that depends on the free flow of information and that is essential to academic effectiveness. Institutional information, whether for the public or for internal purposes, therefore is published online in an open, democratic framework designed to encourage (1) consistent and ready, affordable access to digital information, (2) stability and reliability from the inquirer’s perspective, (3) integration among disparate databases with minimal duplication in capturing, storing, and maintaining these databases, (4) useful, unifying perspectives on the University’s programs and resources, and (5) information literacy and the use of institutional data in decision making.

II. CONNECTIONS TO THE UNIVERSITY’S NETWORK

Centrally supported connections for the faculty, the staff, and the student body

Members of the faculty, staff, and student body have the right to connect to the University’s network and, through it, the Internet and the North Carolina Information Highway. This right and the resulting right to the University's information services and applications described in Section III carry the responsibilities that attach to the use of any University resource. Any revocation of any of these rights, in whole or in part, is subject to the normal due process available to any member of the faculty, staff, and student body.

The University centrally provides two fundamental modes of connection for the faculty, staff, and student body: (1) direct connection via Internet protocols through reasonably convenient, centrally supported computer labs on campus, and (2) dial-up connection via a centrally operated pool of modems connected to the switched public telecommunications network through Southern Bell’s Chapel Hill Exchange—to accommodate those who have a computer, a modem, and telephone service and who find themselves in circumstances that do not allow direct connections.

Departmentally supported connections for the faculty, the staff, and the student body

The University’s academic and administrative departments have the right to connect their computers and local-area networks to the University’s network provided that they agree to adhere to the University’s Uniform Wiring Policy and to the Internet-compliant network management policies coordinated by the Office of Information Technology. Departmental connections provide an additional route by which some members of the faculty, staff, and student body connect to the University’s network. Those eligible to exercise such rights of connection as are granted by a department assume responsibilities imposed by the department, which must include the responsibilities described in the first paragraph of this section as applying to those who employ centrally provided connections.

Centrally supported connections for the public

One of the reasons that the University operates gateways to the Internet and the North Carolina Information Highway is to provide mechanisms for the public to connect to the University’s network, primarily to give the public a standards-based interactive digital path into the University’s published institutional information. This means that anyone anywhere with a connection to either the Internet or the North Carolina Information Highway, whether through a commercial online service or otherwise, also has a connection to the University’s network and thereby has access to a vast collection of the University’s institutional information in a useful digital form. The University, however, has no obligation, beyond that to its faculty, staff, and students described in the preceding two paragraphs, to connect individuals and organizations to the Internet or the North Carolina Information Highway.

III. INFORMATION SERVICES AND APPLICATIONS

Information services and applications for the faculty, the staff, and the student body

Members of the faculty, staff, and student body who connect directly or through one of the University’s dial-up lines to the University’s network have the right to, and easy access to, a collection of centrally supported, standards-based network applications and services for (1) communicating with others via the Internet (using Internet-based e-mail and news groups, for example) and (2) locating, retrieving, storing, publishing, and analyzing the University’s published institutional information on the University’s network. These centrally supported standards, applications, and services are deployed to provide ease of connection and use and to comply with, and contribute to, the direction of the Internet and the North Carolina Information Highway. This maximizes the probability that any resource on these extended networks will be readily accessible through the University’s network to any member of the faculty, the staff, or the student body who is eligible to use it. It also helps to ensure that the University’s resources will be accessible, as appropriate, to other networks and computers connecting to the University’s network through the Internet or the North Carolina Information Highway. The University thus draws on the resources of the larger networking community and contributes to it.

The University’s network is a large capital investment incurring very substantial continuing operating costs. Nevertheless, the marginal costs of centrally providing a connection and basic services to any member of the faculty,
staff, and student body are currently negligible, and so the University centrally levies no individual per-use charges. Accordingly, connections and basic services are provided to the faculty, staff, and student body in a context not unlike that defining the use of University-owned telephones to make telephone calls within the Chapel Hill Exchange area. Basic connections and services (1) are reasonably convenient and free to responsible members of the University community, and (2) are the portals to extended services, some of which incur individual per-use charges that are paid in a variety of ways.

Information services and applications for the public

The University also grants access rights on an as-is basis to its published institutional information and to selected software resources on its network to anyone anywhere with a connection to the Internet or to the North Carolina Information Highway. Such information includes, but is not limited to (1) information about the University and its policies, resources, demographics, and management as maintained in institutional databases, and (2) selected academic resources in digital form, to include the catalogs of the University’s libraries in the form of the Online Public Access Catalog operated by the Triangle Research Libraries Network. To advance the University’s mission, other digital information and resources also are available on a selective basis to anyone with a connection to the University’s network, but the University has no general responsibility in this regard. Access to information may be constrained, for example, by commercial licensing agreements. At the other extreme, free access to information may derive from cooperative arrangements between University departments and federal and state agencies. For instance, all official documents of the Clinton administration currently are online on the University’s network as a service to the global Internet community.

The University is aggressive in publishing its institutional information and other important information resources on its network for public access. Within the terms of software licenses and other resource constraints, the University also chooses to provide access to standards-based software tools that allow inquirers to locate, display, capture, and analyze published information. In designing and publishing its digital databases, the University makes every effort to comply with the law by protecting that information which by law is protected from disclosure and by disclosing that information which by law is public. In designing data formats and applications for publishing information online in a way that optimizes the usefulness of vast stores of raw digital data, the University makes no distinction between access by the public and access by members of the faculty, staff, and student body. The design philosophy seeks to provide any inquirer with relational flexibility in aggregating data and spotting trends but, through aggregation, to protect data elements that by reasonable management and community standards would be considered private—an individual’s salary, for example.

Any University-owned computer or local-area network connected to the University’s network provides a means to share mission-related digital information or resources with the public through the gateways to the Internet and the North Carolina Information Highway. The University assumes the responsibility for ensuring that such information is published in digital form by requiring its departments to assume responsibility for the institutional information that they generate. As the steward for institutional data that it collects, a department must comply with the University-wide standards and implementation guidelines overseen by the Information Resources Coordinating Council.

IV. PRIVACY, CONFIDENTIALITY, AND FREEDOM OF EXPRESSION

The University expects members of the faculty, staff, and student body to become familiar with individual and institutional responsibilities to protect confidential information and with the risks to privacy inherent in digital technologies. Good citizenship implies familiarity with the possible states of dynamic digital streams sent or received via the University’s network and static digital files stored on University property. For example, digital streams constituting e-mail communications might traverse public and private networks over which the University has no authority, and they might be broadcast or duplicated by a recipient without the permission of the sender. Just as with printed documents, the University owns and archives digital communications having the official sanction of a department. Otherwise, the University considers static digital files and dynamic digital streams to be private and does not disclose their contents, except as required by contractual obligation or state or federal law. To ensure reliability, however, the University reserves the right to employ backup, storage, and recovery systems throughout its digital infrastructure.

University departments that serve as stewards of an information resource available to the University community at no charge and without contractual obligations have the right, within the limits of prevailing laws, to store the details of any inquiry to, or use of, the information resource. This right can be practiced, however, only if the inquirer is notified at the time of connection of the intent to store any identifying details of the would-be transaction and is given the option to disconnect immediately with confidentiality preserved.

The University respects encryption rights on its network and may itself encrypt information and transactions when secure confidentiality is an obligation.

All existing guarantees of freedom of expression extend to those who use the University’s network as a medium of expression.
Restructuring a Large IT Organization: Theory, Model, Process, and Initial Results

by Mark Luker, Jack Duwe, and Tad Pinkerton

Three years ago the University of Wisconsin–Madison merged three existing but disparate technology-related units into a single division, reporting to a chief information officer. The new Division of Information Technology (DoIT) faced many challenges, beginning with the need to restructure the components of the old units into a cohesive new organization. This article describes that restructuring process, based on the structural cybernetics theory of N. Dean Meyer, who was employed as a consultant in the process.

In 1992, the University of Wisconsin–Madison completed the formation of a Division of Information Technology (DoIT) from three existing units that reported to different administrators: Administrative Data Processing (ADP), Madison Academic Computing Center (MACC), and Telecommunications. In addition to continuing the work of these units, DoIT was charged with providing campuswide information technology (IT) planning, expanding student access to information technology, offering better access to institutional data, and merging services to avoid unnecessary duplication. DoIT has about 400 permanent staff plus 200 student and limited-term employees.

The transformation of DoIT into a cohesive unit began with the preparation of a strategic plan, based on a method detailed by John M. Bryson in Strategic Planning for Public and Nonprofit Organizations.1 Top- and middle-level managers created a plan, published in March 1993, that identified the most important issues for the division, in priority order. The top three issues were to improve information technology services to students, facilitate access to University information, and establish a technology architecture.

Mark Luker is CIO for the Division of Information Technology at the University of Wisconsin–Madison. He is responsible for strategic planning, leadership, and budgeting for campus information technologies, including academic and administrative computing; data, video, and voice networking; and printing. He advises campus administration on matters of information and information technology.

Jack Duwe is the Deputy Chief Information Officer for Operations for the Division of Information Technology at the University of Wisconsin–Madison. With the CIO, he is responsible for the internal affairs of the division. Previously, he was the Director of Administrative Data Processing for seventeen years and held other administrative posts at the University for the preceding twelve years.

Tad Pinkerton is a Professor of Computer Sciences at the University of Wisconsin–Madison, where he has been on the faculty since 1969. He is Deputy Chief Information Officer for Outreach for the Division of Information Technology, responsible for assisting the CIO in activities external to the division. Previously, he was Director of Academic Computing and Director of the Office of Information Technology.

1 John M. Bryson, Strategic Planning for Public and Nonprofit Organizations (San Francisco: Jossey-Bass, 1988).
to students, facilitate access to University information, and establish a technology architecture.

Making rapid progress on many of these issues, such as improving services to students, required reorganization. (The existing three organizations each provided some IT services to students, but there were overlaps and gaps in these services.) The need for reorganization and integration of campus network services was specifically recognized in the plan. (Both academic and administrative computing units, for example, provided LAN services.)

Some specific goals were developed for the reorganization, such as reducing confusion among users, sharpening focus on customer service and quality, unifying the organization with one mission and one culture, and creating a high performance organization strategically aligned to meet the information technology needs of the future.

As strategic planning neared completion, DoIT also began to implement Total Quality Management. This served as a starting point for merging the cultures of ADP, MACC, and Telecommunications. The first process improvement teams were specifically designed to be cross-functional and include staff from the three organizations.

In the spring of 1993, DoIT adopted a theory, model, and process for designing information technology organizations described by Dean Meyer in his manual, Structural Cybernetics. DoIT felt that Meyer’s methodology was well suited to a university environment (and specifically to UW–Madison) and needed little adaptation. DoIT hired Meyer as a consultant to assist with several steps in the process. His experience in reorganizing other IT departments was invaluable and saved much time.

Theory

Meyer’s philosophy for transforming an organization involves more than just moving to a new structure on the organization chart. It includes five dimensions:

- organizational structure—clear boundaries for each unit;
- internal economy—the systems of budgeting, priority setting, charges, and tracking;
- culture and values—including customer focus and teamwork;
- feedback loops—rewards to encourage behavior towards mission; and
- methods and procedures—standard processes used throughout the organization for conducting its business.

We saw the need to address all of these dimensions and followed the consultant’s recommendation to begin with organizational structure.

The design of the restructured DoIT is based on a set of organizational principles that are detailed in Structural Cybernetics, some of the most important of which are:

- Each individual has a single functional responsibility. This is based on the principle that one person cannot be expert in more than one thing at a time. A person is more effective being an expert in one technology, for example, than being mediocre in a number of technologies.
- Only one unit offers a given product or service; that is, there is no internal competition for services. Within DoIT, for example, the structure eliminates having several groups provide LAN design.
- Units responsible for daily operations are clearly separate from those working with new technologies. Introducing innovation and maintaining reliable operations should be in different units.

Model

The new DoIT organizational groups are of four major types, based on the Structural Cybernetics theory.

Technologists—These units build inventive, state-of-the-art technologies and write articles on leading-edge software or systems design. There are two types of technologists: application technologists, who are responsible for data-specific systems, and base technologists, who are specialists in component technologies and off-the-shelf tools.

Service Bureaus—These units are dedicated to providing reliable and efficient operational services. There are two types of service bureaus: machine-based service bureaus own and operate shared-use systems and sell services that are primarily produced by machines, and people-based service bureaus provide services produced by people rather than machines, such as helpdesk support and training.

Architect—The architecture unit is responsible for assembling key decision-makers on campus and defining an information architecture for the campus. This small unit will build a campus consensus for standards, guidelines, and statements of direction that constrain the design of systems for the purpose of eventual integration.

Consultants—the consultants are responsible for understanding the client’s business and applying methods of business analysis. There are strategic consultants, who serve key opinion-leaders on campus, and retail consultants, who are available to anyone on campus.

“The first process improvement teams were specifically designed to be cross-functional and include staff from the three organizations.”

Dean Meyer calls organizational units that provide more than one of the above functions "rainbows." An example is a unit responsible for design, installation, and day-to-day administration of a LAN. This creates a conflict between innovation and reliable, ongoing operation. "Rainbows" should be limited to the highest level of the organization; lowest level units should be only one of the above types. (This may not be possible in very small organizations, however.)

While an organization following Meyer's theory uses the building blocks described above, the particular design is created by its own staff and is unique to its needs and circumstances. Following the outline of a process Meyer describes, DoIT designed its own organization.

**Process**

The reorganization began in earnest in the summer of 1993. Several ground rules were established to encourage a healthy transformation:

- No reduction in staff would result from the restructuring.
- Salary reductions would be avoided whenever possible.
- The resulting organizational structure would be "flatter."
- The design would involve the active participation of existing staff.
- Those leading the design of the new organization would work for the best structure for DoIT, not for their personal interests.

The new DoIT was designed from the top down. The chief information officer (CIO) and the directors and assistant/associate directors from the original three organizations designed the first level (Tier 1). The second level (Tier 2) was roughed out by the new Tier 1 leaders chosen by the CIO, and reactions were requested from a larger group of supervisors and high-level technical staff.

Each design step was preceded by a training session with the consultant. Once a design was created for a given organizational level, leaders for the units in that level were selected. After two management levels were thus designed and staffed, remaining staff were assigned to the new units according to where most of their existing job functions had been assigned.

While the leaders of the new organization were spending many hours behind closed doors designing the new organization, there was regular communication with DoIT staff. The CIO presented to staff an overview of the organizational design principles and the design process. Updates about the design and the schedule of events were distributed by electronic mail. Staff were encouraged to submit questions either directly to DoIT leaders and the personnel department or anonymously via an electronic mail address. Answers were published on the division's internal Gopher server.

In February of 1994, DoIT announced its new organization to all its staff. This all-day event served as an initial orientation for Tier 3, since the new organization has only two levels of management below the CIO office. Presentations were made by the chancellor, the CIO, Dean Meyer, and many of the new Tier 1 and Tier 2 managers.

