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OhioLINK在網路環境裏對資訊獲取和資源共享的成就

The Success of Ohio LINK for Information Access and Resources Sharing in a Networked Environment

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【摘要 Abstract】

OhioLINK（俄亥俄學術圖書館及資訊網）儼然已為圖書館網路及資源共享建立了一種極為經濟有效的模式。本文特別介紹了OhioLINK的作業、特色，及從"資訊社會"進入二十一世紀"數位化社會"的發展途徑。

The establishment of OhioLINK (Ohio Library and Information Network) among academic libraries in Ohio for cost-effective networking and resource sharing has proven a successful approach. This paper examines the operations of OhioLINK in detail, highlights the many unique features, and projects its future course of action as we move beyond the information society into the digital society of the twenty-first century.

關鍵詞 Keyword
資源共享 圖書館網路 館際合作
OhioLINK；Resources sharing；Library networking；Interlibrary cooperation

INTRODUCTION

Since the 1960s, many changes have taken place in libraries of all types throughout the world. In the U.S., the most significant force accelerating the pace of change in libraries has been the revolution in computer, information, and telecommunication technologies. In the 1960s several major applications of computer technology in libraries were introduced, including the development of the MARC (Machine-Readable Cataloging) Format by the Library of Congress to facilitate the use of computers in cataloging and to set record standards; the establishment of the Medical Literature Analysis and Retrieval System (MEDLARS) by the National Library of Medicine for easy search of and access to the large body of medical literature; the creation of the Ohio College Library Center (OCLC--now renamed as Online Computer Library Center) for online shared cataloging and resource sharing, and the compilation of large computer databases by major indexing and abstracting publishers (e.g., the Chemical Abstract Services).

Since, there have been dramatic changes every five to ten years brought about by a succession of much faster and more powerful computers, sophistication of software packages for library applications, improvements in telecommunications and networking technologies, innovations in information storage and retrieval techniques, growing uses of interactive hyper- and multimedia technologies, evolution of electronic publishing, widespread use of Internet and the World Wide Web (WWW), and others. These changes, coupled with the information explosion, have transformed libraries from paper-based institutions prior to 1960 to computer-based from the 1970s on, to networked since the 1980s, and on to electronic, digital and virtual library in the 1990s. It is clear that the direction of libraries in the 21st century will be a synthesis of these various developments in a high-tech, networked, and digital environment.

CHALLENGES TO LIBRARIES

In addition to the technological transformations, libraries everywhere also face the following challenges:

- Exponential growth of human knowledge;
- Rapid expansion in scholarly communication and publishing;
- Growth in libraries' sizes, functions, resources, services, and complexity;
- Skyrocketing costs of library materials;
- Growing diversity in information formats;
- Shrinking library funding;
- High costs of acquiring, maintaining, and upgrading library systems;
- Requirements for management accountability;
- Increasing demands for library staff skilled in information technologies;
- Changing nature of library collections from "ownership" to "access";
- Expanding user demands and expectations;
- Increasingly vital role in information literacy and lifelong learning.

Facing these multiple challenges, libraries in the U.S. have proactively responded to seize the opportunities available to them. They, in

many ways, have played a leading role in the deployment of new and emerging technologies to broaden their resources and to expand their services through cooperation and networking. In fact, their successes have spurred the foregoing challenges.

The traditional concept of "*ownership*" in collection development is gradually being replaced by "*access*" to information and knowledge without regard to location and format. True resource sharing among libraries through networking has become the common desire and practice.

THE OhioLINK APPROACH

The formation of OhioLINK (Ohio Library and Information Network) among academic libraries in Ohio, beginning in 1990, for cost-effective networking and resource sharing has proven to be a successful approach. This paper will describe this initiative under the following themes:

- A Serendipitous beginning
- The OhioLINK vision
- Where does OhioLINK stand today?
- How does OhioLINK work?
- What's next for OhioLINK?
- Can the OhioLINK experience be replicated?

A SERENDIPITOUS BEGINNING

The formation of OhioLINK was a direct result of a year-long study by a blue-ribbon panel appointed in 1986 by the Ohio Board of Regents① to study library needs of state universities in Ohio. In its report "*Academic Libraries in Ohio: Progress Through Collaboration, Storage, and Technology*"②, the panel made several recommendations. The most important of these was to implement "as expeditiously as possible a statewide electronic catalog system". Collateral recommendations included retrospective conversion of remaining paper cataloging records to the MARC format, development and implementation of a statewide delivery system for library materials, and a plan for a cooperative preservation program.

To plan and implement these recommendations, a Steering Committee was established by the Regents with a number of task forces and subcommittees composed of librarians, systems staff, and faculty members from the initial 13 state-supported universities, two large private universities, two independent state-supported medical universities, and the State Library of Ohio. (See Table 1).

Through the investment of thousands of person-hours in hundreds of meetings, several planning documents were completed, including a "*Request for Information*" issued in August 1988③, a "*Planning Paper*" issued in November 1988④, a "*Request for Proposal*" issued in August 1989⑤, and an overview, "*Connecting People, Libraries & Information for Ohio's Future*" issued in 1989.⑥ Based on the responses to the "*Request for Proposal*", a commercially developed library system by Innovative Interfaces, Inc., was selected in 1990 and installations began in 1991.

After the system was installed in the 18 initial participating libraries between 1992 and 1995, OhioLINK was expanded to cover all state-supported two-year colleges and to an increasing number of private colleges and universities. As

Table 1
List of the Founding Libraries

Thirteen State-Supported Universities:

University of Akron

Bowling Green State University

Central State University

University of Cincinnati

Cleveland State University

Kent State University

Miami University

Ohio State University

Ohio University

University of Toledo

Shawnee State University

Wright State University

Youngstown State University

Two Largest Private Universities:

Case Western Reserve University

University of Dayton

Two State-supported Medical Colleges:

Medical College of Ohio

Northeastern Ohio Universities College of Medicine

One State Library:

The State Library of Ohio

國立政治大學 National Chengchi University

of this writing in April 1999, 74 academic libraries in Ohio have joined OhioLINK. Membership identification and information can be found at http://www.Ohiolink.edu/members-info/.

THE OhioLINK VISION

Since its inception, the basic concept of OhioLINK has been to exploit the existing state-wide telecommunication infrastructure built by OARnet (Ohio Academic and Research Network) to link the library systems in all the participating libraries, each with a common computer hardware and a software platform--using the Innovative Interfaces Library System.

