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Integrating Computing and Library Services:

An Administrative Planning and Implementation Guide for Information Resources

by Arnold Hirshon

CAUSE Professional Paper Series, #18

Published in cooperation with the Coalition for Networked Information

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an organization to advance the transformative promise of networked information technology for the advancement of scholarly communication and the enrichment of intellectual productivity

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Dedication

To my parents, for surviving my youth
and providing encouragement in my adulthood

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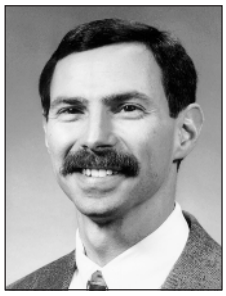

Arnold Hirshon became vice provost for Information Resources at Lehigh University in 1995. Responsible for the university libraries, computing, telecommunications, and media services, he has led Lehigh's strategic planning and restructuring process to integrate the computing and library functions. He is responsible for the institution's Internet 2 implementation, introduced an effort to improve enterprise-wide information systems, and helped to found a statewide academic library consortium.

From 1990 to 1995, Hirshon was university librarian at Wright State University. He has also served as associate director of University Library Services at Virginia Commonwealth University, assistant head of the Cataloging Department at Duke University, and head of the OCLC Cataloging Section at Wayne State University.

Hirshon served in 1992 as president of the Association for Library Collections & Technical Services (ALCTS), and as editor of the ALCTS *Newsletter.* His substantial publication record includes monographs, book chapters, and articles on information technology, outsourcing, library consortia, organizational planning and reengineering, customer services, and the impact of digital publishing. A frequent lecturer, he has spoken across the United States and internationally. Further information about Hirshon may be found at http://www.lehigh.edu/~arh5/arh5.html.

Acknowledgments

The author gratefully acknowledges the contributions of Julia Rudy of the CAUSE office for her support and encouragement in shaping this paper. In addition, I thank all of the respondents to my spring 1997 survey of chief information officers, the participants in the 1996 focus group of chief information officers responsible for integrated information resources operations, and those who attended the similar meeting at the 1997 CAUSE annual conference. I am also indebted to Ray Metz of Bucknell University for his invaluable comments on the manuscript. Finally, I acknowledge the efforts of many people at Lehigh University from whom I have learned so much.

Foreword

One of the main reasons for the founding of the Coalition for Networked Information in the early 1990s was the perception that harvesting the growing potential of information technology and high-performance networks to transform scholarship, teaching, and learning would require unprecedented collaboration between librarians and information technologists. Indeed, furthering such collaboration has been a major programmatic theme in the Coalition's work over the years through efforts like new learning communities and the working-together workshops; it has also been a vital underpinning for work in areas as diverse as authentication, cost centers and measures, the TULIP electronic scholarly journal project, and digital dissertations.

One strategy that some institutions have used to advance the cause of greater collaboration between computing and libraries is the actual administrative integration of the two functions. This integration has been undertaken for a variety of reasons, some good and some not so good, and has proven to be an uncertain and controversial enterprise. Merging computing and libraries involves bringing together two cultures which can be very different: even though they share some strongly held values such as the overarching importance of user service, these are not necessarily recognized as common fundamental values. Library directors and information technology directors both have very difficult jobs and face almost impossible sets of expectations from their campus constituencies. Bringing together both sets of functions and expectations has the potential to produce a totally unmanageable situation for the incumbent.

I first became aware of these issues in the latter part of the 1970s, early in my own career, when a question emerged about how computing responsibilities would be distributed between the library and the academic computer center at New York University. Later, at the University of California Office of the President, as director of library automation I actually operated a large computer center for a time, and for many years a very significant part of the intercampus networking function fell under purview of that directorship. The function of library automation itself was part of the portfolio of the University-wide CIO, my boss. So I am keenly aware of the questions that the new digital environment raises for the management and organization of activities that of necessity integrate library and information technology activities. I can also remember well the excitement about the potential of combining computing and library functions, and the debate raised by Ray Neff's memorable 1985 paper, "Merging Libraries and Computer Centers: Manifest Destiny or Manifestly Deranged?" [*EDUCOM Bulletin* 20, no. 4:8–16]—the title of Neff's paper nicely sums up the very strong feelings on both sides of the argument. Given this personal background, I found this new professional paper, *Integrating Computing and Library Services*, to be of great interest as a perspective on these issues from the senior management level.

Arnold Hirshon has done our community a very real service in preparing this CAUSE paper on the integration of computing and library services. He moves us beyond rhetoric and theory to a thorough, pragmatic, and dispassionate analysis of actual comparative institutional experience in integrating the functions. Then, building on this analysis, he provides us with a tremendously valuable discussion of the conditions under which such mergers are likely to succeed, and offers detailed, step-by-step advice for those institutions that may choose to pursue such a merger.

A number of key points come through very clearly. Successful and effective collaborations between information technology and libraries do not require the merger of the two functions, although merging the functions may be a reasonable way to build on and deepen an already well-established base of collaboration. Merging the functions is an expensive, complex, risky investment under the best of circumstances, and is a terrible way to try to repair an environment in which effective collaboration isn't happening, or to shore up one or more dysfunctional organizations. If things are going well with collaboration, a merger is still an investment that is not to be made lightly, and it may be counterproductive if the institution isn't both clear and realistic about the benefits it hopes to obtain through such an action. As Hirshon puts it, "Integrating operations is a tool to achieving institutional objectives, not an objective in itself... The institution must have a vision of what an integrated organization will accomplish, and how the integration will help to achieve that vision or reach the established goals." He makes the point very articulately that this is a high-stakes decision that each institution needs to make for itself, considering its own character,

vision, and goals, and that it certainly isn't a universal best practice that all institutions should mindlessly adopt. I think that Hirshon and I share the belief that an explicit organizational merger is but one possible means towards the objective of more flexible and responsive service to the academic community. Hirshon's great contribution is to help us to understand when this means is likely to help rather than to hinder, and what sorts of results we can reasonably gain from it under varying initial conditions and expectations.

One misguided reason for merging, Hirshon suggests, is to save money. Hirshon's analysis documents numerous aspects of this issue that merit careful consideration, beyond the one-time cost of the merger. Merging the organization will have wide-reaching and ongoing implications for human resource costs in areas such as salary equity, for example. Related to this, one of the statistics that I found most striking was that 71 percent of the institutions Hirshon studied retained separate library and computing directors reporting to the CIO; even in the 17 percent that reported full integration he observes that traditional library and computing subordinate structures remain in the organization chart reporting to the CIO. Clearly, while the kinds and quality of services offered to the campus community may be beneficially changed by merging the two functions, the resulting organizational structure often results in a lower level of integration than one might have expected, and often the net effect seems to have been to insert an additional level of senior management into the organizational structure. It's clear that we will need ongoing research into the effects of these mergers to understand the extent to which the goals of the merger are actually being met; in many cases the new organizations are too new for such an assessment to be made today.

One of the great drivers to consider merging information technology and library functions is the growing convergence between content and technology. My feeling is that this issue is going to become even more complex and visible in the coming years as distance education, instructional technology, multimedia authoring and distribution, and very sophisticated network applications become ever larger factors in the activities of universities and colleges. Institutions will continue to grapple with how to best organize this growing span of disparate but interrelated activities and services. Hirshon's work provides a superb starting point for institutional dialog about how to address these challenges.

Clifford A. Lynch
Executive Director
Coalition for Networked Information

Executive Summary

Since the early 1990s, there has been a dramatic growth in the number of higher education institutions in North America with integrated library and computing operations. Currently more than ninety four-year institutions of varying sizes have such organizations, and more than 80 percent of these institutions integrated their operations since 1993. This paper does not advocate organizational integration, nor does it present the experience of any one institution. It does provide an objective guide for exploring the causes, desirable conditions, alternatives, and initial steps when an institution wishes to consider merging its computing and libraries.

Terminology

Organizational integration of libraries and computing is still relatively new and is constantly changing. Therefore there is, as yet, little standardized terminology. Within the context of this paper, the following definitions are used:

The term *chief information officer* (*CIO*) describes only those individuals to whom **both** computing and library operations report. *Computing* is an inclusive term for major technology operations, including academic and administrative computing, networking, and telecommunications. *Information resources* is an inclusive term describing combined library and computing operations. An *integrated organization* is one in which significant aspects of both the computing and the library operations report to the same chief information officer. *Provost* is used interchangeably with "chief academic officer" and "vice president for academic affairs." The *survey* referenced herein was an e-mail survey conducted by the author in spring 1997 of CIOs at four-year institutions in North America. The term *university* is used broadly to describe four-year colleges or universities.

History and Trends

Historical Perspective and Trends

Although a few institutions combined the management of libraries and computing in the 1970s, this approach became more widespread during the mid to late 1980s as enabling technology caught up with the concept. The merger mania of the 1990s occurred simultaneously with the introduction and expansion of the World Wide Web, campus networks, and the increased availability of library information in electronic form accessible through open systems with standard Web interfaces.

The Growth of Organizational Integration

While these changes in technology have clearly had an influence on the increasing trend toward merging, other forces have also been at work. According to the survey, these include: (1) a growing convergence of information and the technology upon which it relies; (2) an increased ability to use information and technology to create and enable better and more coordinated services; (3) a need on some campuses to remediate weak service organizations; (4) a precipitating event, such as the departure of a key administrator or construction of a new building; and (5) the development of a new institutional strategic vision.

Practical Benefits

CIOs at an informal meeting in December 1997 noted accomplishments made possible (or carried out more easily) because they had an integrated organization: specific service improvements (such as a single point of contact for computing and library assistance), improved campus visibility for the two operations, greater organizational flexibility to deploy staff or financial resources, increased staff cooperation, and improved compensation equity.

Ubiquity of the Integrated Organizational Model

Integrated organizations are present at a wide variety of institutions, ranging from liberal arts colleges to large research universities. The average student body size among survey respondents is 9,000, the average faculty size is 645, and the breakdown by Carnegie type reflects a good distribution at institutions of all types.

Making the Institutional Decision

Deciding Whether To Integrate

Integrating operations is a tool to achieving institutional objectives, not an objective in itself. There are certainly times when the conditions are not conducive, or where other activities should occur before an institution attempts integration. The institution must have a vision of what an integrated organization will accomplish, and

how the integration will help achieve that vision or reach the established goals. Ideally the integration should evolve as a logical next step within the host institution rather than as a complete disconnect from the past. Conditions that seem to predispose the new operation to success include a naturally occurring event that led to the decision, strong support from the president and provost, flexibility of the organization's culture, and minimal conflict related to status and position classification of faculty and professional staff. Some significant *factors for success* include:

- use of the integration to advance university goals,
- a collaborative history between the computing and library operations,
- strong faculty support,
- a climate of readiness within both organizations,
- a perceived value in having one voice address information and technology issues, and
- an institutional desire to build a client-service-oriented and technology-enabled organization.

Poor drivers for integrating include:

- doing it because other institutions are doing so,
- trying to improve a weak operation by marrying it to a stronger one,
- needing to downsize or save money,
- combining operations to save space, and
- reducing the number of direct reports to the provost or president.

Even if the institution decides not to integrate, several less drastic alternatives may improve cooperation: remediate or eliminate weak operations, consolidate like operations, and increase collaboration between the library and computer operations on special projects.

Recruiting and Hiring the CIO

Scope and Reporting Relationship of the Position

In addition to library and academic computing operations, other duties of the CIO typically include administrative computing, campus networking and telecommunications, and media production and delivery services. Because one of the common purposes for creating the CIO position is to elevate the status or visibility of the operations, the CIO almost always reports to the provost or the president. In the survey, 75 percent report to the provost, and 17 percent to the president. Regardless of the reporting structure, the CIO usually has a seat at the table of the highest level of institutional decision-making groups, such as a president's cabinet, dean's council, or university planning and budget committee.

Names and Titles

A large number of institutions continue to include the word "library" somewhere in the name of the new organization; the word "computing" occurs far less frequently. More common are broader names, such as "information services." The most frequently occurring phrases include the words "information," "services," and "resources."

The title of the new position will reflect the organizational context of the campus. If the title implies that the position holds little status, that fact will probably affect the quality of the applicant pool. Currently, 61 percent of the CIOs responding to the survey hold the title of vice president, associate vice president, vice provost, associate provost, or dean. Other commonly used titles include director, chief information officer, and college or university librarian.

The Search Process

CIO positions are relatively new in academe, so the applicant pool is unlikely to include many, if any, current CIOs. Most applicants will probably be directors of campus libraries or computing. The highest priority is to find someone with a combination of library and computing experience who demonstrates sensitivity to the issues and to the concerns of staff in both areas of operation. To improve the pool, some institutions engage the services of an executive search firm. In any event, it is important to balance the composition of the search committee. Given the diversity of faculty, and of computing and library concerns, a premium should be placed on appointing individuals who take a campuswide perspective, are capable of articulating their views, and demonstrate potential — not necessarily on individuals who have had specific work experiences.

Advertisements must clearly state the scope of the organization and the responsibilities and desired qualifications of the CIO. Unless there is a particular need to hire a technologist or librarian, the position description should contain no bias. Qualifications described in detail in this paper include education and job knowledge; professional experience and accomplishments; academic and technical skills and abilities; and administrative skills, abilities, and experiences.

According to the author's survey, 60 percent of incumbent CIOs were promoted from within, and 40 percent were hired from the outside. Librarians were more likely to be promoted into the position (61 percent); only 32 percent of those promoted from within had a predominantly computing background. The remaining 7 percent came from other backgrounds. Among those hired from the outside, there was a relatively even division between those with a predominantly computing background (53 percent) and those with a librarian background (47 percent).

Evaluating Candidates

Search committees should consider not only the degree of the candidate's expertise within his or her own field, but also experience relevant to both libraries and computing. Even if the candidate has had only limited personal experience in both areas, in the cover letter and

interview the candidate should demonstrate a balanced approach by introducing examples relevant to both areas.

Advice to Potential Candidates

The CIO will be in a highly visible, and therefore high-risk, position. Candidates should consider their own experience and background as well as the readiness of the institution to bring about this change. Do you truly understand the organizational and cultural differences between libraries and computing? What can you bring to the position and to the institution? What degree of support is there for the position across campus? Is there enough inherent talent on the staff to support the new organization? Is the timetable for success realistic?

Negotiating with the Preferred Candidate

Once an offer has been made, the candidate and institutions should be prepared to discuss such difficult issues as the presence of the CIO on major campus advisory and decision-making bodies, extended commitment to the individual (either tenure or a long-term contract), additional funding for new staff positions within information resources, budget increases for operating resources, expectations for significant organizational changes resulting from the integration, and salary.

The New Organization: First Steps

Challenges for the New CIO

The new CIO will be expected to define the new organization and position. There will probably be much second-guessing. In an environment of high expectations, the new CIO should expect to listen intently to staff and clients, demonstrate balance and fairness for both libraries and computing, establish credentials with both the computing and library staff, quickly build support for the organization within the staff and on campus, encourage open dialog, build a strong leadership team, recognize the level of staff expertise, not raise unrealistic expectations, and address organizational cultural differences.

Potential obstacles to success include too narrow a vision of the role of the CIO; failure to resolve organizational cultural differences; failure to address staff status and compensation inequalities; inadequate funding, which fosters competition for resources; union agreements that make organizational changes unduly difficult; living in the past or resisting experimentation; creating unrealistic expectations; failure by staff to stay current with developments in technology, information content, or management practices; forcing the integration in an institutional environment with no previous success with inter-organizational collaboration; and failure to build an effective technology infrastructure to support content needs.

Planning to Implement the Vision

Integration is substantially improved when there is a shared vision of the change as being beneficial. A comprehensive strategic plan can enhance service delivery and position the organization to accomplish its goals. A rigorous planning process should involve both internal and external constituencies. Principles or assumptions to guide the planning process should be established at the outset — for example, are there "sacred cows" that the plan will not address? A clear calendar of events for developing and implementing the plan will keep the process on track and give predictability that is reassuring for everyone involved. Key elements of a successful strategic planning process include staff education, environmental scanning, effective working groups, and allowing review and comment of the draft plan.

Reorganizing

Only after the organization has articulated its mission, vision, and goals should any restructuring occur. The goal of restructuring is to generate a fresh view of services and internal management, and to further strategic plans and investments. The process also enables the organization to identify activities that are redundant or require increased coordination. Changing the organizational structure involves many logical, political, emotional, and practical problems, and this often is the hottest issue in an organizational integration.

The major consideration in restructuring is the intended degree of integration. Among the survey respondents, 71 percent have thus far retained separate library and computing directors. Only 17 percent reported a fully integrated organizational model, but even in these cases the organization charts show that traditional library and computing subordinate structures remain, now reporting to the CIO. A key organizational issue is how to provide effective point-of-need and in-depth information client services, and whether library and computing help and consultation services will be integrated (and to what degree). Other structural issues include whether the organization should be discipline based or client based, centralized or distributed, hierarchical and matrix based or team based, stove-piped or interactive, and evolutionary or revolutionary.

Any restructuring plans should be shared regularly with the person to whom the CIO reports and with the university human resources department. Issues that should receive extensive attention include the objectives of the restructuring, methods for assigning staff their new responsibilities, new position descriptions and job titles, position classification and human resources audits, steps for initial and ongoing organizational development, the possibility of staff turnover, and differences in organizational cultures of libraries and computing.

Relocation of Offices and Operations

Changes to staff office and public service spaces must be based on making the best use of available space within the context of the overall objectives of the integration. Client support teams may need to be located near their client base or in other academic buildings. The CIO should also consider the effect of the location of his or her own office upon staff, faculty, and other administrators.

Communicating with Staff and the Campus Community

Throughout the planning and implementation processes, it is essential to maintain staff and campus communication. Whenever an organization undergoes a major change, the opportunities for misinformation and rumors are rife. Left unattended, these can seriously undercut the effectiveness of the new operation. The information resources group needs to make its transition plan known to its staff and the full campus, to clarify who is responsible for each of the old and new tasks, which tasks should be retained or eliminated, and when each part of the transition will occur. Some organizations may adopt an evolutionary switch-over accomplished in multiple phases over several months, while others may choose a single cut-over date when the old operations cease and the new ones begin. As soon as the changes and transition plans are known, the staff and campus education process should begin. Good communication methods include meetings with staff and other campus groups, electronic forums such as listservs, formal publications (for instance, quick guides that identify the key contact people or service points), and a focused Web site.

Budget Considerations

Few institutions can afford to expend their information resources budget on an ad-hoc basis. Effective budget allocations and adequate funding should create a vital link between the plans and the budget. Information resources should develop multi-year plans to ensure funding for major priorities and initiatives, and consider whether the computing and library budgets should remain separate or become commingled.

Final Thoughts

The CIO job is not for the faint of heart. The following composite includes the author's advice and that of other CIOs.

Advice to Integration Planners

The integration should be a natural outgrowth of the university's strategic plan. Do not integrate simply to save money nor to solve a single personnel or organizational problem. Collaboration and cooperation can be accomplished in other ways, so the decision to integrate should be an act of faith and of courage, not a quick fix. Provide a substantial period of time for the new organization to grow, with at least a three-to-five-year commitment before substantially changing directions. Because things may get worse before they get better, the single most critical factor for success will be the continued firm support of the provost, president, and even the board of trustees.

Advice to Staff

Librarians and technologists must work as a team. Recognize and embrace the fact that the abilities, skills, and experiences of everyone are essential to the new enterprise. If you personally oppose the merger and absolutely cannot reconcile yourself to this change in the organization, use the integration as an opportunity to reassess your own career.

Advice to the New CIO

Be pragmatic, be daring, but take only realistic risks. Build alliances and partnerships. When things seem to be going smoothly, know that a new problem is around the corner. Show an interest in all operations, particularly those that were not part of your personal background. Be prepared for a long learning curve. Recognize that the sphere of concerns and political risks are greater than for a computing or library director alone. If you are uncomfortable juggling with blow torches, it may be advisable to look elsewhere for your next career move.

Integrating computing and library operations takes time and effort, and comes with no guarantees. Under the right conditions, however, it can yield significant improvements in service quality and resource allocation.

Introduction

Since the early 1990s, there has been a dramatic growth in the number of four-year academic institutions in North America with integrated library and computing operations. Currently there are more than ninety such institutions of all sizes (see Appendix B). According to a survey conducted by the author during the spring of 1997, over 80 percent of these mergers occurred since 1993. The purpose of this paper is to provide institutions with an objective guide to explore the causes, desirable conditions, alternatives, and initial steps when it wishes to consider whether to integrate computing and libraries.

This paper primarily addresses issues related to four-year colleges and universities in North America. While much of the content may pertain to community colleges or to institutions outside of this continent, those circumstances can present specialized situations. In addition, this is not a case study of the experiences of any particular institution. It is based upon the composite experiences of many institutions gleaned through the literature, surveys and focus groups, and the personal experiences of the author. Although the aim is to provide a summary of best practices, pragmatism and local politics must always be taken into account.

Definition of Terms

Given the newness of integrated operations, there is little standardized terminology. The following list defines how specific terms are used within the context of this paper.

- ***Chief Information Officer (CIO)***

Has many different meanings on different campuses. As Barbara Horgan notes,

> For some, a CIO is a senior-level administrator who participates on the institution's executive council and who is responsible for institution-wide information resources management (including central computing and networking, the library, telecommunications, multimedia, printing, and so forth). For others, a CIO is a senior officer who provides high-level oversight for information technology-related operations and who works in partnership with the college or university library head and advisory groups in planning for institution-wide investment in information resources — technology, services, and information.[1]

Even though there is no generally accepted common definition, in this paper the term CIO is used specifically to describe an individual to whom *both* computing and library operations report.

- ***Computing***

An inclusive term for major technology operations, including academic computing, administrative computing, networking, and telecommunications.

- ***Information Resources***

As used herein, a general term indicating an organization that comprises library, computing, telecommunications, and, often, other related services such as media services.

- ***Integrated organizations***

Includes institutions where significant aspects of both the computing and library operations report to the same chief information officer. In some (particularly larger) institutions, the integration may include only some parts of the technology operations (such as academic but not administrative computing) or some libraries (such as the main academic library but not the separately administered law library). Specifically *excluded* are institutions where there is joint management of only one service (such as a common computing and library help desk) or where the CIO has planning responsibilities but no line responsibilities for the actual operations, staff, or budgets. While such collaborative or coordinated activities are obviously desirable, they fall outside the scope of a fully integrated organization. As used herein, this term may be used interchangeably with the terms "merged" or "combined" organizations.

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[1] Barbara Horgan, "CAUSE's CIO Constituent Group: Sharing Experience and Expertise," *CAUSE/EFFECT* 19 (Summer 1996): 8-9,53, see http://www.cause.org/information-resources/ir-library/abstracts/cem9623.html.

It should be noted that some academics and campus chief information officers do not like the term CIO because they believe it is insufficiently defined in the academic setting or because they believe the origination of the term in business denigrates the component parts of the operation, i.e., libraries, computing, and technology services in general. The author does not know of any academic institutions that have adopted the even more vague term of "chief knowledge officer." The use of such a term in an academic institution would no doubt inspire great derision. At least one colleague on the teaching faculty remarked to the author, "What's next? Chief *wisdom* officer?"