"Announcement Day" was only the beginning of the reorganization process, and there was much more to do immediately after this event. For example, the strategic consultants spent over a month visiting all key clients to explain the new organization in person.

### The new organization

Tier 1 of the new organization contains the units described below (and shown in Figure 1); Tier 2 units are listed in Table 1.

**Applications Technology**—Applications Technology acquires, develops, and maintains data-specific application systems. This entails analyzing, designing, and building inventive, state-of-the-art systems; tracking emerging technologies; researching the abilities and uses of new products; writing articles on leading-edge products or systems design; and planning for future systems.

**Architecture**—The Architecture unit works with the University community to build a consensus on campus standards and guidelines for the design of hardware and software systems. Such systems will then (at least eventually) be able to interoperate effectively, and the University can share training and experience. Agreed-upon standards and guidelines are documented, publicized, and periodically reviewed.

**Systems Engineering**—The Systems Engineering unit (base technology) acquires, develops, and maintains systems in the platforms, operating systems, database management systems, and networks areas. This entails analyzing, designing, and building inventive, state-of-the-art technologies/systems; tracking emerging technologies; researching the abilities and uses of new products; writing articles on leading-edge products or systems design; and planning for future systems.
Tools and Methods—The Tools and Methods unit (base technology) acquires, develops, and maintains systems in the end-user computing, instructional technology, software engineering, and discipline areas. This entails analyzing, designing, and building inventive, state-of-the-art technologies/systems; tracking emerging technologies; researching the abilities and uses of new products; writing articles on leading-edge products or systems design; and planning for future systems.

Production Services—Production Services (a machine-based service bureau) owns and operates shared-use systems and provides a stable and secure environment to meet the needs of the customer. Shared-use systems include the computer operations center, telecommunications network operations, applications processing, printing, and computer labs. This unit also provides facilities management for customers who own their equipment.

Organizational Effectiveness—The Organizational Effectiveness unit (a people-based service bureau) helps DoIT staff improve customer satisfaction and provide effective management of projects and daily operations. It helps promote staff awareness of organizational culture, structure, values, and work methods.

Support Services—Support Services (a people-based service bureau) provides cost-effective support for installation and operation of information technology products and systems. It also helps clients and customers to use, develop, and deliver information technology products and systems. Examples include help desk operations, telephone operator services and voice mail, delivery services, installation and repair services, training, technical writing, and graphic arts.

Sales Consulting—Sales Consulting (retail consultancy) provides on-demand needs assessments for most clients, a showroom for DoIT products and solutions, a sales facility where customers can purchase DoIT products, a newsletter and product information for customers, market research, and promotion services.

Strategic Consulting—Strategic consultants maintain close ties with campus opinion leaders. They help clients identify strategic IT solutions and act as facilitators between the client and other parts of DoIT. Consultants are knowledgeable about DoIT products and services and the client’s business, and they alert clients to emerging IT solutions.

Administration—Administration (a people-based service bureau) provides administrative, billing, financial, human resources, and purchasing services for DoIT units in support of their missions. Administration provides the means for the individual units to have integrated business processes while functioning within state and University rules, regulations, and guidelines.

Deputy CIO/Outreach—The Deputy CIO/Outreach shares the duties of the CIO by representing him outside the division. This includes providing campus leadership in in-
The new culture is unlike any of the cultures of the three predecessor organizations; it is based on customer focus, entrepreneurial spirit, and teamwork.

A new organizational culture

An important aspect of our new organization is its culture, which is based on a formal set of principles described in a five-page document. The starting point for this document was a list of ideas from the consultant, and the end point was a consensus among the Tier 1 and 2 managers on what to include and how to say it. The new culture is unlike any of the cultures of the three predecessor organizations; it is based on customer focus, entrepreneurial spirit, and teamwork.

Internal economy

In the new DoIT, each group is empowered to run a business within our business, which includes breaking even on their profit and loss statements and billing one another for subcontracted work. Clients who formerly received free development services are being converted to “labor shadow budgets” in which they are allocated a specific amount of money that can be spent on DoIT labor for any of their projects. Strategic consultants work with them to help set

Table 1: The new DoIT structure—Tier 1 and Tier 2

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<th>Architecture</th>
<th>Strategic Consulting</th>
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<td>Associate Architect</td>
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<td>Assistant Architect</td>
<td>Enterprise Support</td>
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<td>Institutional Support</td>
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<td>Applications Technology</td>
<td>Production Services</td>
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<td>Academic Support Applications</td>
<td>Applications Processing</td>
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<td>Business Finance Applications</td>
<td>End User Computing</td>
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<td>Business Operation Applications</td>
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<td>Human Resource Applications</td>
<td>Printing and Copying</td>
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<td>Library &amp; Information Retrieval</td>
<td>System Operations</td>
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<td>Student Academic Applications</td>
<td>Network Operations</td>
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<td>Student Finance Applications</td>
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<td>Systems Engineering</td>
<td>Support Services</td>
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<td>Data Resource Management Technology</td>
<td>Directory Assistance and Messaging</td>
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<td>Network Engineering Technology</td>
<td>Distribution</td>
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<td>Network Systems Technology</td>
<td>Help Desk</td>
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<tr>
<td>Platform &amp; Operating Systems Technology</td>
<td>Installation and Repair</td>
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<td>Systems Management Technology</td>
<td>Professional &amp; Technical Education</td>
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<td>Tools and Methods</td>
<td>Publishing</td>
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<td>Instructional Technology</td>
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<td>Software Development Technology</td>
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<td>Sales Consulting</td>
<td>Organizational Effectiveness</td>
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<td>Marketing Communications</td>
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<td>Showroom &amp; Solutions</td>
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priorities, and the normal University budget process mediates their competing needs for additional resources.

The human dimension

If there was one aspect of reorganization where we were most unprepared, it was that of staff communications. From the date of our first meeting with the consultant, at least some staff assumed that we were talking about their specific jobs, and were very anxious for information. Our earliest communications were vague and sketchy, exacerbating the problem. What worked best in the end was to provide very detailed information about the “what” (agenda, any concrete timetable, etc.) but not the “how” (details of the process and results) or the “who.”

Some time after Announcement Day, we discovered material on change management, such as William Bridges’ Managing Transitions,4 which greatly helped us understand what we had been experiencing. We offered some change education and stress management classes to staff, but books like Managing Transitions offer more detailed advice and more comprehensively define phases of change.

One of the more difficult ideas for our staff to accept was the idea of becoming more specialized—this seemed to them to run counter to good business practice. Shouldn’t people be able to step into others’ jobs, and be responsible for a full range of duties? Meyer’s point is that people should have complete responsibility in a specific area in order to excel in it, and others should have similar opportunities to become “world class” in other areas. A project is completed by teamwork, as these experts collaborate to deliver an integrated product. Many of our staff were not accustomed to depending heavily on the work of other team members—previous cultures had valued individual contributions more highly.

The new culture was defined rather quickly by the Tier 1 and Tier 2 managers, and discussed with the staff in a half-day training session following Announcement Day. More effort was needed for staff to accept these significant changes, which we now depend on to achieve successful day-to-day interactions.

Transforming an organization, and doing it well, is a lengthy process. It is more than merely changing the organization chart. Experts suggest that three to five years is needed if the change involves a culture shift. To be effective, the reorganization must define the roles of each group and how these groups interrelate. It is also important to keep explaining and reinforcing the new organizational culture to support the new organizational structure.

Table 2: Examples of cultural principles

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<tr>
<td>1.</td>
<td>The purpose of DoIT is to serve its customers, not control them.</td>
</tr>
<tr>
<td>2.</td>
<td>Everyone is responsible for his or her own quality. There are no inspectors and no other group to make up for one’s lack of quality.</td>
</tr>
<tr>
<td>3.</td>
<td>DoIT is a “business within a business.” Similarly, each department and group within DoIT is its own “business within a business,” and each manager is evaluated as an independent business person. This spirit of entrepreneurship will carry through as many levels of the organization as possible.</td>
</tr>
<tr>
<td>4.</td>
<td>Decision-making authority will be granted to match responsibilities.</td>
</tr>
<tr>
<td>5.</td>
<td>We form clear contracts with our customers and suppliers. Contracts are not long or legalistic and, for simple projects, they may be oral. They are, however, clear agreements between customers and suppliers.</td>
</tr>
<tr>
<td>6.</td>
<td>Customers decide on the degree of “technological and business” risk they wish to take in their projects.</td>
</tr>
<tr>
<td>7.</td>
<td>Performance will be measured against clearly stated, agreed-upon objectives. Recognition will be based on performance. This includes teamwork as well as individual performance.</td>
</tr>
<tr>
<td>8.</td>
<td>When clients choose to do work themselves, DoIT will support and mentor them whenever possible.</td>
</tr>
</tbody>
</table>

The consultant’s business lexicon (entrepreneur, business-within-a-business) was not immediately and universally accepted by our staff. In part, this reflected their background and university experience. It is more difficult to operate in full accordance with a business model, since the public sector reward system and other aspects of the higher education environment operate differently. After education and exposure, however, this language seems to work well to communicate about the organization.

Other lessons learned

Using an organizational theory and model proved to be very worthwhile. The theory gave designers common goals and terminology. The model provided a focus and allowed the designers to look beyond personal interest and view the organization as a whole. Hiring a knowledgeable consultant who gave us a process for reorganization was also very helpful.

During organizational design, all Tier 1 and Tier 2 staff were trained in the theory and the model. Although achieving good understanding of the model took time, this understanding was necessary to design the domain for each group.

Once we worked out a process for doing so, rostering the large majority of DoIT staff into the

(continued on page 34)

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**UNIVERSITY OF IDAHO**

Created in 1889 by a statute of the 15th territorial legislature, the University of Idaho is a publicly supported, comprehensive, land-grant institution with a full-time student enrollment of 11,000, located primarily on an 800-acre campus in Moscow, Idaho. Designated as the state’s primary institution for graduate and research education, UI offers a wide range of graduate and undergraduate programs through ten colleges.

In addition to its main campus, the University has resident instruction centers in Coeur d’Alene, Boise, Twin Falls, and Idaho Falls, and operates facilities in ten other locations throughout the state, one in the heart of the Idaho wilderness. Agricultural extension service is provided through four district offices and by county extension agents in forty-two of the state’s forty-four counties.

**Why invest in information technology?**

Given Idaho’s predominantly rural nature, to meet the educational needs of citizens the University has developed a delivery network that reaches into every corner of the state. Thus there is a clear recognition of the value of investing in information technology to more effectively and efficiently accomplish UI’s mission as a land-grant institution.

The University employs a ten-year strategic planning cycle to address institution-wide programmatic concerns. Provost John Yost notes the significant difference between the plan of the early eighties and the one recently completed, mainly because of the potential of information technology. Like many other state-supported institutions, UI is challenged economically as a result of decreasing support from the state legislature. With resources severely constrained, says Yost, “We’re going to have to do fewer things better, using the most up-to-date information technology. We have the opportunity to provide leadership within the state by being more and more of a collaborative university—with the legislature, with the private sector, and with the K-12 community.”

According to George Simmons, vice provost for academic affairs, “One challenge we have is to provide the same network access we enjoy on the Moscow campus to the statewide University infrastructure. Once that is in place, we can begin to think of the network as a huge body of knowledge, connections, and interfaces for the entire populace of Idaho.”

Yost adds: “The innovative educational technologies will cause us to raise questions about whether we need to teach a course in a semester or whether we can do it at a self-paced rate, and that will lead to a change in learning productivity. It will be controversial, but we will raise the question about a three-year baccalaureate in some areas. There are many courses that do not need to be taught in the lecture mode or over a full semester. We will ask the faculty to consider the importance of communicating the excitement of discovery, the methods of inquiry, and the modes of thought that give students a flexible handle on an accelerating world with tremendous career paths, rather than transmitting their specialization in the traditional way.”

While information technology holds promise to increase learning productivity and helps span the barriers of distance, investment in this resource needs to be approached thoughtfully. Vice President for Finance and Administration Jerry Wallace says, “We have enough money to do whatever we want, but not everything we want. We need to be very selective in those initiatives that we take on, and do them in a systematic fashion that builds a foundation for where we are trying to go. Effective planning is critical.”

**Planning for information resources**

At UI, central information services are delivered through three organizations: Administrative and Academic Computing Services, the Division of Instructional Media Services (DIMS), and Library Services. Rather than create a

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*Photos by UI Photo Services*

Top: John Yost, Provost; Jerry Wallace, Vice President for Finance and Administration. Bottom: Fritz Hibbler, Director of Academic and Administrative Computing Services; Harvey Hughett, Director, DIMS; Ron Force, Dean of Library Services
A single vice presidency to oversee these areas, President Elisabeth Zinser established and chairs the President’s Ad Hoc Information Technology Cabinet to formulate policy related to planning, developing, and operating information technologies and to provide a coherent, unified vision of institutional needs and priorities for IT. The Cabinet, which is made up of key vice presidents, college deans and chairs, and computing and instructional media staff, meets quarterly with the various subcommittees it has charged to explore specific IT-related topics.

Input from faculty, staff, and students about computing is provided through the University Computing Advisory Committee, which works closely with Computing Services. It was this committee, in conjunction with Computing Services, that successfully proposed a student computing fee in the fall of 1992 to facilitate integrating computing into the curricula throughout the University.

Students have access to “open” labs at several locations on campus and serve on advisory committees to help plan the future of computing at the University of Idaho.

Partnership strategies leverage resources

The University has used several creative partnerships to leverage its decreasing resources, two of which are in the telecommunications and networking area. Until last year, UI’s phone services were provided through an aging PBX system. An analysis of the costs of replacing the PBX versus outsourcing UI phone services showed it would be more beneficial to contract for Centrex services, especially when the vendor (GTE) guaranteed that the revenue stream UI had been enjoying from phone services would not decrease with the new arrangement. The contract was signed in March of last year, and in just five months GTE had completely installed an AT&T 5ESS central office switch, which now provides the campus (as well as local communities) with analog as well as ISDN and other digital services.

At about the same time, UI concluded that it lacked the telecommunications networking infrastructure to serve its land-grant mission in the more sophisticated networked information environment of the future. (Although sixteen main buildings are connected with optical fiber, these installations serve only about 1/6 of the campus.) Clearly, UI had to invest in upgrading this infrastructure, but with limited funds and no growth in staff positions sufficient to take on this formidable effort, how could this be accomplished?

UI’s solution to this dilemma was to enter into an outsourcing arrangement for end-to-end network services. In Jerry Wallace’s view, the networking industry is creating a standard transport (ATM) for a standard physical layer which will allow computer networks to assume a “utility” status. Thus it made sense to seek a partnership with a private company that would be willing to assume the responsibility for installing, managing, maintaining, and adapting (as emerging technology warrants) the University’s network infrastructure. Wallace sums it up thus: “We simply can’t afford to own our own infrastructure; we haven’t the resources to continually keep up with advances in networking technology. We decided that it would be better to partner with a corporation that will be one of the public utility providers of such infrastructure in the future.”