Through this linkage and a central union catalog capable of retrieving real-time circulation record and location information, users of all participating libraries can access both online local and central catalogs and can initiate borrowing requests for items not available locally from any of the other libraries which own the item. Through a 48-hour delivery service, interlibrary borrowing can be completed within two or three days in most cases.

Once the basic system-wide network was established, OhioLINK has been able to quickly add other resources and services to benefit its member libraries. Most important of these have been:

- the acquisition of many much-in-demand electronic databases,
- expanding the number of full-text databases,
- acquiring electronic journals through discounted pricing for a large consortium,
- developing a new search engine to ease the search of multiple databases,
- adopting a statewide approval plan to reduce unnecessary duplication,
- expanding online borrowing from books to other types of library materials,
- establishing an Electronic Journal Center with an increasing number of e-journals,
- establishing a Digital Media Center with virtually unlimited storage space available at Ohio Supercomputer Center for member created or commercially produced digital collections.
- improving off-campus access to OhioLINK resources.

The shared vision of OhioLINK can thus be summarized as:

- linking all major academic libraries in Ohio in an electronic network environment,
- tapping the existing computer and telecom-munication infrastructure,
- pooling all library resources for easy access and effective sharing,
- delivering materials quickly by various means,
- cooperating for collection development,
- acquiring large and expensive electronic resources cost effectively through consortial purchasing power,
- transforming interlibrary cooperation and resource sharing.

Figure 1 shows that among the 20 million combined library holding of books (representing over 7.1 million individual titles) 56% were held

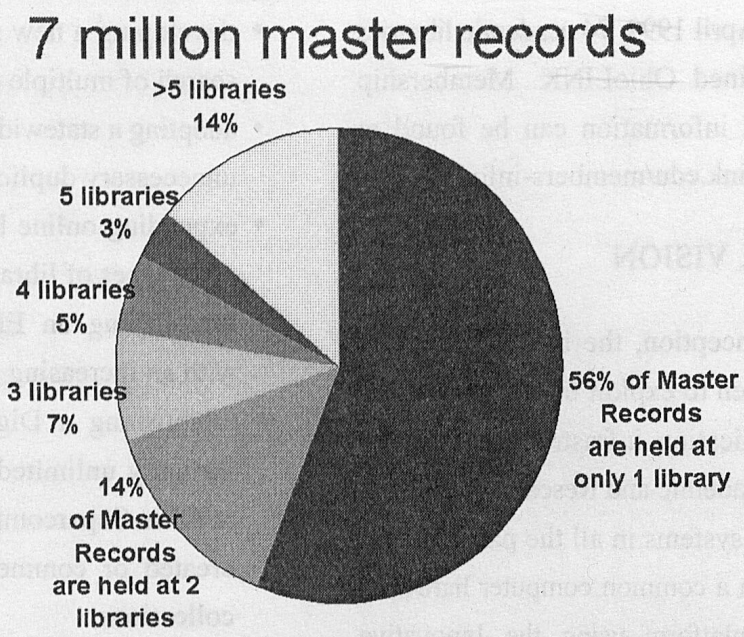

Figure 1 : Percent of Items Held by Number of Libraries

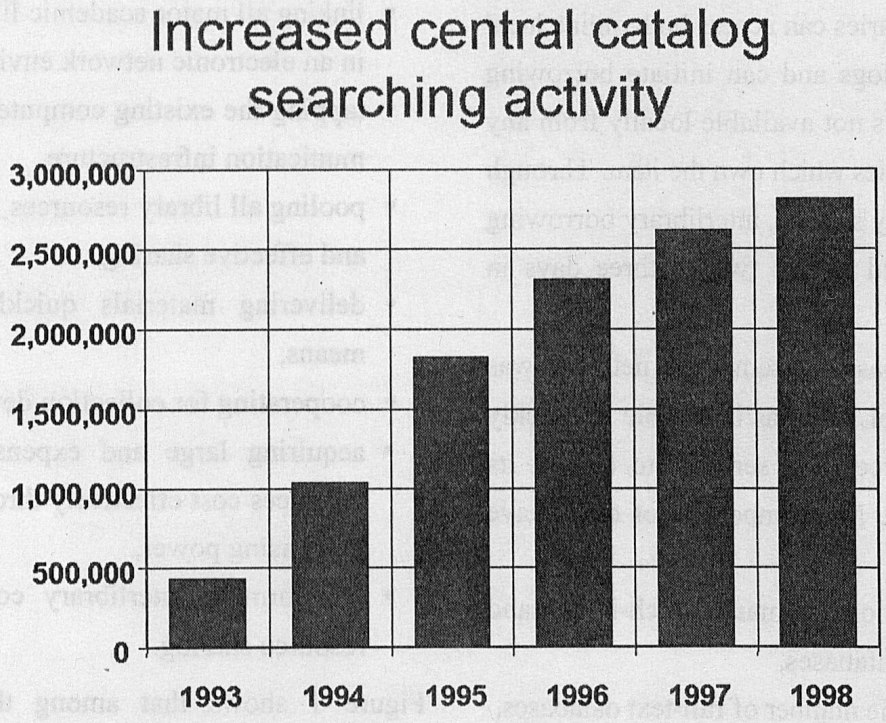

Figure 2 : Annual Seraches of the OhioLINK Central Online Catalog

by only one library, 14% by two libraries, 7% by three libraries, 5% by four libraries, 3% by five libraries, and the rest 14% by six or more libraries. The fact that a large percentage of books are held by only one library indicates the importance and benefit of resource sharing and the combined strength of a pooled collection.

WHERE DOES OhioLINK STAND TODAY?

Even though OhioLINK is still developing and expanding its resources and services, some concrete results have already been achieved.