- ***Provost***

Used interchangeably to signify the "chief academic officer" or "vice president for academic affairs."

- ***Survey***

An e-mail survey conducted by the author in spring 1997 of CIOs at four-year and graduate-level institutions in North America. The current list of qualifying institutions with a CIO includes more than ninety institutions (see Appendix B, page 35), but at the time of the survey some of these positions were vacant, being advertised, or were unknown to the author. The survey was sent to seventy institutions; forty-seven responses were returned. Some responses were incomplete, and therefore some of the results reported represent only a subset of these forty-seven institutions.

In addition to this formal survey, the author conducted a focus group with six chief information officers at the annual CAUSE conference in December 1996 and a discussion session of about thirty chief information officers at the December 1997 CAUSE conference. Comments from those discussions are incorporated into this report, as are comments received through an invitational electronic discussion list for chief information officers who hold responsibility for integrated information resources operations.

Integrating Libraries and Computing: History and Trends

The integration of the administration of libraries and computing is not a new phenomenon. Some institutions, such as the State University of New York at Albany and California State University at Chico, combined these operations in the 1970s, and their joint operations are still intact. During the mid to late 1980s a number of well-publicized integrations occurred, including those at Carnegie Mellon, Columbia, Duke, Rutgers, the University of Kentucky, Vanderbilt, Virginia Tech, and Wayne State University. Of those merged in the 1980s, only those at Kentucky and Virginia Tech still retain the essence of that organizational merger.

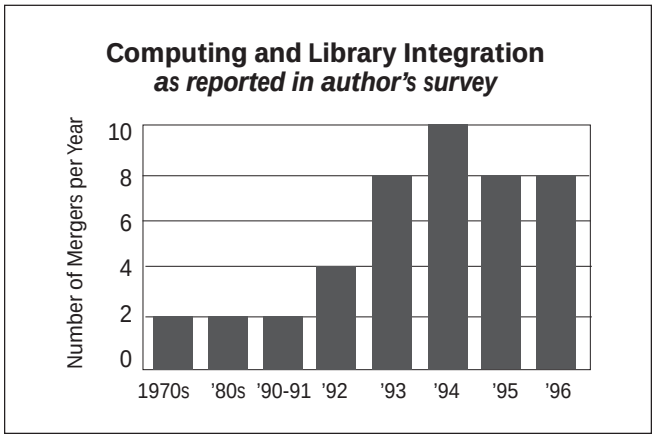
If a college or university is considering integrating today, it is important to understand why there were so few efforts in the mid 1980s, and why even fewer survived. A driving force behind the early integration efforts was the recognition that there were multiple information providers on campus who could be more successful through collaboration. The organizational lines began to blur as information organizations aligned their mission more closely with that of the university, and as the distinctions became less clear between the formats for delivering information and the technological methods to deliver that content.[2]

Unfortunately, the early mergers did not always permeate below the top level of the organization chart. In most cases there continued to be a director of the library and a director of the computing center, both of whom reported to an associate provost or assistant vice president rather than to the provost. The time was also not propitious for a full integration. While there were some promising joint applications, the philosophic models of information or technology service delivery on most campuses were still very traditional.

Current and Emerging Trends

If many of these early efforts were not permanent, why was there a resurgence in the 1990s? The frequency of mergers by year is very telling. As the chart at right shows, there was a distinct increase in the number of library and computing operations that integrated after 1992 among the institutions responding to the author's survey: only 8.7 percent were integrated before 1989, but 82 percent integrated in 1993 or after. The biggest concentration occurred from 1994 to 1996. Although preliminary review of the survey results might seem to indicate that there has been a slowdown in the last two years, bear in mind that the survey was conducted in spring 1997 (and therefore the most recent integrations might not be represented), and that a number of institutions did not respond to the survey because they were still recruiting for their CIO at the time.

The data indicate that while the concept might have been good before 1990, apparently its time had not yet come. What changed was that the technology finally caught up with the concept. It is not a coincidence that the more recent merger mania occurred simultaneously with the introduction and expansion of the World Wide Web, which made ubiquitous networked end-user information a reality. The primary emphasis of campus networking switched from the technology itself to the content and the need to access large banks of information that required high bandwidth. Internal administrative information systems were transformed by the Web and intranets, and "administrative systems" became "enterprise-wide information resources." Library information, which previously was contained in closed systems, was increasingly accessible through standard Web interfaces. Changes to the curriculum also blos-



[2] Arnold Hirshon, "Vision, Focus, and Technology in Academic Research Libraries: 1971 to 2001," *Advances in Library Automation and Networking* 2 (Greenwich, Conn.: JAI Press, 1988): 245-247.

somed as personal computers and networks matured and made interactive media affordable and available to non-technically oriented faculty.

The Growth of Organizational Integration

While these changes in technology have clearly had an influence on the trend toward merging, other significant forces also had an effect. Five major reasons for this emerged from the responses to an open-ended question on the survey:

1. **There is a growing convergence of information and the technology upon which it relies, and a desire to use the technology to advance the teaching, learning, and research processes.** Twenty CIOs cited this reason, by far the most commonly reported one. Rapid changes in technology are causing libraries to become more dependent upon technology for information delivery, and computing specialists are becoming more concerned with delivery of information using technology rather than with the technology for its own sake. One respondent noted that the "library is an integral part of any [campus] information system and computing will be the backbone of that system." In some cases, the online library catalog or Web-based library databases were the primary driver for increased connectivity on campus, and greater cooperation was necessary between the two organizations for network and technology planning. The lines between information content and technology networks have begun to blur, not only for staff but for clients who are seeking assistance with databases, statistical packages, and the like. In such circumstances, the client is left to wonder whom on campus to call for help.

2. **There is an increased ability to use information and technology to create and improve the coordination of services.** Increasingly faculty and students are seeking access to an integrated set of tools and resources available through campuswide networks supported by a single service unit. Integrated operations enable staff to work together to plan and manage these systems and processes. This creates an opportunity to build on organizational strengths and converging interests, and to extract the best of each culture to create a new organizational synergy. One CIO mentioned that both operations increasingly came to recognize the commonality of their roles through prior collaborations in distance education, library information over the campus network, library catalog and index development, and campus Gopher and Web development.

3. **There is a need on some campuses to remediate organizational weaknesses or to fix problems in service orientation.** Six CIOs noted that before the integration the technology operations on their campus provided poor services or had a poor service image. (No similar statements were found in the survey about library services.) In one case, there was a belief that "academic computing should have an academic home and that faculty should receive training and development from their faculty peers (librarians) ... [who have] strong technical skills, strong content knowledge with regard to electronic information, and a *service ethic*."

4. **A precipitating event caused a reexamination of how the units should be organized.** A frequently cited circumstance was that either or both the library or computing center director retired or left the university. This caused a reexamination of the most effective use of those positions. In some of these cases, the university attempted to save money by not filling one or both of the positions. Other precipitating events included imminent construction of a new library or computer center, or a recommendation to integrate that came from a university committee or an external consultant.

5. **Information resources were reevaluated as part of the development of a new institutional strategic vision.** Perhaps surprisingly, this was the least-cited reason of the five. In some cases, the president or provost advocated the integrated strategy. Some campuses found it desirable to have one person (a CIO) speak for the campus on information resource-related issues. This person also is expected to coordinate technology funds and programs, to increase collaboration between the library and computing areas, and to raise the visibility of the position and the information resources issues.

Practical Benefits

At an informal meeting of CIOs at the CAUSE annual conference in December 1997, about thirty CIOs were asked to cite specific accomplishments made possible (or more easily accomplished) because they had an integrated organization. Some of the items identified were:

Service Improvements

There are integrated organizations that now have one published phone number for all client help and assistance. Some organizations also provide a single computing help and library reference desk. Others noted that they have begun joint development of instructional programs, and that those programs are much improved because of the input of computer professionals and librarians working together. Another institution reported that the academic computing program is no longer prescriptive ("we know what is best for you") but has become more faculty driven and client responsive.

Improved Visibility

The integrated organization has resulted in greater access and ability to participate in top-level administrative meetings. It is believed that with the strength of the combined resources, there is more likelihood of a CIO being included in upper-level campus decision-making groups than for a library or computing director alone.

Greater Organizational Flexibility

With a larger and cross-trained staff, integrated organizations have the flexibility to shift staff and rebalance workloads during peak periods, especially to assign help for major projects when one group is inundated and another has a lull in activity. Others indicated that there was also better pooling of support resources (such as student assistants). Integration also brought a greater ability to reallocate financial resources to solve common problems, such as to reallocate telecommunications revenue to support networking or Web developments.

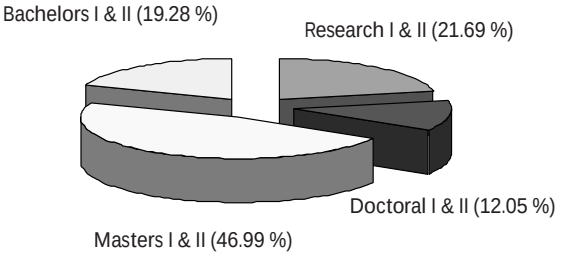
Increased Cooperation

Many report better coordination between units, and a heightened awareness of the needs of the entire organization. This can also lead to improved internal support, such as the library realizing improved computing technical support. Through cooperation, the two organizations can also engage in joint design and implementation of major initiatives, such as new buildings on campus, public computing sites, and instructional facilities. When a wider array of library, computer, telecommunications, and media expertise come to the table, the results tend to be much better. Through integration, one organization reported it was able to engage in joint development, management, and ownership of electronic classrooms, which would not have been possible otherwise. Also reported was greater interaction on university-wide Web management.

Compensation Equity

Bringing the two units together creates a larger job family for salary comparison purposes. In some cases this resulted in improved compensation, especially for librarians.

Carnegie Classifications of Institutions with Integrated Computing and Library Operations
(of institutions listed in Appendix B)



Ubiquity of the Integrated Organizational Model

While most of the mergers before 1990 occurred in very large institutions, the more recent "second wave" is more evenly distributed among institutions of all sizes. In the survey the average-size student body (undergraduate and graduate) was 9,000, ranging from 1,550 to 30,000, and with 26 percent having more than 15,000 students. The average faculty size was 645, with a high of 2,200.

Although it may appear that integrated operations predominate at masters-level institutions, the distribution of CIOs by Carnegie class fairly closely mirrors the distribution of institutions by Carnegie class within the CAUSE membership. The CIO distribution is slightly higher at research and masters institutions, somewhat lower at baccalaureate institutions, and almost exactly the same for doctoral institutions.

	CIO Distribution (Appendix B)	Carnegie Distribution in CAUSE membership
Research	22%	15%
Doctoral	12%	11%
Masters	47%	40%
Baccalaureate	19%	34%

Making the Decision

Integrating operations is a tool to achieving institutional objectives, not an objective in itself. There are certainly times when the conditions for integration are not conducive, or where other activities should occur before an institution attempts integration. Ideally, the institution should have an idea of what a integrated organization might accomplish, and how integration could help to achieve that vision.

Readiness Indicators for Integrating

Existing conditions at a particular institution can enhance or inhibit integration. Ideally the integration should evolve as a logical next step rather than occur as a complete disconnection from the past. This requires that planners explore their *institutional* culture. For example, does the institution normally engage in risk-taking or entrepreneurship, or is it inherently conservative? Is it technologically advanced? Will the merger meld organizational strengths or only mitigate the organizational weakness of one operation or another? While it is possible to impose a merged organization upon weak operations, the result will be remediation and not necessarily organizational advancement.

Following are some of the most significant background factors that seem to point an institution toward an integrated organization:

- ***Institutional Mission***

The integration should advance the mission, goals, and objectives of the university.

- ***Collaborative History***

The integration should build on a history of inter-organizational cooperation, and the proposal should be supported by both operations. Hostile takeovers will not only be suspect, but internal assassins can sabotage the effort. The working relationships should permeate multiple levels in the organization. There should also be a shared belief that increased communication or joint activities (such as faculty development projects or distance education planning) will result in improved services.

- ***Strong Faculty Support***

Faculty on campus should understand the advantages and liabilities and should be convinced that integration offers the potential to improve services significantly.

- ***Climate of Organizational Maturity***

Each of the two component organizations should possess "organizational maturity," as evidenced by high-quality current service delivery, staff confidence, a willingness to let go of the past, a pervasive spirit of teamwork, a willingness to engage in open debate, a history of risk-taking, a shared sense of doing what is best for the good of the university rather than the unit, and little inclination to protect turf.

- ***One Voice for Information Issues***

The institution should perceive a value in having one voice to address information and technology issues with the provost and president.

- ***Expansion of Client Service Orientation***

There should be an institutional desire to build a client-service-based organization that can achieve more together if it is fully technology-enabled. The integration should represent more than a new layer of hierarchy or simply moving boxes on the organization chart; it should create real opportunities to improve service.

Poor Reasons for Integrating

There can also be negative drivers for integrating, which should be avoided. While one or two of these factors may be present even in an organizational environment that favors a merger, negative reasons alone should rarely be used to justify a merger. Some examples of negative reasons include:

- ***Climbing on the Academic Bandwagon***

The institution perceives that "every leading-edge institution is doing it," and therefore believes it should integrate if it wishes to be at the forefront.

- ***Improving a Weak Operation by Marrying It to a Stronger One***

Beware the law of unintended consequences. Rather than strengthening an organization, marrying a weak partner to a strong one can just as easily result in the weak operation dragging down the strong one. An even worse situation is the marrying of *two* weak, under-funded, or under-resourced operations. Little good is likely to emerge from such a partnership.

- ***Downsizing or Saving Money***

Libraries and computing are expensive, labor-intensive operations. Integrating them will not — and should not be expected to — automatically result in savings; it may initially cost even *more*. Savings accrued by eliminating positions may be a result, but it should be not be the goal. For example, should one or both of the two current chief administrators of computing or libraries retire or leave, that departure may be a valid impetus for initiating a review; it is not a persuasive justification for integration.

- ***Eliminating an Ineffective Administrator***

Integrating operations to get an ineffective administrator out of the way may have short-term benefits, but over the long term it may cause a host of other highly significant staff-related issues to be left unresolved. There are much less disruptive ways to remove one ineffective administrator than to put the entire organization through a process to integrate computing and library operations.

- ***Saving Space***

Libraries and computing operations are inherently staff and space intensive. If an institution plans to construct a new building to house both operations, integrating operations can have a positive effect upon the plans. However, if a major goal is to consolidate operations within existing space, the probable outcome will be cramped and discontented staff.

- ***Eliminating Faculty Status for Professional Staff or Reducing Compensation***

It is more typical for librarians than campus technologists to hold faculty status. Removal of faculty status could have immediate and demoralizing consequences on the integration, and could doom the effort from the start. In addition, integrated operations require a *higher* degree of competence from *all* staff. Therefore, the wage scale will probably be higher than the one that preceded it whether professional staff hold faculty status or classified positions.

- ***Reducing the Number of Direct Reports to the Provost or President***

Both libraries and computing are central to the academic enterprise. To integrate solely to reduce the number of direct reports can result in a reduction of the visibility and communications between the CIO and other academic administrators. This can only have deleterious consequences.

Alternatives

If the institution decides not to integrate, at least three alternative approaches can accomplish similar purposes without a drastic organizational overhaul: improvements to weak operations, increased organizational consolidation, and greater inter-organizational collaboration.

Remediate or Eliminate Weak Operations

Any organization can be improved by reengineering ineffective operations, reassigning weak or ineffective managers, and reassessing budget expenses within the current library and computing organizations of the component areas. If the most pressing problem on campus is a technology organization that is not client centered or a library that cannot live within its budget, those problems must be remedied before any attempt is made to integrate the problems of the two organizations into one big problem. Integration is best when built upon strong base organizations.

Consolidate

The university may be losing significant opportunities because it has too many fiefdoms. For example, if there are still separate technology operations for academic computing, administrative computing, or telecommunications, consider whether today's information resources environment can be effectively managed with such a structure. If media services continue under a separate umbrella, there might be ways in which the campus would be better served bringing it under the library. If the libraries are reporting to multiple people, perhaps they should be consolidated under a single person. An integration of library and computing operations later can be much more effective if some of the subsidiary merging takes place first.

Collaborate

Even if the institution decides not to integrate, greater collaboration between the library and computing operations will probably still be desirable. Such collaboration may be a prelude to integration later, or may simply reduce organizational boundaries and build common interests.

It is not familiarity, but the *lack* of it that breeds contempt. Barriers will be lowered and trust will build as the staff work with and become more familiar with each other. To build trust, the computing and library leadership should create opportunities for staff to work together. The units could work first on simple yet meaningful projects that address a real service need, such as the development of guidelines for the university Web page, or joint management of a library and computing training facility. Later, the units could work on more complex tasks, such as development of an integrated user help or reference desk. It is important to avoid working on low-priority or "make-work" tasks, which can backfire if staff come away from the experience believing that there is little common interest between the two organizations.

To develop an effective, coordinated work plan requires overt commitment by the senior administrators of both the operations and the university. Sharrow notes that there are at least nine challenges in such library/information technology collaborations:

- agreeing on priorities for joint and independent development,
- identifying adequate funding,
- balancing the library's traditional role for selecting content with the role of information technologists to be responsible for delivering that content,
- identifying and respecting areas of responsibility and mitigating turf issues,
- recognizing the effect of the collaborative activity on people and existing operations,
- deciding who will be in charge and bear the authority for the collaborative project,
- engaging in constant, constructive communication,
- recognizing different personalities and building mutual trust and respect, and
- remaining sensitive to the campus politics and climate.[3]

As the spirit of collaboration begins to take hold, the two operations should begin to prepare a joint development agenda. It is important to explore ways in which the organizations will share burdens so difficult tasks become possible.

If these collaborative efforts are successfully implemented over time, the once-unthinkable integration of operations might become a logical evolutionary step. However, it is far better for this to emerge naturally than to cause a shotgun marriage. Even if an organizational integration never becomes a goal, increased teamwork within an institution is always a desired outcome.

The Decision Process: Executive versus Consensus

Who makes the decision to integrate and how that decision is made can be important. In the survey, 76 percent of the respondents indicated that the decision to integrate on their campus was an executive (top-down) decision. Of the remainder, 16 percent said the decision was made bottom up, 5 percent said it was a combination of consensus and executive decision-making, and one respondent indicated that the decision resulted from a report of an external review committee. As the integrated model becomes more commonplace, consensus-based decision-making may become more prevalent because the decision to integrate may be seen as less controversial. Both the top-down and the consensus-building approaches have advantages and disadvantages.

Advantages of Executive or Top-Down Decisions

- The chief executive or academic officer sends a clear signal to the campus that this is a high-level position that will have demonstrable, ongoing top administrative support.
- Less open debate offers less opportunity to marshal resistance, so a top-down decision will reduce immediate staff resistance to the decision. However, resistance may still fester: one survey respondent noted that as a result of the executive decision on that campus, "the faculty were furious and the level of negativism against the appointment was significant."
- With less time spent on discussion of the process or decision, the institution can move more quickly to implementation.

Advantages of Consensus Decisions

- There is likely to be more widespread support (or at least less resistance) from staff and faculty, who will be more likely to understand the logic behind the change or have a greater stake in its success.
- The consensus-building process can reduce the turf issues that may arise between the library and computing staff.

In the survey, the local environment often determined the method chosen for making the decision. On campuses where there was a top-down decision, more than a few of the CIOs thought the decision could not have been made any other way. One noted that there had been "considerable friction" between the library and computing groups previously and that a natural consensus was unlikely ever to emerge. On another campus there were long discussions, but when the final decision came, it came rapidly: "The president decided that with the new [CIO] coming on board, the time was now and that the new person [should] not have the political baggage of causing the change. The initial shock has passed and the team has been put together. It actually was helpful to not be the person who caused the change."

One CIO indicated that an executive decision was probably the only way to make the decision on that campus because "the cultures are too far apart to expect bottom-up consensus." On another campus the decision was reached when a subcommittee of the university strategic planning process studied and recommended the merger, but the new president ultimately made the decision. On a third campus, a team of administrators, staff, students, and faculty recommended the integration. At a fourth campus, an external review committee recommended the creation of the CIO position. In this last case, "those in the institution who did not feel that this

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[3] Marilyn J. Sharrow, "Library and IT Collaboration Projects: Nine Challenges," *CAUSE/EFFECT* 18 (Winter 1995): 55-56. See http://www.cause.org/information-resources/ir-library/abstracts/cem9540.html.

Other approaches to increasing cooperation can be found in:

Beth J. Shapiro and Kevin Brook Long, "Just Say Yes: Reengineering Library User Services for the 21st Century," *The Journal of Academic Librarianship* 20 (November 1994): 285-290.

Brendan A. Rapple, et al., "The Electronic Library: New Roles for Librarians," *CAUSE/EFFECT* 20 (Spring 1997): 45-51. See, in particular, the commentaries by Joanne R. Euster, Susan Perry, and Jim Schmidt. See http://www.cause.org/information-resources/ir-library/abstracts/cem971a.html.

was the right move had no opportunity to participate in the process. Some strong feelings remained that the institution should have a separate library administration."

Conditions for Success

In institutions that choose to integrate libraries and computing, there are some conditions that seem to predispose the new operation toward success.

- ***Timing***

The institution should look for a natural time to make the decision, such as the change in a key administrator (e.g., the president or the provost) or adoption of a new strategic plan.

- ***Strong Support at the Top***

The most important initial and enduring success factor is the continued strong demonstration of commitment by the president and provost. Integrated organizations challenge not only the organizational cultures and turf, but also the conventional wisdom of how campuses provide information services. Those who like their change in measured doses may find integration to be a wrenching experience. Middle managers who have established routines or bases of operation will not want to start over. If the previous library or computing directors are still on campus, and if they are not team players, they may actively undermine the new organization or CIO. Faculty who were opposed to the change from the outset will view any problem as proof that the idea to merge was a bad one. When the new organization encounters the inevitable difficult periods, the staff and faculty must receive strong signals from the top that the support for the integration is not wavering.

- ***Strong Staff Support***

The new organization will be much more successful if there is already a base of expertise that spans the operation. For example, a library staff that is knowledgeable about computing and networking is an invaluable resource, as is a computing staff that has experience and expertise in the academic research process.

- ***The Ability to Adjust the Culture and Environment***

Not only are the two cultures of library and computing very different, but in reality there are far more than two cultures. Both organizations actually encompass multiple subcultures. Within the computing arena, academic and administrative computing staff often have different outlooks, as do hardware and software support specialists. User services staff in computing organizations have different cultures than programmers or technicians. Libraries have a long history of cultural differences between public services and technical services librarians, and media specialists also have their own cultural heritage. It is a continuous challenge for the new integrated organization to bring out the best from each of these diverse cultures as it develops a holistic organization.

- ***Adequate Budgetary Resources***

Integrating the organization but not providing adequate financial resources will doom the organization from the start. Expecting that a reallocation from libraries to computing, or vice versa, will solve a budget problem is probably shortsighted and counterproductive.

- ***Human Resource Factors***

Competition may arise if one portion of the professional staff, such as the librarians, has faculty status while another group is classified within position. Differences in wage scales can also create significant friction.