In February of this year, UI requested proposals for a “partnership to deliver telecommunications network services.” The RFP document outlined the parameters of the envisioned partnership, in-
The Information Age and the Age of the Learner are converging, and not any time too soon. Our society’s need for enlightened, literate, and productive citizens is more poignant than ever. To this end the University of Idaho, like other land grant universities, is a ‘tale of two worlds.’ We offer a residential living-learning community on campus and concurrently carry our teaching and learning resources to the ‘living rooms’ of individuals, families, businesses, and education centers at great distances.

The extension to ‘remote’ living-learning settings of more than a century of experience in teaching, discovery, and productive application is made possible by the explosion of new telecommunication technologies. The UI is incorporating these new technologies into its portfolio of essential tools for delivering quality, accessible, and affordable educational services. I applaud the innovative partnerships between the visionaries and technicians who produce these tools of hope for continuous learning, as well as the creative educators and students who use them.

Cladding respective partner responsibilities, instructions for preparing proposals, and technical specifications. In late April, the University entered into negotiations with GTE as a network partner, with the expectation that the campus will be fully wired (including classrooms, faculty offices, residence halls, and labs) in twelve months.

Quality philosophy is key to good management

The management philosophy that Wallace and Director of Computing Services Fritz Hibbler have introduced in their organizations is based on a quality orientation, team training, and results-oriented job descriptions. Staff in Finance and Administration, including Computing Services, receive team training. This training has helped them to understand what empowerment really means and how to work effectively in a team environment.

Every six months, individuals in Computing Services create job descriptions based on expected outcomes, including allocating percent of their time to each of those outcomes. The latter are based on objectives and tasks identified as part of their unit’s annual “action plans.” This approach truly empowers the individual to be responsible for attaining the objectives, and allows the needed flexibility to undertake new activities as needed, even at the management level. For example, rather than heading organizational “units” within Computing Services, Hibbler describes his three associate directors as sharing cross-unit responsibility for specified, but fluid, outcomes: “We strive to be a dynamic organization, responding to the need to change and be innovative, and to add value in the process.”

Wallace’s organization has identified many “customers” within and external to the University whose needs must be served. But in the end, he says, it all comes down to serving the student: “If you do a good job with students, you generally serve the rest of the customers. Our philosophy at UI is that no student should ever have to stand in line for anything, ever; no student should ever leave this university for lack of service.”

Restructuring business systems

As a result of these management approaches, there has been an effective reorganization of business systems, and an ongoing process has been established to continually seek improvements to streamline administration.

Three years ago, UI realized its homegrown COBOL-based administrative systems were a stumbling block to providing the kind of service today’s students expect, nor could these systems enable interdepartmental information sharing or ready access to information for decision-making. An administrative computing committee was formed and charged with identifying administrative computing needs and recommending solutions. After an intensive study, in the spring of 1993 the committee established a strategic direction that included

UNIX-based, multiprocesssing Sequent computer systems, the Oracle relational database, and the complete suite of administrative (Banner) applications from SCT.

A three-year strategic plan for computing presented to the Deans’ Council proposed that the funding necessary to support the administrative upgrade ($3 million in upfront costs) be derived from an administrative computing reserve, as well as from General Education contingency reserve funds and increased funds for computer services, to be spread over the next three years.

To date, the University has successfully completed the installation of the alumni, student admissions, and finance systems, with human resources and payroll currently under way and the other student modules (including financial aid) scheduled for later this year. The implementation of a data warehouse with report writer tools has made a big difference in raising the level of understanding of the value of the new systems, and their potential to change University business processes. That potential, however, will not be fully realized until the networking infrastructure is in place.

Good communications throughout the implementation of the Banner products has been key to success. One of the ways this has been accomplished is through a page on UI’s World Wide Web server, called Banner Bits. The use of teamwork techniques has also facilitated the systems implementation.

Delivering central information services

When Hibbler joined UI three years ago, a substantial reorganization was undertaken to make Computing Services more responsive to the support needs of faculty, staff, and students.

Customers are now supported through user education and consulting services, a Help Desk (including the On-Site Service Group), and a Partners Program. The latter is an informal network of interested computer support personnel throughout the University who provide ideas and information about their departments’ needs to computing services staff and who keep their departments informed of new computer services and activities.

Support provided by the Instructional Media Services organization, under the direction of Harvey Hughett, includes not
only conventional classroom audio-visual services for faculty teaching and learning, but also multimedia services, photography, printing services, publication design, photocopying, instructional TV, and maintenance. According to Hughett, to enable the use of multimedia in the classroom it will be necessary to equip classrooms with large-screen video projection, large-screen data projection, CD-ROM, and videodisc capabilities, as well as Internet access.

DIMS collaborates with the Office of Faculty Development to offer numerous classes where professors can learn about a variety of technologies, from connecting to the Internet to using software to teach. DIMS also administers a mini-grant program offered through the provost’s office that enables faculty awarded these grants to design and develop new approaches to teaching.

In addition to traditional library services, the University Library operates an integrated online information system from CARL Systems, Inc. through its membership in the Inland Northwest Automated Library Network (INLAN), a consortium of four regional higher education institutions. Over 200 cataloged CD-ROMs in the library collection are available through a local area network.

Dean of Library Services Ron Force recognizes the rapidly changing role of academic libraries as the digital medium gains in popularity for publications in many fields. The Internet offers many challenges as well as opportunities to partner with campus computing and instructional media services. Three areas of collaboration include bringing order to UI’s Gopher menuing system, publishing on the Internet, and training faculty and students in the skills they need to navigate the Net. In the area of electronic publishing, the library is experimenting firsthand with an online publication, the Electronic Green Journal.

Increasingly, the University’s distance education needs are being supported through the efforts of the College of Engineering Outreach program, under the direction of Barry Willis. Initiated ten years ago, Engineering Outreach is a charter member of the National Technological University (NTU) Consortium. The program provides off-campus, distance-delivered graduate degree programs in eight technical disciplines. Delivery is by videotape as well as live courses offered by satellite and microwave. Recently Engineering installed a compressed video system between the Moscow campus and Boise, running on a T1 line, to provide more interaction between faculty and students at the two sites. The T1 setup has provided a model for other programs that are now beginning to use the technology effectively.

**Transforming teaching and learning**

Dale Gentry, dean of the College of Education, lauds the support of the University’s central information services organizations. In a climate of increasing chargeback for such services, their dedication to no- or low-cost services has helped promote the use of information technology to improve the teaching and learning process.

In spite of shrinking funds in other areas, the state of Idaho has shown support for the use of information technology in education by allocating resources to colleges of education for two purposes: (1) to prepare undergraduates in education to use technology in the classroom, and (2) to enable the colleges to be a resource to K-12 school districts as they implement technology.

UI’s College of Education is working toward developing classrooms and labs that will allow a transition from the mode of teacher-as-presenter to one of teacher-as-interactor and students-as-teams-of-learners. One of the best examples of this approach is the Thomas O. Bell New Century Classroom (see sidebar below), funded by the provost’s office and the College of Education.

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**Thomas O. Bell New Century Classroom**

Located at the University of Idaho’s Coeur d’Alene Center on the North Idaho College campus, the New Century Classroom is a modern showcase of technology, curricula, and pedagogy for the future. Through this experimental classroom, UI offers Idaho’s K-6 teachers in-service coursework that focuses on in-depth explorations of the resources, identification of effective methodologies, and construction of lessons and/or units that integrate technology into the math/science curriculum. In-service opportunities include weekend workshops, one-day seminars, vendor presentations, field trips, and one-week courses. The University of Idaho’s Computing Services provides a T1 line between this Coeur d’Alene facility and the Moscow campus, as well as an uplink to the Internet.

Many of the documents mentioned in this article are available from the CAUSE IR Library (for information call 303-939-0310 or send e-mail to orders@cause.colorado.edu). They are also available on UI’s Gopher [gopher://gopher.uidaho.edu/](http://gopher://gopher.uidaho.edu/) and Web servers [http://www.uidaho.edu/](http://www.uidaho.edu/).
Restructuring...
(continued from page 29)

new organization was orderly. Many staff were focused on a single major function and could be readily placed with that function in the new organization. Some staff, however, were very “rainbowed” and were more difficult to place. We now realize we should have been more proactive in explaining what we were doing to facilitate this process.

Space is a critical factor. Getting needed remodeling completed in a timely fashion is a major problem, and we are only now completing the bulk of our 350+ staff office moves. Having members of a group scattered over several floors of several buildings has seriously inhibited building the necessary sense of group cohesiveness.

The internal economy and corresponding financial systems needed priority attention by Tier 1 managers immediately after Announcement Day in order to serve as an appropriate guide for staff decisions. Designing a new internal economy has been much more time-consuming than we anticipated.

We found that support tools such as a contract database, billing system, and a help desk problem-tracking system are required for the new organization, especially after merging several old organizations that were using different tools. Our lack of such tools is hindering us in completing the reorganization and in implementing the new internal economy. However, it seems impossible to begin creating them any sooner because of the necessary knowledge required of participating managers.

Staff have had misunderstandings about new processes, such as contracting, planned for the new organization. Simplification of these processes, supported by appropriate tools, would have made activities after reorganization much smoother for staff. (We responded with designs after the fact, but are still slow in getting tools in place.)

The Meyer design process focuses primarily on assigning responsibility to organizational groups (creating a complete but non-overlapping set of domains). In day-to-day work, communication must follow the shortest and easiest path, not strictly adhere to domains. We feel we provided insufficient training and reinforcement for our staff in communication processes. This, coupled with their lack of experience working in cross-functional teams, has made progress slower than we had hoped.

Designers of the new organization needed regular reinforcement on the theory and model. As new staff join the organization and DoIT adds new products and services, this reinforcement will continue to be critical. We occasionally question whether placement of a function in the new organization fits the model, for example, and reach an appropriate conclusion only after much discussion. It is important in each such case for all involved to understand the basis for the decision and the tradeoffs that were considered. It is also important to document this for future reference.

Summary

Today, DoIT is not yet the high-performance organization it is designed to be—too many of us are still learning our roles, improving our communication skills, and adopting the new culture. The internal economy and supporting administrative processes are many months from completion. However, the benefits we hoped to achieve are becoming apparent:

• We have created a strategic focus on planning driven by careful needs assessment, as our new consultant group works with key clients on a daily basis.
• These same key clients have assumed ownership and responsibility for their centrally funded IT services through the creation of a labor shadow budget.
• We now have a long-term approach for improving the organization using our Organizational Effectiveness department. This is critical to our goal of institutionalizing quality improvement and a contrast with our struggles to launch the quality program prior to reorganization.
• We have a unified approach to installation and repair of all equipment supported by DoIT.
• We are well along with consolidating five different help desks into a single unit that uses top quality tools and methods.
• We are beginning to work with clients on a consensus-based campus architecture, about which they and we are very enthusiastic.
• Through both our marketing function and Organizational Effectiveness, we are systematically gathering customer feedback to drive product selection and improvement.
• We are creating a unified catalogue of all DoIT products and services, available electronically and in our new showroom.
• Our staff is beginning to develop pride in the new, more effective, integrated organization. Though more time is needed to be all we can be, we are clearly on the right track.
Fee-based Information Services: The Promises and Pitfalls of a New Revenue Source in Higher Education

by Elizabeth A. McDaniel and Ronald H. Epp

Following the lead of other institutions of higher education seeking alternative revenue sources, the University of Hartford established a fee-based electronic information service for off-campus clients. After two years of pilot projects, market research, product identification and redesign, advertising and diverse marketing strategies, high hopes, and financial investment, Corporate Information Services was not yielding anticipated revenue. The service was suspended in May 1994. This article reviews the rationale and development of the service and the lessons learned from the project.

Customer-oriented information research and document delivery services offered by academic libraries and some independent information specialists provide businesses with up-to-date, focused information to meet their business needs. In today’s information age, many businesses, associations, and individuals understand the commercial value of competitive intelligence and information research for conducting their operations. Many academic libraries contain the publications and information technologies to access timely information crucial to managing business success.

Academic libraries can enlarge their client base by charging fees for providing services to corporate and professional users who need quick information research and document delivery, but who are not affiliated members of the academic community. Many academic libraries already provide limited information services to non-primary clientele without compensation. The value that libraries add is access (since they have purchased or leased the requisite hardware, software, and telecommunications), a user-friendly gateway, and knowledge brokers who can navigate the increasingly complex network of global information resources. Furthermore, corporate

Elizabeth A. McDaniel was formerly Associate Vice President for Academic Affairs at the University of Hartford and Professor of Special Education. In July 1995, Dr. McDaniel assumes the post of Vice President for Academic Affairs/Executive Provost at Nova Southeastern University. Her current interests include models for faculty training in the new technologies and the integration of technologies into the curriculum.

Ronald H. Epp is Director of Libraries and Learning Resources at the University of Hartford and Associate Professor of Philosophy. He recently co-edited Collection Development in College Libraries and is closely involved in the networking of electronic resources at a statewide level.
information providers promise their clients reliability, responsiveness, and individualized attention.¹

As independent institutions begin to address their over-dependence on tuition, they seek alternative revenue sources. Large research libraries across the country (e.g., Rice University, UCLA, George Washington University, and the University of Wisconsin–Madison) have led the way in establishing fee-based services. In the early 1980s, institutions offering fee-based information services established a discussion group of the Association of College & Research Libraries, called FISCAL (Fee-based Information Services for Colleges and Libraries). Its 1988 directory listed eighty-three fee-based services, and its 1992 directory listed 550. This discussion group shares policies and procedures with members and prospective members, and sponsors workshops at national library meetings on how to establish, market, and expand fee-based information services. In addition to supporting like-minded institutions and professionals, it advocates a new way of thinking about information services in today’s technological and information-based business environments.

The evolution of Hartford’s project
Like many independent institutions of higher education, the University of Hartford—a comprehensive independent institution located in West Hartford, Connecticut—has experienced the financial impact of cyclical full-time undergraduate enrollment. One response to this problem might be to develop alternative revenue sources that are more consistent and predictable. These might include an array of professional services and facilities which could be marketed to the business community. Since some states have established statutes that ban fee-based services in state-funded institutions, private institutions might have a competitive advantage in marketing such services.²

The infrastructure that eventually enabled the establishment of fee-based electronic information services at Hartford was put into place over a seven-year period beginning in 1986.³ The initial step was installing a fiber-optic network connecting most of the academic and administration buildings, including the new library building then under construction. To provide access to other library and off-campus information databases, Computer Services provided access to the Internet in 1989; BITNET had been available at the University since 1985.

In 1989, the University completed a major renovation of the main library complex, combining all library branches except the music library.

In 1990, the computer services department and library staff collaborated on an automation project that led to the acquisition of an online public access catalogue (OPAC) along with software that automated the major operating functions of the library. The library system, along with the periodicals catalogue developed by Computer Services, immediately paid dividends, as library circulation increased by 20 percent in the first year following the automation project.