- Demonstrated benefits and economies of scale have enabled OhioLINK to seek more State funding in support of its central operations, delivery services, acquisition of major bibliographic, reference, and full-text databases, and undertaking other new initiatives.
- More than 7.1 million individual titles representing 20 million volumes held by 74 libraries are now available to approximately 460,000 students and 50,000 faculty and staff.
- In 1993, there were nearly 450,000 annual searches of the OhioLINK central catalog. In 1998, this rose to more than 2.75 million searches. (See Figure 2).
- In 1994, about 75,000 requests for direct borrowing by patrons were initiated. By 1998, this jumped to 560,000 requests. Between January 1994 and March 1999, the cumulative patron online borrowing requests surpassed two million. The successfully filled rate was 85% of the requests. (See Figure 3). According to documented studies, patron-initiated borrowing has reduced the cost of an interlibrary loans from $15-$30 per item by traditional methods to $8.00 per item.
- For statewide access to electronic information —in December of 1992, there were only two databases, but in December 1998, there were 67 databases. The annual searches of all OhioLINK reference databases have gone from 500,000 in 1993 to more than 10 million in 1998. (See Figure 4). The cost per search has been reduced from $3.90 per search in 1993 to less than $0.30 per search in 1999. (See Figure 5).
- For access to full-text -- in 1993, nothing was available, but in a single week in the peak month of November 1998, 30,000 full-text journal articles of 125,000 pages were printed online by users from the UMI supplier. The average cost per article was $0.90. (See Figure 6).
- Using consortial purchasing power, OhioLINK's reference database licensing costs represent 30% to 80% discounts from individual library prices.
- OhioLINK has successfully negotiated license fees for electronic journals at +5% to +10% annual cost increases (compared to 10% to 15% increases historically) that deliver 5 to 10 times more titles than traditional print subscription levels.
- Since its inception in April 1998, OhioLINK's Electronic Journal Center has expended its collection of electronic journals. As of

