Chapter 3
Organizing Information Resources for Effective Management
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Organizing and Managing Information Resources on Your Campus
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Individuals and groups of people carry out roles and work together to achieve shared objectives within a formal social structure and with established processes. This is the basic definition of an organization. In this chapter, we seek to stimulate awareness and understanding about the current status, diversity, and future development of information resources (IR) organizational structures in colleges and universities. We address the nature and purpose of organizational structures in general, consider organization in the context of the higher education culture, recommend six general principles for designing effective higher education IR organizations and examine how myriad factors will influence choice of IR organizational design, and suggest some developments that may have implications for IR organizational structures and processes in the future.

The Nature and Purpose of Structure

Organizations have been a subject of analysis and critique in the management literature, and the processes of organizational design

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and development have been documented in both theoretical and research presentations. Organizational structures define relationships and roles and the systems through which goals and priorities are established, decisions are made, resources are allocated, power is wielded, and plans are accomplished. They determine the degree to which administrative responsibility and authority are distributed and shared, operations and procedures are integrated and flexible, and policies and standards are designed and enforced. Organizational fluidity and vitality are important factors in productivity and success.

Organization theory looks at a variety of parameters to define organizational models, with particular focuses on these:

- Centralization and decentralization
- Hierarchy and adhocracy
- Bureaucracy and distribution
- Simplicity and complexity
- Formality and informality
- Administration and entrepreneurship
- Authority and collaboration

Organizations can be viewed, among many characteristics, in terms of layers and rigidity of structure, direction and effectiveness of information flow, sources and impact of leadership, participation in decision making, freedom of action, and levels of ambiguity. Particularly important are the environmental conditions that can influence organizational design, including the health of an industry, the level of competition, the speed of technological change, the extent of globalization, the degree of professionalization in the field, and the rapidity of new knowledge creation. This summary exploration of organizational characteristics itself reflects the broad range of perspectives and the labyrinth of traits and trends that affect structure and process.
Organizational Models in Higher Education

The higher education community, often described as poorly run but highly effective, presents a unique organizational tradition. Even as colleges and universities have grown in size and complexity, the historical dualism that brings together a conventional administrative hierarchy with the networked structure associated with academic governance and faculty decision making has been preserved.

Information resources organizations have grown up in this two-headed beast, and even today and in the most completely integrated organizations, the vestiges of this history are easily seen. IR organizations whose leadership is rooted on the academic side of the institution often exhibit structures and styles that are more akin to those of faculty departments than they are like the hierarchical business organizations they report to.

Colleges and universities have struggled to distribute authority, integrate key operations, break down bureaucratic processes, achieve less rigidity in structure, promote more cooperation across units, and build more matrix-type approaches to the work of the institution. Higher education has had strong flirtations with such initiatives as Total Quality Management, reengineering, and the learning organization, but little has been fundamentally changed in the traditional system-driven management models and the complex and conventional administrative hierarchies.

It is questionable whether higher education should or could effectively integrate the structures and strategies of the corporate environment and whether new management models can easily map into the classic academic bureaucracy. Not only is there often lack of clarity in institutional mission and goals, but they also are often multiple and conflicting. As a result, centralized planning and resource allocation systems often coexist with broadly distributed and loosely coupled structures across academic divisions and with an expanding array of maverick organizations like research centers and
entrepreneurial enterprises. The independence of faculty as teachers and investigators and their collective control over the principal products of the institution, that is, learning and new knowledge, add an often unfathomable and schizophrenic character to the organizational culture of higher education.

An inventory of the types of functions that exist within most colleges and universities under the umbrella of information resources and technology demonstrates the breadth and depth of the enterprise. These can include administrative computing, academic and research computing, networks, telephony, student computing, instructional technology, libraries, media services, language laboratories, print services, computer stores, mailrooms, Web support services, and electronic publishing.

**Principles for Organizing Information Resources**

Because institutions of higher education span the spectrum from small (both in enrollment and geography), relatively focused liberal arts colleges to large, spread-out, and highly diverse research universities—not to mention the spectrum of private to public to for-profit funding, single campus to multicampus system, and associate degree to doctoral granting—it is not surprising that the models for organizing the IR function are also highly diverse. Nevertheless, there are some general principles that may be of use in thinking about individual situations.

**Establish a Locus of Institutional Responsibility**

Regardless of the point on the range of diversity described above, one general organizational issue is where to place the institutional responsibility for the IR functions. A decade ago, responsibility for IR, even central IR functions, was distributed among senior executives. Today, most institutions have recognized the need for high-level leadership with broad responsibility for coordination across the institution (Green, 2001). Specific titles vary, but these posi-
tions are often referred to, formally or informally, as chief information officers, or CIOs.