It is best to raise these issues as part of the initial deliberations about the decision to integrate. By addressing such questions early, the institution can determine whether it is really ready for an integration.

Recruiting and Hiring the CIO

Arguably the most important step in integrating the organization is to recruit and select the best person to be the new CIO.

Defining the Scope of the Position

The first decision is to define the areas of operation to be included within the new organization. In addition to libraries and academic computing, most integrated operations also include administrative computing, campus networking, and telecommunications. Media production and delivery services, distance education, the university press, or auxiliary enterprises such as university printing services may also fall under the purview of the CIO.

The Reporting Relationship of the CIO

Given that the CIO position is often created to elevate the status or visibility of the operations, the new CIO should report to a high-ranking institutional officer such as the president or provost. Of the survey respondents, 75 percent report to the provost, and 17 percent to the president. (In Canadian universities it is more common than in the United States for the CIO to report to the chief financial officer alone.) Regardless of the reporting structure, the CIO usually has a seat at the table of the highest level of the institutional decision-making groups, such as a president's cabinet, dean's council, or university planning and budget committee. In one institution the CIO jointly reports to the chief academic and chief financial officers.

It is interesting to compare the results of the author's survey with a contemporaneous survey conducted by Mark Cain on the CAUSE CIO electronic discussion group.[4] There were some significant differences in the survey populations. Where the author's survey included only CIOs who had responsibility for both computing and libraries, only 25 percent of Cain's respondents had combined responsibilities, and 75 percent had only technology-related responsibilities. In Cain's survey, only 43 percent reported to the provost, 18 percent reported to the president, another 18 percent reported to the chief financial officer, and 8 percent reported jointly to the chief academic and financial officers. By comparing the two survey results, it appears that as libraries and computing operations integrate, the operations are more likely to become integral to the academic enterprise, and therefore report to the provost. Furthermore, in many institutions this represents an elevation in the reporting relationship, especially for computing directors.

A corollary issue is identifying the peer group of the CIO. Library and computing operations are each substantial academic support units that consume a considerable portion of the total university budget, and are often larger than many of the academic colleges or schools within the university. Combining the two results in the largest academic support unit on campus. To be fully effective, the CIO must have continuous contact with deans, vice presidents, and other high-level university administrators to ensure not only an effective communication flow but also sensitivity to emerging issues on campus. The CIO must be a constant participant in the regular meetings of senior administrators on campus, including the deans, even if the CIO reports directly to the president. Without this opportunity for continuous interaction, the CIO can become isolated and unresponsive to the needs of the faculty and student body.

Naming the New Operation

Although it may seem to be a trivial issue, naming the new organization can have reverberations on campus and can affect recruitment. On campus, faculty or staff may regret the loss of identity that they have come to associate with familiar terms such as "libraries" or "computing." In recruitment, qualified individuals may be discouraged from applying if the name of the organization does not adequately reflect the scope of the position, or if the title sends mixed signals.

The university should consider whether the words "library" or "computing" should be in the organization's title, or whether a neutral term such as "information resources" is preferable (assuming that such terms, e.g. "information services," were not appropriated in the past by the computing or library operations alone). The former approach may be the clearest way to a sense of continuity, but the latter may be more inclusive or bet-

[4] Survey results posted April 16, 1997, to cio@cause.colorado.edu under the subject line "summary of 'CIO Defined' survey data," archived on the CAUSE Web site at http://www.cause.org/member-dir/cg/cio-archive/00000895.htm.

ter convey the sense of a new beginning or change in strategic direction. Long titles such as "libraries, computing, and information resources" may be the most inclusive, but they are also unwieldy and redundant.

A review of eighty-five distinct organizational titles listed in Appendix B indicates that a large number of institutions (twenty-nine) continue to include the word "library" somewhere in the title of the organization; the word "computing" occurs only six times. Most common are broader organizational names based on neutral phrases that are usually preceded by the term "information," such as "information services" or "information resources." More than one of these terms may appear together, such as "information services and resources." Whether separately or in combination, the words that appeared most often were "services" (thirty-nine occurrences), "technology" (twenty), and "resources" (fourteen). Other words that appeared, but with much lower frequency, included "academic" (five occurrences), "learning" (four), and "systems" (four).

Position Titles

Just as the name of the new organization conveys a message, so does the position title held by the CIO. The title must reflect the common parlance of the specific campus, but it can have importance outside the institution. If there will be a national recruitment, the title must adequately convey the role and standing of the position within the institution. Whether the position title is forward looking or traditional conveys the expectations for the person to be hired. Multiple titles, such as vice provost *and* dean of libraries, may convey subtle intentional or inadvertent messages.

Currently, there seems to be no preferred or dominant title. The title should accurately reflect its owner's status within the institution and the reporting relationship. The university can increase its chances for a successful recruitment if the title demonstrates that the position has significant standing in the institution. In current practice in the U.S., 61 percent of the institutions with CIOs most frequently use the titles vice president, associate vice president, vice provost, associate provost, or dean (see below). There seems to be no correlation between the position titles and the Carnegie classification of the institution. At fourteen institutions, the word "librarian" appears in the official job title as either the lead term (e.g., university librarian) or as a secondary term (e.g., dean of academic information services and director of library).

Most Frequently Used Titles for CIOs
as listed in Appendix B

15	Vice President
10	Vice Provost
10	Dean
7	Associate Provost
7	Associate Vice President
7	Executive Director
6	Director
5	Chief Information Officer
5	College or University Librarian, Chief Librarian

Once again, it is interesting to compare the results of the author's survey with that by Mark Cain on the CAUSE CIO discussion list. Only 25 percent of Cain's respondents had responsibility for the library. Whereas in the author's survey of CIOs of integrated operations the top three position titles (vice president, vice provost, and dean) accounted for 43 percent of the responses, in Cain's survey these three titles accounted for only 26 percent. Similarly, while in the author's survey only 7.5 percent of CIOs held the title of "director," in Cain's survey 26 percent held that title. Although the public survey data do not permit detailed analysis, it would appear that when the CIO is only responsible for technology (and not library) operations, the position tends to be lower in the hierarchy.

Promoting from Within vs. Recruiting

An important consideration will be to determine whether to recruit for a CIO externally or to promote someone from within. According to the survey, 60 percent of the incumbent CIOs were promoted from within, while 40 percent were hired from the outside. Of those promoted from within, 61 percent are librarians, 32 percent have a predominantly computing background, and the remaining 7 percent come from the faculty or another administrative position. When hiring from the outside, there was a relatively even division between those with predominantly computing backgrounds (53 percent) and those with library backgrounds (47 percent). Of all CIOs in positions that are currently filled and listed in Appendix B, 74 percent are male and 26 percent are female.

Both internal promotion and external recruitment have advantages and disadvantages. An internal candidate's awareness of institutional politics and history may allow him or her to move the integration along quickly. However, that person may also be burdened by past practices, policies, or decisions, or may have vested interests. The external candidate may bring new ideas, enthusiasm, or a fresh perspective that may be particularly important to a new organization, but will require time to learn about the existing operations and the campus politics. Given the wide impact of this position, a premium should be placed on appointing an individual who will take a campuswide rather than parochial perspective, is articulate, and demonstrates potential rather than bringing specific work experiences.

Whether the intent is to look internally or outside the institution, particular care should be taken in composing the search committee. The faculty will be highly affected by this position, and may have a concern that either the library or computing operations will be diminished in the effort to integrate. Both computing and library staff may be nervous about a "hostile takeover" of their areas, and may seek out (and perhaps champion the cause of) "one of their own." Other administrative and academic areas of the university will also have a strong stake in the hiring of the CIO, and, depending on the campus, the student body (especially graduate students) may also express an interest. As many of these interests as possible should be included on the committee to minimize later second-guessing.

External Recruitment

When recruiting externally for a CIO, bear in mind that these are relatively new positions on most campuses. Therefore, the applicant pool is unlikely to include many (if any) people who have already held a CIO position at another academic institution. In addition, there will probably be a limited pool of people interested in and qualified to take on the challenges of both libraries and computing. The primary recruitment challenge will be to find someone who has the requisite training, vision, and experience, and who demonstrates a sensitivity to the issues and staff in both areas. Most candidates probably will currently hold senior administrative responsibilities as the director of either campus computing or libraries. It will be the rare individual who can go directly into the CIO role from an assistant or associate director position without having had some experience at the director level.

To improve the applicant pool, some institutions engage the services of an executive search firm. These firms can be very helpful in defining the responsibilities of the position and in identifying and seeking out qualified candidates. To ensure the broadest possible pool of candidates, the search firm will usually work with the campus search committee to identify qualified candidates rather than advertise and wait for candidates to apply. The search firm can be particularly helpful in identifying and screening candidates who might otherwise have been unknown.

Position Advertisements and Descriptions

The advertisement must clearly state the scope of the information resources organization, the responsibilities and desired qualifications of the CIO, and the position to which the CIO will report. The statement of qualifications should go beyond the formal educational or experiential requirements to state the type of individual sought. (Appendix A includes examples of actual advertisements for CIOs that have appeared during the past few years.)

A particular danger is that members of the staff or the screening committee will want the qualifications to be written in their own image. For example, a survey respondent who was a self-described technologist with previous experience in professional organizations working with librarians said, "I personally prefer having the computer type be in charge. I didn't find it difficult to quickly learn how to think like a librarian." Obviously there were also librarians who thought it was more desirable to have the faculty and research orientation that is more natural to librarianship. Beware any candidates who minimize the other half of the job; in the words of Walter Mondale, those who think otherwise may "know what they know, but it is what they don't know that they *think* they know" that should worry you.

Below is a set of generic qualifications culled from advertisements and job descriptions, and articulated by incumbent CIOs based upon their "real-life" experiences. This list is only a starting point. For example, what might be a critical qualification at a research institution may be of little or no value at a liberal arts college, and vice versa.

Education and Job Knowledge

- Advanced degree in library, information, or computer science required, with additional advanced degrees in another relevant field preferred.
- A portfolio sufficiently broad to embrace both the information content and the information technology to deliver that content.

Professional Experience and Accomplishments

- A minimum of seven to ten years of increasingly responsible senior administrative experience within one or more of the primary areas of operation (e.g., as a director of libraries or computing, or as a CIO) in an academic environment.
- Familiarity with, and sensitivity to, both computing and library cultures. Demonstrated credibility with campus librarians, technologists, and senior university administrators.
- Significant experience and knowledge of state-of-the-art developments in advanced technologies and information systems in higher education, such as distributed computing systems, distance learning, media production, telecommunications systems, networked information technologies, library information databases and systems, academic and enterprise information computing, and communications networking services. (*Note:* Many survey respondents noted that the successful CIO does not need to be a technical wizard, but must be a "technology generalist" who understands the potential of information technology and is able to articulate that vision effectively.)
- A record of academic research and service appropriate to a senior administrator holding faculty appointment.

- Teaching, grant- and fund-raising, or other experiences or accomplishments that may be pertinent to the position.

Academic and Technical Skills and Abilities

- Ability to articulate a vision of the role of information resources and technology in support of academic programs.
- Demonstrated vision of computing as an information and communication tool.
- Ability to articulate the importance and application of the research process, the use of information, and the application of technology to enable information processes within an academic environment.
- Ability to distinguish and communicate the level of technical knowledge that is more appropriate to the staff than to the CIO.
- Demonstrated strong client-service orientation.

General and Administrative Skills, Abilities, and Experiences

- Superior oral and written communication skills, including demonstrated effectiveness in communicating and collaborating with administrators, faculty, staff, and students.
- Commitment to campus outreach.
- Ability to manage campus expectations, act with personal courage, and handle difficult situations.
- Ability to facilitate the work of teams, to form coalitions, to build consensus, to offer and negotiate compromises, and to demonstrate political savvy.
- Record of success leading an organization in strategic planning, and effectively managing fiscal and human resources.
- Demonstrated commitment to affirmative action in staffing and service delivery.
- Flexible management style and a high tolerance for ambiguity.
- Comfort with risk taking and entrepreneurship within an organizational context.
- Ability to admit error and learn from it.
- Demonstrated creativity in problem solving.
- Personal energy in copious quantities.
- Ability to listen effectively.
- Strong sense of humor. (More than a few survey respondents thought that this qualification above all others was a key to not only survival but success in the position.)

In sum, the CIO is expected to have the vision of Isaiah, the wisdom of Solomon, the moral leadership of Moses, and the patience of Job.

Evaluating Candidates

Beyond meeting the stated qualifications for the position, candidates should be well informed and current within their primary area of expertise. Successful candidates should be able to speak intelligently (but not necessarily as technical experts) in the wide range of topics beyond the backgrounds from which they come. While bright candidates may be capable of picking up on technical aspects that were not required for their previous experience or training, it is important that they demonstrate the proclivity to do so.

A second, and perhaps more important, criterion is that candidates demonstrate a vision and possess experience relevant to both libraries and computing. Even a candidate who has had personal experience in only one of the two major component areas should demonstrate a balanced approach in the cover letter and during the interview by introducing examples relevant to both areas. Especially if a candidate's experience is in only one area, he or she should not pose as an expert in every operation. This would be nearly impossible in a job with such a broad spectrum. While it is important to assess the knowledge that the candidate will bring to the position, it is just as important to see if he or she is willing to admit freely any areas of ignorance.

Some Advice to Potential Candidates

The greatest enthusiasm for the integrated organization will occur before and during the interview period. At this time the new organization is untested and the opportunities seem boundless. However, the candidate and the institution should temper this enthusiasm with the inevitable reality. For the integration to be successful, the institution and the candidate should be fully comfortable with addressing difficult issues openly.

The CIO will hold a highly visible, and therefore high-risk, position. The CIO will be in a much more vulnerable position than either a library director or computing center director alone. The size of the operation (both in terms of budget and staff size) is much greater, and therefore is a much easier target for campus critics. Every complaint about either the library *or* computing will devolve to one person: the CIO. Although both libraries and computing present a host of difficult problems on their own, the combination of the two can make the problems insolvable. In this environment, the opportunities for the CIO to misstep or to offend are legion. Finally, all campuses have traditions that insulate the library and computing operations; when the going gets tough, some protection is afforded by falling back upon tradition. However, information resources is still very new, and new precedents are created daily. As is said in the legal profession, "Hard cases can make for bad law."

Before deciding whether to apply for a CIO position, a candidate should ask himself or herself tough

questions. Do you truly understand the organizational and cultural differences between libraries and computing? Are you enthusiastic about bringing out the best of both? What relevant experience, qualifications, and vision can you bring to the position and the institution? Do you have the patience and the stamina the position will require?

Should you apply and be interviewed for the position, be prepared to assess the position and the campus. If this is the first time the CIO position is being advertised, ascertain the degree of support for the position across the campus. Was this decision embraced or was it imposed and resented? If the position is a re-advertisement, what caused the first search to be unsuccessful? If the position is being filled again after the departure of a CIO who was in the position for a relatively short time, why did that person leave? What would the institution expect to hear if you asked the previous incumbent about the position?

Candidates should also recognize that the best of intentions can lead to unexpected consequences. What might happen to you (and to the rest of the staff) if the president or provost who initiated the integration suddenly left? What safeguards will there be for the CIO when the inevitable difficulties in transforming the organization begin to emerge? Moral support is vital to this new enterprise, but without an institutional commitment to accept some of the risk, the CIO can become the scapegoat. The CIO is expected to be a risk taker, but it behooves a candidate to ascertain what protections come with the position (such as a long-term contract or tenure). It is reasonable to expect the institution to demonstrate an ongoing commitment to the candidate that will continue even if the members of the current administration are not there personally to ensure these commitments.

Finally, assess the strength of the staff and the current organization. Is there enough inherent talent on staff upon which to build a very different type of organization? Does the university administration have a detailed and realistic understanding of the challenges and difficulties that lie ahead? What are some of the potential problem areas? Do the administrators have a realistic timetable for judging success? Are there signs that they might retreat if there are early signs of stress or turmoil? Is the budget sufficient? These are all difficult questions, and everyone with whom the candidate comes in contact should be prepared to provide honest answers.

Negotiating With the Preferred Candidate

As the interview proceeds, the candidate's terms and conditions have become somewhat apparent; after a firm offer is on the table the negotiations begin in earnest. The CIO can reasonably expect to have a "honeymoon period" after starting on the job, but it is best to try to clarify as many of the expectations as possible during the negotiation process. The following is a partial checklist of issues the institution should be willing to consider as part of the negotiation process:

Standing of the CIO Position

Information resources will be the major academic support unit on campus, and therefore will be a large part of the university budget and staff. To be fully effective in the position, it is critical for the CIO to be a full member of the major advisory and decision-making groups on campus, such as the president's staff, the provost's council, the council of deans, the campus planning and budget committee, and the committees related to curricula and university development.

Faculty Status and Rank for the CIO

On most campuses, the CIO will probably report to the chief academic officer and will be responsible for the primary central academic support units on campus. To dispatch the responsibilities of the position effectively, the CIO must work closely with deans, department chairs, and the faculty, and be represented on campus governance committees. Therefore, the institution should be willing to provide faculty rank for the CIO.

Long-Term Commitment to the Individual

The institution will be asking the candidate to assume a significant career risk by accepting the position. Integrated operations engender occasional groundswells of resistance from staff or other campus constituents who find a familiar world threatened by a new order. The institution should recognize and be willing to accept a portion of the risk by making a long-term commitment to the individual to be hired by granting tenure (within his or her area of specialization, not as CIO), a renewable long-term contract of at least five years (with at least one year's notice of non-renewal), or an agreement to provide multiple (preferably three to five) full years of operation before engaging in a general or campus review of the operations or the CIO.

Additional Administrative Positions

The CIO may find fairly entrenched operations or managers whose loyalties are greater to the existing order than to the new CIO. The university administration presumably integrated the organization to cause things to change. It is unrealistic to expect that all of the necessary abilities, skills, or experience will already be on staff to carry the new ideas forward. If all administrative positions must be filled internally, or if the only way to hire new staff is through turnover, it could be a few years before the necessary strategic changes can occur. By that time, it could be too late. The CIO should be given budget flexibility to hire at least one or two people from the outside (particularly for senior administrative positions) who are not wedded to past practices or who bring special abilities or skills required in the new environment.

Additional Operating Resources

CIOs cannot spin fiber-optic strands or old books into gold. The candidate and the institution should consider the current funding, and whether it is sufficient to meet expectations. There should be a realistic assessment of funding needs for major expenses such as library materials, computing equipment, networking, instructional technology, distance education, etc. Try to establish the campus plans for a student technology fee, new building or renovations, and other capital or large-expense items related to the library, computing, or networking, and make sure that your expectations and those of the institution are aligned to reality.

Organizational Changes

The new CIO should ascertain what expectations the president and provost have for the new organization. Is there an expectation that there will be changes to staffing or to the reporting structure?

Salary

A reasonable argument could be made that the CIO should receive compensation at a higher level than that of either a library director or a head of information technology operations. The CIO will assume the responsibility for two areas of responsibility previously administered by two individuals rather than one. More importantly, the CIO is being asked to assume a higher level of risk and to demonstrate a broader level of expertise, and will hold a greater level of institutional decision-making authority and visibility. Therefore, the salary should usually be commensurate with that of academic deans.

The New Organization: First Steps

When the new CIO begins, all eyes will be on the person to define the new organization. Much second-guessing will take place. Every action and utterance will be imbued with meaning. In an environment of high expectations, some advice to new CIOs from incumbent CIOs bears repeating:

- ***Listen***

Whether the CIO is new to the institution or new to only some aspects of the job, it is important to listen before acting. As the schedule permits, the new CIO should meet individually with as many staff as possible, and make an effort to engage in dialog on campus with deans, faculty department chairs, and individual faculty.

- ***Demonstrate Balance and Fairness***

Organizational integration should be a union of equals, not a hostile takeover. As one CIO noted, "The CIO must be scrupulously impartial in managing the formerly separate units since staff will automatically assume that [the CIO] will favor the unit" from which the CIO came. The CIO must work against this stereotype by bending over backward to demonstrate a genuine interest in all areas of the operation. In addition, it is critical that the integration not become a pretext to raid one budget to subsidize the other.

- ***Establish Credentials***

The CIO is neither the chief technology specialist nor the chief library specialist — those roles should be sufficiently present within the staff — but the CIO does need to display technical competence in both library and technology-related issues. All new CIOs should expect a steep learning curve and need to ask many questions.

- ***Establish the University Standing of the CIO***

The CIO is more of a university-level administrative position than is either the library or computing director. It is essential to possess a broader information resources perspective and a greater knowledge of university operations. When the CIO pays attention to university-level issues, some staff may feel neglected, resent losing their in-house administrator to the university, or see the CIO as no longer one of "us" but as one of "them." The challenge will be to strike a proper balance between these internal and external needs.

- ***Build a Strong Leadership Team***

It is important that the CIO retain the services of strong administrators who have significant background both in libraries and in computing. The organization will need to have individuals who can advocate for traditional needs, but who are also willing to compromise and adjust to shared responsibilities. It is important that the organizational leaders engage in some cross training and demonstrate to staff early that they are working together as a team. The CIO must also clearly articulate his or her expectations — both formal and informal — of members of the leadership team.

- ***Build Support Quickly with Staff and on Campus***

The CIO must be ready to justify the integration repeatedly. This will require campus outreach and wide consulting with faculty and other campus administrators. Early outreach efforts are critical to building a good working relationship with the faculty, academic deans, and university administrators. Internally, it is essential to have staff who are willing to work hard to make the integration a success.

- ***Provide Staff with Learning Opportunities***

Staff should be given opportunities to learn more about what happens on the "other side of the house." Provide orientation sessions, cross-training opportunities, and informal opportunities for staff to meet and relax with each other.

- ***Reduce the Tension***

Uncertainty breeds tension and distrust, and lack of information exacerbates the problem. The new CIO should create opportunities for all interested faculty and staff to meet with him or her and with the leadership team. During this process, acknowledge objections to the new organization, and attempt to reconcile these differences if possible. Recognize that some of the people who are most opposed may never be convinced. While this resistance should be acknowledged, the organization cannot continually dwell on the negative. The CIO should encourage open dialog about issues of mutual concern and overlap, and provide regular forums to support this, such as staff listservs and informal gatherings for discussion. The CIO should also stay in regular communica-

tion with the person to whom he or she reports to ensure that the new organization stays in sync with other developments on campus.

- ***Customize Solutions***

It is critical to do more than just try to replicate the success at another institution. Recognize that local circumstances are a critical element in the success of any organization. What may work at one institution may be a disaster at another.

- ***Understand the Time Demands***

Whether the CIO was previously a library or computing director, it is impossible to have the same type of focus that the previous position allowed. According to the author's survey of CIOs, 55 percent of the respondents found that much or most of their time is spent on technology-related issues. For 34 percent of the CIOs, general administration consumed most or a substantial part of their time. Only 24 percent thought their time was spent about equally on technology and library issues, and only 5 percent thought their time was spent predominantly on library-related issues.[5]

- ***Recognize Staff Expertise***

The CIO should recognize and build upon the diverse skills and abilities that computing and library staff bring to the integrated operation. It is important to orchestrate these talents.