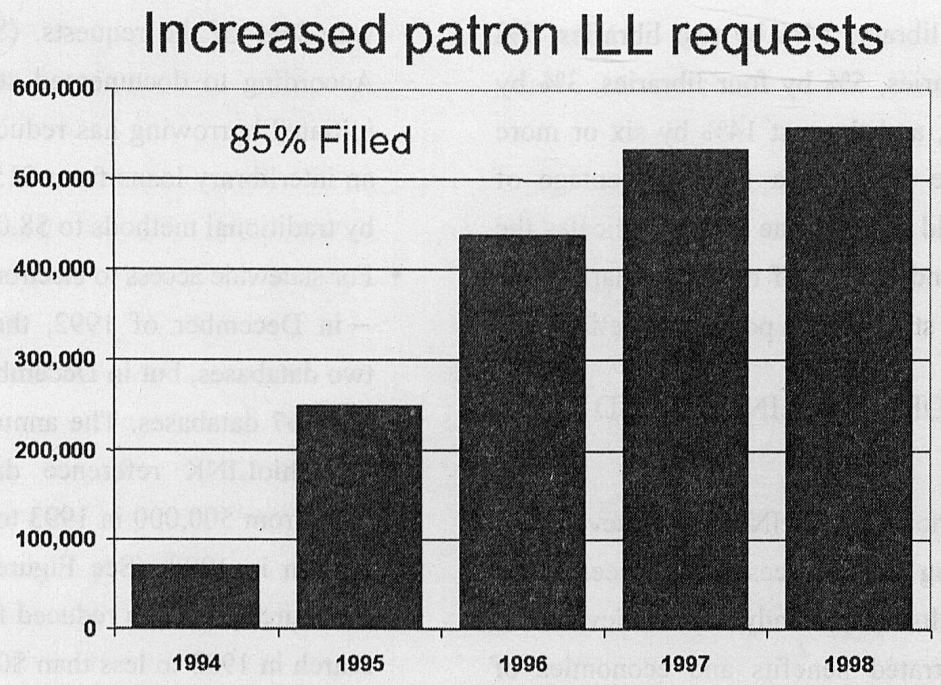

Figure 3：OhioLINK Patron Initiated Online Borrowing

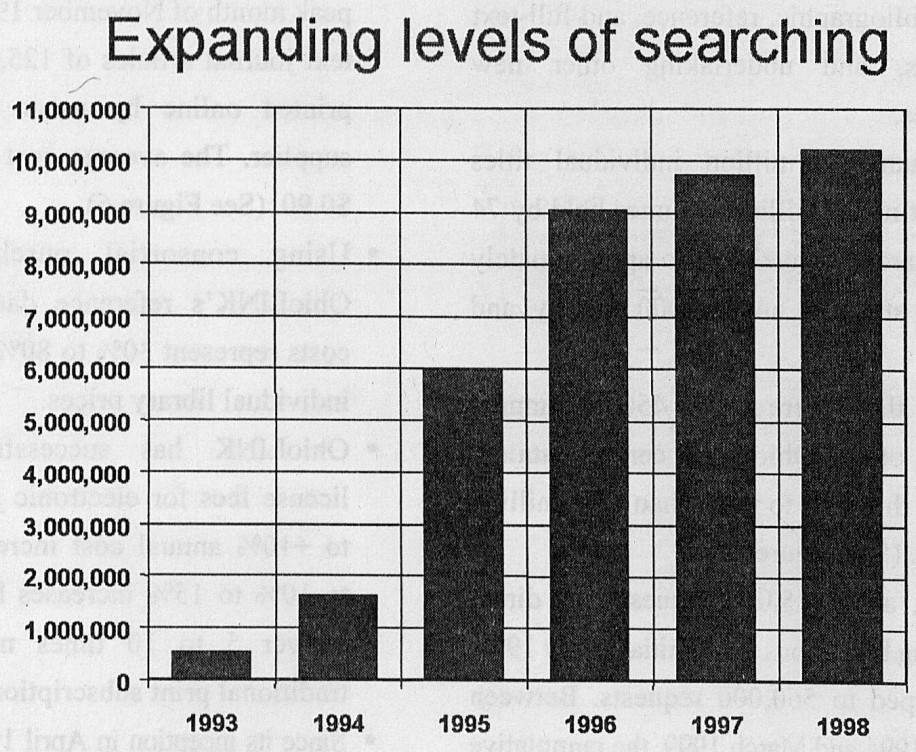

Figure 4：Searches of OhioLINK Central Reference Databases

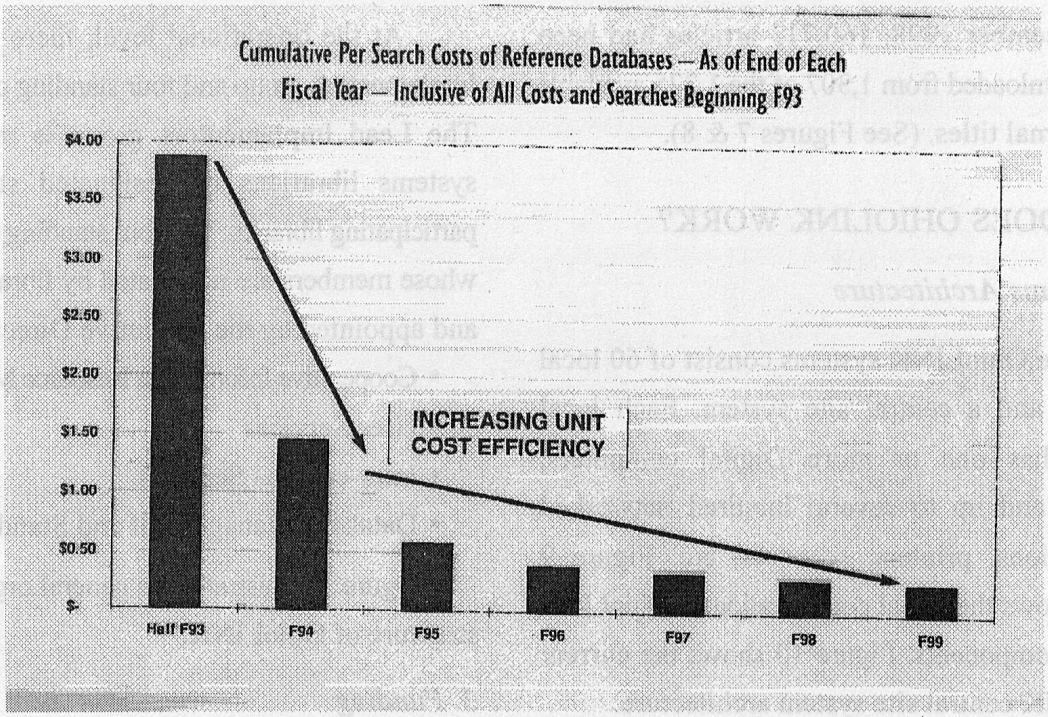

Figure 5 : Cumulative Per Search Costs of Reference Databases

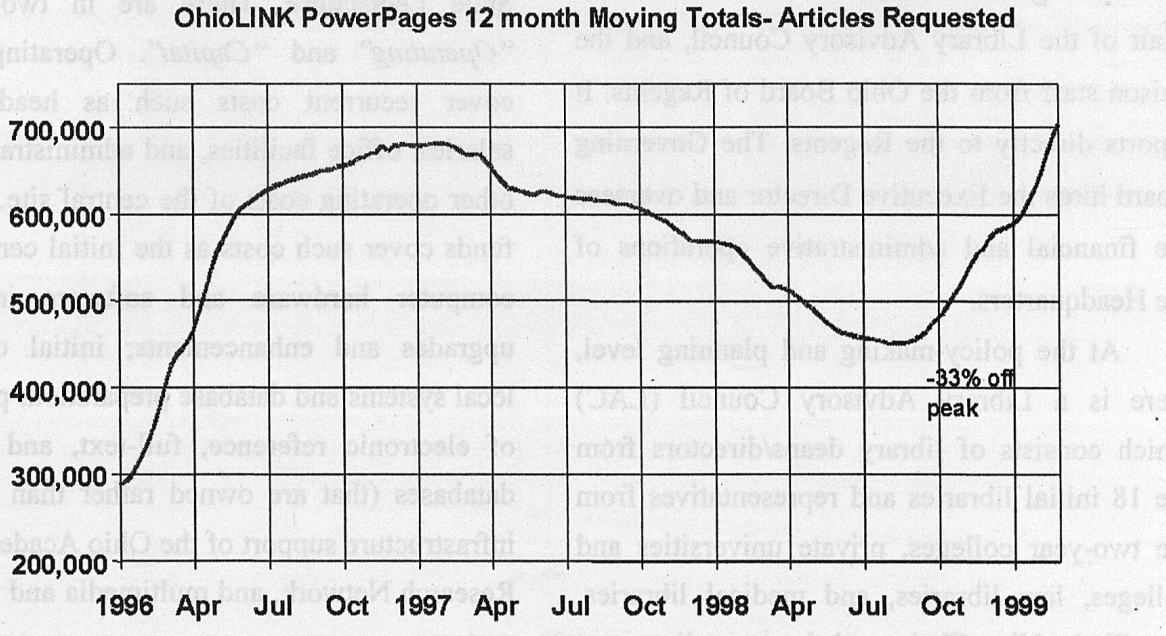

Figure 6 : UMI Power Pages Article Downloads

December 1998, 160,713 articles had been downloaded from 1,307 of the 1,325 available journal titles. (See Figures 7 & 8).

HOW DOES OHIOLINK WORK?

1. Systems Architecture

The OhioLINK systems consist of 60 local systems and a central site system. Each local system has one or more Digital computers, servers, and up to several hundred networked workstations, printers, scanners, etc. Figure 9 below shows the initial configuration of OhioLINK system components. Figure 10 shows the current OhioLINK central site system architecture.

2. Governance

OhioLINK's Governing Board is made up of provosts or chief academic officers of participating institutions, the chair and vice chair of the Library Advisory Council, and the liaison staff from the Ohio Board of Regents. It reports directly to the Regents. The Governing Board hires the Executive Director and oversees the financial and administrative operations of the Headquarters.

At the policy-making and planning level, there is a Library Advisory Council (LAC) which consists of library deans/directors from the 18 initial libraries and representatives from the two-year colleges, private universities and colleges, law libraries, and medical libraries. The Chair, Vice Chair, and the immediate past chair constitute the executive Coordinating Committee (LACCC).

At the operational level, there are a Lead Implementors group and four standing committees. The Lead Implementors group is made up of systems librarians or designated staff of the participating libraries. The four standing committees, whose members are nominated by library directors and appointed by the Executive Director, are:

- Cooperative Information Resource Management
- User Services
- Inter-campus Services
- Database Management and Standards

Figure 11 illustrates the general organizational structure of OhioLINK.

3. Funding

OhioLINK's main funds have come from State appropriations based on requests submitted through the Ohio Board of Regents to the Governor's office and approved by the Ohio State Legislature. These are in two forms: "*Operating*" and "*Capital*". Operating funds cover recurrent costs such as headquarters salaries, office facilities, and administrative and other operating costs of the central site. Capital funds cover such costs as the initial central-site computer hardware and software including upgrades and enhancements; initial costs of local systems and database preparation; purchase of electronic reference, full-text, and journal databases (that are owned rather than leased), infrastructure support of the Ohio Academic and Research Network, and multimedia and full-text systems.

