

INTERCONNECTIVITY AND THE ELECTRONIC ACADEMIC LIBRARY

Donald E. Riggs

*University Librarian
Arizona State University
Tempe, Arizona, U.S.A.*

Abstract

Due to the emphasis on the use of computing networks on campuses and to the very nature of more information being accessible to library users only via electronic means, we are witnessing a migration to "electronic academic libraries." This new type of library is being required to have interconnections with the campus' other online information/data systems. Arizona State University libraries have been provided the opportunity to develop an electronic library that will be the focal point of a campus-wide information/data network.

Introduction

With its 42,000 students, Arizona State University is the nation's sixth largest university. It has more than 12,000 students enrolled in graduate programs, and the enrollment projection for the institution in the year 2000 is 65,000+ students. The university library system is ranked among the top 35 research libraries in the U. S. and Canada. During the 1985-86 fiscal

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year over 116,000 new volumes were added; the collection has over 2.1 million volumes and 2.5 pieces of microforms. Over 600 national databases can be accessed by the ASU students and faculty. In addition to the main library, there is a new science and engineering library, a business library, a branch campus library, a music library, an architecture and environmental design library, a law library, and university archives. The library system has added 84 new positions during the past eight years. A new branch campus, ASU West, library is under construction; it is being designed as an electronic library; a new \$11.5 million underground addition to the main library is also expected to be ready for occupancy by early 1989. The library system is a state-of-the-art "electronic library."

New Technology

The library system's online catalog and circulation control are performed on the Tandem computer. Currently these two subsystems operate on the UTLAS software package. A change will soon be made to the CARL (Colorado Alliance of Research Libraries) software. Acquisitions and serials control are handled by the Innovacq system. Plans are underway to connect the Innovacq and Tandem systems. After the CARL software is implemented, many significant new services are expected to be made available to the university community. For example, anyone with a personal computer (plus modem) will be able to dial into the ASU's library online catalog. It will be only a matter of time before users will have the capability to check out books (via their PCs) without having to step foot in the library. Naturally, a service of this nature will require a delivery system.

Sophisticated workstations will be installed in the ASU West Library and in the new underground addition to the main library. The workstations, in time, will permit access to the all of the

libraries' online systems, various local area networks on campus, various online records throughout the campus, access to OCLC/RLIN, access to all local and many remote databases, CD-ROMs, campus computer center, electronic mail networks, and even desk-top publishing.

Strategic Planning

The ASU libraries have been involved in strategic planning since 1983. This type of planning process involves a critical look at the libraries' future and then formulation of ways to bring intentions into reality. Interconnecting the libraries' online systems with our university's online systems is paramount in our thrust for a single, interactive campus network. This endeavor is amajor component in our strategic plan.

The strategic planning process involves a "backward analysis" approach to identifying where the ASU libraries want to be in five years, then work back in time from the desired future to the current status. During this regression, it is important to delineate how the libraries are to achieve future interconnectivity at which particular time in the five-year period. By using the "backward analysis" approach, one can determine what pathways (i. e., strategies) have to be used each year from five years hence back to the present year to attain the planned end results. Interconnecting the various campus online systems is a monumental task requiring an active planning process. Since strategic planning is an ongoing process, it is the ideal planning technique for coping with and gaining control of changing technology.

A High-Level Committee

In 1983 ASU created a university-wide, executive level Information and Communication Services Advisory Committee

(ICSAC). The committee's charge include reviewing, advising, and making recommendations on information and communication services to the Executive Vice President and Vice President for Academic Affairs. In short, it provides direction on:

1. Institutional information services and communication policy.
2. Long range plans.
3. Major budget issues.
4. Organizational structures.

The committee deals with such issues as:

1. Pricing and services of central computing services.
2. Acquisition policy for computer-related equipment.
3. Communications network policy services and costs.
4. Publication policies.
5. Copyright, licensing, contracting, and compensation policies.