- ***Do Not Raise Unrealistic Expectations***

Although a new CIO is expected to bring enthusiasm, it is important to temper this with reality. The CIO must establish clear, realistic goals and measures of success for the leadership team and staff. It is better to under-promise and exceed expectations than to over-promise and disappoint.

- ***Understand and Address Organizational Cultural Differences***

It is impossible to overemphasize the difficulties in integrating different organizational cultures. Adjusting to the cultural differences is a never-ending challenge for the entire information resources organization. It is also critical to understand both the institutional and the organizational culture. As one CIO colleague noted, "The best advice I got was to look for the things that are culturally deep [at this institution], acknowledge those things, and realize that those would be difficult to change." The CIO went on to note that "I'm not talking about computing and libraries, but things like [the fact that] the University considers the library a treasure."

[5] There are some possible reasons for this distribution. First, 60 percent of these CIOs come from a library background. Therefore, it is natural that they would need to spend more time learning technology. Second, many of these CIOs reported that where they spend most of their time does change during different times of the year and from year to year. Third, *library* technology might well account for some of the time spent by the CIO.

Inhibitors to Organizational Success

In spite of a CEO's best efforts, certain organizational conditions can inhibit or even doom the new organization. Such negative factors include, but are not limited to:

- a narrow vision of the role of the CIO;
- failure to address turf, territory, or self-interest concerns;
- lack of CIO knowledge about the responsibilities of the various information resources units;
- inadequate funding prior to the integration, and zero-sum funding equations thereafter that create competition in allocating or reallocating staff positions or resources;
- union agreements that make changes to the organization unduly difficult;
- an unwillingness to listen to, or to learn from, experience;
- a "we've always done it this way" attitude which resists experimentation;
- failure of staff to stay current with developments in technology, information content, or management practices;
- a forced integration in an institutional environment which has no previous record of success with inter-organizational collaboration;
- a technology infrastructure which is incapable of supporting the content needs of the institution.

This list only scratches the surface of the many things that can trip up the CIO during the early days of the new organization. As the new CIO and the campus begin the journey toward a integrated organization, there will be an ample supply of unpredictable problems that will doubtless cause considerable anguish.

Planning to Implement the Vision

The hiring of a CIO to administer the newly integrated information resources organization signals the beginning of a new enterprise, not the end of a process. The venture will be successful only if there is a shared understanding that the change is mutually beneficial. An effective way to structure a fresh and comprehensive exploration of how to exploit the opportunities for collaboration is to develop a strategic plan that will position the organization to accomplish its goals related to staffing, budgets, administrative support, service delivery, etc. A strategic plan can also be invaluable for organizations that are considering significant restructuring.

Ideally, there will be an institutional strategic plan upon which the information resources plan can build.[6]

[6] For a recent exploration of this topic, see Martin Ringle and Daniel Updegrove, "Is Strategic Planning for Technology an Oxymoron?" *CAUSE/EFFECT* 21, no. 1 (1998): 18–23. Available on the Web at http://www.cause.org/information-resources/ir-library/html/cem9814.html.

The strategic plan must provide a vision for both the information content and the technology infrastructures, and encompass the information needs of clients through the application of traditional and emerging technologies. The plan should also articulate funding strategies to cope with seemingly intractable issues such as equipment life-cycle replacement strategies or the realignment of the library materials budget to accommodate new modes of electronic scholarly communication.

A rigorous planning process should involve both the staff of the prospective organization and broader campus constituencies. The plan should set forth the critical directions in which the organization intends to move, and should result in the establishment of broad policy directions and goals. The strategic planning process may or may not result in specific tactical initiatives to move the organization toward those goals.

Any planning process will have its limits, especially in a highly dynamic environment such as information technology. The purpose of the plan is to establish general programmatic directions, but a creative organization must remain flexible so it can adapt rapidly to circumstances and exploit new opportunities as they arise. As Kanter has written,

> Flawless plans, unvarying rules, strategies launched without mid-course corrections — "absolutes" such as these have little to do with the task of managing. Now, more than ever, management is a balancing act — the juggling of contradictions to get the best of attractive but opposing alternatives. Order is a temporary illusion, strategy a moving target. Leaders cannot impose authority on a world of constant motion; they can only hope to steer some of that action toward productive ends.
>
> ... But chaos need not mean action without guidance or limits. New organizational models offer the best of both worlds — enough structure for continuity, but not so much that creative responses to chaos are stifled.[7]

Before the planning process begins, it may be useful to establish guiding principles or underlying assumptions. For example, will the process be developed by a large or small group? Will the plan be developed with active staff involvement in an open forum or by a small group meeting in private? Are there "sacred cows" that the plan will not address, or are all issues — at least at the beginning — open for discussion? What methods will be used to communicate developments about the plan? Is the plan expected to result in any downsizing, outsourcing, discontinuance, realignment, or augmentation of staff or operations?

[7] Rosabeth Moss Kanter, "The Best of Both Worlds," *Harvard Business Review* (November-December 1992): 9-10.

Key Events for Strategic Planning and Implementation: *Sample Timetable*

Month 1
- Begin staff orientation to the current organization
- Assemble planning committees and provide them with an overview and training
- Conduct general staff retreat to develop new mission, vision, and values statements

Month 2
- Issue draft mission, vision, and values statements for comment
- Articulate the types and level of services for the current organization
- Conduct campus focus groups and surveys

Month 3
- Conduct internal and external environmental scans
- Issue mid-term committee reports and distribute for staff review and comment

Month 4
- Issue organization-wide draft strategic plan for campus review and comment
- Begin discussions on new organizational structure

Month 5
- Complete review of stakeholder input and incorporate into final plan
- Issue final plan
- Continue discussions on organizational structure, and review with staff

Months 6–7
- Complete development of new organizational structure
- Begin to estimate staffing levels for all new operations
- Provide a mechanism for staff to request job assignments in the new organization
- Develop new position descriptions for all positions

Months 8–9
- Assign staff to new positions
- Audit positions against new job descriptions (typically performed by the human resources department)
- Work with the new leadership group (all administrative and managerial staff) to begin to develop transition plans for the new organization

Months 10–18
- Begin phase-in of new organizational structure or new operations
- Begin training staff for new positions
- Begin to establish productivity and quality measures
- Develop new internal and campus advisory committee structures

Perhaps most importantly, there should be a clearly articulated and well-understood calendar of events for developing and implementing the strategic plan. Although larger organizations may require a longer period of time to develop their plans, it is probably better if the plan is articulated within six to twelve months. If the strategic planning process goes beyond that, people will begin to lose sight of the goal or the plan could be irrelevant by the time it is issued. A sample timetable for the key activities appears in the sidebar at left. The following is an overview of some of the key steps for a successful strategic planning process:

Staff Education and Familiarization

Staff need ways to get to know each other and educate themselves about the new operations. Exercises to help build this familiarity include staff orientation tours, "counterpart meetings" between current departments where there are overlaps in areas of interest or operations, and all-staff retreats to share thoughts about new mission, vision, and values statements.

Environmental Scanning

An environmental scan is useful to establish an overview of the major changes emerging in higher education, computing, libraries, and media services, and how the new organization will respond. The scanning process should include literature searches and research about general trends in higher education, technology, and scholarly communication. In addition, focus groups and surveys should be conducted with faculty and students to discern institution-specific perceptions about the quality of current operations.

Creation of Effective Work Groups

If the planning process involves sub-committees or working teams, each group should receive an explicit charge and set of deadlines. The working teams should engage in frequent, meaningful two-way communication with the staff, such as by distributing minutes of their deliberations on a listserv or online conference, conducting briefing or feedback sessions, and distributing newsletters.

It should also be made clear at the outset to whom the work groups should deliver their reports and how the final strategic plan will be assembled. Strategic plans tend to be iterative exercises. A committee meets with staff, who give their input. The committee winnows those comments and develops a plan. The reports of the various committees go forward and get combined, consolidated, and edited for consistency. With each iteration, some of the specificity of the separate working group plans gets lost. As a result, the chances are that an individual or group will become disturbed that a favorite point does not appear, or does not appear in the same form, in the final report. Therefore, it is important to recognize at the beginning that the final report cannot include everything, and that it is the substance, not the format or wording of the individual reports, that is of the greatest significance.

Preparation of Draft Strategic Plan

The draft of the strategic plan should include sections that provide:

- an environmental scan and needs assessment;
- a vision and mission statement;
- the values of the new organization; and
- the strategic directions, plans, goals, and key initiatives to implement the plan.

Review and Comment

After the strategic plan is published in draft form, the staff and the full campus should have ample opportunity to comment on it. The report may be reissued after this feedback has been incorporated.

Strategic planning processes are time consuming and require constant dedication. As Luker et al. advise, even after the organizational model is in place, adjustments will still be necessary. More importantly, they note that

> 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.[8]

Changing the Organization Chart

Restructuring can be the natural next step in moving the organization toward its objectives after the strategic plan has been developed. The process enables the organization to identify activities that require augmentation or increased coordination, or are redundant. Changing the organization's structure involves many logical, political, emotional, and practical problems, and this often is the hottest issue in an organizational integration. Critical questions are raised about current operations and turf. For example, who reports to whom now, and will that change? Will the library or the computing services dominate in the new organization? What changes will the new structure bring to the way in which the organization communicates or to the processes it currently follows?

A key issue for the new information resources organization will be to consider how it will provide client assistance services. There has been much recent discus-

[8] Mark Luker, Jack Duwe, and Tad Pinkerton, "Restructuring a Large IT Organization: Theory, Model, Process, and Initial Results," *CAUSE/EFFECT* 18 (Summer 1995): 29. See http://www.cause.org/information-resources/ir-library/abstracts/cem9525.html.

sion in the literature on the need to develop new client support models. In *The Crisis in Information Technology Support: Has Our Current Model Reached Its Limit?*, McClure, Smith, and Sitko provide an excellent summation of the problems with traditional technology-user support models, and present some options that any institution that is integrating its library and computing operations should consider. They note that an integrated organization will need to provide both point-of-need and in-depth information client services that are responsive and effective. The organization may also need to develop new client training and instructional models.[9]

Although there are now many institutions with integrated library and computing operations, the survey responses and discussions with CIOs have led the author to conclude that the predominant organizational substructure is fairly traditional. For example, according to the survey results, 71 percent retained separate library and computing directors who now report to the CIO rather than to the provost (as in the past). About 17 percent of survey respondents reported having a fully integrated organizational model, but a review of the actual organization charts reveals that in most cases, even though a flatter hierarchy was achieved by eliminating separate directorships, essentially the same subordinate operational organizations were retained. Therefore, most integrated operations today still reflect a strong library and computing lineage. Samples of some organizational structures are contained in Appendix C.

When developing an organizational structure that promotes client services, the organization will need to consider whether to organize by client discipline (e.g., academic department) or by the more traditional library or computing functional model. The organization must also consider the extent to which the model is to grow out of or disconnect from the past. The organization chart should be a way to further the goals of the integration without making the new operations unrecognizable. Some factors and options the institution should consider when developing the new organizational structure are these:

Operational Overlap

Which services are essential, which can be consolidated or eliminated, which require operational backup to ensure continued operation, and which involve unproductive overlap?

Function, Discipline, or Client Orientation

Traditional library and computing and communication services are organized functionally. Libraries have public service and technical services operations; computing operations are generally organized by academic or administrative computing, or by software, hardware, and networking. The academic institution, however, is organized by academic departments or colleges. The new organization may be more responsive if it is organized like the rest of the institution rather than by the typical internal support functions, but this model may be disorienting for staff or faculty accustomed to the more traditional model.

Centralized or Distributed Organization

Consider which services can be delivered most effectively if centralized, and which may be better distributed throughout the university. It may also be desirable to incorporate a formal liaison program so that distributed departmental staff are trained by information resources personnel to become an informal extension of the information resources organization.[10]

Hierarchical, Matrix-Based, or Team-Based Structure

Most traditional computing and library operations are organized hierarchically. Alternative organizational models include matrix-based organizations (in which some, if not all, staff may have multiple reporting relationships) and various types of team-based management (including ad hoc, standing, and self-directed teams).

Stove-Piped or Interactive Operation

A "stove-piped organization" is one where there are separate operations that do not have much interaction, such as separate library and computing functions within a merged organization. Stove-piped organizations have high autonomy and identity, but low collaboration. Interactive organizations are premised on a high level of information transfer among constituent units. An information resources operation that retains a stove-piped organization but wishes to foster greater collaboration will find it inherently more difficult (though not impossible) to do so within its closed structure.

Evolutionary or Revolutionary Approach

Should the organization be evolutionary or revolutionary? One CIO thought she was hired from the outside specifically to make a revolution while another said that at her institution the initial changes were incremental with further changes envisioned upon completion of a planning process. Still another CIO who believed in incrementalism said, "We're dealing with structures and organizations that have evolved over hundreds of years (in the case of libraries) and decades (in the case of computing). There are so many natural areas for collaboration that new structures will grow if we provide the right conditions."

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[9] Polley McClure, John W. Smith, and Toby D. Sitko, *The Crisis in Information Technology Support: Has Our Current Model Reached Its Limit?*, CAUSE Professional Paper Series no. 16 (Boulder, Colo.: CAUSE, 1997).

[10] See, for example, Marisa Johnson, Julia Leon, and Susan Mistretta, "Partnership in Supporting Computer Technology at Emory University," *CAUSE/EFFECT* 20 (Summer 1997): 17-23. See http://www.cause.org/information-resources/ir-library/abstracts/cem9724.html.

What is the current practice among existing information resources organizations? While there is a general inclination toward traditional structures, there have been some exceptions with thus-far mixed success. At one extreme, the level of integration was so complete that traditional library and computing operations were virtually eliminated. Although this institution later modified their organization chart somewhat, after the recent departure of the CIO they eliminated the CIO position and reconstituted separate library and computing operations.

A less radical organizational change that still pursued a very high level of integration between libraries and computing has been in place since July 1996 at Lehigh University (see Appendix C for the current organization chart). Although there is some integration within the technology and information infrastructure areas, the crux of the integration occurs within the client services area. In addition to separate client service teams supporting each of the academic colleges, there is a general services team that staffs an integrated library and computing help desk. In addition to the client services group, there are other, more traditional infrastructure support groups for library and technology operations.

A subsidiary issue to the formal organizational structure is the establishment of campus committees to advise the new organization. The committee structure needs to be reconciled with the functions of the information resources organization. Before developing advisory committees, the CIO is well advised to seek input from any current advisory committee members about the proposed restructuring and the development of replacement committees.

The timing for introducing the new organization chart is very important. Some believe that a new organization chart should be created soon after the integration to set the tone and direction for the integrated operations. Others believe that only minor organizational changes should occur initially, and that organizational changes should evolve over a period of months or over the course of a year. The difficulty of the change to the new organization will be in direct proportion to the ambitiousness of the plan. The degrees of organizational change and the levels of integration can be viewed as points of difficulty on a continuum of most difficult to least difficult (see box at right).

If the staff has a high tolerance for ambiguity and is highly committed to the new organization, a progressive change may be the best strategy, especially if the new organization is very ambitious. If the new organization leaves much of the old processes and leadership intact, the change to the new organization will probably be rather simple and accomplished relatively quickly. As the change becomes more significant and ambitious, the transition problems become much larger.

Throughout the restructuring process, it is important to remember that staff define themselves by their current positions and their expertise. Many staff will take organizational changes — and the new organization chart — personally. The CIO and the entire leadership team will continually need to help staff see themselves as important members of a team that provides services and support to campus information system users. Patience and reassurance will be at a premium during the transition to the new organization. This is discussed in further detail in the section on human resource issues on the next page.

Relocation of Offices and Operations

As the new organization is put into place, staff may need to relocate their offices to bring the new operating units together. This should not necessarily result in moving (or squeezing) all of the computing staff into the library. If done well, planning for the physical relocation of staff can advance the implementation of a new organizational structure; if done poorly, it can cause great staff and cli-

Degrees of Complexity and Difficulty in Implementation

Highest Complexity and Difficulty

1. Total organizational integration. The organization chart retains no clear-cut traditional library or computing operations.
2. Moderate integration. The lines between computing and libraries are somewhat blurred. Increased integration of operations, particularly in direct client service provision, with the organization based upon client disciplines rather than internal functional efficiency.
3. Increased integration of some major operations. Separate library and computing director positions eliminated, but traditional operations and identities clearly identifiable.
4. Limited integration of one or two key service areas, such as a joint library/computing help desk. Separate library and computing directorships retained.
5. Library or computing director position retained, with CIO serving in one of the two capacities. Some projects or operations are jointly managed between libraries and computing.
6. Separate library and computing directors continue to report to the CIO, with minimal interaction between the directors or operations staff.

Lowest Complexity and Difficulty

ent frustration. Above all, good space planning and execution take time. As Luker et al. note about the major restructuring of the IT organization at the University of Wisconsin at Madison,

> Space is a critical factor. Getting needed remodeling completed in a timely fashion is a major problem, and we are only now [about two years later] 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.[11]

Delays in staff relocations can inhibit the development of the new organizations. Occasionally, all staff can move at the same time — for example, when the staff size is very small, there is vacant space available into which to move, or all staff are moving simultaneously into a new facility. In most situations, relocations occur in stages: one person cannot move until another has moved and left a space available. During the time when staff are still in their old locations, the physical divisions can impede the growth of group cohesiveness and make communication difficult.

Changes in personal work space usually cause great staff distress. People often become attached not only to their personal space but to the accoutrements (such as desks and chairs), and mostly to the people who have cohabitated their space. To reduce the potential tension, great care should be taken to involve staff in their own moves, to provide them with an opportunity to express their preferences, and to minimize the disruption the move will inevitably cause. It is important to plan and execute relocations properly to avoid cramped work space, improper network connections, or great physical distances between those who must confer frequently. Nonetheless, in a move involving a large number of people there may be conflicting recommendations or goals. It is not always possible to accommodate everyone's first choice. After allowing an opportunity for genuine input, the entire leadership team will have to accept responsibility to make the final decisions.

One other issue may be the location of the CIO's office, which might be in the campus administration building, or in the library or computing center. An office in the campus administration building signifies that the CIO is a major campus administrator, and it gives the CIO greater regular access to other administrators. However, administrative offices can distance the CIO from his or her staff and operations, especially if the campus is large. If the library and computing center are housed in different buildings and the CIO is in one of those two buildings, there is a risk that staff will perceive the office location as providing preferential treatment of one group over the other. In the focus group conducted by the author, it appears that most CIOs do have their offices in a library or computing center, but there are no general guidelines for resolving this issue.

When relocating or renovating service areas, consider how to make best use of the space within the the overall objectives of the integration. If the organization is creating new user support teams, those teams may need to be located near their client base or in other academic buildings. Changes in the location of service operations can be frustrating for clients who have become accustomed to finding the service in a specific spot. Most people are creatures of habit and expect the same things to be available in the same places forever. When relocating service operations, great care should be taken to notify the campus well in advance about upcoming changes, and to explain the reasons for them.

While relocation of services can be frustrating for clients, it can also create user excitement if the change is well designed and executed. For example, a new combined computing/library help desk can result in a physical space that is visually interesting, comfortable, and conducive to productive research. If it is designed properly, faculty and students entering the facility will instantly recognize the improvements.

Human Resource Issues

The initial plans for restructuring should be shared with the person to whom the CIO reports, the staff, the campus, and particularly the university human resources department. Human resources specialists will probably have many questions and ideas of their own — as well they should. An inquisitive human resources staff can be a great asset because their questions will help to avoid problems later. For example, if the campus has unions or civil service employees, there are critical issues that the human resources office will help to consider.

Following is an overview of some of the most common human resource issues related to restructuring. The restructuring in some cases may be relatively simple, involving only a few staff or operations. In other cases, a comprehensive restructuring may require additional reading or in-depth conversations. Through adequate preparation, the CIO can provide the staff with all of the appropriate options, and minimize the inevitable disruption that restructuring will cause.

Importance of Restructuring

Restructuring will inevitably cause personnel problems, but effective management can help to avoid some of these problems. Restructuring not only brings the opportunity to optimize performance, but it can also be the most valuable way to reposition the resources of the staff to meet the goals of the strategic plan.

Effect of Restructuring on Staff

Staff will feel the strain of the restructuring until they have sufficient time to become accustomed to their new responsibilities. The amount of change caused by the new structure will directly correlate with the amount of

[11] Luker et al., 10.

stress produced. Restructuring can have a short-term adverse effect on morale, but it is important to measure this against an accurate benchmark. While it is common to look back on morale or productivity as having been ideal prior to the restructuring, this is rarely the case. McClure et al. note many changes in information technology operations that are making it impossible to satisfy all campus user communities. They point out that as central organizations are increasingly overwhelmed by demand, the quality of support inevitably deteriorates. To meet these new demands, they recommend a new, significantly different organizational client support model. Yet moving to this new model will inevitably require changes — and therefore stress.[12] As the changes take effect, the restructuring becomes an easy target for complaints about service problems, but in reality it is only one of many complex factors.

Assigning New Responsibilities

Ultimately all staff will need to be given their new assignments. In many cases, the first step may be to determine who will be the leaders within the new organization. By naming the leadership first, those leaders can participate in determining other staff assignments. There are two basic approaches to resolving this step: the CIO can choose and appoint, or all leadership positions can be advertised internally and all staff can be given the opportunity to apply for the positions. In the latter case, the CIO may make the decision based upon the applications, or may elect to involve one or more staff screening committees to assist in the choices.

All staff will share a concern that the restructuring may result in a job reassignment or change in job functions. Many people will wonder whether the expertise they have will continue to be valued or whether they will have to learn new skills. One way to reduce this anxiety is to provide each individual (orally or in writing) with generic descriptions of all positions in the organization, and invite them to express their interests, skills, and preferences for placement in the new organization.

Another issue will be to determine the number of staff needed in each area of the operation. If the new structure is not substantially different from the old, estimating the number of staff required may be straightforward. However, significant changes in the organizational structure will make the task more difficult. The CIO and the leadership team should be prepared to adjust the allocation of staff after they have had some experience with the new organization.

Developing New Position Descriptions and Titles

The definition of positions and the preparation of new job descriptions not only provide a clear statement of the responsibilities of each position, but also may be used on some campuses by the human resources office to audit and classify positions. If some or all of the professional staff have faculty status, audits may not be used if the faculty ranking structure will take precedence. Some campuses require that audits be conducted before staff assume their new positions, some immediately after, or some others after the employee has held the position for a period of time (such as six months). When permissible, wait at least six months after the change to ensure that the job descriptions comport with reality rather than expectations. The delay also gives the leadership staff some time to become familiar with new staff before having to complete a large amount of paperwork to prepare the new job descriptions. To compensate people who may have been working out of their classification during this period, some campuses permit retroactive pay increases after the audit is complete.

To generate the new position descriptions, it will probably be easiest to develop sets of generic descriptions that contain the elements common to all jobs within a certain type or class. For example, if the job is for a reference librarian or computing consultant, it is possible to provide a common set of duties or minimum qualifications for the position. The human resources staff can then audit multiple staff members using the same job description. Whenever necessary, the generic description can be customized by adding specific job duties.