In 1998/99 fiscal year, the Operating Budget is $5.157 million and the Capital Budget

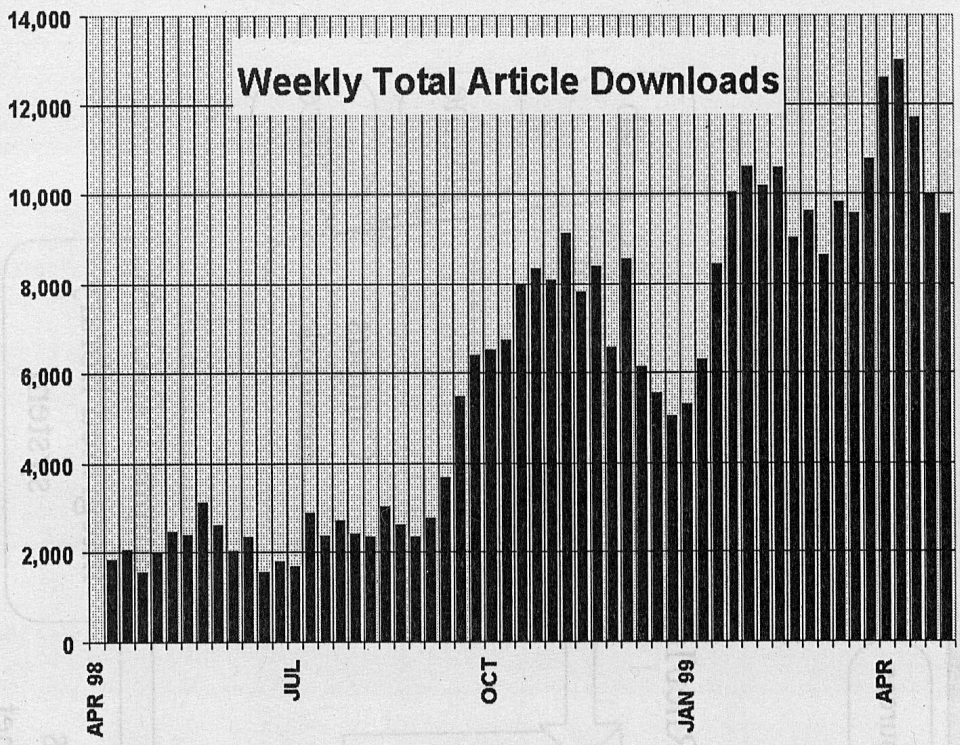

Figure 7：Electronic Journal Center (EKC) Downloads

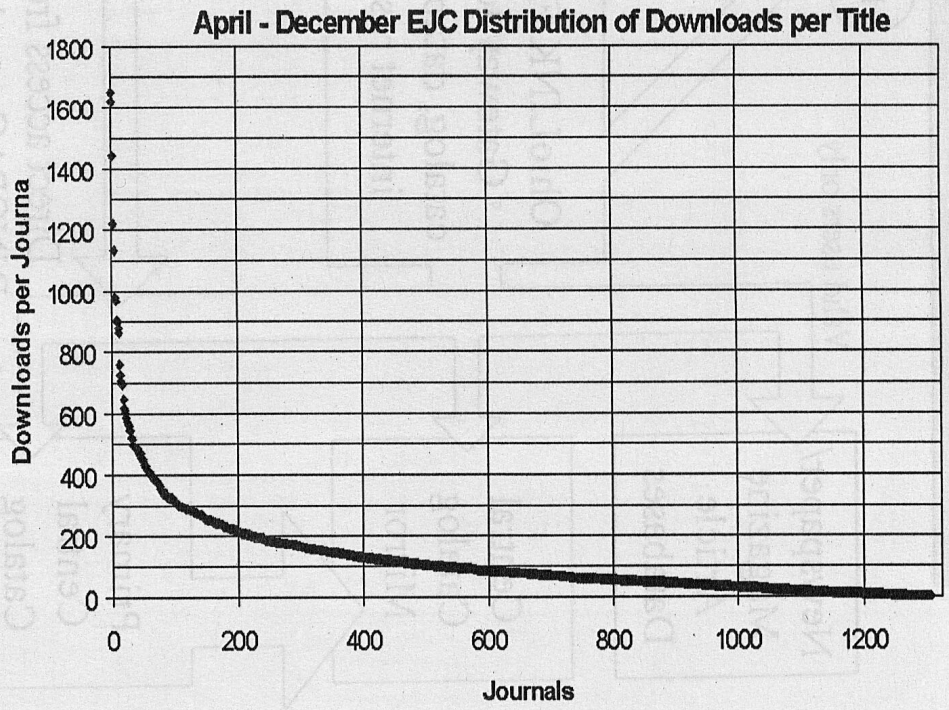

Figure 8：Electronic Journal Center Downloads Per Title

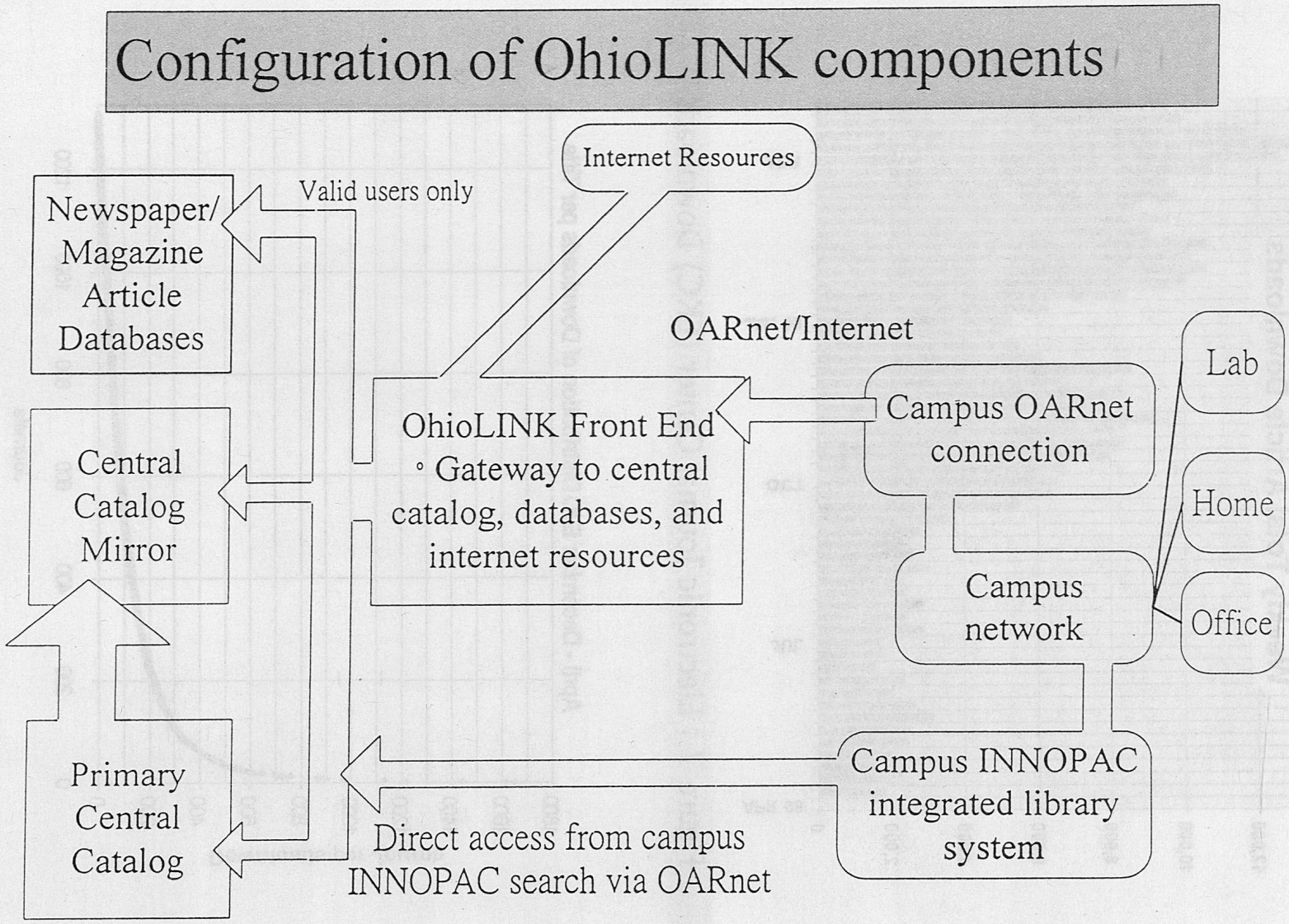

Figure 9 : Configuration of OhioLINK Components