During this period, library and computer services staff began an evaluation of how best to make this information database directly available to students and faculty. Because a few fee-based online services such as DIALOG were only accessible with the help of research librarians, they were infrequently used. Individual CD-ROM databases mounted on personal computers were effective, but this configuration limited access to one patron at a time. In 1993 the CD-ROMs were networked through the OPAC, and usage of these seventeen products proved a resounding success. To facilitate access to campus information, a campuswide information system (called HAWKnet) was developed by Computer Services and installed in 1992.

Phase one: initiating the service
In January 1992, personnel in the offices of Academic Affairs and Computer Services began conversations with the then University Librarian about a project to market online information. Computer Services took the lead, with the libraries and Academic Affairs lending support. During a feasibility study early that year, the University engaged a consultant to assess potential markets.

Several potential products were outlined in a questionnaire sent to over 400 area business and municipal organizations. The questionnaires were followed by a number of focus group meetings where the potential products were discussed in detail. The products being considered were:

- Access to the University’s campus network and libraries
- Access to a commercial database vendor with 750 databases
- Research and document delivery
- Training courses in information searching and retrieval
- Access to faculty expertise
- Access to reports on research being conducted at the University
- Library automation consulting and assistance

While there was some appeal among the focus group members for each of the above, it was determined that the University would be best served to concentrate on a few of these items for the commercial market.
Computer Services installed a network connection to a database vendor in Philadelphia and additional telephone lines, including a 1-800 number. In the fall of 1992, the University decided to move forward with a four-month pilot of the fee-based information project. A budget for the pilot service, called The Corporate Librarian, was developed to support twenty hours per week of the consultant’s time for marketing and training member clients on the uses of the online service; twenty hours per week of additional information research staff support; and secretarial/budget support provided through Academic Affairs.

In a business climate where local corporate libraries were downsizing or closing, focus groups and corporate librarians predicted that corporations would be interested in purchasing memberships to our information services to supplement research and document delivery services of overworked corporate or public libraries. It was assumed that individual managers and executives of corporations wished to conduct online research themselves from their office or home computers through a commercial vendor providing access to 750 databases. In addition to annual membership fees, an ongoing source of revenue was to be a percentage of the online database fees negotiated with the vendor.

Both kinds of corporate customers were identified and, as the primary marketing strategy, the consultant sent letters to—and/or made telephone contacts with—local corporations. The consultant conducted demonstrations of the online capabilities of the system at various locations in the area, including some corporations. Sales targets were established for the number of corporate members to be enrolled by March 1, 1993.

Although the original market for The Corporate Librarian was envisioned to be corporations enrolled with annual memberships that would entitle users to access databases from their office computers, it soon became clear that more flexible usage was desired. The target of twelve corporate memberships was not met, but as word of mouth about the services spread, inquiries increased about information research on an ad hoc basis. The next phase of the project began with the appointment of a full-time director and a change of name to Corporate Information Services (CIS). Marketing continued to offer memberships to businesses, but added information research and document delivery to a wider range of occasional customers, believing that they might be recruited as members at a later date.

Phase two: formalizing the service

During the next twelve months, the University attempted to support and institutionalize CIS. The project began with the installation of telephone lines and a network connection to a database vendor. Computer Services provided office space, hardware and software, and shared administrative services, as well as significant encouragement and technical support. The reporting line of the new director moved from the associate vice president for academic affairs to the director of libraries and learning resources. This change was designed to promote closer coordination of personnel and information resources as well as to integrate fee-based information services as an emerging library function. The full-time CIS director was joined by a half-time information research assistant.

A few months into phase two, the CIS office moved to the main library, where staff could share a facsimile machine with Interlibrary Services; holdings of the library could be accessed more directly, and CIS staff could work more collaboratively with library personnel. Library reference staff provided assistance in identifying and locating the society publications, industry standards, and highly specialized journals that were most in demand by CIS clients. Many resource needs could not be met by our collections and had to be requested from other academic institutions and commercial providers.

During this phase, a direct-mail marketing campaign was conducted, including letters and brochures describing the new service that were mailed to more than 400 local companies and individuals. At the same time an advertising campaign in the regional daily newspaper and specialized business periodicals was designed to attract public attention. In response to inquiries, the staff distributed printed information, answered specific questions, and conducted personal demonstrations of the online research capabilities. Three-quarters of the way through phase two, a marketing consultant was hired to review the marketing activities and advise new strategies. He suggested greater segmentation of the market, including packaging of services to meet particular types of businesses, and more face-to-face contact with businesses, all intensive activities which would require a full-time marketing specialist.

Demise of the service

One year after phase two of the project was initiated, the original expectations for both the number of customers and volume of business had not been realized. While experts in fee-based
Services at other institutions advise that it takes at least one year to establish the infrastructure for providing services, to market the service, and to establish the client base, we had not generated a sufficient level of demand in that timeframe. We compared CIS against the average fee-based service which works with 100–125 clients each month and delivers about a thousand documents to those clients.4

The University made a significant financial investment in this project, but little revenue was generated. Throughout the year, especially in the last six months of phase two, close scrutiny was given to marketing efforts and to employing strategies to minimize expenses. After careful review of the income and expenses of Corporate Information Services at the end of the second phase, and the realization that significant additional investment was needed in marketing to make cost recovery a possibility, the University decided to suspend CIS.

Lessons learned from the project

The University was a novice at marketing fee-based services to the business community. To be successful in these ventures, we needed to refine our products and our presentation to appeal to potential customers. What did we know about potential customers? Did we have sufficient demographic, geographic, and psychographic data to support our marketing effort? Moreover, did we focus on how our service could improve the realization of one or more aspects of the corporate mission: innovation, quality, sales, and growth?5

Were the right people in companies receiving our direct mail literature? The materials about Corporate Information Services mailed to CEOs or corporate libraries may never have reached managers, directors, planners, and department heads who needed our services. Identifying avenues to officers who have the greatest information needs was one of the biggest unmet challenges.

Institutions have too frequently assumed that businesses understand the value of information and the value added by information brokers, within or outside academe. Library staff suspected that corporate clients may have viewed our services as more mechanical than bibliographic. We asked ourselves whether the University had adequately marketed the CIS director as a knowledge broker experienced in making distinctions between information that is useful and information that is not, a sophisticated activity called information filtering.6 Moreover, anecdotal evidence from FISCAL providers suggests that “Corporate America” has not demonstrated a continuing need to access fee-based library-bound information.

Many businesses of all sizes have very recently looked away from academe for information, opening their pocketbooks to purchase hardware and software to mount and access services on commercial networks like America Online and Prodigy. In the early months of 1994, Business Sources on the Net (BSN) was initiated; it represents itself as a comprehensive index of business information accessible on the Internet at no cost.7 However, the breadth and complexity of the Internet make it difficult to locate and retrieve resources without a skilled navigator—perhaps motivating clients to use CIS for skilled, fee-based information retrieval.

While electronic access may appeal to businesses large and small, the CIS effort in late 1993 to target smaller businesses may have been misdirected. Despite the media hype about the impact of the information revolution on the business community, we learned that smaller businesses disregard libraries, favoring personal and informal sources of information. Customers, suppliers, vendors, distributors, attorneys, and even competitors predominate over printed materials as resources.8 When libraries are referenced, academic libraries are chosen after business and public library resources have been exhausted.9

The pricing of services was a continuing concern. We wanted to set prices for research and document delivery, for the occasional user and the corporate member, at rates that would cover expenses and yield a profit for the University. We knew that the risks were considerable, since a University of Georgia survey found that only 30 percent of fee-based services reported annual revenue above $50,000.10 We were also sensitive to the need to make the fee structure competitive with other providers to encourage frequent patronage by new and continuing customers. We also needed to be sure that research and document delivery did not consume staff time, leaving them “busy but broke.”

The holdings in a research library are more extensive than those in a comprehensive university library. Corporate users rarely seek anything beyond statistics, investment listings, demographics, manufacturing trends, and production levels.11 In many cases these quantitative data were not available in our collections, and appropriate publications had to be located and requested from external providers, adding to overhead expenses and reducing “profit.” Better communication with existing fee-based service providers about the kinds of materials requested might have helped us better anticipate the adequacy of our collection to satisfy the information


needs of prospective customers for the new service.

Many of the prospective customers for CIS appeared interested in the human intellectual resources of the University. Many were interested in information that can be supplemented by the expertise of university faculty. Referrals to knowledgeable faculty for interpretation or analysis of information was sought by some prospective clients. A faculty consultation network, as a complement to fee-based information services, might provide businesses with access to faculty expertise. This arrangement would provide faculty with access to administrative support that they may need in these outreach activities (i.e., clerical, contracting, and billing services) that an "outside" consultant would have to find independently.

A vision for fee-based services

As it was envisioned, CIS would have a core of corporate members with passwords. Their managers would conduct their own information research and call upon CIS to provide document delivery. A much larger group of individuals from the business and professional community would request occasional information research and document delivery. Members of the University community, including faculty and administration, would also be regular and consistent users of the service because of its personal service and speed in delivering documents. Students conducting their own research in the library would request document delivery for a fee for items they needed quickly. CIS could be a well-integrated part of the library and a well-respected University service to the community. It would connect business executives and professional managers to the University in ways that contribute to the success and well being of their businesses. These associations would enhance the University's reputation as a source of valuable information, contribute significantly as a revenue source for the University, and provide a service to actual or prospective donors to the University.

With the suspension of CIS last year, all members of the community associated with the project were disappointed that our investment of energy, enthusiasm, and resources did not yield more substantial revenue. Some believe that CIS needed more time to attract customers through more extensive advertising and marketing. It is well recognized that in their first few years such enterprises are especially vulnerable to profitability concerns, management changes, and marketing problems. Others close to the service believe that one important condition for the success of a fee-based service was not in place—strong collections in the disciplines being accessed. The consequence was both staff time and considerable expense to satisfy client demand through commercial document delivery providers. Others believe that the current fiscal condition of the University and the climate of the business community in which we reside are not at this time conducive to fee-based information services.

In summary, our venture in fee-based information services was not financially successful. In this particular exploration of new revenue streams, this learning experience has better prepared us for managing risks that are unavoidably a part of applying information technologies to higher education. We hope that the insights we gained from this experience can be useful to other institutions considering the establishment or discontinuance of fee-based information services.

“A faculty consultation network, as a complement to fee-based information services, might provide businesses with access to faculty expertise.”

13 See Barbara Stump's “Ideal Conditions for Fee-Based Service” in Fee-Based Services in ARL Libraries, op. cit., pp. 55-56.
Process Reengineering in Academic Libraries: Shifting to Client-centered Resource Provision

by Maxine Brodie and Neil McLean

The emergence of networked information services is challenging traditional forms of academic information delivery. This article examines the potential of business process reengineering to address this challenge through creation of a new client-centered paradigm for information resource provision that will strengthen the partnerships between all information professionals.

The rapid expansion of networked information services, together with the increased emphasis on quality assurance processes, highlights some interesting problems for academic libraries. While strategic planning in academic libraries now reflects a more customer-focused approach, the principal assumption behind most of this planning is that academic libraries are still firmly in the right business and that continuous improvement of existing practices will lead to greater customer satisfaction. This viewpoint challenges that assumption: we believe that if we are to meet the needs of our clients, we need to develop a new paradigm for information resource provision.

To illustrate the potential application of business process reengineering principles to the redesign of academic library services, we examine only traditional document delivery services. However, it becomes clear that these principles can apply to all aspects of the information provision process, and that their implementation requires the collaboration of all information resources professionals, not just those who work in the library.

Making a case for action

Why is continuous improvement of existing document delivery practices not enough? We believe that the internal operating environments of many academic libraries are showing signs of organizational stress, the major symptoms being:
- a decreasing ability to meet client needs and expectations in the old ways;
- addition of new ways of doing things without dispensing with the old;
- inability to shift resources quickly;
- chronic under-investment in new technologies;
- inability to reexamine the need for existing practices and/or the need to change them;
- a tendency to shift the blame onto others;
- organizational structures and cultures that are unreceptive to innovation and unable to accommodate change easily;
- management information that is activity- and input-oriented rather than output-oriented—we can always answer “how many?” but not “at what cost?” and “how long did it take?”

 Added to this, there are important factors affecting academic libraries in the external environment. These factors arise out of changes in relationships within the publishing and information industry and changes in information technology (IT).

Traditionally, academic libraries have followed the “local ownership” approach by acquiring substantial serial holdings to meet the needs of their clients. As a result they have always been the largest purchasers of serials and, as such, are tied to the future of the large serial publishers. The spiraling price of serials causes libraries to cancel more, which in turn causes publishers to raise the price to cover smaller production runs. At the same time, communications technology and photocopying make it easier to obtain copies of individual articles rather than rely on a serial
subscription. This puts further pressure on the publishing industry and means that traditional sources of supply are no longer clear. The changing economics of providing access to the serial literature mean that libraries can no longer be self-sufficient and are faced with increasing uncertainty in choices for document supply.

The advent of commercial document delivery services has added a new dimension to service delivery, and many academic libraries now make use of them. It is the emergence of these services that has led to the “just-in-time” versus “just-in-case” debate and to the development of so-called “access versus ownership” policies. There is, however, great uncertainty as to how the process of procurement should be managed—for example, whether the library or the client should pay for the service, and whether the library or the client should deal directly with the vendor. Such services present a challenge to traditional academic library philosophies, and there seems to be no consensus of opinion on how they should be integrated into library service strategies.

The result is that libraries are providing access to more and more material from more and more sources for their clients—an activity that is currently putting great strain on many areas of the library’s budget, including inter-library loan. From the user viewpoint, the loss of local journal subscriptions and the forced reliance on remote searching through the current cumbersome interfaces are cause for unease, if not dissatisfaction. This points to the need for a new service paradigm that combines the traditional strengths of library service, the rapidly emerging networked information services, and the increased capacity of clients to access and manage information resources through workstations.

Creating a new client-centered paradigm

To design a new service paradigm we need a new way of thinking—a new framework that is truly client-centered. Such a framework can be found in the literature on reorganization and change in American corporations—that of reengineering. Why consider a concept like reengineering in relation to academic libraries?

Advanced technologies, the disappearance of boundaries between national markets, and the altered expectations of customers who now have more choices than ever before have combined to make the goals, methods, and basic organizing principles of the classical American corporation sadly obsolete.1 If we substitute “academic library” for “American corporation,” there is an obvious potential for application of the process reengineering approach to the library.