Job titles require particular attention. The changing of job titles can be very emotional and contentious no matter how much care and attention it receives. Competing ideas and interests will emerge. For example, the institution will need to decide whether it wishes to achieve consistency in the titles used between library- and technology-related positions. Depending upon the level of centralization of human resource management in the institution, these differences may be slight or significant, as indicated in the table on the next page.

Administrative and managerial titles can be especially difficult. A review of position titles used in advertisements reveals some interesting patterns and distinctions in the titles used to describe traditional library and computing operations.[13] In general, librarian titles reflect the ties to the academic side of the institution. It is common for the head of the library to have an academic title such as "dean." Where hierarchical titles are used, the highest-level title (such as the term "director") is nearly always reserved to describe the top administrator of the entire operation. The most typical middle managerial title is "head" or "department head," which parallels academic departments (which also often use the term "department chair"). By contrast, computing titles are

[12] McClure et al.

[13] The advertisements reviewed for computing positions were from the CAUSE online job postings (both the positions that were open at that time and the archives)—see http://www.cause.org/pd/jobpost/jobpost.html. For library positions the review was of a one-year backfile of positions listed online by the Association for College and Research Libraries—see http://www.ala.org/acrl/advert3.html for current listings.

often rooted in the administrative side of the university, and there is also greater title "inflation." Computing and technology operations generally are more hierarchical and less collegial than are those in libraries, and the position titles tend to be more similar to those in business than academe. The title "director" is by far the most frequently (and least consistently) used title in computing. It often applies to senior administrators and to middle managers. The term "manager" is still prevalent in the computing environment in the academic world even though the term is losing favor in the business world as team-based management becomes more pervasive.

There are good reasons why position titles matter. Although job titles per se rarely *determine* a position classification, they may *reflect* differences in classification. Staff — and perhaps others on campus — become concerned if the two major job families being integrated continue to have differing types of job titles because of a perception that the level of compensation and the elevation of the title will go together. Titles can also affect

Comparison of Position Titles Commonly Used in Computing and Library Operations

Level	Computing Titles	Library Titles
Top-Level Administrator *(director of all computing or technology operations)*	Assistant Provost Associate Provost Assistant Vice President Associate Vice President Chief Information Officer Dean Director Executive Vice President Vice President	Associate Provost College or University Librarian Dean Director Head Librarian
Senior Administrator	Assistant Director Associate Director Director	Assistant Dean Assistant Library Director Assistant University Librarian Associate Director Director *[rarely used]* Associate University Librarian
Middle Manager	Director Manager Team Leader	Chair *[rarely used]* Curator *[special collections only]* Department Head Head Team Leader
Front Line Manager	Assistant Manager Coordinator Manager Project Leader or Manager	Assistant Head Coordinator Section or Unit Head
Staff Position *[selected examples only]*	Engineer Programmer Systems Administrator *[1]* Analyst Specialist Programmer Analyst	Archivist Assistant Librarian Librarian *[2]* Officer *[3]* Specialist *[rarely used]* Web Coordinator or Administrator

NOTES

[1] Used in the context of the "administrator" of systems, not supervising or managing people
[2] For example, acquisitions librarian, catalog librarian, reference librarian, or systems librarian
[3] Only found in the context of "collection development officer"

not only those who are initially placed in the position, but also later recruitment. If a position title is not clear and meaningful to those within the institution, the confusion will probably be shared by potential applicants as well.

When choosing titles, decide whether the primary objective is for the new titles to reflect an intentional tie to or a break from the past. Because it protects the comfort of staff and the broader campus, continuation of a title such as "senior librarian" or "computing consultant" may help ease the transition to the new organization. Retention of earlier titles, however, may signal that the new integrated organization differs little from that of the past, and this may also foster a continuing feeling of separation between the two groups. If the organizational structure is moving away from a traditional hierarchy to a matrix or team-based groups, it may be appropriate to consider moving away from traditional titles (such as "manager" or "department head") toward titles that reinforce the team concept (with titles such as "team leader" or "group leader").

Position Audits and Salary Determination

Assuming that the information resources positions are classified in position rather than in rank (i.e., faculty status), the university human resources office will probably complete the position audit, and may recommend salary adjustments. The funding source for such changes varies widely depending upon local practice. Some campuses provide central funding while others require this cost to be borne by the individual unit. The CIO should be well aware of the local practice before embarking on this step.

A key issue may be whether there is to be salary parity between library and computing staff. It is common for campus computing and technology staff to be more highly compensated than library staff because of market competitiveness. It is also more common for librarians to hold faculty status, while professional computing staff may prefer not to have it. The CIO will need to look at and balance these issues carefully, and work with the staff and human resources department to craft a solution that is appropriate to the campus.

Initial and Ongoing Organizational Development

The new leadership must work with staff so they understand their new jobs, and provide them with the requisite training to be successful in those new positions. The amount and type of training will differ based upon existing staff expertise and the significance of change in a particular position. Even in areas of the organization that require little change in responsibilities, some individuals may have significant changes in job duties. Staff training can be especially important in technology or in team-based organizations. Not only may cross-training be required to increase technical skills, but staff may need to learn organizational skills to better coordinate their work with that of others.

The training program should provide not only an initial plan of action, but also steps for continuous training and improvement. While the initial training may be rather straightforward, the ongoing program will be more difficult. When an organization is new, a level of enthusiasm moves the training program forward. However, as staff become involved in their daily activities and stress levels increase, it becomes more of an imposition to take the time for training.

One aspect of organizational development that should be strongly encouraged is the development of service standards.[14] These standards provide succinct statements spelling out goals for the ongoing services of the organization. Each statement should provide a quantifiable and qualitative measure of performance. For example, a computing service statement might indicate that all networked information systems will be available every day with 98 percent reliability. Published service statements can provide clients with the measures by which to judge the services provided by information resources. The process of developing the statements also allows the staff to better understand the key services of the organization, and to clarify gaps or areas of operational overlap. The organization should also develop methods for collecting the data to measure and analyze the success of the operation in meeting its service goals, and annually review and update the standards.

Staff Turnover

Nationwide, the dynamic environment of information resources (especially computing) experiences a fairly significant degree of staff turnover. Highly skilled personnel are in demand. There is also a tendency in technology fields for individuals to hold greater loyalty to their own technological interests than to any one organization. A 1994 study noted that the most significant reasons for turnover in information technology areas were, in decreasing order, dissatisfaction with the work itself, dissatisfaction with the quality of the supervision, criticism of the level of service provided by the organization, a feeling that the organization was not permitting individuals the opportunity to use all of their professional skills, and dissatisfaction with salary.[15]

During periods of great organizational change, all of these concerns become more prevalent. Many staff

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[14] For a fuller discussion of this topic, see Susan Wehmeyer, Dorothy Auchter, and Arnold Hirshon, "Saying What We Will Do, and Doing What We Say: Implementing a Customer Service Plan," *Journal of Academic Librarianship* 22 (May 1996): 173–180. The Lehigh University service standards are available at http://www.lehigh.edu/ir/service.html.

[15] Jeffrey A. Berman and Baruch Nevo, "Job Satisfaction Components, Task Characteristics, Organizational Characteristics and Turnover Intentions Among Data Processing Employees," *International Journal of Management* (March 1994): 585–591.

who have been comfortable in their positions may take the organizational restructuring as an opportunity to reassess their own career interests and goals. The result is that a period of restructuring will probably result in a higher-than-usual level of staff turnover. Turnover may be particularly high in organizations that previously were the most stable because individuals in those organizations may be less accustomed to significant change.

Despite the best efforts to retain good staff, there may be times when this is not possible or even desirable. If, for example, an individual is interested in advancing to a leadership position but none is likely to become available in the new organization, there is an incongruity between the individual and organizational interests. At this juncture, the individual must make a decision. Restructuring may create new opportunities for some while closing off opportunities for others. In this regard, turnover can be a natural mechanism for an organization to evolve. A recent study showed that people who *initially* are highly satisfied with their jobs are less likely to quit than those who are not; however, job satisfaction becomes less of a factor over time as to why people choose to stay in a job. The study showed that after four years there was no difference in the likelihood of quitting between those who were initially satisfied and those who were not.[16] After four years, other factors become more important in one's decision to stay.

Healthy institutions thrive from the introduction of new ideas, energy, and enthusiasm. This often comes from a manageable and sustainable level of turnover that is balanced with sufficient stability for the organization to sustain itself. Neither very high nor too low a level of turnover is desirable. Low turnover can be the result of a complacent or comfortable organization where people stay not for the challenges but because it is easier to stay than to look elsewhere. While a loss of a key staff member can create temporary difficulties, over time the organization may be more healthy if staff elect to stay based upon their commitment to the new vision.

Addressing Cultural Issues

As noted throughout this publication, the existing organizational culture will have a great effect on the integration of operations. Majchrzak and Wang state that "collective responsibility is an attitude, a value, a concern. ... Changing the organizational structure alone will not instill such values or behavior. [I]f companies are not ready to take the steps required to change their culture, they may be better off leaving their functional departments intact."[17]

In the organizational integration of libraries and computing, all staff must be sensitive to the differing organizational cultures of the library and computing staff, and to the subcultures of those organizations as well. The stereotypes held by both groups are well known and documented. Lipow and Creth cite (among other stereotypes) that librarians don't understand technology, are inflexible, and are passive-aggressive, and that computer technologists aren't service oriented, they thrive on change, and are "aggressive-abrasive."[18] In their informal survey of library and computing directors, Hawkins and Battin note that stereotypical librarians are also "hell-bent on warehousing everything," "idealistic, isolated, impractical," are "partners only when they are in control," and "can't think outside the box." The librarian's stereotype of the technologist is that the latter are "blue-sky people [who are] not reality/performance based," and are "dazzled by technology for its own sake," "unconcerned about ultimate costs," "disinterested in the past," have "little knowledge of disciplinary research needs," and have "poor management, people and strategic skills."[19]

The differences of culture run far deeper than the stereotypes for at least two reasons. First, while there is some truth to the stereotypes, there is also a great deal that is not true. Despite the stereotype, many computing people not only do not race to try out everything new, but may resist change even more than librarians. Conversely, many librarians are not very effective information gatherers or planners.

Second, and more significantly, the cultures of the problem-solving approaches of the two groups are often quite different. This may be in part because of the strong gender biases of the two professions: computing as a profession has been predominantly male, while librarianship has been female dominated. Librarians tend to approach client services from a nurturing and instructional mode; they want to guide and mentor, working especially well with neophytes or those who are able and willing to express their difficulties. Their approach is stabilizing, confirming along the way that the client is still following the instruction. By contrast, computing professionals, whose "traditional" client base often consisted of engineers and scientists who were technologically literate and engaged, most enjoy helping those who are able to help themselves. Computer professionals often want to teach advanced skills to people who are already well beyond the basics. While computing professionals may excel at one-to-one interactions to develop customized solutions to specific problems for in-

[16] David Dickter, Mary Roznowski, and David A. Harrison, "Temporal Tempering: An Event History Analysis of the Process of Voluntary Turnovers," *Journal of Applied Psychology* (December 1996): 705-716.

[17] Ann Majchrzak and Qianwei Wang, "Breaking the Functional Mind-Set in Process Organizations," *Harvard Business Review* (September/October 1996): 95.

[18] Anne G. Lipow and Sheila D. Creth, *Building Partnerships: Computing and Library Professionals* (Berkeley: Library Solutions Press, 1995) vii.

[19] Brian L. Hawkins and Patricia Battin, "The Changing Role of the Information Resources Professional: A Dialogue," *CAUSE/EFFECT* 20 (Spring 1997): 22. See http://www.cause.org/information-resources/ir-library/abstracts/cem9717.html.

dividual clients, librarians often excel at developing general solutions to meet the needs of large groups. When these two groups talk together, they often do not understand each other because their approaches are so foreign. As the integration proceeds, it is important not to get rid of one approach or the other, but to build on the strengths of each group to develop solutions appropriate to particular situations.

For an organization to be able to recognize and move beyond these cultural and learning-style differences, each group must recognize *and be willing to embrace* the differences in educational background and cultural values of the other. Opportunities for both formal and informal socialization should be created to break down the barriers and increase the opportunities to increase familiarity. Most importantly, the building of a new culture requires not only attention (even vigilance), but the sheer passage of time. The library and computing cultures prevalent in academe today were built up over decades (if not centuries); they will not magically transform themselves in a matter of months or even a few years. This is true even in institutions that have had cultures of innovation. Expect that it will be at least three years before significant operational changes begin to take hold, and at least five years before the change starts to become ingrained.

Communicating with the Staff and Campus Community

Throughout the planning and implementation processes, it is essential to maintain staff and campus communication. Whenever an organization undergoes a major change, the opportunities for misinformation and rumors are rife. Left unattended, these can seriously undercut the effectiveness of the new operation. The information resources group needs to make its transition plan widely known to its staff and the broader campus. This plan should clarify who is responsible for each of the old and new tasks, which tasks should be retained or eliminated, and when each part of the transition will occur. Some organizations may adopt an evolutionary switch-over accomplished in multiple phases over multiple months, while others may choose a single cut-over date when the old operations cease and the new ones begin. As soon as the changes and transition plans are known, the staff and campus education process should begin. Methods for doing this include:

Meetings

Create staff and campus small-group forums (such as academic department meetings), large presentation sessions, or individual meetings to introduce and discuss the changes.

Electronic Communication

Use staff and campus listservs, system bulletins, network bulletin boards, and conference groups to communicate changes about the organization and to encourage feedback about the changes in service.

Information Resources Web Site

A particularly effective way for an information resources organization to convey both information and the excitement of change to the campus is to develop an entirely new Web image and information infrastructure. Not only can the Web page present the new strategic plan and organization chart, but its structure can reflect the level of integration of the new organization. There are probably many existing Web pages that can be incorporated into the new site, but they should be carefully updated to carry the message and name of the new organization.

Formal Publications

Regularly print articles in the campus newsletter or student newspaper. Predict the questions and concerns that people will have, and address those issues quickly and forthrightly. The CIO might also consider a regular column in the campus newsletter to update the campus and to share ideas about emerging issues. An information resources newsletter for the campus can quickly establish an image and presence for the new organization. This can be published electronically or in print. The frequency should be at least two or three times per year, and the primary audience will probably be faculty and staff.

Quick Guides to the New Organization

Especially when there have been substantial changes in the points of contact for public services, it is important to provide a simple-to-follow guide of whom to call for various types of problems. This is especially important for phone numbers. Whether printed or on the Web, a quick reference guide can point clients to the most commonly requested services such as circulation of library materials, classroom equipment help, computer repair service, technical assistance for computers or media equipment, information about network connections (on- or off-campus), instructional Web page development, e-mail assistance, hours of operation, interlibrary loan, instructional design and delivery, library research and collections, opening network accounts and changing passwords, purchase of new computers or software, changes in telephone service, etc.[20]

[20] An example from Lehigh of this type of quick reference information to help point clients in the right direction can be found at http://www.lehigh.edu/ir/quickref/. At this site, see the specific pages for particular colleges or department, e.g., the College of Arts and Sciences listing at http://www.lehigh.edu/~incast/quickref.htm.

Budget Considerations

The budget is the primary tool of any administrator trying to effect change. A close link between the plans and the budget through effective budget allocations and adequate funding is essential to ensure the success of the strategic plan and the new organization.[21] A published budget, shared with the information resources staff and campus, can lead to an open and forthright dialog as to how the new organization will expend its financial resources for maximum benefit.

The degree to which the budget will be integrated will probably reflect the degree of integration in the organization. If the CIO holds little or no budget control, it will be much more difficult to make significant changes. For example, an information resources organization with separate library and computing directors is likely to retain separate budgets for each. This structure empowers the two separate budget managers, and puts the CIO in the position of having to negotiate with them to fund cross-organizational goals. Integrating the budgets more completely creates the opportunity to view all funds as one resource that can be allocated to achieve maximal organizational goals. However, full budget integration can also make the budget appear larger, and therefore more vulnerable, on campus.

Ideally, information resources should develop multi-year budgets to ensure funding for major priorities and initiatives. If information about campus needs and potential funding resources are available from academic units throughout the university, that information should be incorporated into the information resources plan. It will also be useful to collect information about spending patterns in recent years to establish baselines for spending in each category.

Funding for the information resources organization is highly problematic because demand constantly exceeds what is a reasonable supply. Both libraries and computing have developed a reputation over the past few decades for being high-maintenance operations. As Patricia Battin has noted,

> Today, the higher education community resembles a dysfunctional family, passing back and forth from the library to the information technology division the blame for dysfunction instead of admitting the pathology of the total family structure. For years the library was the scapegoat ... labeled as the "black hole" of budget deficits because of escalating journal prices. Now the honors for the "bad seed" have passed to the information technology divisions, accompanied by anguished cries for more speed, more accessibility, more reliability, and howls of dismay over the ceaselessly spiraling costs.[22]

Another danger zone when the library and computing organizations combine is if the budget of one operation consistently subsidizes the other. Whether the budgets should be separate or commingled will depend upon local campus practices. It may be desirable to allocate the entire budget as an integrated resource, but to establish separate expenditure budgets for technology and libraries, particularly for high-cost categories such as technology replacement or library acquisitions and access services. If budget allocations and expenditures are not balanced and even-handed, discontent or distrust will result. This problem can be minimized by avoiding large reallocations over a short period of time unless there is a clear direction from the provost or president to do so.

When creating the new budget structure, it is critical to create a base level of categorical funding for recurring expenses, such as life-cycle equipment replacement or library materials. While the latter has been categorically funded on most campuses for many years, the former often is not. There should be annual allocations (even if the total amount available is insufficient) to support the technology infrastructure such as network growth, telecommunications switches, public site computers, residential networking, software upgrades, operating system changes, faculty computers, etc. Creation of a life-cycle budget will require an iterative process to assess the need and how much can be afforded, and to determine the annual shortfall. It will probably take two or three budget cycles before a clear life-cycle budget emerges.

Although the creation of life-cycle funds is essential, it is important to set aside sufficient funds for new projects, special initiatives, and other one-time expenditures. Particularly in technology areas, much of the need goes beyond maintaining the existing infrastructure to investing in new and emerging technologies. In addition, there can be unexpected events, emergencies, and opportunistic purchases in which the organization may wish to invest.

One final decision that will face the CIO is whether budget control should be centralized or delegated or distributed to others. When centralized, the CIO can ensure that the budget priorities that have been established are actually being funded, and that the funds are not being eroded by next-level managers or administrators. However, central maintenance of a large budget in an integrated operation may result in the CIO's becoming a budget bottleneck or a feeling on the part of others in the organizational leadership that they are not being trusted to handle the budget. As the individual who bears the ultimate fiduciary responsibility, each CIO will have to weigh local circumstances and derive a solution with which he or she will be comfortable.

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[21] Particularly helpful advice in this area can be found in Martin D. Ringle, "Forecasting Financial Priorities for Technology," *CAUSE/EFFECT* 20 (Fall 1997): 22-29. See http://www.cause.org/information-resources/ir-library/abstracts/cem9736.html.

[22] Hawkins and Battin, 22.

Final Thoughts

Integrating libraries and computing is a difficult task, and is not a job for the faint of heart. The problems and complications facing a computing or library director today are great; combining these jobs amplifies the complexities. An interesting *Edutech Report* section, "Hot Issues: 1996–1997," asked some probing questions about "The mood of the CIO." The passage quoted below paints a rather bleak picture of the situation of the CIO who is responsible only for information technology (IT) and not even for the libraries.

> Is this an impossible job? Are institutions so IT-challenged that no one person can succeed for very long as a CIO in any one place? Are CIOs used as scapegoats for the institution's inability to be able to make difficult priority and resource decisions? Are CIOs unfairly blamed when the technology does not live up to the institution's completely unrealistic expectations?
>
> The CIOs with whom we talked are generally very depressed. Not all of them, to be sure, but enough so that it is clear that the general anxiety level is much higher than it should be. Even though we had reason to expect just the opposite by now, the gap between the CIO and the rest of the administration seems to be widening. And this is regardless of what level the CIO is at in the institution. As we heard from one CIO respondent, "This institution created the CIO position so that no one else at the top level ever had to think about IT again. That has turned out to be a disaster — for all of us."[23]

If this is true for the CIO who is responsible only for information technology, it is even more so for those handling all of information resources. Despite this rather bleak scenario, when I surveyed information resources CIOs, a number of respondents were very enthusiastic about integrations. Comments like "Do it!" "Merge," and "Go for it!" were common. While most respondents were highly enthusiastic, they still had concerns or advice about how to avoid the pitfalls. The following is a composite of my own advice and that of other CIOs received through the survey.

[23] "Hot Issues: 1996-1997," *The Edutech Report* 12, no. 6 (September 1996): 5.

Advice to the University Administrator

- Integration should be a natural outgrowth of the university vision or strategic plan. Do not integrate to save money, or to solve a particular personnel or organizational problem. To increase the chances of success, build support so faculty and staff understand and share the vision of integration.
- Remember that integration may not be appropriate in all circumstances. Collaboration and cooperation can be accomplished in other ways. Integrated operations are more likely to be successful if they are built within an environment that has a history of collaborative efforts. Integrating operations in an environment where the two organizations are distrustful of each other or openly hostile will almost guarantee failure.
- Making the decision to integrate should be an act of faith and of courage, not a quick fix. The new organization will need a substantial period of time to grow. Allow at least three, and preferably five, years before substantially changing directions. During this three-to-five-year period, consistently champion the integration, especially during the inevitable difficult periods when staff or the campus lose faith and question the advisability of the strategic directions, the new organizational structure, or changes in service delivery. Make interim corrections to the course of action but avoid the temptation to second-guess every decision or to retreat at the first sign of resistance.
- Things may get worse before they get better. When things go wrong, remember that every problem cannot be attributed to the change in the organization. For example, as noted elsewhere in this paper, there is a national crisis in help-desk management and residential networking that has vastly increased the amount of technical support needed. If the operation is significantly understaffed, and if demands continue to increase, no amount of strategic planning or restructuring will solve the problem.
- Integration should not be undertaken in an unstable university environment. The most critical single fac-

tor for success will be the firm support of the provost, president, and board of trustees.

Advice to the Staff

- Librarians and technologists are increasingly working together to address campus information needs, and they therefore must work as a team. An integrated organization legitimizes and encourages this teamwork, and provides many opportunities for professional growth. Recognize and embrace the abilities, skills, and experiences that your colleagues from all areas of the newly integrated operation contribute to the common enterprise.
- If you personally oppose the merger and absolutely cannot reconcile yourself to this change, reassess your own career. Would you be happier in another environment?

Advice to the Potential CIO

- Be pragmatic, be daring, but only take those risks that have a realistic chance of success. Build alliances and partnerships. Whenever things seem to be going smoothly, expect a new problem to arise.
- Be prepared for a long learning curve. If it seems simple, look again.
- The long-term implications for such cooperation need not result in loss of identity for either operation. Build the new organization on the strengths of the old organizations rather than trying to dismantle the successes of the past.
- Recognize that the sphere of concerns and the political risks for a CIO are greater than for either the computing or library director alone. The time and attention of the CIO is much more diffuse. The CIO will be called upon to address many things for which he or she is not prepared or has had no direct experience. Expect to be asked daily about a broad range of issues such as library consortia; campus residential networks; electronic journals; network server models; library materials inflation rates; budgeting for instructional technology; scientific computing; changing models of client service and help desk delivery; telecommunications technology, regulations, and business practices; outsourcing of library cataloging, computing services, and modem pools; network authentication, authorization, and security problems; library approval plans and journal vendors; campus standards for desktop computers; photocopier and networked printing contracts; mainframe operating systems; automated library systems; campus intranets and groupware; digital library projects; Internet 2; special collections and archives; enterprise-wide information systems; asynchronous learning and asynchronous transfer mode; and emerging Web technologies. Librarian or computing directors occasionally deal with pieces of these issues; CIOs deal with all of these issues all of the time.