Most CIOs report to the president or chancellor, the provost, or the administrative vice president or chief financial officer (Penrod, Chapter Two, this volume). They are often members of the executive staff and participate in important institutional decisions. However, even when they occupy these strategic roles, they rarely have direct management responsibility for all of the IR-related functions in the diverse and decentralized research university. They may not have direct responsibility for distributed support units within colleges and departments or for the libraries. Commonly, they will have direct responsibility for the centrally provided communications services, administrative data services, and general institutional services such as e-mail and calendaring. Depending on local priorities, they may have responsibility for high-performance computing and instructional and classroom technologies. Green (2001) and Latimer (2000) provide analyses of the functions normally included in the CIO portfolio. The examples of IR organizations that follow illustrate the variations that exist among institutions.

Bryn Mawr College

The CIO at Bryn Mawr, a progressive small liberal arts institution, has comprehensive responsibility for all of the IR elements, including libraries and distributed support. This college has developed a highly original structure in which library and academic computing staff are deployed around the campus in discipline-focused clusters (science, humanities, and so forth). Faculty coordinators help to ensure that local priorities govern support activities, but the staff still report to the institutional IR organization to ensure coordination, professional development, and standards.

Columbia University

This large urban undergraduate and graduate university with a strong research focus was an early integrator of information technology (IT)
functions under a single administrator. By the early 1970s, all computing and telecommunications areas were administered by a CIO, reporting to the executive vice president for academic affairs. In 1986, this structure was expanded to include the university libraries. By 1989, the pendulum had swung back in the other direction, with administrative computing and telephone services moving to report to an administrative vice president. Academic computing, network services, and the libraries continued to report to a university librarian who was also a vice president, and this unit has now been expanded to include an electronic publishing group, an electronic pedagogy group, and a center for digital library research and development. Several large professional schools and academic departments have developed resident IT support staff who work in varying degrees of coordination with the central administrative and academic computing organizations.

*The Pennsylvania State University*

Penn State is probably unique among higher education institutions in having twenty-four campuses that are geographically distributed yet function as part of a single university. The CIO has academic computing, administrative computing, telecommunications, and IT security reporting to his office. The libraries are outside the CIO responsibility, although the CIO organization does run the library systems and has a close working relationship with the dean of libraries. IT support staff on distributed campuses report to their campus administrations, but work closely with the CIO’s organization to ensure coordination. On the University Park campus, many units have local IT support staff who are in close communication with the central organization.

*Indiana University*

IU, also a large multicampus institution, appointed a vice president for IT and CIO (VPIT/CIO) in 1997 with direct responsibility for a multicampus organization of over twelve hundred staff members
who deliver IT services on the two core campuses, located in Bloomington and Indianapolis. In addition, the main IT organization coordinates local support and services at six other campuses through campus CIOs, who report jointly to the VPIT/CIO and campus chancellor. The libraries at all eight campuses are also part of a fairly centralized structure, reporting to the university librarian, and they work in collaboration with the IT organization on numerous initiatives. Local IT support personnel in departments and schools throughout the university, although not formally part of the central IT organization, collaborate and coordinate with service delivery units within University Information Technology Services.

Define Roles and Responsibilities Clearly

Once a decision is made about the nature and locus of institutional responsibility for information resources, it is important to define the extent and limits of the institutional role and, by inference, the extent and limits of the roles of other managers within the institution. For example, if the first decision is that there will be a CIO with certain functions reporting to that office, the second set of decisions should address the other IR functions that are not part of the CIO office and how their roles relate to the CIO office and to each other. This is clearly important when the library does not report to the CIO, but it is also important for all the other central units, like printing and media services, as well as the distributed support units. What is the relationship between the desktop support and local area network administrators within departments and the central network and computing support organization?

Formally Organize Distributed Support

It is often the case that executives thinking about organizing IR on campus focus exclusively on structure for the central IR organizations. In complex research universities, the majority of IR staff are outside the central organizations and are often not effectively part of any IR organization.
The president or provost and CIO should work directly with deans and other vice presidents to suggest organizational structures for use within their units that can improve service and efficiency and facilitate coordination across the whole institution. For example, it is very common to find that single IT support persons with responsibility for individual departments or buildings report to departmental administrative assistants or assistant chairpersons. These individuals have no backup and, in many cases, no effective supervision. Although the protocols and conventions they deploy might be effective as long as the specific individual is there to maintain them, they often are completely unsupportable in the absence of their creator.