Process reengineering

Hammer and Champy define reengineering as “the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance, such as cost, quality, service and speed.”2

The rethink is fundamental because it assumes nothing; it asks “why” and “what should be,” not “what is.” The redesign is radical because it is not “fiddling at the edges”—it is meant to get to the root of things, including written rules and unwritten assumptions. The improvement is dramatic because the aim is a quantum leap, not a safe 10 percent improvement. It is focused on processes—not on products, tasks, jobs, structures, or workers. Indeed, another writer on reengineering, Thomas Davenport, claims that just adopting a process view may be a major step forward for an organization, because there is value in “viewing the business cross-functionally through the eyes of the customer.”3

Once the key processes are defined, order of magnitude improvements can be achieved by redesigning them from beginning to end, using innovative technologies and organizational resources. Using technology to innovate is not the same as automating existing procedures; it is not “paving cow paths”—that is, providing more efficient ways of doing the wrong things.4 Reengineering is ambitious, rule-breaking, enabled by the creative use of technology, and oriented towards processes. It has become necessary in business because of a new environment in which customers are in charge, competition has intensified, and change is constant.5 Reengineering implies a new organization of work, using a process model rather than the old industrial model. In the industrial model, work is broken down into simple tasks on the assumption that people have few skills and little capacity for training. However, organizations then need complex processes and structures to link these simple tasks back together, leading to inefficiency. The process model says, on the other hand, that “to meet the contemporary demands of quality, service, flexibility, and low cost, processes must be kept simple. This need for simplicity has enormous consequences for how processes are designed and organizations are shaped.”6

Information resource delivery: a business process

It is our contention that the corporate concept of “business process” has considerable potential in the library context. As Hammer and Champy say, “A business process is a set or
According to this definition of process, the broader concept of “resource delivery” also challenges other traditional library functions, for example, those involved in delivering information resources to undergraduates—acquisitions, cataloging, reserve room, loans, reshelving.

For many types of library clients, it is likely that the old notion of document delivery mediated by the library through interlibrary loan will disappear, except for access to older printed works that have not been converted to electronic form. Instead, resource delivery will involve direct participation by the client, with direct delivery to the client. The process of resource delivery may be triggered by resource discovery (planned and unplanned through serendipity) in sources provided by the library or by others. The client will need to be able to collapse or expand the steps involved in resource discovery and delivery when required.

Several key points emerge from this process view of information provision:

- **Effective service to the client involves a high degree of interdependence and collaboration between information publishers, system and tool developers, IT infrastructure providers, and libraries.**
- **Information technology can link the client not only to the library, but also directly to publishers and suppliers, and to information and systems providers. For our clients, this means we do it their way, or sooner or later they will do it themselves. If we behave like a “troll on the bridge,” our users will build a new bridge a mile upstream. Therefore, the library’s viability will depend on its effectiveness in planning, managing, marketing, and educating, and in facilitating for its clients the processes of resource discovery, delivery, management, and use.**
- **Unlike a manufacturer, the library has no central “production” process—a library integrates the output of others. This may have a significant impact on our ability to reengineer our processes, unless we find effective ways to exercise our limited influence on others in the supply chain.**
- **Library processes are not ends in themselves, but need to be integrated into the processes of our clients.**
- **Library processes are linked and not discrete, so change to one will affect another.**
- **Library processes are not “one size fits all.” Each library process may have multiple versions for a different client (for example, undergraduate, researcher), and in different disciplines.**

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7 Ibid., p.3.  
Information resource delivery: the need for reengineering

Hammer and Champy suggest that processes are suitable for reengineering if they satisfy these three criteria:

- Is it “broken”? Symptoms of a broken process are:
  - extensive information exchange, data redundancy, rekeying
  - high ratio of checking and control to value adding
  - high degree of rework and iteration
  - complexity, exceptions, and special cases
- Is it important to your clients? There is no question that this process is of strategic importance both to clients and libraries.
- Is it feasible to tackle it? Even if the prospect is daunting, what will be the consequences of not tackling the problem?  

Our current procedures for document delivery qualify for serious consideration on all three criteria.

Redesigning information resource delivery

Key factors in redesigning resource delivery according to the process reengineering framework include developing a new vision, focusing on the client, understanding the existing process, and understanding a number of enablers and barriers.

### Key Steps in Redesigning Resource Delivery

- Develop a New Vision
- Focus on the Client
- Understand the Existing Process
- Understand Enablers and Barriers
  - Technological
  - Marketplace
  - Organizational

After establishing the case for action, a new vision is required before the redesign process can start. For example, such a vision for resource delivery could be that clients are able to obtain the right information resources, when and where they want to, at the least cost, and at the required quality.

The redesign process then starts with identification of client needs, facilitated by the library in consultation with information providers and those responsible for the IT support required. We should not assume we know clients’ needs better than they do. On the other hand, we should not be limited by what they say they want, as our clients often find it difficult to conceptualize what they do not know. We should end up by understanding the needs of our clients better than they do themselves. This will require a close understanding of their work environment, an assessment of the differences between expectations and reality, and an understanding of what they do with the output of this process.

To redesign a process effectively, we need to know how well (or badly) the current one performs and what the critical issues are that govern its performance. To develop this understanding, we need to first understand what the current process provides, and why, and then consider what else might be possible. This can be achieved in a number of ways, including participating in the process ourselves as users and by identifying best practices in our own and/or other service sectors. Then we need to assess the potential of technological, marketplace, and organizational developments to support or hinder the redesign process.

### Understanding IT enablers and barriers

According to Hammer and Champy, technology should be used to help us “break the rules” in process redesign. “Companies need to make technology exploitation one of their core competencies if they are to succeed in a period of ongoing technological change.”

Although libraries have been fairly quick to take up new technology as it appears, there has been less concerted attempt to influence future developments. As a result, information technology has been developed and adopted in a piecemeal fashion, becoming both an enabler and a barrier at the same time.

There are many opportunities for collaborative work with IT professionals to improve client support at the individual workstation. Some of the most significant IT enablers required to be able to redesign the resource delivery process are listed in Table 1.

### Understanding marketplace enablers and barriers

The scholarly information industry is in a volatile state for a variety of reasons. It is important at the outset to realize that the scholarly publishing industry is a very small industry by world standards, which has not so far attracted the attention of the big multinational conglomerates. This means that the industry suffers from chronic under-investment. The investment in the development of the new technology often comes from increasing the profit on hard copy.

There are, however, some interesting trends...
One of the main impediments to new forms of service delivery is the question of copyright and payment. The publishers have relied heavily on libraries to purchase hard copy serial subscriptions for their income, with “fair use” agreements covering photocopying for individual use. There is much debate as to the adequacy of existing copyright law for the electronic information environment. From the publishers’ point of view, fair use is less important than royalty payments from users accessing services. There are a variety of licensing/royalty agreements already in use, but they are clumsy and difficult to administer. In the short term we are likely to be confronted with different copyright solutions for libraries and individual requesters and with different problems associated with “returnable” and “non-returnable” documents.

In spite of all these difficulties, new alliances are emerging with increasing frequency in an attempt to provide a more comprehensive resource delivery service. Various attempts by libraries to engineer solutions to the problem of integrating resource discovery and resource delivery have met with mixed success. There is now a growing realization that the marketplace should be left to sort out its own solutions. The aim of academic libraries as an intermediary for users is to retain flexibility in a highly competitive market and to avoid unduly restrictive long-term commitments.

Academic libraries will need to think about their relationships with publishers and suppliers and move to create bargaining power with those who can add value through such services as:

- consolidating the output of other publishers/suppliers,

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**Table 1: IT enablers required to redesign information resource delivery**

- Ubiquitous access to and use of communications infrastructure by clients
- Academic data networks that are powerful and reliable enough to support electronic resource delivery
- Mature client/server architecture providing, for example, automatic, seamless look-ups of resource locations, with delivery options linked to the resource discovery process
- Resource discovery tools that are client-centered and not data-centered, that is, which support all types of user requests from simple to complex in the language of the user rather than the language of the system and which provide Z39.50, or similar, interoperability between systems
- User-centered searching tools appropriate to very large, full-text databases
- User-centered browsing tools appropriate to electronic resources
- Means to resolve problems relating to the integrity of the scholarly record in an electronic age
- Cross-functional resource management systems with substantial integration at least at the user level, consisting of simple and robust data structures organized by key aspect of the library’s business
- Single rather than multiple financial and control systems.

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12 Z39.50 is an ANSI (American National Standards Institute) standard which facilitates interoperability between systems. For example, it is now being implemented by a number of major library system vendors as a means of allowing clients to search the online public access catalogues of other libraries without having to learn a new set of commands.


• packaging resources and services to suit our users' requirements,
• providing "just in time" delivery,
• providing a quality control service on resources and services supplied, and
• providing information to us on usage patterns, user preferences, etc.\textsuperscript{16}

Understanding organizational enablers and barriers

Libraries have to make a strategic decision as to how far they can facilitate the resource delivery process on an individual basis and/or to what extent they should rely on cooperative or national initiatives to achieve their goal. They have to decide, also, to what extent the resource delivery process should be subsidized, either by national funds or library funds.

The array of initiatives now under way in different countries is very often dependent on the prevailing attitude of government to the notion of central subsidy/organization of services. Academic libraries have to decide, therefore, the ground rules for corporate or national action, who the stakeholders are to be in such a process, and the range of marketplace options to be included in such a program.

At the individual library level, there are a number of important strategic issues to be addressed. The heart of the matter is whether the library wishes to be truly client-centered in its approach to service. At the present time, publishers and other resource providers are not willing or able to deal with individual users in academic institutions. Therefore, there can be no new service paradigm in the short term unless the resource delivery process is facilitated by the library. In order to achieve this objective, the library has to change its role as an intermediary from being a deliverer of actual services and products to being an active facilitator in the resource delivery process. Of primary importance in achieving this change will be the effort devoted to marketing the new service paradigm and its related facilities and the training of users to make effective use of the process. If libraries do not rise to this challenge, they will be increasingly marginalized as service providers, and users will make their own arrangements as the need arises.

Libraries have devoted considerable amounts of time to traditional forms of user education, but this has been directed primarily at undergraduate students. Academic staff are understandably reluctant to change their traditional patterns of usage and reliance on libraries. Therefore, a lot of effort is required to make them aware of the new services and to persuade them that the new services will fulfill their needs. Success in the marketing/promotion initiative will fail if it is not followed up with a targeted training program. While some academic staff are highly proficient in the use of technology and electronic information, many are not. This, too, is a resource-hungry

\textsuperscript{16} Davenport, p. 239.

\textsuperscript{17} Hammer and Champy, Chapter 4.

Table 2: Organizational impact of adopting a process framework\textsuperscript{17}

\begin{itemize}
  \item Steps in the process will be performed in natural order (simultaneous processing)
  \item Work will be performed where it makes the most sense (even if this means the client participates!)
  \item Work units will change—from functional departments to process teams
  \item Jobs will change—from simple to multidimensional—when the result to the client is always cared about
  \item Processes will have multiple versions for different clients (not standardization)
  \item Staff roles will change—from controlled to empowered to make decisions
  \item The focus of performance measures will shift—from activities to results
  \item Values will change—from protective to productive
  \item Managers will change—from supervisors to coaches
  \item Organizational structures will change—from hierarchical to flat
  \item Executives will change—from scorekeepers to leaders
  \item A hybrid centralized/decentralized structure will be possible, based on shared information systems
  \item A “one stop shopping” case manager, with easy access to all information systems, may be used to provide a single point of contact for users and to shield them from remaining complexities in the process
  \item Checks and controls will be introduced
\end{itemize}
Key Objectives for Facilitating Resource Delivery Using the Process Model

- Construct profiles of clients and their needs, so that the resource delivery process can be tailored to fit their characteristics.
- Integrate client information with our other internal information systems.
- Achieve integration of resource discovery, delivery, and use, as and when required by the client.
- Achieve integration of resource delivery into the client’s own processes, tools, and other outputs.
- Offer flexibility and choice in all aspects of the resource delivery process.
- Provide clients with an “expert system” for discrimination among choices of resource delivery option, cost, time, and format.
- Provide flexible payment options that are configurable by the client, which identify and authorize usage of tools and services without library staff intervention, and which automatically comply with copyright and licensing requirements.
- Specify and influence the development of modules common to all versions of the resource delivery process—for example, “establish client credentials,” “bill the client,” “pay royalties/license fees”—all of which should function without impeding the resource delivery process to the client.
- Develop measures of client satisfaction that include simple and automatic feedback on aspects of resource delivery, like accessibility, cost, legibility, and speed.

Developing an agenda for action

Margot J. Montgomery postulated the future role of libraries as follows:

In the future, the information provision business will be more competitive than it is today. Successful libraries will be good at catering to users. This will mean knowing users’ current and anticipated information needs and negotiating efficient and effective access on behalf of users with publishers, other libraries, and authors/creators.\(^\text{18}\)

In light of the process model, we should expand this list of those with whom we need to negotiate to include all information and information technology professionals.

It is increasingly likely that we will have to conduct these negotiations with new alliances of old partners and with new players we have not yet encountered. Therefore, it is important that we concentrate our own efforts on developing and refining our role as intermediary and facilitator for our users. This role will survive and grow because the client-centered approach demands mechanisms that provide information on user requirements, the satisfaction of user expectations through locally tailored services, and an ongoing role in training and support.

Apart from demanding “imagination, inductive thinking, and a touch of craziness,”\(^\text{19}\) reengineering the information resource delivery process will provide a substantial challenge to the skills of all information professionals in two key areas: (1) finding effective ways of influencing the development of the technological, organizational, and marketplace enablers required to achieve our objectives, including the development of new and stronger partnerships, and (2) developing the means to profile and record client requirements and client satisfaction measures as part of overall information management and decision support systems.

Librarians may be tempted to adopt a “wait and see” strategy when faced with the complexities outlined in this article. Such a stance would be at best folly and, at worst, the beginning of the road to extinction. In order to survive, we require a new service paradigm, which will demand new and bold ways of managing service provision in close collaboration with our partners. This is our challenge for the remainder of the decade.
The Manager’s Changing Role in a Teams Environment

by Larry Dean Conrad and Sheila E. Murphy

What is the impact of empowered teams on the role of managers? This viewpoint explores the “advisor” or “advocate” role for managers who are considering the deployment of a teams environment in their organizations, and suggests why this new role should be viewed as beneficial to the manager as well as the empowered staff.

The practice of creating “empowered teams” in the workplace is rapidly gaining momentum in this country, and is creating a management revolution. The wholesale downsizing of the private and public sectors over the past several years has served as a sort of shock therapy to the work force. Job security is a thing of the past. Employee loyalty has been shattered. Workloads are up dramatically, as we all have to do more with less. Opportunities for advancement are limited. Our organizations have been forced to re-examine their basic goals and operating principles in order to compete in a global economy while keeping the work force effective and productive.

Much has been written about this state, and several movements have emerged to help address these challenges, including the quality movement spawned by Dr. W. Edwards Deming and its Total Quality Service off-shoot, the stewardship movement promoted by Peter Block, the entrepreneurial management movement based on the writings of Osborne and Gaebler, and the reengineering movement of Hammer and Champy. One of the common threads that runs through all these management concepts is the need to get the most out of the work force by establishing empowered teams. Many managers believe that this approach merely represents the latest management fad that will pass, as have all the others, leaving the status quo. We believe this view to be short-sighted at best and self-serving at worst.