The integration of computing and library operations on campus, and the creation of a chief information officer position, require a significant commitment of time and effort by a university or college. This is not a step that can or should be taken blithely. It is inevitable that changes required in the organization and culture of information resources operations, and in the institution, will bring upheaval. For the effort to succeed, it requires forethought, planning, and a sustained commitment and faith in the direction taken. There are also no guarantees: what led to a successful effort at one institution may not translate well at another institution with a different history and culture. Bold leadership, willingness to experiment, and top-level institutional commitment are the essential keys to integrating these operations. Should any of these factors not be present within an institution, integration should probably not be attempted. However, with a multi-year commitment and continuous effort to improve the organization, integration can yield significant improvements in the quality of services and the allocation of resources.

Appendix A: Position Advertisements

This appendix contains advertisements for searches conducted by participants in the author's survey that resulted in the hiring of a CIO or for which the position was vacant at the time of publication. Searches that were unsuccessful or that resulted in the institution's deciding not to hire a CIO are excluded.

The text of the advertisements has been edited to standardize the format of presentation and to include only the position description, qualifications, and environment statement (if present). Unless otherwise indicated [in brackets], there was no other editing of the text. Other information that may have been contained in the original advertisement, such as the application procedure, is not included.

Position advertisements are included for the following institutions (the year indicates when the advertisement was run):

Bradley University (1997)
Bucknell University (1996)
Calvin College (1996)
Clarkson College (1997)
George Mason University (1997)
Indiana State University (1996)
Kenyon College (1996)
Lehigh University (1994)
Pacific Lutheran University (1996)
Seton Hall University (1996)
University of Alaska (1997)
University of Rhode Island (1997)
Virginia Commonwealth University (1997)

Bradley University

Associate Provost for Information Resources & Technology

Responsibilities: The Associate Provost provides leadership, vision, and strategic planning for academic and administrative computing, networking, the library, telecommunications, audio visual and television services, and the public radio station. The Associate Provost, in collaboration with the academic deans and administrative officers, provides leadership to creatively apply information and technology to the curricula and to support the technological infrastructure for the operations of the University.

Qualifications: Applicants for the position of Associate Provost must have (1) a vision of the role of information resources and technology in support of academic programs; (2) significant experience in the application of information resources and technology in higher education; (3) demonstrated success in the management of personnel and budgets; and (4) experience in the delivery of effective information and technology services. Applicants should also have a minimum of five years of increasingly responsible administrative experience in an academic setting, demonstrated commitment to participatory management and open decision making, excellent leadership, interpersonal and communication skills, and an advanced degree in a relevant field. Preference will be given to candidates who demonstrate familiarity with the administration and operation of computing centers, networks, libraries, distance learning technologies, telecommunications, audio visual and television services, and public radio stations. A record of teaching, research, and community outreach is highly desirable.

Bucknell University

Associate Vice President for Information Services and Resources

Responsibilities: Reporting to the Vice President for Academic Affairs, the Associate Vice President will be responsible for the management and development of a new organizational unit which combines all information services, resources, and technologies at the University, including the Bertrand Library, Instructional Media Services, and Computer and Communication Services.

Responsibilities include: management of the University's information resources and overseeing the evolution of its academic and administrative information services, coordination of efforts to apply the University's information technologies to teaching and learning, and leadership in improving administrative functions through the use of information technologies.

Qualifications: The University seeks candidates with evidence of demonstrated leadership and managerial experience as a senior librarian, director of a computer center, or chief information officer. The successful candidate will have the professional degree(s) appropriate to those positions, a commitment to traditional library and information technology functions, and a capacity to work in an educational environment composed of strong programs in the arts, sciences, and engineering.

Calvin College

Vice President for Information Services

Responsibilities: Calvin College seeks applicants for the office of Vice President for Information Services. The Vice President will manage and provide the leadership, strategic planning, and coordination for both academic and administrative computing, the library, and telecommunications. Will ensure the promotion of new paradigms for instruction, scholarship, student recruiting, office automation, and for all other areas of information technology.

Qualifications: Calvin College is a Christian college in the Reformed tradition. The position requires a religious commitment compatible with the mission of the college. The successful candidate will have a master's degree in an ap-

propriate area; an earned doctorate is preferred; computer expertise and experience; experience in leadership, management, and staff development; sensitivity to people and ability to build morale and loyalty. Written and oral communication skills are essential.

Clarkson University

Chief Information Officer

Responsibilities: Clarkson University is seeking an outstanding leader to serve in the position of Chief Information Officer. Reporting to the CIO are academic and administrative computing, the library, and media technologies. The CIO serves in the President's cabinet. The individual who assumes this position will be a creative and energetic technology manager with a clear focus on serving the information needs of the campus community.

Qualifications: Candidates for the position should demonstrate proven administrative success in the information technology arena, preferably with at least five years experience. The Chief Information Officer will join an administrative team committed to leading Clarkson into the 21st century as one of America's premier technological universities.

George Mason University

Vice President for Information Technology

Responsibilities: George Mason University seeks a Vice President for Information Technology. The vice president is the university's chief information officer. As a principal policy advisor to the president and provost and as a member of the Executive Council, the vice president provides university leadership for all aspects of information resources, technology, and services, particularly the application of those resources to teaching and learning. Reporting directly to the president, the vice president is responsible for strategic planning and implementation, coordination, budget, personnel, and policy related to information technology and resources. Additionally, the vice president is responsible for overseeing management of university computing, libraries, instructional development and support, telecommunications and networks, the television station, and the Campus-Wide Information System to ensure the pervasive and innovative use of technology in instruction and administration throughout the university. The vice president represents the university externally in matters of information technology and resources and ensures a high national profile for GMU in those areas and builds partnerships with industry and government agencies to enable campus implementation of emerging and advanced technology.

Qualifications: Familiarity with large university environment and academic culture; demonstrated knowledge and ability to provide vision and leadership in information technology and resources; strong experience in administration and leadership with a doctoral university; demonstrated ability to work effectively with and build consensus among a diverse population of information users and providers, as well as to build alliances with external agencies; familiarity with the latest developments in advanced technologies and information systems in higher education nationally; and excellent communication, interpersonal, and presentation skills. A doctorate is preferred.

Indiana State University

Associate Vice President for Information Services and Dean of Library Services

Responsibilities: The Associate Vice President and Dean reports to the Provost and provides leadership, strategic planning, and overall management for Information Services, which encompasses the library, academic computing and networking services, institutional computing, and telecommunications. The successful candidate will possess a vision for the role of the library and for integrating information technologies, resources, and services in support of the University's mission. This position involves extensive interaction with a variety of individuals and organizations, on and off campus, and requires an open consultative style of leadership.

Qualifications: An ALA-accredited master's degree in library science and at least five years of experience in academic library or computing administration are required. Doctorate strongly preferred. Demonstrated knowledge and understanding of academic libraries, computing and networking infrastructure. Demonstrated leadership in organizational and fiscal management including planning, developing, and evaluating programs and personnel. Demonstrated effectiveness in communicating with various internal and external constituencies. Record of scholarly accomplishment.

Kenyon College

Vice President for Library and Information Services

Responsibilities: Kenyon College invites applications and nominations for the newly created position of Vice President for Library and Information Services. Reporting to the President, the Vice President will provide leadership, planning, and overall management for the library, academic and administrative computing, and telecommunications, in support of the college's mission. Duties will include integrating the library, academic, and administrative computing into a collaborative unit; directing the work of the professionals and staff in this unit; strategic, long range, innovative planning for library and computing services; coordinating the library's public and technical services; formulating and implementing policy for selecting and integrating effective information technologies and services for the college; directing the library's participation in the Five Colleges of Ohio consortium; budget planning and management; serving as facilitator and liaison between Library and Information Services and various college constituencies. The Vice President is a member of the President's Senior Staff Advisory group.

Qualifications: five years or more experience in information management, preferably in academic library and/or

computing administration; evidence of increasing administrative responsibility; demonstrated leadership in strategic planning and organizational, personnel, and fiscal management; successful, progressively responsible experience in managing information technology and networks; demonstrated effectiveness in communicating and collaborating with administrators, faculty, staff, and students, and of service user orientation; advanced degrees from an ALA-accredited program and/or a graduate degree in computer science, or equivalent professional attainments; college-level teaching experience desirable.

Lehigh University

Vice Provost for Information Resources

Responsibilities: Lehigh University invites applications and nominations for the new position of Vice Provost for Information Resources. This position will provide strategic planning, coordination, and leadership for University Libraries, Academic Computing, Administrative Computing, and Telecommunications. The Vice Provost will report to the Provost and be a member of both the Provost's Council and the University Council. The Vice Provost must possess a vision of the role innovative information technologies can play in higher education, as well as an understanding of the changing paradigm in scholarly communication. The successful candidate will have responsibility for integrating information systems, resources, and services in support of the teaching, learning, and research missions of the university. The Vice Provost will be expected to create an organizational structure and a working environment that encourage creativity, cost effectiveness, and change.

Qualifications [Minimum]: Understanding of the use of information technologies in support of instruction, research, and administration. Understanding of the administration and operations of libraries, computing centers, and telecommunications services with experience and expertise in at least one of these areas. Seven to ten years of increasingly responsible management experience. Demonstrated commitment to participative management style and to open decision making. Excellent interpersonal and communications skills. An advanced degree in a relevant field.

Pacific Lutheran University

Executive Director of Information Resources

Responsibilities: The Executive Director will be responsible for providing active and integrative leadership for the university library and computer center, both currently housed in the same building, and for the integration and management of other university information resources. Long range planning for the continuous improvement of information technology and services is crucial. Directly reporting to both the Provost and the Vice President of Finance & Operations, the Executive Director will be the primary advocate for information technology at the university. Other duties will include policy formulation, budgeting and financial control, and program development, all of which involve extensive interaction with various departments and units. The Executive Director will oversee more than forty professionals and support staff with a combined annual budget of over $3 million.

Qualifications: A thorough understanding of computer services, academic libraries, and voice and data networks. A master's degree in information technology, library, or computer services is desired. Of critical importance are professional vision, current knowledge of electronic information technologies, a realistic understanding of the place of technology in a largely undergraduate and teaching-oriented university, effective interpersonal and communication skills, and managerial acumen. Evidence of increasing managerial leadership experience in complex organizations is necessary. A collegial and inclusive leadership style is essential.

Seton Hall University

Associate Provost for Information Management

Responsibilities: This is a new position created as a result of the University's strategic planning process. The Associate Provost for Information Management will manage all aspects of information technology for the University, including: academic and administrative computing, instructional technologies and their infusion into curricular planning, multimedia delivery systems, library systems and networked information, distance learning, and telecommunications.

Responsibilities will include: providing vision and leadership in formulating information policy in support of teaching, learning, research, and the administration of the University; aligning all elements of the University's information resources in support of the University's strategic goals; strategic planning for information management and systems; providing support for the effective use of information resources in teaching, learning and scholarship; and participation in the University's process redesign efforts. The Associate Provost for Information Management will report to the Provost.

Qualifications: Excellent leadership, written and verbal communication, and consensus and team building skills are required, as well as a strong commitment to participatory management, staff development, service, and quality. Candidates must have an appropriate advanced degree; an advanced degree in Library Sciences from an ALA-accredited program is desirable. Also required are: practical knowledge in technical innovation, library automation, networking, and use of information technology in teaching and learning; demonstrated skills in planning, budgeting, and organization; the ability to make technical issues understandable to the University community; the ability to work with strategic partners in the delivery and management of information; a minimum of six years in increasing administrative responsibility in information management; a demonstrated record of professional and scholarly activity; and proven ability in grant procurement.

University of Alaska

Director of Libraries and Information Technology

Responsibilities: The University seeks a dynamic and innovative leader who will provide vision and direction for the integrated units Elmer E. Rasmuson Division of Libraries and Division of Computing and Communications (C&C). The Director provides leadership for planning, articulating, and implementing program goals and is responsible for budget and overall management. The Director reports to the Provost, is the primary advocate for information technology at UAF, and is a member of the Provost's Council and other policy setting bodies.

Qualifications: Candidates should have a record of successful, progressively responsible administrative and fiscal experience in library or computing services in an academic setting. Experience with information technologies should include demonstrated familiarity with both library and computing applications, an understanding of current trends in both fields, plus operational responsibility in one area and substantive collaboration with the other. Also essential are excellent communication skills, a record of research and professional leadership appropriate to senior faculty rank, and a demonstrated capacity for team management, consensus-building, and public advocacy. An ALA-accredited master's degree in library or information science or equivalent is required. Professional experience in both library and computing services is preferred.

University of Rhode Island

Vice Provost for Information Services & Dean of University Libraries

Responsibilities: Responsible for planning, coordination, and leadership for the University's information technology services and support, including Management Information Services, Technical and Operational Services, Information and Instructional Technology Services, Networking and Telecommunication Services, and Library Services in support of the University's mission in instruction, research, academic outreach, and technology.

Qualifications: Advanced degree in an area relevant to the position required. Must possess an understanding of the mission, role, and operations of libraries, computing, and information technologies, and have five or more years of significant prior successful administrative experience in at least one of these areas operating in a complex environment. Successful experience in integrating information systems, resources, and services in support of academic and/or administrative functions required. Demonstrated accomplishments through research, creative activity, professional activity, or other means sufficient for appointment at the vice provost/dean level required. Must demonstrate the ability to further the goals of the library, computing, information, and instructional technologies to support the teaching and research of the faculty and the learning outcomes of students. Must possess excellent interpersonal, communication, and collaborative skills, and a demonstrated ability to build team support. The following characteristics are being sought in the successful candidate: evidence of creativity, flexibility, innovation, and vigorous leadership; ability to increase resources through external sources, including partnerships, grants, and private giving; leadership experience in managing information and instructional technologies, preferably in higher education; ability to advocate the centrality of libraries and information technologies to the mission of the university; strong service commitments to clients; demonstrated ability to advance innovative programs in response to a rapidly changing information environment.

Virginia Commonwealth University

Vice Provost for Information Technology

Responsibilities: The incumbent will report directly to the Provost and will provide vision, leadership, and coordination for a comprehensive information technology environment serving ten schools, one college, nearly 22,000 students, and 13,000 employees on the academic and medical campuses.

Qualifications: Advanced degree in an appropriate discipline is required. Demonstrated knowledge and ability to provide vision and leadership on issues related to information technology coupled with a strong record of management responsibility, preferably in a research university setting. Progressive experience in the administration and direction of information technology, demonstrated ability to work effectively with a diverse population in the development and administration of programs, and ability to secure external funding resources are preferred. Excellent written, verbal, interpersonal, and presentation skills are required.

APPENDIX B: Four-Year North American Institutions with CIOs

(as of April 1998)

NOTE: The following list of institutions with integrated library and computing operations was compiled by the author, and the information was verified with the individuals listed below. Institutional decisions to integrate or reverse integration, and the names of the CIOs, change frequently. Although this information was accurate as of April 1998, ongoing accuracy cannot be guaranteed. Please send additions, deletions and updates to Arnold Hirshon (arh5@lehigh.edu). Please include the name of institution and the name, official title, and e-mail address of the chief information officer who is responsible for computing and libraries.

Institutions identified with an asterisk (*) were added to the list after the compilation of results reported within the main text.

Augsburg College
Stuart Anderson, Interim Director of the Library and Information Technology

Aurora University (Illinois)
Brett Sutton, Dean of Information Services

Ball State University
Duane O. Eddy, Executive Assistant to the President for Technology

Babson College
Richard Mickool, Chief Information Officer

Berea College
Ann Chase, Director of Information Services

Bradley University
Anthony Mordosky, Associate Provost, Information Resources and Technology

Brandon University (Manitoba, Canada)
Robert Foley, Chief Information Officer

Brooklyn College
Barbra Buckner Higginbotham, Chief Librarian & Executive Director, Academic Information Technologies

Bucknell University
Ray Metz, Associate Vice President for Information Services and Resources

California Lutheran University
Kenneth E. Pflueger, CIO and Director, Information Services

California State University, Bakersfield
Wendell Barbour, Vice President for Information Resources

California State University, Chico
Fred Ryan, Vice Provost of Information Resources

California State University, Northridge
Susan Curzon,Vice Provost, Information Technology Resources

California State University, San Bernardino
William Aguilar, Vice President, Information Resources and Technology

Calvin College
Henry DeVries, Vice President of Information Services

Carthage College
Eugene A. Engeldinger, Vice President for Academic Information Services

Case Western University
Ray Neff, Vice President for Information Services

Cleveland State University
Fred Gage, Vice Provost for Information Technology

Coe College
Richard Doyle, Director of Library Services and Academic Computing

College of New Jersey
Mary Biggs, Dean of Library and Information Services

Concordia University (California)
Hal Whelply, Vice President, Information Services

Concordia University (Illinois)
Dennis Witte, Vice President for Information Services

Concordia University (Minnesota)
Eric LaMott, Associate Dean of Information and Technology

Connecticut College
Connie Dowell, Dean of Information Services, and Librarian

Dowling College
[vacant], Associate Provost for Information Services

Drake University
Robert Lutz, Associate Provost for Information Resources

Eastern Michigan University
Morell D. Boone, Dean of Learning Resources and Technologies

Eckerd College
Edward I. Stevens, Director of Information Services & Technology

Fairfield University
James Estrada, University Librarian and Executive Director of Academic Computing

Franklin University
James Riha, Executive Director for Information Systems and Services

George Mason University
Joy R. Hughes, Vice President for Information Technology

Harper College (Illinois)
Dave McShane, Chief Information Officer and Vice President of Information Systems

Indiana State University
Ellen I. Watson, Associate Vice President and Dean of Libraries for Information Services

Kalamazoo College
Lisa Patrick, Director of Information Services

Kenyon College
Dan Temple, Vice President for Library and Information Services

King's College
Terrence Mech, Vice President for Information & Instructional Technologies

Lehigh University
Arnold Hirshon, Vice Provost for Information Resources

Macalester College
Joel Clemmer, Vice President for Library, Computing and Information Technology

***Mankato State University**
Sylverna Ford, Dean, Library Services & Information Technology

Marywood College
Mary Anne Fedrick, Associate Vice President for Academic Affairs

Michigan State University
Paul Hunt, Vice Provost for Computing and Technology

Mount Holyoke College
Susan Lane Perry, College Librarian, Director of Library, Information, and Technology Services

Mount St. Vincent University (Canada)
Lillian Beltaos, Assistant Vice President/University Librarian

Northern Michigan University
Thomas M. Peischl, Dean, Academic Information Services

Oregon State University
Curt Pederson, Associate Provost for Information Services

Pacific Lutheran University
Sheri Tonn, Dean of Information Resources

Rensselaer Polytechnic Institute
John E. Kolb, Dean of Computing and Information Services

Rockefeller University
Francis C. Lees, Chief Information Officer

Saint Mary's College (Maryland)
Todd Kelley, Associate Provost and Librarian of the College

Salisbury State University
Cliff Woodruff, Dean of Information Technology and Services

Samford University
Alan Hargrave, Associate Provost for Learning Resources

Seton Hall University
Steve Landry, Assistant Provost for Information Management

Sheldon Jackson College (Alaska)
Evelyn Bonner, Division Chair, Learning Resources/ Librarian

Southern Illinois University, Edwardsville
Jay Starratt, Dean of Library and Information Services, and Acting Director of the Office of Information Technology

State University of New York at Albany
Carlos Santiago, Associate Vice President, Information Systems and Technology

State University of New York at Brockport
Raj Madan, Dean, Academic Information Services, and Director of Library

State University of New York at Cortland
Paula Warnken, Associate Vice President, Information Resources

State University of New York at Plattsburgh
Cerise Oberman, Dean of Library and Information Services

State University of New York at Potsdam
Peter Brouwer, Associate Vice President, Information Services

Tufts University
[position vacant], Dean, Information Technology & Libraries

University of Akron
Steven C. Myers, Associate Vice President for Information Services

University of Alaska, Fairbanks
Steve Smith, Interim Co-Director of Libraries

University of Alaska, Southeast
Sharon Taber, Director of the Library, Computing and Media Services

University of Alberta (Canada)
Ernie Ingles, Executive Director of Learning Support Systems

University of Calgary (Canada)
Alan H. MacDonald, Director, Information Services

University of California, San Diego
Gerald Lowell, Associate Vice Chancellor, and University Librarian, Academic Information Technology

University of Central Florida
Joel L. Hartman, Vice Provost for Information Technologies and Resources

University of Charleston (West Virginia)
Robert L. Frey, Vice President for Academic Life, Dean of the Faculty

University of Colorado, Colorado Springs
Leslie Manning, Dean for Library and Information Technologies

University of Illinois, Chicago
Sharon Hogan, University Librarian

University of Kansas, Lawrence
William Crowe, Vice Chancellor, and Dean of Libraries, Information Services

University of Kentucky
Gene Williams, Vice President for Information Systems

University of Montana
John P. Cleaveland, Executive Director, Office of Information Technology

University of Nevada, Reno
Steven D. Zink, Associate Vice President for Information Resources and Technology

University of North Carolina at Charlotte
Raymond A. Frankle, Associate Vice Chancellor for Library and Information Services

University of Regina (Canada)
Bill Maes, Director of Library & Information Services

University of Rhode Island
Paul Gandel, Vice Provost, Information Resources and Dean of Libraries

University of Richmond
Ellen Waite, Associate Provost for Information Services

University of Scranton
Jerry DeSanto, Associate Provost for Information Technology

University of South Carolina
George Terry, Vice Provost & Dean of Libraries & Collections

University of Southern California
Jerry D. Campbell, Dean & University Librarian

University of Toronto (Canada)
Carole Moore, Chief Librarian

University of Utah
Sarah Michalak, Director of the Marriott Library

University of Wisconsin, Eau Claire
David Hart, Assistant Chancellor for Information and Technology Management

University of Wisconsin, La Crosse
Dale L. Montgomery, Interim Associate Vice Chancellor for Information Technology Services

University of Wisconsin, Oshkosh
John Berens, Executive Director, Libraries and Information Technology

University of Wisconsin, Parkside
Edward Meachen, Associate Vice-Chancellor, Information Services

University of Wisconsin, Whitewater
Hsi-Ping Shao, Assistant Vice Chancellor, Technology and Information Resources

Virginia Commonwealth University
John Dayhoff, Vice Provost for Information Technology

Virginia Tech
Earving L. Blythe, Vice President for Information Systems

Wellesley College
Micheline E. Jedrey, Vice Provost and College Librarian Information Services

William Patterson College of New Jersey
John Gaboury, Assistant Vice President for Library Services and Information Technology