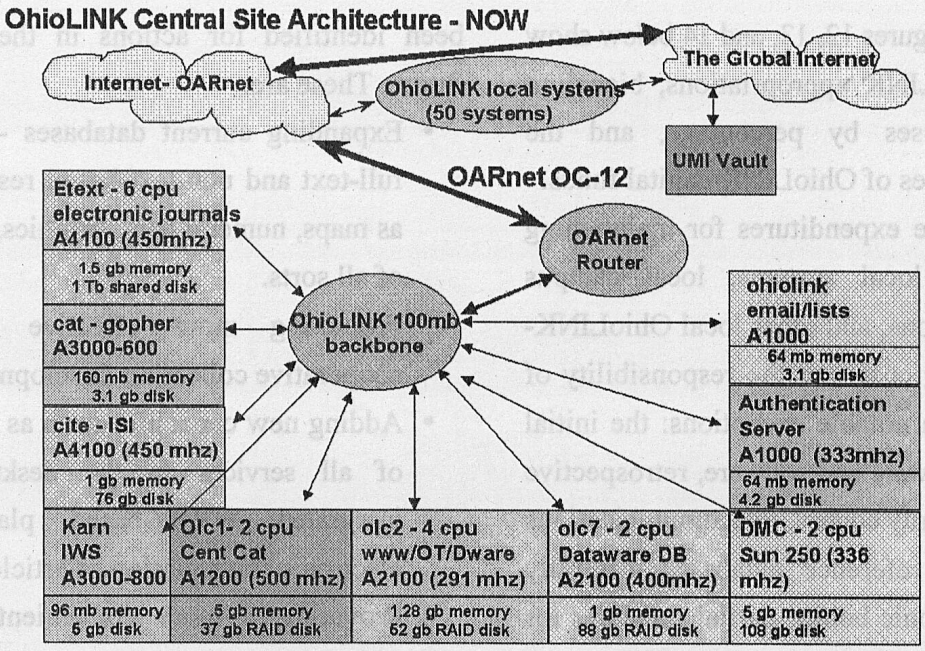

Figure 10 : Ohio Central Site Architecture

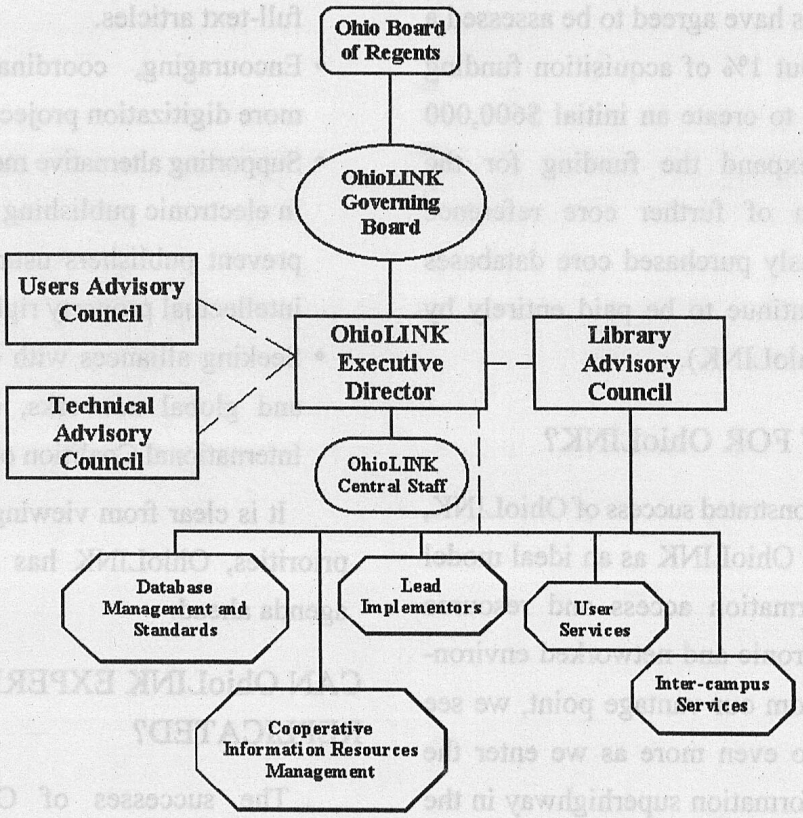

Figure 11 : OhioLINK Organizational Structure

is $2.5 million. Figures 12, 13, and 14 below show the actual OhioLINK appropriations, biennium operating expenses by percentage, and the distribution of uses of OhioLINK capital funds.