Much has also been written about the teams approach, most of it focusing on potential gains in effectiveness, the quality improvements that are possible, the reduced overhead and competitive advantages that can result, and the quality-of-life gains for the work force. But what about the impact of empowered teams on managers?

The literature generally focuses on managers as expendable, no longer needed in the new empowered-team work force. In fact, management is routinely identified as the largest single obstacle to achieving the benefits promised by a teams environment. We suspect there are two reasons for this. First, an effective teams environment does reduce the need for managers in the classic sense. (It’s worth noting that the managerial ranks have already been thinned steadily as a result of downsizing over the last ten to fifteen years.) Second, there has been too little focus on the role the manager should play in the new environment. The tendency to resist change coupled with the failure to articulate effectively the new managerial role make it understandable that managers might resist the teams movement.

The typical description of a teams environment is one in which the manager stops making decisions, stops giving orders, and becomes more of a coach. Unfortunately, this coaching concept may not be very well defined in practical terms. In addition, there is no clear reason given for why a manager might see this change as beneficial to his or her career. What will managers actually be doing in the new environment, and how can that job prove to be a desirable, enriching experience?

Teams environment

There are three kinds of teams typically discussed in the literature: (1) quality circles—groups of employees who focus specifically on quality problems in delivery of the products or services the organization produces; (2) Total Quality Service (TQS) teams—groups of employees who focus on business activities as a set of processes that can be incrementally improved; and (3) self-directed/self-managed teams—groups of employees who manage themselves collectively and assume responsibility for many of the traditional managerial functions, such as performance appraisals, disciplinary actions, and budgets.

The three types of teams share common conceptual underpinnings and build upon one another. Quality circles were the first to gain popularity in the early 1980s, but are more or less considered passé today. Quality circles recognize that the people who do the work are the ones who know best how to fix problems. TQS teams build on and extend the quality circle concept to recognize that a problem may be the result of more systemic issues, requiring a look at the entire business process to address the fundamental problem. Self-directed teams go one step further to recognize that the processes themselves are affected by the organizational structures we build and the mindsets of the people within them. Manz and Sims consider the latter two (TQS and self-directed teams) a particularly powerful combination.

Each type of team involves some degree of change in the traditional perception of the manager as the person who has the most expertise and who rightfully should make all the decisions. In quality circles and TQS teams, the existing organizational structure is usually retained, leaving the existing power structure in place. Thus these two team types are fundamentally evolutionary in nature. However, self-directed teams challenge the basic power structure: the right of the manager to make decisions and to be in control. This makes them fundamentally revolutionary in nature. We will focus on the new role of the manager within a self-directed teams environment, as we believe that is where the teams movement is going.

**Teams management model**

The teams approach is about treating people like adults, recognizing that work is a voluntary activity (voluntary in that we are all free to quit and work elsewhere), and that everyone wants to enjoy and take pride in her or his work. Dr. Deming makes this point a hallmark of his philosophy: work has intrinsic value and people want to do a good job. We need to ensure that organizational processes support workers' ability to do a good job and ensure employees' ability to affect the outcomes of their efforts. If the processes do not allow workers to do a good job, or if workers are unable to affect the outcomes, they become disillusioned and disengaged.

In treating people like adults, the teams approach recognizes that each person has a critical role to play in the delivery of the organization's products and services. It also recognizes that each person—once he or she is trained—is in the best position to understand the details of any process and serves as the best source for identifying ways to improve each process. The teams approach recognizes that a synergy occurs when everyone is working together towards a shared goal and everyone understands the issues and challenges involved in meeting that goal.

**The manager psyche**

Too often managers have a vested interest in maintaining the status quo. Many have grown up in the traditional hierarchical system and, indeed, have prospered by it. The unpleasant truth is that managers tend to like to control others and enjoy the notoriety of being the decision-maker and the special status of being a manager. Thus managers are often not thrilled at the prospect of giving up control and sharing decision-making and the limelight with others.

The teams concept challenges managers' views of themselves and their roles in the organization. It can be a serious blow to managerial egos to recognize that teams can do the job, and often do it better than they can. An early team training session—where a new team was being introduced to a pair of tools, brainstorming and multi-voting—serves as a case in point. One of the participants was knowledgeable about the topic being discussed and contributed a number of ideas in the round-robin technique being used. There were many other contributions, however, and when it came time to vote for the best alternatives, he did not vote for a single one of his own ideas! He was forced to admit his ideas had simply not been as good as those generated by the rest of the team. This provided a powerful lesson in the power and value of a teams environment.

**The manager's new role**

Is there anything positive the environment has to offer managers from the old hierarchical structure? We believe the answer is yes, but the role and environment are significantly different from the ones they have been used to. A good way to underscore this is to abandon the title of “manager” and adopt something different, such as “team advisor,” as suggested by Manz and Sims, or perhaps “case manager,” as suggested by Hammer and Champy. “Advocate” is another possibility.

Many of the traditional managerial roles are not needed in the new teams environment. Those managers who define their role in the organization solely on the basis of control may not make the transition to the new order. However, managers who define themselves on the basis of leadership, advocacy, facilitation, coordination, the removal of barriers, and the development of staff should make the transition to teams smoothly since they already possess the appropriate...
mindset for a teams environment. Leadership means providing direction for the organization—establishing a vision. People don’t want to be managed; they want to be led. We assert that this has always been the most important role of management. Teams have shown they can manage themselves on a day-to-day basis, thus freeing management’s time to concentrate on moving the organization to where it needs to go. Whether we like it or not, change is a given in today’s organizations. Nothing will kill an enterprise faster than stagnation. Most of us can relate to the metaphor that life in the 90s is permanent “white water.” Forget the idea of shooting the rapids and coming to an area of calm where we can collect our senses before attempting the next stretch of rough water; we’re in an environment of constant change. Leadership has never been more important than it is today, and teams can release managers from the imperatives of daily crises to focus on determining where the winds of change will take the organization and how it can profit from those changes.

Advocacy and removal of barriers means battling the bureaucracy, forming partnerships, and overcoming negativism to advance team goals. A leader in an organization needs to “clear the way” for progressive ideas to be implemented. As Hammer and Champy point out, many barriers are erected against new ideas in any organization. A worker comes up with a new idea that he feels has merit and takes it to his boss. If she likes it, she takes it to her boss, and so on. Anyone along the chain of command has veto power; any single “no” can kill it. Conversely, look at all the “yeses” that must be garnered in order for the idea to go forward. Is it any wonder our organizations stifle creativity? There is a role for advocacy and removal of barriers that the team advisor can play. This role requires someone who is articulate, who is skilled in consensus-building, who can help explain and sell an idea, who can line up the necessary resources, and who can keep the idea from getting stalled in the bureaucracy.

Facilitation and coordination means helping the team find solutions to problems and coordinating activities between teams. There is a role for facilitation and coordination that is crucial to the group process. The team advisor can be tapped to assist the team as necessary, not by giving them the answers but by helping them find the answers on their own, and to coordinate activities with others in the organization to ensure a smoothly operating enterprise.

Development of staff means helping staff members continue to progress in their careers. There are many development opportunities in the teams environment. Team members may be called on to perform functions and roles they have had little or no experience with or expertise in: budgeting, conflict resolution, providing feedback, and dealing with different communication styles and differing levels of interpersonal skills. Ongoing training is needed to help develop members of the team. They also need access to someone who can serve a mentor role and help them develop needed expertise. Team members can usually provide technical skills, but they will need help from outside the team to develop these additional non-technical skills.

The above characteristics of the new “team advisor” position were also key in the traditional managerial role, but were often compromised to deal with the crisis du jour. In the teams environment, the team advisor can focus on these aspects and thereby improve the overall effectiveness of leadership in the operation of the organization. Management focus is on the “what,” while the team focus is on the “how.” Thus occurs the following seeming paradox: by giving up control (of individuals), management gains control (of the organization).

Conclusion

Managers in the traditional hierarchical structures have little to fear, per se, from the introduction of teams. Change is coming to our organizations. It is being driven by the expediencies of downsized organizations and increased competition. The old hierarchical command and control organizational structures are no longer effective in today’s global market and enterprises.

The work force is demanding and receiving a say in how their organizations are run. Acceding to this is not altruism on the part of management, but rather a recognition that there is a better way of doing business. By giving up control of individuals, managers gain better control of the organization. This is truly a win-win situation, as everyone comes out ahead. Those managers who are solely control-oriented may not survive the transition—but their days were already numbered. Teams will only hasten the process, as we transform our organizations into more enlightened institutions that treat people as adults who have productive and innovative contributions to make.

For further reading:


“... teams can release managers from the imperatives of daily crises to focus on determining where the winds of change will take the organization and how it can profit from those changes.”

Several important issues confront Information Resources (IR) groups today, among them the important issue of providing meaningful, relevant services to an expanding user base. In an increasingly technological environment, people—both client groups and IR department staff—are an important component of successful implementation strategies for information technologies.1

Our Information Resources organization at Pepperdine University is proud of the relatively good relationship we have developed with our user communities. We have, with their support and participation, successfully deployed administrative and academic systems throughout the University. We have also been successful in deploying systems directly to the faculty and student populations, thus bypassing many of the bureaucratic hurdles that formerly were in place. For example, students routinely register by phone, and faculty members access student data directly from our computer systems.

However, from a University-wide perspective, several issues confront the IR support organization. They include the following:

- While many client groups are being serviced by the IR group, there are many other client groups that are not being serviced at all. Historically, groups that are being serviced well include groups that are directly touched by the host-based administrative applications. For example, while the admissions, registration, and finance groups are all being served, the central plant operations, student services, and athletics groups are not.

- Many of the client groups that are being served well by the IR group have specific personnel who are responsible for working with IR in support for our service offerings. These people provide direct input regarding the needs and desires of their groups. Client groups that do not have (and in many cases cannot afford) personnel dedicated to this role, experience a diminished level of support from the IR organization.

- To many clients the IR organization seems confusing and distant. For example, users frequently express frustration in not knowing which IR service unit to contact for a specific service. Who’s responsible for PC repairs? Whom do I contact for a network connection? When my telephone doesn’t work, who comes to fix it? These are frequent questions, and frankly, our answers are often too complex.

- Pepperdine’s IR organization experiences a very low personnel turnover rate. Many of our employees have been employed for ten years or more. While on the surface this would appear to be a positive factor, it does have negative components, such as job burnout and limited institutional perspective and awareness. At the same time, technology changes have occurred, and some of the IR staff have not been involved with these changes, nor do they understand the implications of those changes for the University or for the IR service organization. It is our desire to expand staff awareness and cross-training opportunities for these staff.

Initially we spoke of these issues as separate problems with separate solutions. The only solution for the first and second issues that seemed possible was a massive increase in IR staffing, to account for the need for additional service representatives to the client groups that were not being represented to the IR unit. However, we knew that in this age of declining budgets and stable staffing levels, this was not really a viable option.

As we worked through these issues, it dawned on us that perhaps we could address all of them with a volunteer service representative program, pulling from the existing ranks of the IR organization. Thus was born the Service Partner Program (SPP).

The Service Partner Program objectives

The Service Partner Program (SPP) provides Service Partners (SPs) to selected Information Resources client groups. The program is open to...
staff members of the IR division on an invitation basis. Any IR staff member can be solicited to become an SP, in addition to their regular job assignments.

The objectives of the Service Partner Program are as follows:

- Improve customer contact and service
- Improve customer service orientation within IR
- Simplify the appearance of the IR organization to customers
- Provide job diversity to IR staff
- Provide cross-training to IR staff

Participation in the program is optional, except in a select few cases where the job being performed by a staff member is essentially the same as the SPP duties. We decided to make this a volunteer process because we wanted to ensure that the people who functioned as SPs and who would thus have direct contact with clients would be those who had a personal interest in doing so. These volunteers, we felt, would be the ones who would look forward to the job diversity and cross-training opportunities that this program would provide. There is no additional compensation at this time for those serving as SPs.

**SP duties**

Each SP is the primary (but not necessarily the exclusive) contact for one or more client groups with the services and staff of IR. The SP acts as a facilitator to ensure that appropriate services and customer needs are adequately considered in the planning and implementation of IR program offerings. As such the SP has a responsibility to:

- communicate on a regular basis with the client group and its management, providing a professional and formal bi-directional channel of communication regarding global technology concerns and IR announcements;
- partner with the client group in a planning process about information technologies to the extent that is allowed by the client group;
- understand the business of the client group and understand how information technology can be applied to the business needs of the client group; and
- follow the terms and conditions of the SPP and maintain good job performance in regular job duties.

Perhaps more than anything else, the SP acts as a conduit of information both from IR to the various client groups and from them to our organization. Each SP is given a minor budget that enables hosting a lunch for his or her client management periodically to encourage dialogue about the services of IR.

**SPP management and oversight**

The SPP is managed by an oversight committee that meets on a semi-annual basis, represented by the associate provost of information resources, the three line directors of the Information Resources division (Telecommunications Services, Computer Services, and Support Services) and one or more representatives of the client community. This oversight committee provides strategic and tactical direction for the program. The client representatives provide customer input into the process.

In addition to the oversight committee, an SPP Management Committee, composed of the three line directors and an administrative aide, provides operational management oversight to the program. This committee meets on a monthly basis.

**SP application**

A four-step application process determines who within IR will participate in this program as a Service Partner:

**Step 1: Identification of potential participants (“applicants”)**—The first step is to identify applicants for this program. Potential participants can be identified by the SPP Management Committee, by various supervisors within the division, and by aspiring SPs themselves.

**Step 2: Supervisory feedback**—The SPP Management Committee then contacts the potential applicant’s supervisor to ensure that the applicant’s participation has the endorsement of the supervisor.

**Step 3: Solicitation**—The SPP Management Committee then solicits the potential applicant’s participation in the program.

**Step 4: Application process**—Any IR staff member who is solicited to become an SP then submits a resume and statement that answers the following questions:

- Why do you want to become a Service Partner?
- How do your skills apply to this program?
- What kind of training would you need to fulfill the responsibilities of an SP?
- What potential problems do you anticipate in becoming and fulfilling the responsibilities of an SP?

All statements are then reviewed with the applicant by the SPP Management Committee to ensure that: the staff member understands the nature of the SPP and to answer any questions the applicant might have; the training needs of the staff member are considered and planned for; and potential problems are understood and mitigated.

It is important to note that the Service Partner

1 Albert L. LeDuc of Miami-Dade Community College, in accepting the CAUSE ELITE Award for Exemplary Leadership and Information Technology Excellence during the 1993 CAUSE conference, spoke of the importance of people in this equation (see “People Are What Really Matters,” CAUSE/EFFECT, Spring 1994, pp. 10-14). The CAUSE Current Issues Committee also identified people issues as one of a handful of developing trends of importance to the future of information technology in higher education (see “Current Issues in Higher Education Information Technology,” CAUSE/EFFECT, Spring 1994, p. 5).
Program, while a volunteer program, is a strategic tool within the service mix of Information Resources. Therefore, the program is rigorous, and the application process is serious. We intend that the decision about an applicant’s participation in the program be a mutual consent between the applicant and the SPP Management Committee.