Winona State University
Richard J. Bazillion, Dean of Library and Information Services

York University (Canada)
Ellen Hoffmann, Associate Vice-President, Academic Information Services & University Librarian

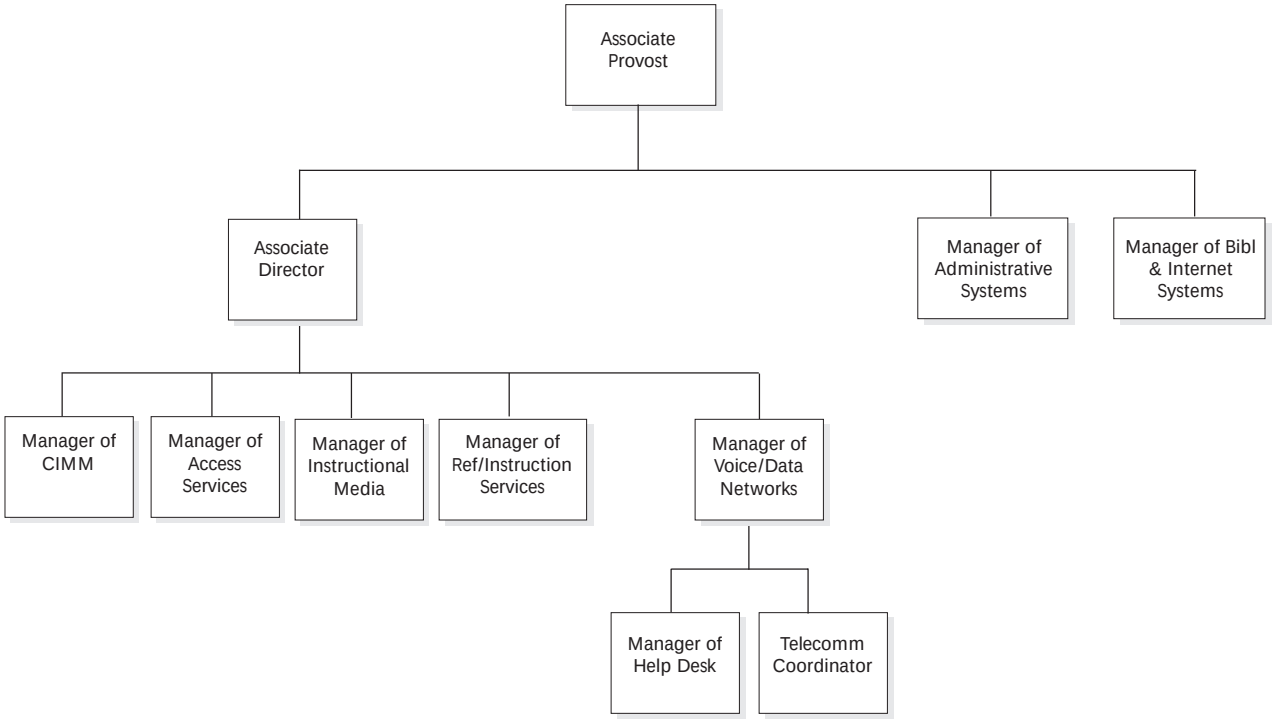
Appendix C: Sample Organization Charts for Integrated Organizations

Following are organization charts for:

California Lutheran University
California State University, Northridge
California State University, San Bernadino
Calvin College
Concordia University (Illinois)
Connecticut College
George Mason University
King's College (Pennsylvania)
Lehigh University
Mount Holyoke College
Pacific Lutheran University
St. Mary's College of Maryland
State University of New York at Cortland
State University of New York at Plattsburgh
University of Illinois, Chicago
University of Wisconsin Oshkosh

California Lutheran University

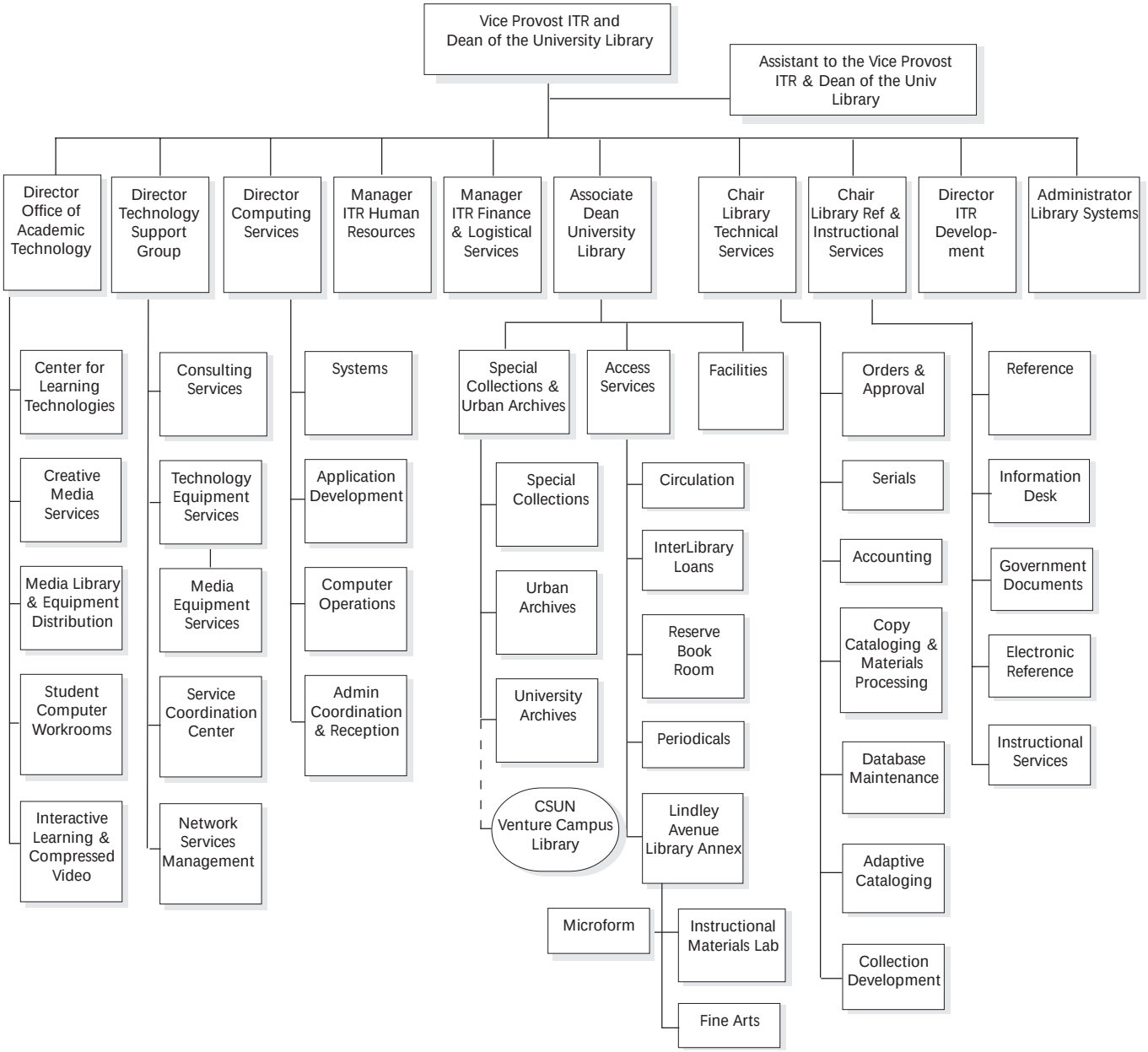
Information Systems and Services



California State University, Northridge

Information & Technology Resources

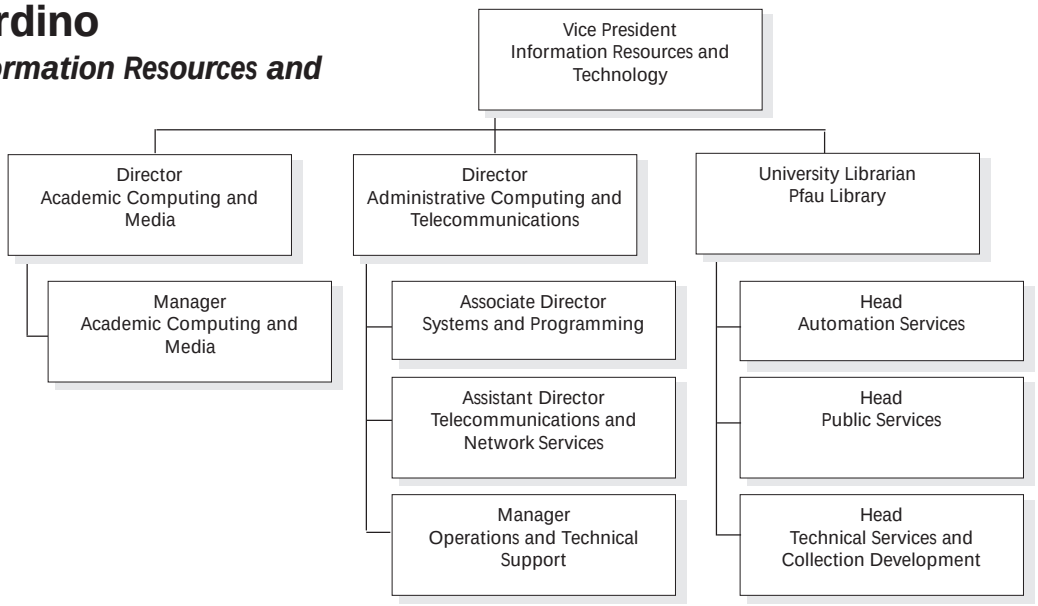
9/29/97



California State University, San Bernardino

Division of Information Resources and Technology

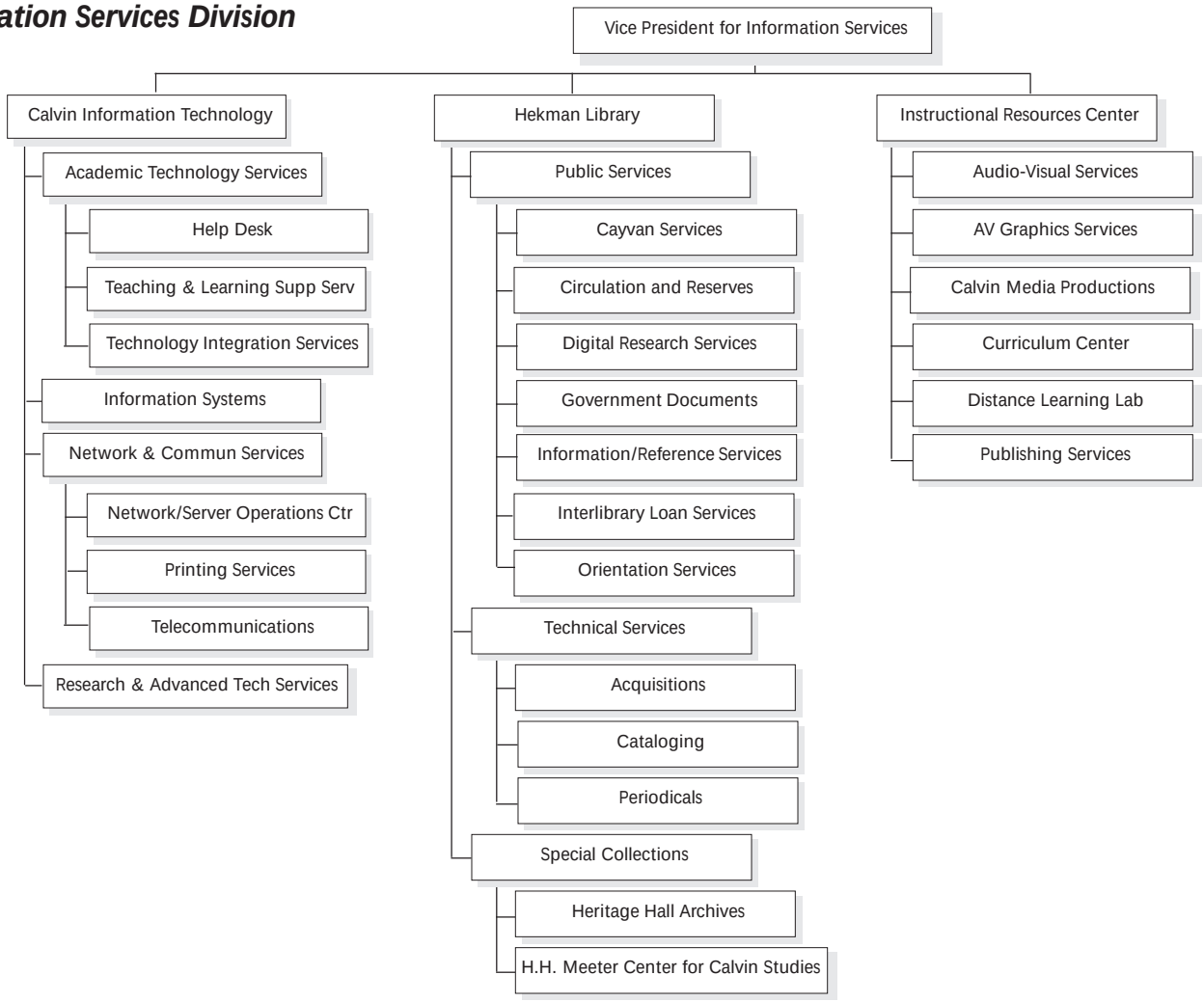
9/19/97



Calvin College

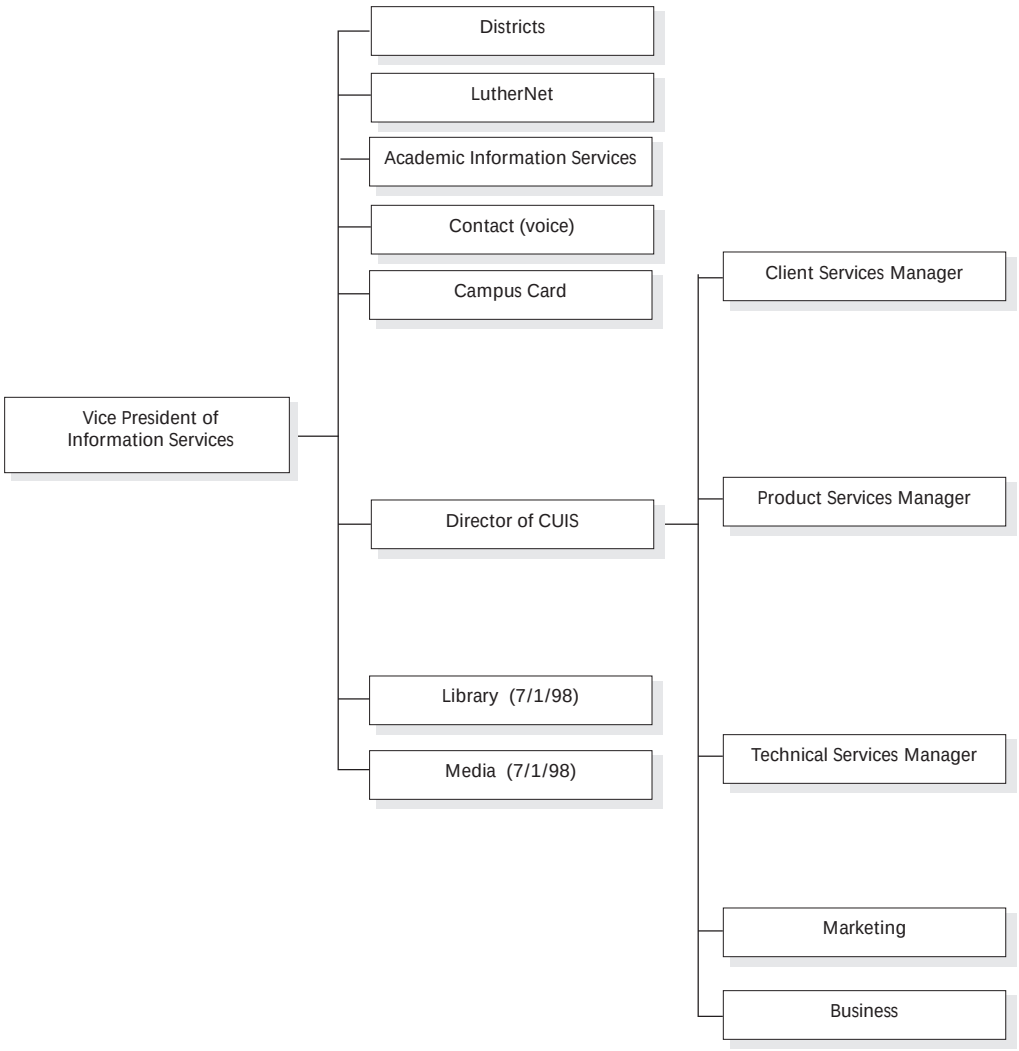
Information Services Division

9/97



Concordia University (Illinois)