Schools or colleges should organize the general IR support people at the level of the school or college and then assign them to a primary department, building, or disciplinary group. By making them part of a larger IR support organization, someone can cross-train them, arrange to have them cover for each other, and develop some standards and conventions. The manager of this college- or school-based unit could have informal managerial responsibility to someone in the central IR department for purposes of institution-wide coordination.

Most large and complex institutions agree that it is important to have IR support staff working within departments close to the people they support, but the lack of coordination can significantly increase the cost. McClure, Smith, and Lockard (1999) and Miller (2002) provide extended analysis of structures and mechanisms for organizing distributed IT support.

Recognize That Structures Often Depend on the People Available

Especially at the institutional level, the availability of individuals with the content and leadership skills for specific roles will be a major determinant of the structure selected. If there is a person in whom the chief executive and the rest of the institution have con-
fidence for a particular role, it is much easier to design a structure to support the person and role than if there is disagreement or competitive claims on the role. It is not uncommon to have executive leadership break up an integrated IT or IR organization when the strong leader who held them together leaves the institution. Executives need to be conscious of this dynamic because the rhetoric characterizing these decisions does not always clarify whether the rationale is one of objective structure or key person dependency. Either is a valid consideration; what is important is to understand which is driving the decision.

Use Common Sense

If you combine people into a single organization, their purposes are more likely to harmonize and converge than not. If you put them into separate structures, their work will diverge. So thinking about organization structure involves identifying the most important dimension of the institution to have coherence on the IR front and then organizing accordingly.

For example, you could decide that having IR support the specific unique academic programs of the institution is the most important goal. That would suggest assigning the IR staff to schools and colleges and perhaps not even having a central academic computing or library function. This arrangement would probably not be the most cost-effective organization, nor would it produce a technological or information infrastructure that has coherence at the institution-wide level. Also, because leadership ability and deep technical skills are generally in limited supply, the institution might find itself falling behind its institutional peers, unable to keep pace with technological change and limited in its ability to advance its mission through technology.

As another example, if you decide that having common administrative processes across the entire institution is most important, that would suggest aligning administrative computing to the core functional administrative units centrally. This arrangement would
probably not produce an information infrastructure that ideally meets the desires of the distributed departments, however, and they would likely create shadow systems.

These examples illustrate the concept that the organization of the IR function is a strategic issue and should be determined by the strategic priorities of the institution.

**Design Organizations to Enable Them to Change**

With the underlying technologies changing so rapidly and the institutional priorities and needs also evolving, perhaps the most important principle to the design of IR organizations is that the structures should support and enable change. When the technologies supporting audiovisual, high-performance computing, and accounting processing, for example, were all unique and incompatible, separate and independent organizations supported them. As these and other functions came to be based on common platforms, the need for separate organizations vanished, and campuses reorganized accordingly.

IR organizations are among the most dynamic on campus. This need for organizational change is met in some institutions through frequent reorganization, an approach that is very hard on the IR staff, who have little continuity in relationships and priorities. It is also hard on the customers, patrons, and other users of their services. They complain that they never know where to go to find the support they need. A different approach is to build a more classical functional base organization and to draw individuals from this persistent structure to create short-lived project teams to accomplish specific purposes. Savage (1990) and Hastings (1993) describe some of the benefits and the challenges of creating and managing such an organization.

In our experience, the greatest challenge is in developing the IR staff’s abilities to function in the matrix-like structure, where they are accountable to both a project manager and a line manager. The managers have to learn how to develop processes designed to resolve the inevitable conflicts among themselves.
Factors Affecting Structure and Process

Institutional characteristics that influence some of the important differences in IR organizational infrastructure include size, control (private versus public), scope of research mission, single versus multicampus structure, presence of professional schools, funding, planning traditions, faculty governance, and tolerance for risk. Another important factor is leadership, that is, the vision and involvement of academic administrators, IR managers, and faculty in pushing the IR agenda and recognizing the link between organizational development and advancement and success. (See the related discussion in Chapter Two.)

It is also important to consider the relationship of technology adoption and integration to organizational development, in that the deeper IR is integrated into administrative systems and academic lifestyles, the more robust and central the IR structure and process become. Importance leads to attention, which leads to action in the academy.

Organizational structure has an important impact on several key aspects of organizational process and character:

- IR organizations often bring together units with very different cultural traditions (the customary beliefs, social norms, styles, thought patterns, and behaviors that characterize a group of people). An administrative computing group coming out of a mainframe or a fee-for-service tradition looks at IR very differently than does an academic computing group coming out of a faculty-based and more free-wheeling tradition or a library group that has centuries rather than decades of professional development and is struggling also to manage large legacy responsibilities. They think differently, they value different things, they work together in different ways, they look at relationships differently, and they relate to the academic culture with remarkable diversity.
• IR organizations often bring together units with very different approaches to leadership (the capacity for vision, guidance, and influence) and power (the ability to control, motivate, influence, and exercise authority). An administrative tradition would suggest a more hierarchical and bureaucratic style with clear lines of authority and the linking of power to decision making. An academic tradition would suggest a more deliberative and consultative style with the linking of power to process and distribution of responsibility. The effective coexistence or integration of these different routines is an important challenge in higher education.