**SP quality issues**

One of the most important concerns about a volunteer program is that quality easily suffers. The SPP would not be isolated from such risks unless measures were taken to ensure that quality is pumped into the program at every level. To ensure quality, the following program components were created:

- **Customer feedback**—Periodically a formal evaluation of the SPP program and the SP contact are provided by customer representatives. Included in this evaluation are feedback about such issues as the frequency and quality of SP contact with the client group, how well the SP understands the business of the client group, and to what extent the SP has been effective in acting as a conduit of communication between the client group and IR regarding customer needs.

- **SP levels**—There are three levels of SPs: Junior Service Partner, Service Partner, and Senior Service Partner. SP levels are assigned by the SPP Management Committee in accordance with performance reviews and customer evaluations. Senior SPs are issued palmtop computers to assist them in their work in the program, and to encourage program volunteers to “climb the ropes” of the program.

- **SP mentoring**—Junior Service Partners are assigned to a Service Partner or Senior Service Partner for oversight and mentoring. The purpose of this mentoring program is to provide guidance and assistance for all Junior SPs in “learning the ropes” of the customer service process and the SPP. Service Partners, in turn, are responsible to Senior Service Partners.

- **Reporting requirements**—Written customer portfolios are prepared and maintained by all SPs. These portfolios reflect the business of the customer, their needs and desires, notes from any meetings the SP has with the customer, and logs of any substantive customer problems or contacts. Customer portfolios are passed from SP to SP as client groups are reassigned or as turnover occurs.

- **Help desk shifts**—The University maintains a help desk where all questions and problems are funneled by the client groups. The help desk uses a problem tracking system for logging and managing calls. In order to provide cross training, each SP is required to work at least one one-hour shift at the help desk per week.

**In-service training**—Every four to six months, the program provides in-service training to all SPP participants. Such training consists of speakers and workshops that provide motivational and skills-related sessions. Participation in these in-service training workshops is mandatory, and impacts SP performance evaluations.

**Performance reviews**—After three months of participation in the program, each SP is formally evaluated by the SPP Management Committee. Performance evaluations include a review of customer feedback about the SP, feedback from the SP’s mentor, and an interview with the SP. Performance reviews are written, are given to the SPs, and are placed in their employment files. If an SP does not agree with the results of the performance review, he or she can submit a statement to that effect that will also be placed into the employee file. Promotion within the program is dependent on these performance reviews. While SPP performance reviews do not affect pay raises, positive reviews may influence the SP’s annual review.

**Implementation**

We are now in a beta test mode for the SP program. Last fall we solicited twelve staff members to act as SPs, from many different parts of the organization. These persons were assigned to a client organization based on their familiarity with the client and based on what we perceived would be good matches.

Some of the twelve were volunteers, while others were “required” to participate based on their job descriptions (essentially their job description matched that of the SP job duties). All of the members, whether volunteer or not, were invited to participate in a series of lunches to dialogue about the nature of the consulting they would be performing, and their input about the program was solicited and folded into what the program has become.

While the intent of the SP program was the long-term development of a relationship between the IR division and a client office, we found that a short-term assignment often made sense in facilitating a specific project with the client. For example, we have had a very specific push to connect offices to the University’s network. In this case, quite a bit of consulting was found that a short-term assignment often made sense in facilitating a specific project with the client. For example, we have had a very specific push to connect offices to the University’s network. In this case, quite a bit of consulting was found that a short-term assignment often made sense in facilitating a specific project with the client. For example, we have had a very specific push to connect offices to the University’s network.
a period of two to three months. This consultation covers all aspects of the network connection process, including consulting, facilitation of the physical connection and software configuration, and training. It is not uncommon for a single NIC to facilitate connections for several client groups. This strategy has worked very well for us, and has simplified the process for the client group by providing a single contact point with our division.

In this beta mode, we have not yet implemented all of the application process steps, nor have we been thorough on all of the quality issues. We will seek to tighten these up as we progress through the beta program.

Client groups that have participated in the SP beta program have indicated that they are excited about the program and, in many cases, that they have too long felt “ignored” by the University administrative processes. This is an important indicator for us, in that one of our original intents with the program was to improve customer contact and service to these types of client groups. In addition, IR staff who have acted as SPs and NICs have indicated that their participation in this program has been beneficial in broadening their work experience both in terms of learning what the customer does as well as learning some of the complexities of the IR division and its processes.

**Conclusion**

Much attention has been given lately to the concept of “flattening the organization,” to make it more responsive and efficient and more service oriented. The Service Partner Program model, we think, is one response to this movement. It is our desire that the whole IR organization be re-energized to provide adequate services to the client community. With the SPP, we intend that we become more efficient and more effective, provide better services, broaden our horizons, and form partnerships with client groups. This program will help transform Information Resources from a hierarchical to a more service-oriented organization.

“It is our desire that the whole IR organization be re-energized to provide adequate services to the client community.”

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**The 1995 CAUSE/CNI Midwest Regional Conference**

**August 28-29 • Evanston, Illinois • Northwestern University**

**“Survival in the Networked World”**

The 1995 Midwest Regional Conference will include a mix of plenary sessions and concurrent sessions in two tracks: **Technical Aspects of Networking** such as the Distributed Computing Environment and security issues, and **Information Sharing and Resources**, focusing on the digital library, use of the Internet for instruction, and copyright/fair use concerns.

**Ann E. Stundem**, Director of Academic Computing and Network Services, Northwestern University, will speak about the abuses, misuses, and sticky situations that appear when the Internet becomes easily accessible to an entire community of “creative” computer users. Stundem will team with **David Bishop**, Northwestern University Librarian, to speak about the need for academic computing organizations and libraries to collaborate in supporting the institutional mission, through concepts like the “library/computing lab” and “reference/computer consulting service.” Stundem and Bishop are co-chairs of the Midwest Regional Conference.

For more information and registration materials, contact the CAUSE registrar Chris Vinall:

303-939-0315 conf@cause.colorado.edu
or access the CAUSE servers:
gopher://cause-gopher.colorado.edu/ http://cause-www.colorado.edu/
“... I found myself enthralled and eager to see what happened next.”

**Recommended Reading**

**Four Days with Dr. Deming: A Strategy for Modern Methods of Management**
by William J. Latzko and David M. Saunders
(Addison-Wesley, 1995, 228 pages, $27.95, ISBN 0-201-63366-3)

Whether an IT organization has been involved in TQM (Total Quality Management) for several years, as we have at Emory, or is just beginning to explore and implement this strategy, *Four Days with Dr. Deming: A Strategy for Modern Methods of Management*, is a resource to consider. After all, what we are all working towards with our organizations began with the foundation laid by Dr. W. Edwards Deming, who initially helped the Japanese turn around their economy, which had been on the verge of collapse following World War II.

*Four Days with Dr. Deming* explains Deming’s basic TQM philosophy and illuminates the information in some very interesting ways. The book is easy to read and uses an unusual style as it takes the reader through Deming’s four-day seminar. The information is imparted to the reader through three “voices”—one is Dr. Deming; the authors act as a second voice, used for clarification; and an imaginary seminar participant is the third voice. I especially found the seminar participant’s viewpoints helpful, as they demonstrated how new ideas learned might help to solve existing problems in an organization. I could relate to many of those problem situations and how Deming’s message could be applied to solve the problem. Because of the multiple “voice” style, I felt as though I were reading a play and found myself enthralled and eager to see what happened next. This was an interesting way to relate some very basic, “bare facts” kind of information that might normally be dry and somewhat unappealing.

The book not only delves into Deming’s fourteen points or “obligations,” and “seven deadly diseases,” but goes into great detail with his famous red bead and funnel experiments. The book is well illustrated, further clarifying the text. In my opinion, this would be a valuable tool for an organization beginning its total quality journey. I could also see this book being used with a group of senior managers who need to get on board and support their organization’s TQM process. *Four Days* is easy to read, yet has some powerful messages for all to ponder and understand.

This book was published not long after Dr. Deming’s death. Those of us not fortunate enough to have attended his seminars no longer have that chance, but after speaking with someone who did, I feel that almost as much can be gained from this text, absent the experience of learning from “the master” in person.

Reviewed by Linda A. Chiappe, Director of Special Projects, Office of Quality, Training and Certification, Information Technology Division, Emory University.

**Managing Internet Information Services**
by Cricket Liu, Jerry Peek, Russ Jones, Bryan Buus, and Adrian Nye

O’Reilly has extended its “Nutshell Handbook” series with a comprehensive how-to book for the newest profession on our staffs: the electronic information specialists. It’s aimed squarely at the intersection of managing electronic information (organizing it, copyright issues, etc.) and servers (Web, ftp, Gopher, etc.) that get the information out. Through and through, it’s practical information and driven by examples. It’s the first book needed by someone adding or taking over an information server, and they’ll keep it open on their desk for the first few months.

Chapter 1 begins with a brief but admirable description of the Internet, and Chapter 2 describes the range of services that can be provided, including finger, ftp, Web, e-mail exploders, Majordomo (UNIX listserv work-alike), Gopher, and WAIS. Each of the services has its own chapters describing the service and giving examples of how to install and configure free versions of each of them. Interspersed is advice on how to arrange information for useful electronic access. Chapter 19 covers Web authoring in detail, and chapters 29 and 30 describe the practical side of legal and intellectual property issues.

The book assumes you’re providing these services on a UNIX system, and that’s a good assumption in our universities. It also assumes the person putting up the services can find his or her way around UNIX at least well enough to follow the copious examples.

The book is up to date in including the capacity and security concerns that have been the most recent headaches for the information providers on staff. There are instructions on configuring servers in ways that don’t leave holes to be exploited. The authors show how to audit usage for capacity projects, and include a first-level tutorial on firewalls at a practical level and tell where to find the Trusted Information Systems free firewall code. *Xinetd* is also described as a
security option for the serious administrator.

The only shortcomings are a result of the rapidly changing electronic world that printed books have trouble keeping up with. In this case, readers should ignore the now-out-of-date section on NSnet Acceptable Use Policies, and look at Mosaic and Netscape documentation for information on secure http (shhttp), which has become very important in the time since the book was sent to press last year.

Reviewed by Glenn Ricart, Director of the Computer Science Center at the University of Maryland College Park and presently on sabbatical at the Advanced Research Projects Agency creating information systems of the future.

Firewalls and Internet Security: Repelling the Wily Hacker
by William R. Cheswick and Steven M. Bellovin

Firewalls and Internet Security is not an easy book to read. It is full of rsh’s, UDP’s, inet’d and an ugly olio of other UNIX entrails. At times the authors become nearly orgasmic describing UNIX logs that to the uninitiated look like random letters over-seasoned with dashes. But the heavy UNIX content is not the scariest thing about this book. That honor goes to the forty-two “truly horrendous” network security risks—each indicated by a sinister black bomb—that are examined in great detail. In case forty-two black bombs don’t scare you enough, the authors cover another hundred or so less horrendous security risks that could also wreak havoc with any of your network connected computers. If you thought that e-mail, WWW, Gopher, MIME, finger, ftp, or any other network service you have ever heard of or used was safe, this book will enlighten you and have you looking over your shoulder and listening for the eerie footfalls of the digital monsters that lurk on the network.

This book may well be too technical for many IT managers. If that includes you, then you should have your network administrators read it and explain it to you. Have them describe your firewall topology (of course you have firewall machines), what your system plan is for protecting sensitive data (of course you have one), and how your system is secure against the threats described in this book or what the plan is to make it so (of course you will do that). Even the least technically adept will want to read page 13 on the lack of security of passwords, page 153 on the intrinsic security flaws of the UNIX operating system, and chapters 12 and 13 on legal issues and encryption.

The authors write from their first-hand experience on the front lines defending the AT&T corporate computer network. This book has the threats, the techniques to break into systems (so that you can understand how you are likely to be attacked), and an overview of the broad issues and technologies necessary to secure network connected computers and defend against the many people who would like to break into your system.

Can your system resist the assaults described in this book? After describing an extended (and ultimately unsuccessful) attack on their corporate system, the authors conclude, “In short, we weren’t ready. Are you?” Firewalls and Internet Security will help you answer that question and do something about the fact that your answer is probably “no.”

Reviewed by Howard Strauss, manager of Advanced Applications at Princeton University. Advanced Applications develops new and novel systems and software based on emerging information technologies.

Bugs in Writing: A Guide to Debugging Your Prose
by Lyn Dupré

I have never been accused of having “good ear.” Of course it was not until I read Lyn Dupré’s new book, “Bugs in Writing,” that I worried about that. Good ear is having the ability to determine good writing simply by listening to it. A person with good ear recognizes awkward constructions, misused words, excess passivity, and all the other myriad of problems in writing without necessarily being able to identify grammatically the exact reason for the problem. Fortunately for all of us prosaic information technology writers, good ear can be developed, and browsing through Bugs in Writing is an excellent way to begin.

Reading Dupré’s introduction is essential to understanding the method to the seemingly mad organization of her book. It is not meant to be read straight through, nor is there any utility in doing so, since there is no logical order of placement. Each writing problem is discussed in a few pages with appropriate examples provided, as well as correctly constructed, often humorous, alternatives. Readers are invited to read a few sections a day at random or to use the well-thought-out indexes to locate areas that discuss
**Our future will be limited only by the reach of our imaginations and our ability to break out of the thought patterns of today.**

We are limited in our visions for the future by our inability to see beyond existing means and applications. Negroponte takes us a step further, sharing his vision for the future much the way that Marshall McLuhan did in *Understanding Media*.

By now, we have learned that bigger does not necessarily equal better. Systems the size of an end table now provide greater computing power than did the monolithic mainframes of the past. Mass storage capacity and fiber optic cabling have followed the same route. And the difference between computer monitors and television screens will also disappear. Negroponte notes that with changes in speed, compression, and content, succinctness will be closely associated with being “better.”

There will need to be other changes in our value systems. Many of us are subscribers to cable television systems with hundreds of channels available, yet we often find that nothing is worth watching. The quantity of stations and programming and the quality (or resolution) of television video have improved, but the content remains the same, at best. Care must be taken to limit the endless amount of unwanted, unneeded bits of information that are simply overwhelming. Compression algorithms will not solve this problem. Content and conciseness will.

The author is the originator of the “Negroponte Switch.” He believes that information currently being transmitted via the air waves (the ether) will be transmitted via ground-based media and vice versa. This will be a necessity, due to the limitations of air-based transmissions, while there can be a nearly infinite number of fibers. I would add as a corollary to the “Negroponte Switch” his statement that, “Being digital will change the nature of mass media from a process of pushing bits at people to one of allowing people (or their computers) to pull” desired information. As this evolution takes place, there will be a need for intelligent filters or agents to selectively identify information of interest to each individual.