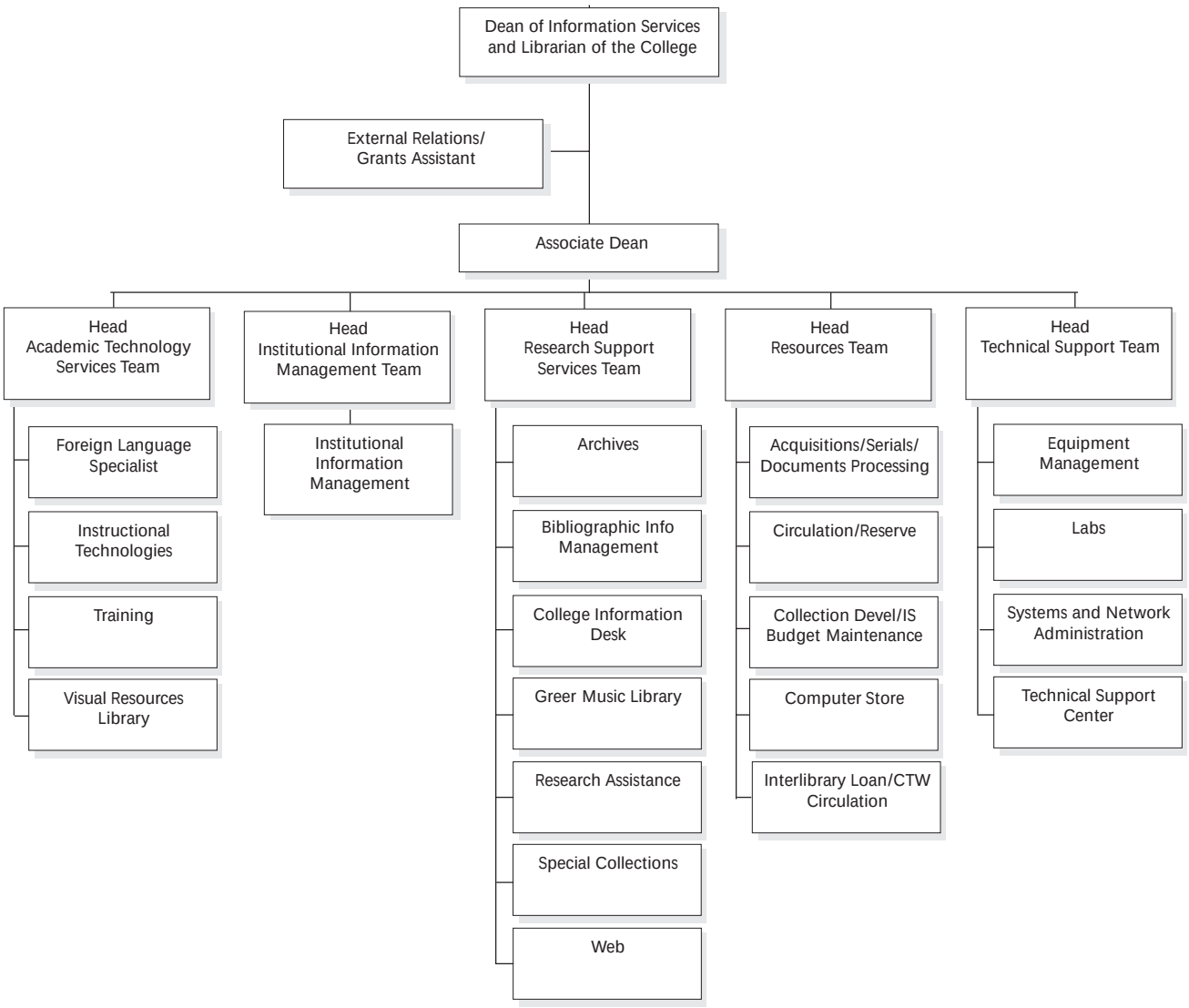
CURF Information Services



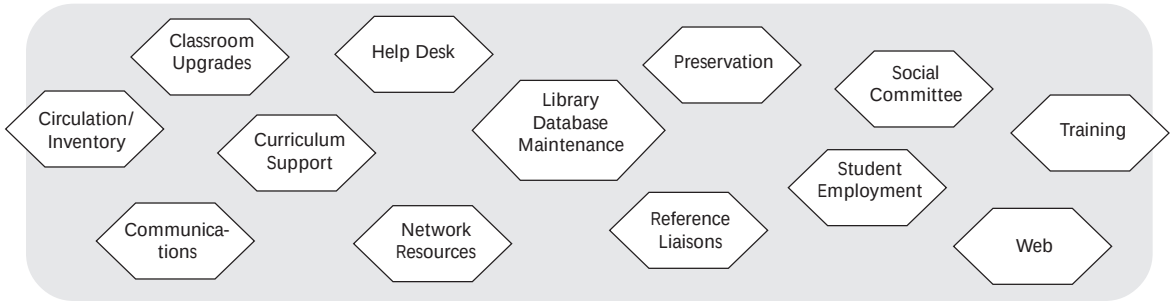
Connecticut College

Information Services

11/18/97

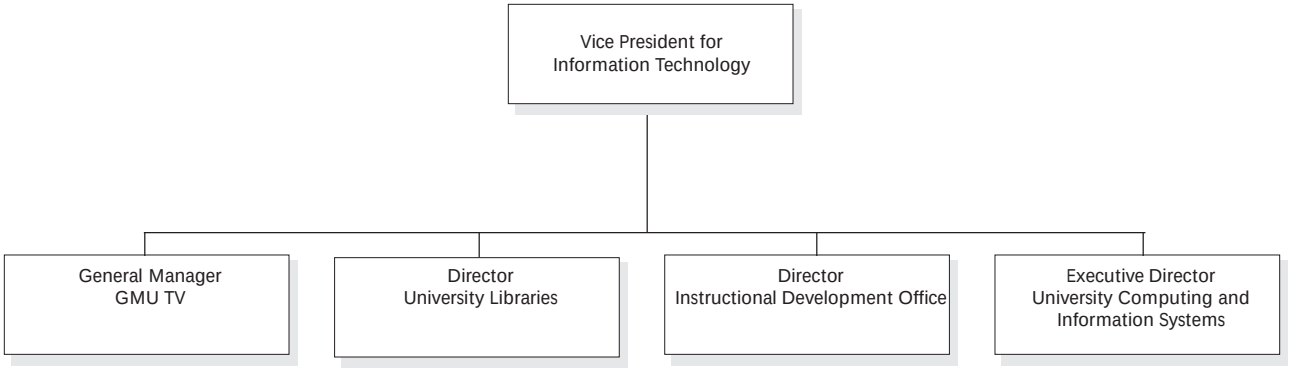


Activity Groups



George Mason University

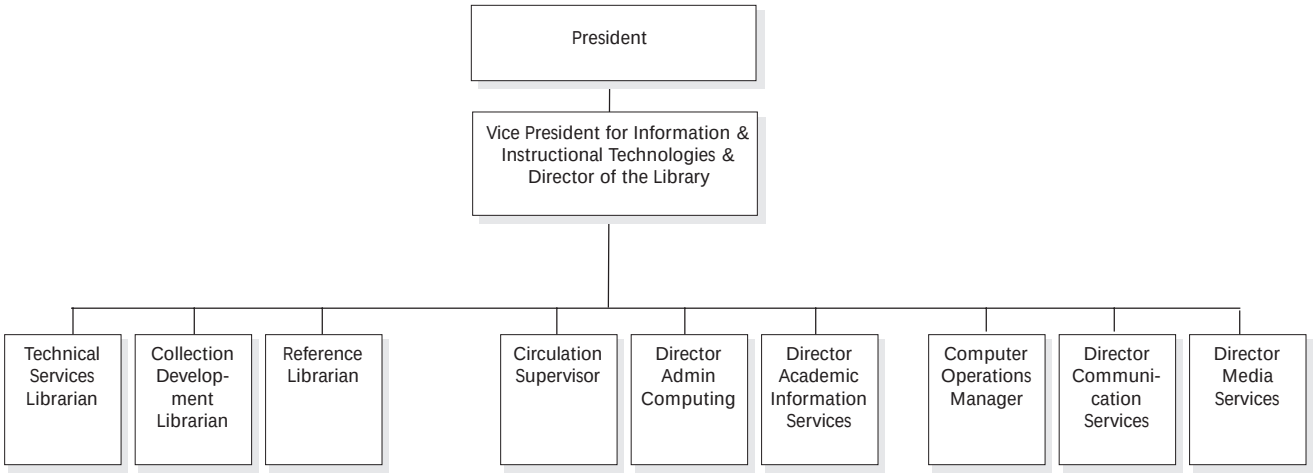
Information Technology



King's College

Information and Instructional Technologies

12/31/96



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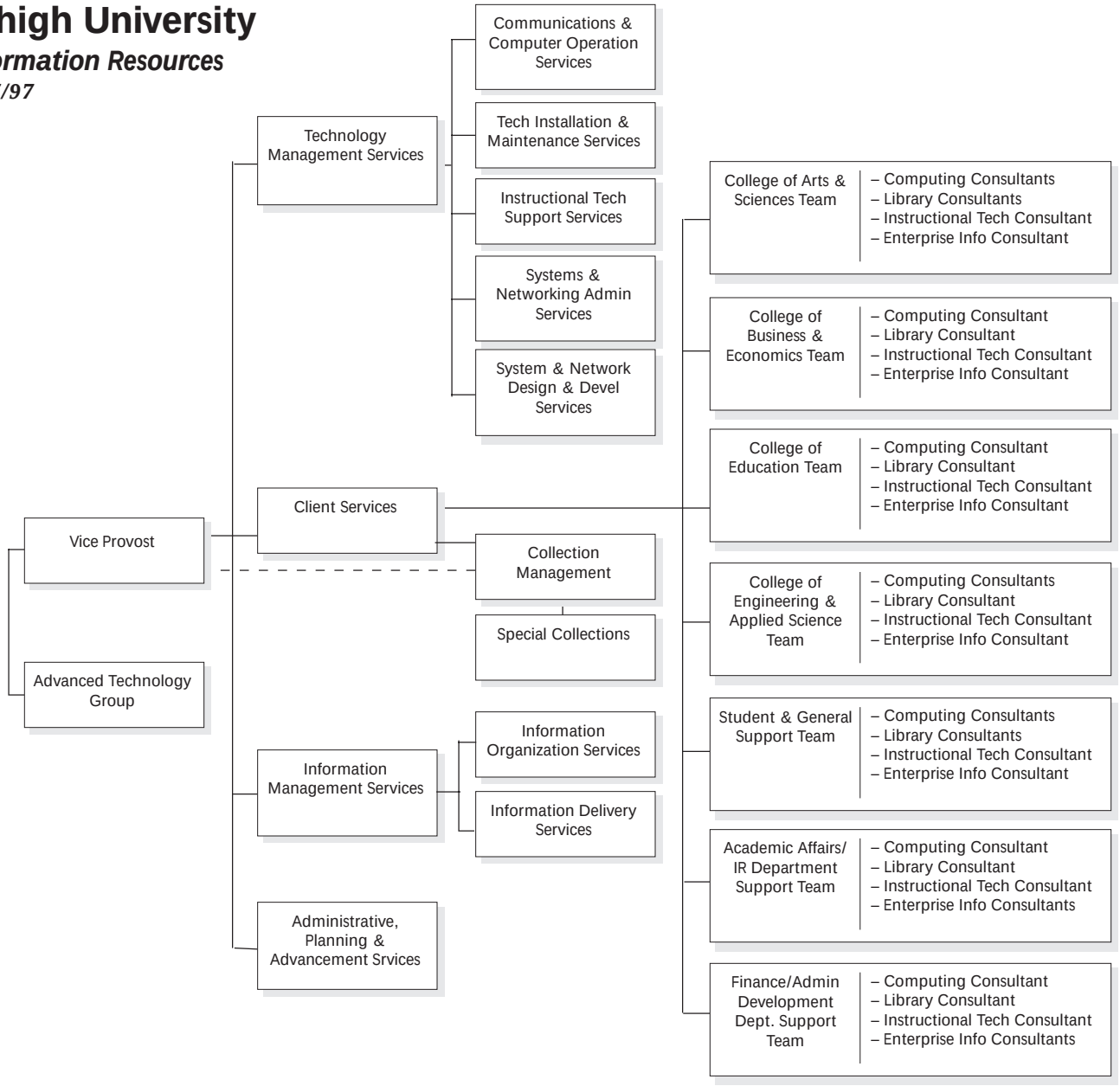
Information Resources

10/7/97



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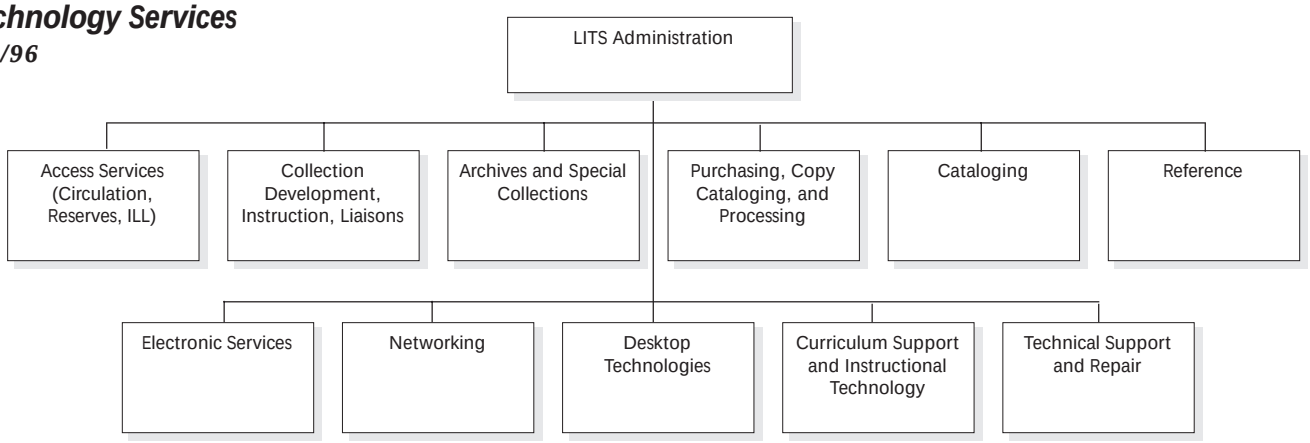
Library, Information, and Technology Services

9/3/96



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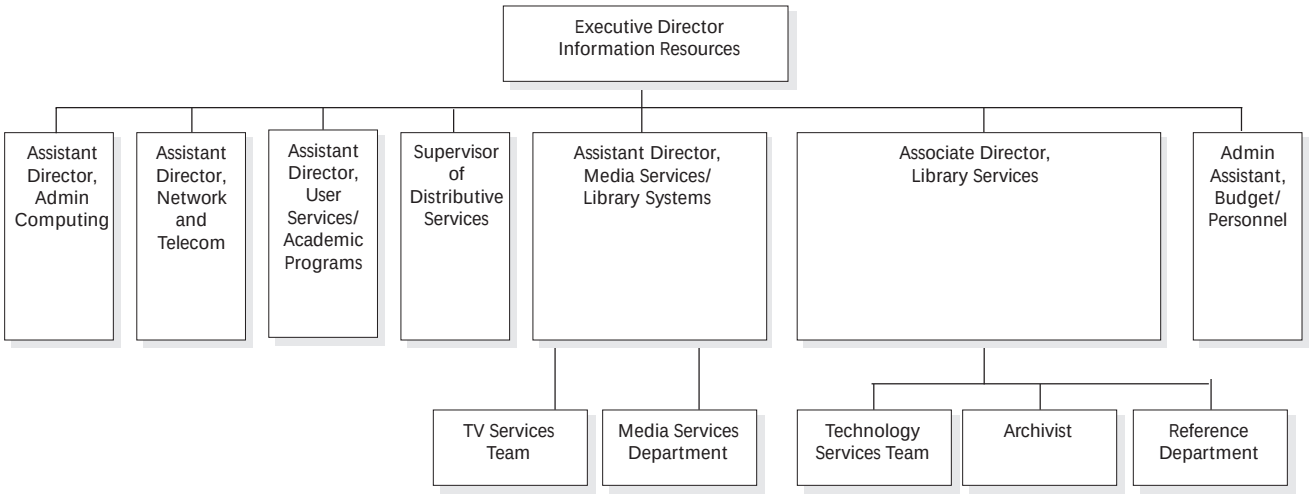
Information Resources



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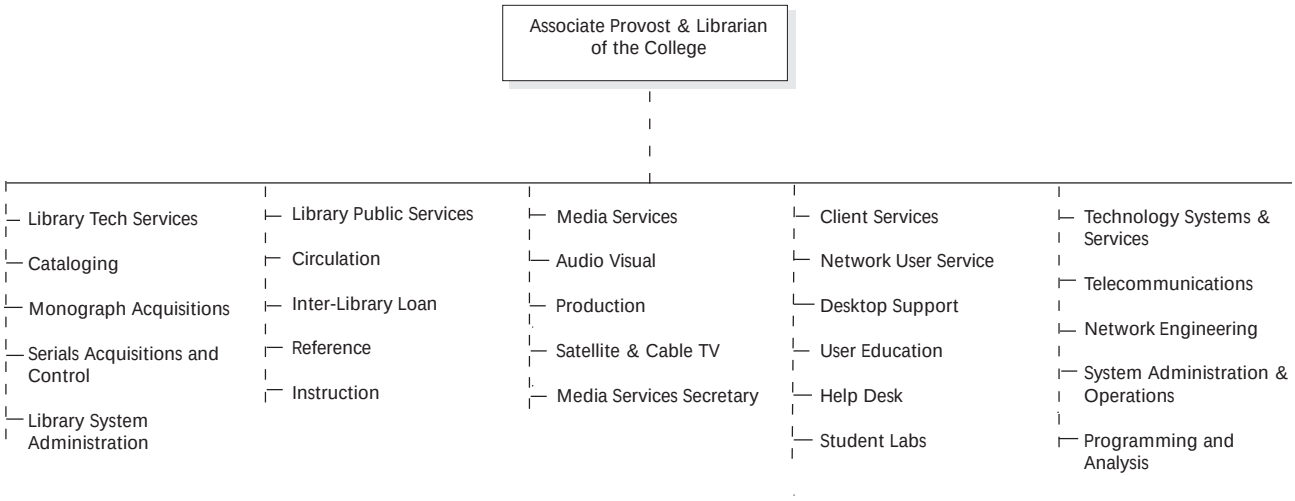
Library and Technology Resources

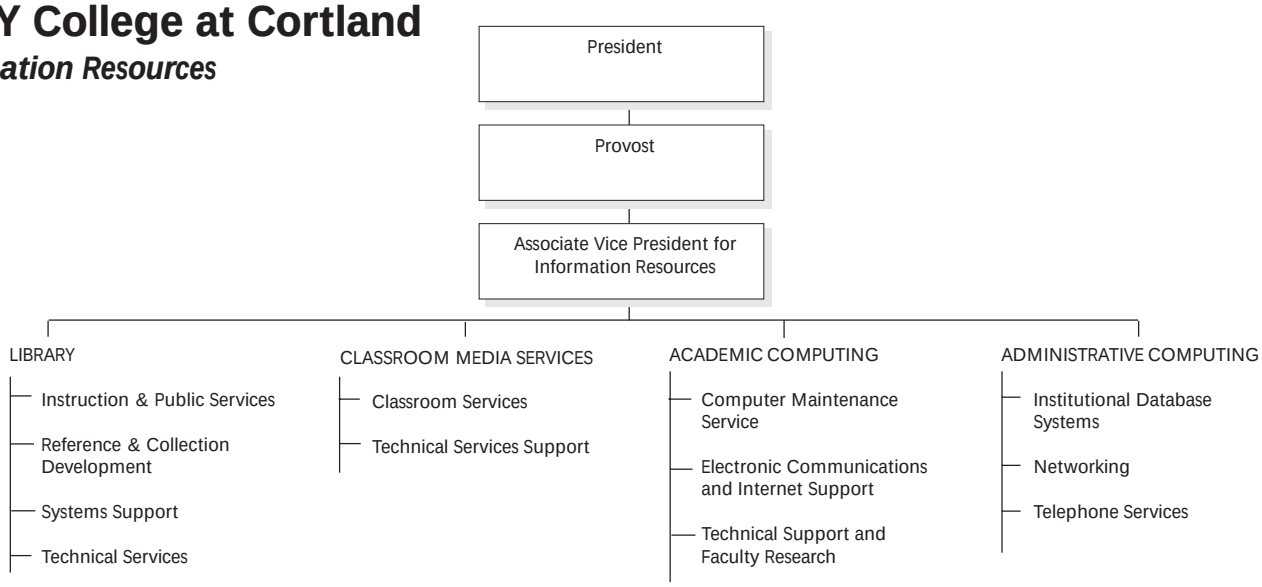
9/19/97



SUNY College at Cortland

Information Resources

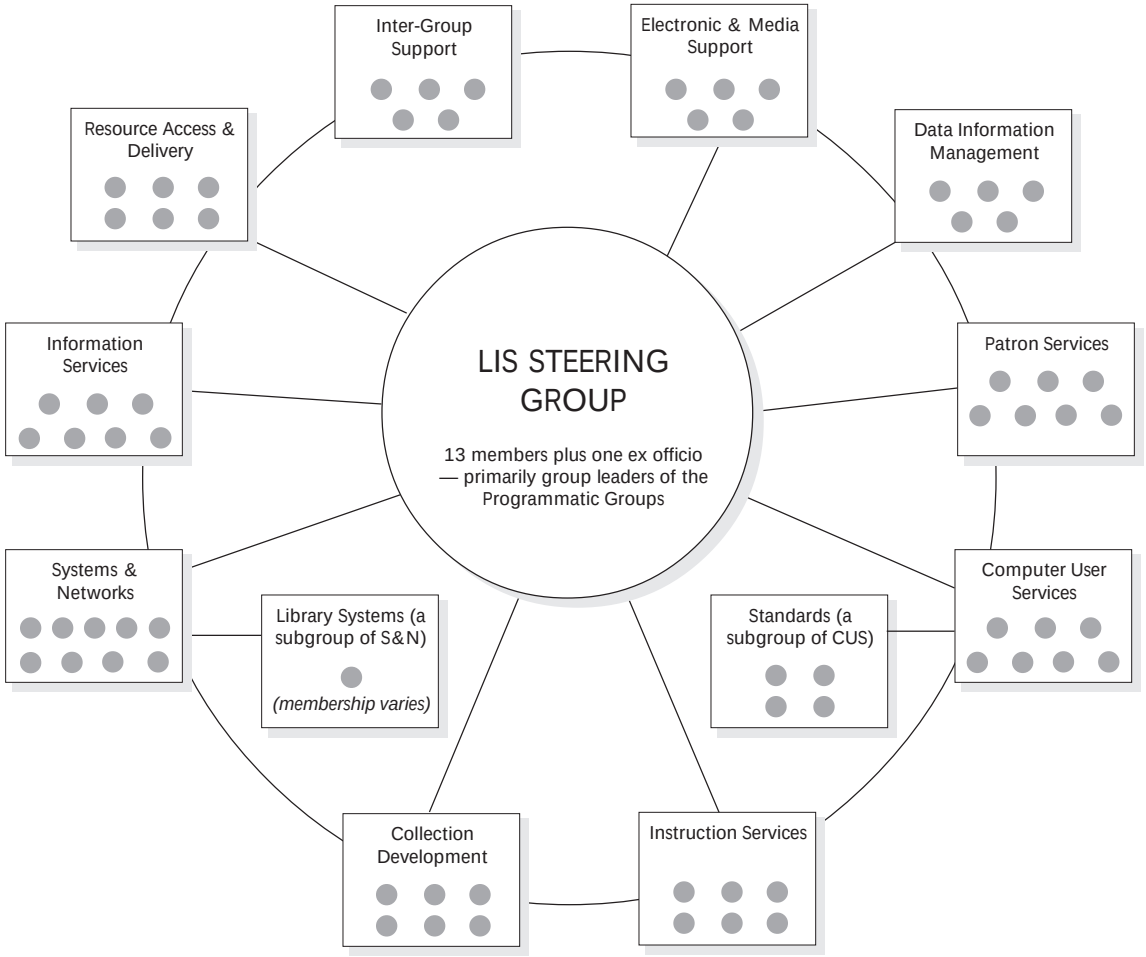
9/97



SUNY at Plattsburgh

Library & Information Services

8/97



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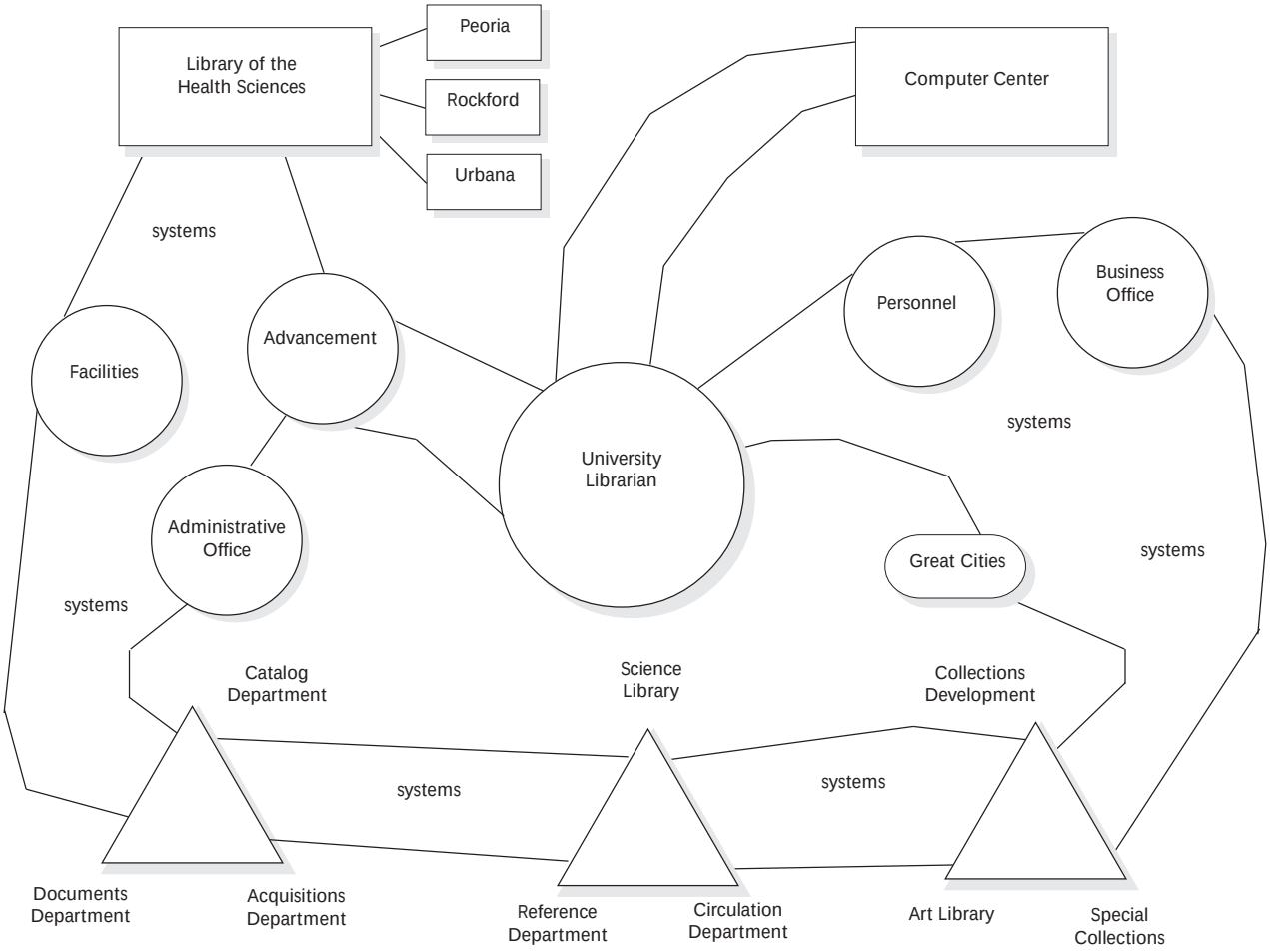
University Library

1/21/94



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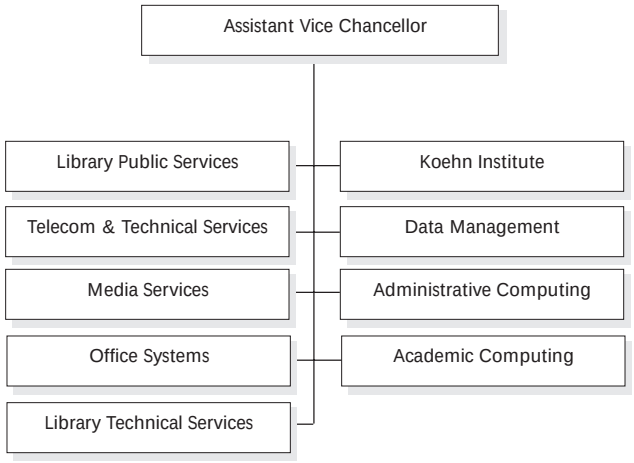

Appendix D: Bibliography – Merging Libraries and Computing

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