• IR organizations often bring together units with very different understandings of strategy development (the actions that make an organization more competitive and successful) and planning (the process of evaluating options and establishing goals and priorities). Again, an administrative tradition would point to a stronger commitment to strategic process, and an academic tradition would point to a fuzzier and less business-like manner.

• IR organizations often bring together units with very different communication and collaboration practices. By communication, we mean the exchange or sharing of information through common systems of symbols and behaviors, and by collaboration, we mean cooperation and working together across organizational boundaries. The dynamics of technological change and the increasing centrality of technology to higher education success argue for a more deliberative and consistent commitment to effective communication and collaboration. The degree to which oral, written, or electronic communication traditions predominate and coexist, and the extent to which there is openness to working with others from different backgrounds and with conflicting priorities, will be critical to the effective evolution of IR organizational development.

• IR organizations often bring together units with different views on budgeting and resource allocation, that is, the administration of available funds and the assignment of organizational assets to different activities. In higher education, some IR units have been
funded out of institutional resources through the central administrative budget or through some formula-based allocation of costs to units that consume IR services. In other cases, IR units have been expected to charge for services and to operate on a subsidized or cost-recovery basis. And in other cases, IR units have been charged with generating new resources from outside the institution, perhaps through obtaining grants, fundraising, or the development of products and services for new markets. (Chapter Four elaborates on these concepts.)

- IR organizations often bring together units with different views on assessment, that is, the determination of the value, importance, and impact of a program or a service. All higher education institutions are increasingly under expanded scrutiny and accountability from boards, legislatures, and students, and this scrutiny touches IR organizations very directly. There are no clear measures of return on investment for IR or of the impact on the quality and reputation of the institution. Administrative computing traditions may be more focused on quantitative measures, and academic computing may be more comfortable with qualitative studies. Libraries historically have been evaluated through input measures, while there are clear expectations for more documentation of output assessment. (See the discussion of assessment in Chapter Nine.)

The central issue in the consideration of these various issues is the meaning of “bring together” and the extent to which the various IR units work in a college or university independently, collaboratively, administratively linked, or organizationally integrated. The degree of integration will highlight the different traditions and practices, the compatibility of cultures, the effectiveness of leadership and planning, the quality of communication and cooperation, the rigor of resource allocation, and the impact of assessment across newly coupled IR units.

Bringing these differentiated perspectives together in a merged organization can be an enormously powerful way to evoke the active
and creative rethinking of the underlying issues. Separate organizations that have been allowed to harden into polarized positions sometimes can find common ground only through consolidation and the associated requirement to sort out a new shared view on all of these things.

The Implications of Future IR Development

Just as higher education technological developments have influenced campus IR organizations in the past, we believe that many such developments on the horizon will have implications for IR structure and process in the future, including the following:

- Expanded growth of national and global network capacity and performance to meet the demands of scientific and research computing and new high-demand applications
- Increased importance of improved IR security and disaster preparedness
- A desire to deploy new portal services in both the administrative and academic arenas
- Enterprise-wide system implementations to manage administrative functions and services
- New national information policies in such areas as privacy, intellectual property, and intellectual freedom
- Implementation of institutional repositories and asset management systems to capture and manage the digital assets of a college or university
- New initiatives in on-line publishing and on-line course development pushed out to external markets
• Massive conversion of print to electronic resources in library collections
• Personal digital assistant device technology
• Broad-based electronic records management systems to archive institutional information
• Cross-institutional approaches to preservation of the scholarly record and to sharing of IR expertise

Conclusion

There is no single recipe for the one right way to organize the IR function within higher education institutions. There are, however, some basic guidelines that can help with the design process. First, we suggest that the ability of the organization to evolve gracefully to meet the incessant change that will buffet it be given very heavy weight in the design process. Second, we acknowledge the overarching importance of the availability of persons with the professional and leadership ability to match the challenges facing the institution. It makes no sense to design an organization for a fully integrated IR structure if the institution does not have and is unsuccessful at attracting a capable CIO to lead that organization. Finally, whatever the structure, it should be consonant with the overall structure and culture of the institution it is to serve, and it should attempt to define structure, roles, and responsibilities throughout the enterprise, not just in the central offices.

References