Negroponte says, “The information superhighway may be mostly hype today, but it is an understatement about tomorrow.” Our future will be limited only by the reach of our imaginations and our ability to break out of the thought patterns of today. I highly recommend this book, as it reminds us to think creatively and not limit our thinking to today’s ways of describing the world.

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**Reviewed by Leslie Maltz, Director of Computing and Communications Resources for the Stevens Institute of Technology, Hoboken, New Jersey. Leslie was recently the Chair of the CAUSE Board of Directors.**

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As professionals involved with information technology, we are constantly facing changes that impact the services we provide and the means of providing them. Nicholas Negroponte’s book, *being digital* (which appears to be a compilation of his witty columns in *Wired* magazine), takes us on a guided tour of the future. Negroponte describes how he sees the world and how this vision contains changes in the way we will think, teach, learn, work, and be entertained. His view of the future is based on several assumptions that make sense, including a change in our belief that all matter is composed of atoms.

Instead, he proposes that in today’s world, the proper metric is information: bits.

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**Reviewed by Ryan Comfort, Policy Analyst, Office of the Associate Provost, Saint Louis University.**

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**being digital**

by Nicholas Negroponte


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CAUSE/EFFECT

Summer 1995
Allegheny College (Pennsylvania) has 200 machines in public labs with network access, 140 machines on faculty desks with network access, 100 machines in administrative offices with network access, and 20 dial-in lines for students, faculty, and staff.

No charges are levied for any computer services. We assume that the cost should be included in the general fees that we charge, just as access to the library is included in those charges. The only charge we levy is for use of off-campus databases that charge by the search (FirstSearch, for example). We see this as the equivalent of charges for photocopies.

David Anderson
Director, Educational Computing Services
danders@alleg.edu

The University of Tasmania currently does not charge for network access and use. The charges are considered an infrastructure item and are paid centrally. However, this is almost certainly going to change in 1996, due to the massive growth in usage and corresponding charges. Accordingly, we are in the midst of determining an appropriate charging mechanism.

John Jauncey
Director, Information Technology Services
john.jauncey@its.utas.edu.au

The University of Saskatchewan charges users for the “final leg” of access to the campus network. We have an Ethernet network, campus-wide, shared by both academic and administrative users. The basic inter- and intra-building infrastructure of fiber, closets, intra-building fiber and bridges, routers, etc. are paid out of general campus capital funds, but the user or his/her unit pays for the final leg from the closet, including labor, medium, conduit (if necessary) and terminating port back in the closet. Typically, that is around $700-$900 (Canadian) for the user, and on a per-user basis, the infrastructure costs a similar amount, for one-time capital. We do not have, and currently do not plan for, any usage charges.

Bob Kavanagh
Director, Computing Services
bob.kavanagh@usask.ca

The University of the South (Tennessee) has live LocalTalk connections in each student room. Students are responsible for obtaining a PhoneNet connector to connect their Macintosh to the network. There is a charge of $25 per semester for an Ethernet connection in the residence halls. At present there are two residence halls where Ethernet connections are possible. Next year there will be one Ethernet-only residence hall, and most others will have Ethernet as an option. There is no other charge to students for LocalTalk connections.

The University provides dial-in access to the network to the public for $10 per month for an hour per day connection time. Dial-in access is available to students who live outside the residence halls and to faculty and staff at no charge.

Laurence Alvarez
Associate Provost
lalvarez@seraph1.sewanee.edu

The University of Kansas (main campus) is now charging $30 per year for dial access to the campus network and Internet. Modem speeds up to 28.8 kbps are available. On-campus Ethernet connections at 10 Mbps are $400 installation plus $3 per month per active connection.

Jerry Niebaum
Executive Director
Information Technology Services
niebaum@ukans.edu

The network department at Michigan Tech (MTU) charges a flat fee for network access. Faculty/staff connections are charged at the rate of $13 per month, and laboratories of workstations are charged $10/month per station (owing to the fact that grouped connections are somewhat cheaper to implement than individual connections due to economies of scale). There is also a one-time service charge of $20 to add or move a workstation on the network.

The revenue produced from charging does not fully fund the network. Additional monies are budgeted by the administration to the central network service organization. Thus networking is subsidized (real figures on the cost of a connection run $50 to $75/mo).

MTU’s mechanism does not presently impose a use charge (i.e., a per-bit or per-packet charge). MTU “allocates” the cost across all of the users. While this may not be eminently fair (some users certainly “use” the network more than others), there is a significant cost associated with counting packets, which we currently avoid.

We have found many benefits to source charging. Involvement in the networking process occurs when departments spend real dollars out of their budget. The payment of the monthly fee is a “vote” that gives the upper level administration a real quantitative indication that departments really need networking and that the service organization is responding to those needs.

Control over network expenditures (resource control) comes about due to the fact that it is now a cost imposed on the user/department. The user

Editor’s Note:
For lack of space, we were unable to print all responses received. All responses to this question have been placed on the CAUSE Gopher server (gopher://cause.gopher.colorado.edu/), under Publications, CAUSE/EFFECT, Volume 18, Number 2, Readers Respond. You can also access CAUSE/EFFECT articles through CAUSE’s World Wide Web server (http://cause-wwww.colorado.edu/).

Or send e-mail to search@cause.colorado.edu containing the message: get cem952readers

CAUSE/EFFECT
Summer 1995
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Question:
How is your institution handling chargebacks for network access and use?

Readers Respond
no longer assumes that the cost of connecting is covered by central funding. A much more intelligent judgment can be made on whether or not a certain computing solution is a cost-effective method of solving a particular educational problem.

Chargeback systems can reduce the effort required to make decisions about expenditures needed to expand and improve the performance of computer networks: users themselves make the decisions every time they pay a fee for being connected. Users understand that this fee goes directly to enhancing and expanding the network to accommodate their network device.

John Louis
Manager, Telecommunications & Networking
louis@mtu.edu

In 1989, Lafayette College (Pennsylvania) made a strategic decision to provide free network access to students. We decided at the time that even a nominal charge of $50 or $100 for a semester would discourage some students from using the network as an experimental medium. They would decide to purchase a copy of a word processor rather than connect to the network where they might try e-mail or other services. For the same reason, we budgeted centrally for network connections for all faculty and staff for the first three years, meaning that anyone who requested a connection during that period received the card and software at no charge. Today, only new connections for additional staff or lab equipment are charged to departments. Lafayette uses IBM Token Ring boards, Novell Netware for software access, and TCP/IP for local and Internet communications.

Les Lloyd
Director, Computing Services
lloyd@lafayette.edu

The current policy at the University of New Mexico is that data outlets in offices, classrooms, laboratories, and conference rooms should be as ubiquitous as telephone outlets. The University has therefore funded a project to implement an optical fiber campus backbone and rewire all campus buildings using level 5 unshielded twisted pairs, which will provide network connectivity from the desktop to the backbone at speeds of up to 100 Mbps using FDDI over copper or the emerging 100 Mbps Ethernet standard. This is a four-year project, which is 75 percent complete, funded by the University with no recharge to users for standard 10 Mbps Ethernet connectivity. Users who need higher speed connectivity (e.g., 100 Mbps FDDI) at the desktop do pay for any extra interfaces required at building hubs or routers. Users in buildings that were low on the priority list for internal wiring have the option of moving up the priority list by paying for their connections.

There are no charges at this time to UNM students, staff, or faculty for access to any Internet services for which there are no fees. Users have to make their own arrangements to access services available on a fee-for-service basis. UNM students, staff, and faculty can also dial in to any UNM shared computer resource from which they can access Internet services. This is not a problem for local students, but students living far from campus may have to pay long distance telephone charges to use this service.

John Sobolewski
Associate Vice President for Computing
jssob@unm.edu

The U. S. Coast Guard Academy (Connecticut) does not currently have any network chargeback system. We are considering a charge to all cadets to cover “personal” usage. However, the issue is not cost recovery. The issue is the ethics of use of government equipment/services for personal use. There is no way to monitor the network to prevent or monitor personal use. Internet access is a fixed cost. However, how do you explain the ethical implications of this? We are choosing to demonstrate that government equipment is not free for personal use by charging a flat fee for such use.

Commander Steven M. Conway
Head, Department of Information Services
conway@dcs.eq.uscga.edu

At Clackamas Community College (Oregon) we do not charge back on a monthly or annual basis for network access at this time. The costs to maintain our internal and external networks and connections are part of the computer services budget. We do charge back for the initial connection to the network. A cost of $250 covers wiring, software, network interface cards, and network port.

Paul Rothi
Chief Information Officer
paulr@clackamas.cc.or.us

The Department of Computer Services at the University of South Africa is responsible for all computer-related services within the University. Currently the department receives requests for computer hardware and software and prepares budgets that are presented to management for approval annually. The University then allocates funds that are used to purchase and supply the needs within the budget restrictions.

We are currently planning for the implemen-
tation of a concept under which we will have to function as a cost center for all services supplied by the department. These plans have not been finalized, but we plan for this system to be in operation by mid-1996.

**Vic Stipinovich**
Director, Department of Computer Services
stipivn@alpha.unisa.ac.za

**Arizona State University** has had and continues to have a policy of not charging faculty, staff, or students for legitimate use of computing resources. This includes Internet access. As with other universities, we are watching as the Internet is privatized, fully understanding that there is a high probability that eventually the capacity charging model we are now working with will change to a usage charging model. When this happens, it is our goal to continue to provide Internet access on a no-fee basis. We, like most universities, have worked hard to get our customer base onto the information superhighway and fear that if there is a usage charge passed on to them, they will shy away from using what may be the most significant educational paradigm change of the 20th century.

A potentially more important issue than the impact of this charging model change on the university campus is the impact that it would have on the K-12 community. At a time when we are working hard to get them as players on the information superhighway, they may find that the toll roads are prohibitive for them to travel.

**William E. Lewis**
Vice Provost for Information Technology
william.lewis@asu.edu

**Creighton University**, a private university in Omaha, Nebraska, implemented a “utility fee” for campus and Internet network usage, effective July 1, 1992. This fee, structured at $6.25/month or $75/year, is imposed on all administrative and academic users. The revenue generated is used to sustain and improve the University’s network capacity and capability, which will include nearly 5,000 connection locations by July 1, 1995. The fee, which is about half of the cost of providing a dial tone to a campus phone, is not assessed for student connections in their residence hall rooms, nor is it imposed for curriculum computing labs and general student user labs. To date, only one complaint has been received about the charging of the utility fee. Others have enthusiastically supported the utility fee concept as charging only those who use the service provided. It generates nearly $100,000 a year and provides funding for network operations and improvements (providing technical support all the way to the back of the individual computer) which would probably not be forthcoming from the University budget.

Recently the University’s Board of Directors approved a new fee structure that includes a $50/year technology-users’ fee for full-time students and $6/year for part-time students, effective Fall Semester, 1995.

**Leon G. “Benny” Benschoter**
Vice President/Information Systems
bennyb@creighton.edu

**Portland Community College** (Oregon) has a new wide-area network that supports centralized administrative applications, electronic mail, dial-in and dial-out modems, and Internet access. Students use the network only through one of the computing labs located on each campus. There are currently 1,500 network connections.

At this time, network services are delivered at no charge. However, beginning in the fall, there will be two additional network services that staff and faculty can receive for a yearly fee. The first provides the ability for work groups to share files and printers without investing in a LAN. As an added incentive, network faxing will be included. The yearly fee for each customer for these services is $45.

The second new service, which is also optional, will be a subscription to desktop software via the network. Customers will be able to use Microsoft Office for Windows, Internet client software, Windows 95, and any other free or cheap software that we find to bundle with it. They will run the software from a network server, where it will be updated with new releases. The yearly fee will be $75 per user.

**Ray Grant**
Director of Information Technology Services
rgrant@pcc.edu

**Regis University** (Colorado) is not charging students for access to its networks. However, Regis does charge students the same cost the University pays to the Internet supplier for Internet access. The University is considering a fee for computer access on the campus.

**Dennis Simms**
Director of Information Services
dsimms@csn.org

Access to **North Carolina State University**’s administrative network and customer support services is viewed by the Vice Chancellor for Finance and Business as a necessary tool that facilitates more effective business practices. This concept is especially important during the current trend of downsizing and budget reductions.
MIRC (the Management Information Resource Center) is a department within the Office of Finance and Business charged with providing a production level, fault-tolerant administrative networking environment and customer support services to administrative users throughout the University.

Services provided are well defined in a service level statement, continually updated and communicated to all MIRC customers, currently numbering 1,200 faculty and staff. State funding provided by the Office of Finance and Business through MIRC to provide these services to all state-supported administrative users. In accordance with University budget guidelines, faculty and staff (supported by receipts) pay an equivalent annual fee, currently $820 per user account, for access to the administrative network and all customer support services. Network access and support services are offered only as a whole package, to simplify administration, promote use of all available network services, and provide an across-the-board standard environment that allows for more efficient customer support efforts. Users are individually responsible for the purchase of their workstation, network interface card, printers, and peripheral devices. MIRC provides the network infrastructure, software licenses, and staff for customer support services. A summary of services provided would include:

- Licenses for a standard suite of software applications, providing for e-mail, calendaring and scheduling, word processing, spreadsheets, databases, SQL query to institutional data, 3270 mainframe access, World Wide Web browser and other Internet tools, network-based faxing, project management, and graphics manipulation.
- A help desk, available by e-mail and phone, to assist with problem resolution, questions, and consulting.
- A hardware technician to assist with hardware installations, troubleshooting, and upgrades.
- Computing consultants who provide worksta-

“We don’t charge for snail-mail; why charge for e-mail?”

At Université Laval (Québec, Canada), we do not charge students for access to the network, either from the campus or from outside through about 100 available lines. We have made it a matter of policy, in a plan adopted in 1993, to make access as easy as possible for students, faculty, and staff. This called for abolishing a previously existing monthly charge, adding 40 new lines, and planning for more. At this time, we see charges as counter-productive. We don’t charge for snail-mail; why charge for e-mail?

Yves M. Giroux
Assistant to the Rector Directeur du Projet AMI
yves.giroux@rec.ulaval.ca

We do not charge for network access at Oakland University (Michigan)—nor do we have any kind of internal charge system for computing. The philosophy is simple: we want to encourage use of technology, not discourage it, and charge systems serve as a negative inducement.

There is a practical side as well. Internal charge systems are notoriously expensive to administer, so why not save the hassle and the dollars and apply the savings to improving the infrastructure?

Bill Connellan
Associate Vice President for Academic Affairs
connella@jupiter.acs.oakland.edu

Fall 1995 Readers Respond Question

What constraints, if any, is your institution placing on the use of institutionally owned computing and network resources?

Under what conditions is external access allowed?

Please send your response, along with your name, title, e-mail address, phone and fax numbers by electronic mail to: jrudy@CAUSE.colorado.edu; by fax to 303-440-0461, or by regular mail to CAUSE/EFFECT Editor, CAUSE, Suite 302E, 4840 Pearl East Circle, Boulder, CO 80301.
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