Committee membership includes:

- Person responsible for Information Resources Management.
- Deans of three colleges (rotating on a three-year term).
- Representative from the Vice President for Academic Affairs office.
- Associate Vice President for Business Affairs.
- Director, Planning and Analysis.
- University Librarian.
- Representative from the Vice President for Student Affairs office.
- Chair of Faculty Senate.
- Faculty member-at-large.

Subcommittees of ICSAC have responsibility for:

1. Providing a forum for airing of user views, ideas and technical information.
2. Recommending and/or developing issues and drafting

policies to be considered by ICSAC.

3. Transmitting information regarding information services to their communities.
4. Reviewing procedures and operations.
5. Recommending actions to both ICSAC and the directors of communication and information services organizations.

After the position of Executive Vice President was dissolved, the person (i. e., Associate Vice President for Information Resources Management) responsible for information resources management reported directly to the University President. Effective July 1, 1986, the President made the following organizational changes that directly affected Information Resources Management:

1. Assigned the mail services operation to the Vice President for Business Affairs.
2. Assigned the copy centers and printing services to the Vice President for Business Affairs.
3. Assigned the remainder of Information Resources Management to the Vice President for Academic Affairs.

The Vice President for Academic Affairs subsequently assigned University Media Systems to the University Librarian.

Regardless of the massive reorganization of information resources, ICSAC remains alive and thriving. It is very important for the University Librarian to serve on this campus-wide committee. ICSAC provides a forum for the University Librarian to articulate the libraries' technology needs and goals. ICSAC's recommendation for awarding the libraries \$1 million (over five years) for converting card catalog records into electronic format carried considerable weight in the final decision to award the libraries this amount. Also, ICSAC supported the University Librarian's recommendation that a commitment of \$180,000 — \$200,000 per year for at least five years be made for library computer hardware upgrade and storage capacity.

StraDaNet

Like many other universities, ASU has been gradually decentralizing its computing activity. The Vice President for Academic Affairs has been allocating \$1 million per year for the past five years to the faculty to purchase microcomputers. Several colleges have purchased their own major computing facilities. Moreover, several local area networks (LANs) have developed throughout the campus during the past three years. Based on this activity, ICSAC requested the formation of a Task Force on Strategic Data and Network Planning (StraDaNet). The task force was comprised of representatives from the faculty, business affairs, student services, computing services, and the libraries. Two working subcommittees (a policy subcommittee and a technical subcommittee) were comprised from the task force; a librarian served on each subcommittee. The charge to the task force was to examine existing information/data policies and to recommend the continuation/modification of existing policies and the formulation of new policies, and to recommend the most appropriate technical means for implementing electronic communication at ASU.

After significant study, the policy subcommittee's recommendations on access were the following:

1. All data should be easily available for inquiry to all members of the university community. Exceptions to this should be forced by the need to secure and protect the data, by moral/ethical considerations, by legal constraints, or because of overwhelming practical considerations.
2. The university manages the administrative and public research databases and controls access to them. Access to other electronically-stored information is controlled by the authors of the information.
3. Access to data is limited to those authorized by the

ASU. Authorization will be consistent with the value to the university of providing the access.

A. A Data Administrator should be employed who is responsible for governing definition of and access to administrative data. ICSAC and subcommittees of its choice should advise the Data Administrator on the execution of these responsibilities.

B. The University Libraries are responsible for governing acquisition of and access to public research data. A committee should advise the libraries on the execution of these responsibilities. The Data Administrator, Computing Services, and the faculty should be represented on this committee.

C. Creators of faculty research databases, instructional files, and mail/conferencing files are responsible for governing access to this information.

Currently the libraries subscribe to several public databases and provide search services for their users. Individual researchers, departments, or colleges also purchase or access databases or extracts of databases for use locally on central or distributed computers. Although this system does permit researchers who can afford to obtain research databases maximum control over what is acquired and how it is used, it has the following disadvantages:

1. The lack of coordination regarding acquisitions may result in redundant acquisition, at some cost to ASU. There is little knowledge about what databases already exist on campus, including databases which may well have been acquired with university funds.

2. The lack of centralized and coordinated acquisitions may also lead to inadequate recognition of the need for public research databases, and therefore inadequate funding for acquisition of these databases. There are those on the subcommittee who believe that millions of dollars will need to be devoted to database acquisitions, just as millions of dollars are

currently devoted to acquisitions of books and journals.

3. The current decentralized approach makes it very difficult for researchers to take advantage of online searching tools that are rapidly becoming available with research databases.

The policy subcommittee advocates that research databases are highly analogous in use within the university to books and journals, and that the University Libraries should acquire, manage, publicize, and assist in the use of these just as it does now for books and journals.

StraDaNet's technical subcommittee made the following observations:

1. The wide availability of microcomputers in academic and administrative offices at ASU has led to an increase in interest in local area networks (LANs), in order to take advantage of the information and resource sharing potential of such system;

2. The expanding possibilities for off-site communications, through wide area networks (BITNET, ARPANET, commercial networking services, etc.) and for off-site resource sharing, including supercomputing (WESTNET), have led to an interest in improving access to these networks through ASU's computing system; and

3. The existing broadband — Advanced Communication Support System (ACSS) — affords the physical means of connecting individuals and LANs to ASU's large computers, but, given the variety of LAN technologies, some means of standardizing access is essential.

Data communications at ASU has historically been accomplished with a number of simple and independent point-to-point networks. With the completion of the broadband (ACSS), the university has taken the first step in providing a campus-wide network. The ACSS project involved the complete rewiring of the campus. This included some 67,000 twisted pair cable for the telephone switch, three CATV .75 inch coaxial cables

for the broadband (one with electronics for immediate use, two for growth), and a 12-strand 62.5 micron fiber optic cable (also installed for future use). A total of about 335 miles of cables were installed. The university is just beginning to take advantage of the capabilities that are available with the broadband backbone. There are about 1,000 connections on the broadband backbone at this time. Most of these are ASCII and 3270 terminals (or PCs emulating terminals), with a small number of ethernet LANs linked across the backbone.

Technical subcommittee recommendations included:

1. ASU should actively pursue the development of a full-featured, campus-wide network, based on the existing broadband cabling system already in place, focusing at the outset on planning, education, and standardization.
2. The type of LAN acquired by individual campus units should be determined entirely within the unit.
3. There should be a program of central support for LAN acquisition, guided by an ICSAC subcommittee.
4. A system for regular evaluation of the growth of the campus network should be established in order to assure that the system evolves in the best possible manner.
5. A local area network literacy program be designed to assist campus units in developing a LAN acquisition strategy best suited to their needs.
6. A basic set of system-wide standards be developed to enable consistency to occur while implementing a multivendor network.
7. Creation of an ongoing oversight committee which will be responsible for all aspects of campus networking.

Conclusion

The ASU library system has a grand opportunity to become

an active and integral player in the university's information/data network. Due to the high-activity toward implementation of state-of-the-art technology and networking at ASU, the libraries enjoy an uncommon target of opportunity to use the campuses' advances in technology to attain the library system's most important goal: to improve the delivery of library services to our students and faculty. The university's decision to give the University Libraries the responsibility for managing the acquisition of and access to public research data is a major step forward toward making the campuses' libraries the centroid of information/data interconnectivity. Interconnecting with our campuses' LANs and other systems will again reinforce that well-worn phrase — "The library is the heart of the campus." The electronic library cannot stand alone; it *must* be interconnected with other electronic systems throughout the campus. As they now say, "You gotta have connections."

References

- Riggs Donald E., *Strategic Planning for Library Managers*. phoenix: Oryx Press, 1984.
Strategic Data and Network Planning Task Force, (StraDaNet) draft report, Arizona State University, 1987.