Most of the expenditures for maintaining and upgrading local systems, local campus telecommunications, and other local OhioLINK-related operating costs are the responsibility of each library with notable exceptions: the initial local system hardware and software, retrospective conversion, authority control, telecommunications backbone, core reference databases, centrally purchased electronic books, partial subsidies for a group licensed electronic journals, and contracted document delivery services--all of which have been paid by central funds. Beginning in 1998, OhioLINK libraries have agreed to be assessed a small amount (about 1% of acquisition funding for my university) to create an initial $600,000 "war chest" to expand the funding for the central acquisition of further core reference databases (previously purchased core databases have been and continue to be paid entirely by state funding to OhioLINK).

WHAT'S NEXT FOR OhioLINK?

With the demonstrated success of OhioLINK, many have viewed OhioLINK as an ideal model for effective information access and resource sharing in an electronic and networked environment. However, from our vantage point, we see opportunities to do even more as we enter the fast lane of the information superhighway in the 21st century. Several strategic priorities have been identified for actions in the immediate future. These are:

- Expanding current databases -- especially full-text and non-text-based resources such as maps, numeric data, graphics, and images of all sorts.
- Promoting more effective means for cooperative collection development.
- Adding new capacities such as the delivery of all services to the desktop via an integrated WWW-based platform and electronic transmission of articles.
- Providing a more convenient and user-friendly interface.
- Linking journal and newspaper databases to actual holdings, circulation records, and full-text articles.
- Encouraging, coordinating, and hosting more digitization projects.
- Supporting alternative methods and strategies in electronic publishing to control costs and prevent publishers usurping control of the intellectual property rights of authors.
- Seeking alliances with other state, national and global networks, exemplified by the International Coalition of Library Consortia.

It is clear from viewing the list of strategic priorities, OhioLINK has a full and exciting agenda ahead.

CAN OhioLINK EXPERIENCE BE REPLICATED?

The successes of OhioLINK are due largely to the following elements:

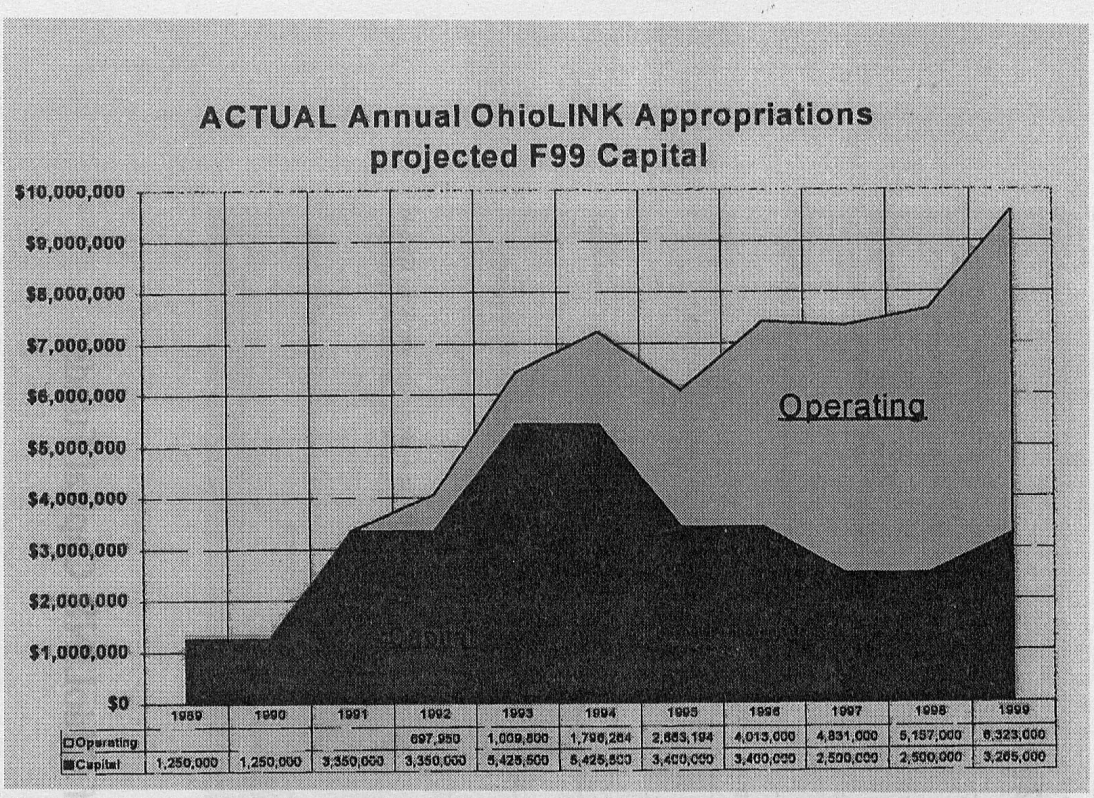

Figure 12：Actual Annual OhioLINK Appropriations

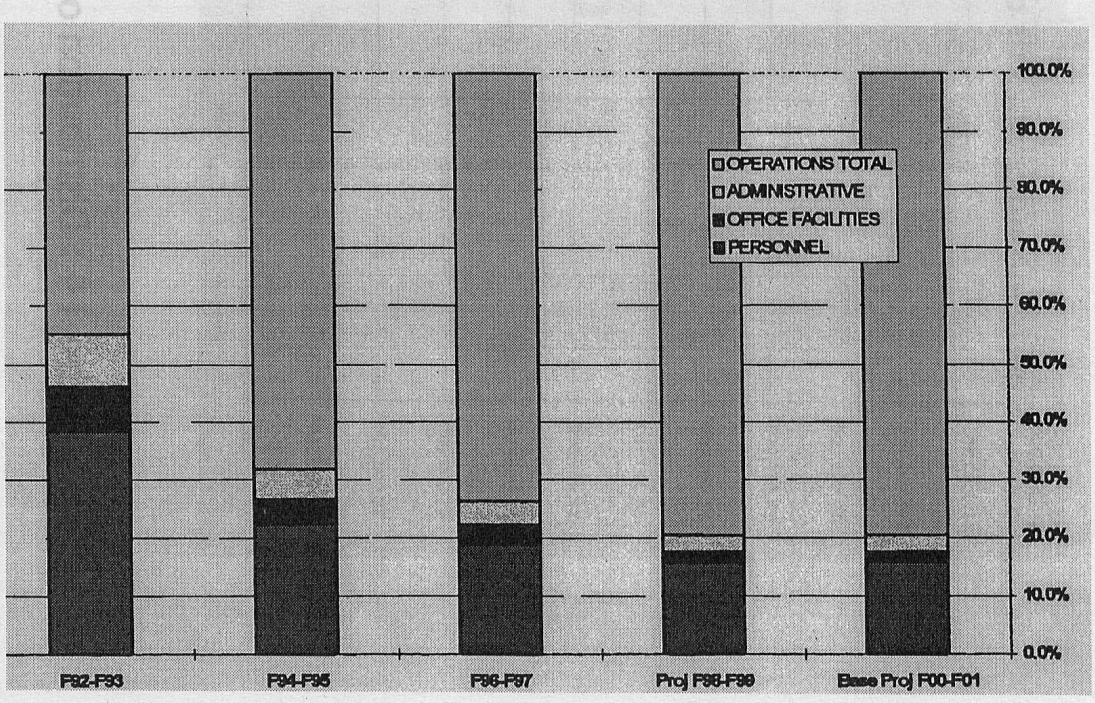

Figure 13：OhioLINK Biennium Operation Expenses by Percentage

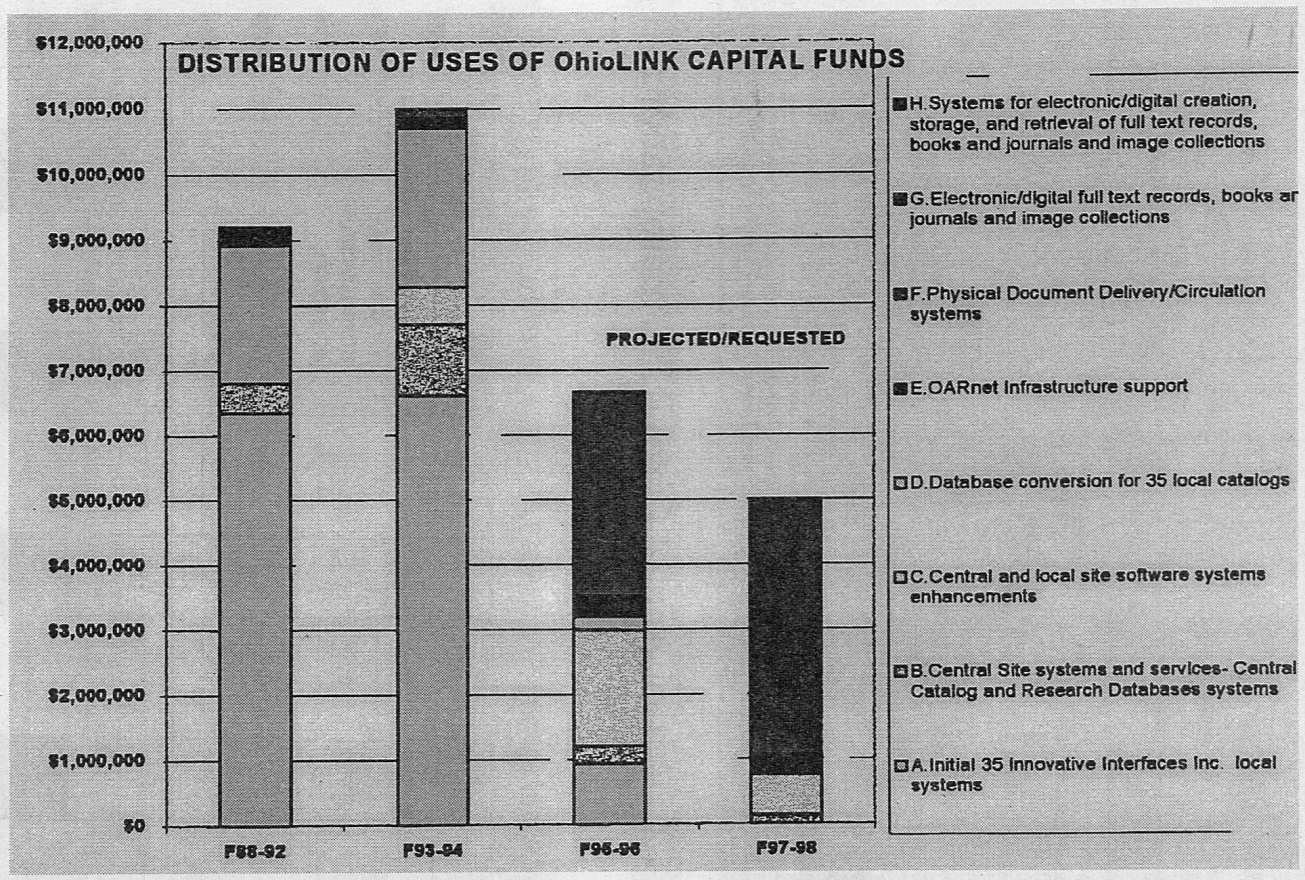

Figure 14：Distribution of Uses of OhioLINK Capital Funds

- General recognition that no library can be self-sufficient in providing the wide-range of information sources needed to serve its users.
- Strong desire of all libraries, both large and small, to cooperate and share resources--a long-honored tradition among Ohio libraries which was a chief reason for founding OCLC back in 1967.
- Visionary library leadership committed to library cooperation.
- Understanding and support of a governing body (the Ohio Board of Regents) willing to provide initial and ongoing funding.
- Availability of more sophisticated library and information technologies for library automation and networking.
- Increasing availability of electronic and digital publications.
- Full participation of all libraries in a functional organizational structure which is able to build consensus and to make wise, judicious, and timely decisions.

What can be done in Ohio can also be done elsewhere if the abovementioned elements are present. In fact, some of these elements can be cultivated and nurtured if necessary.

Furthermore, an OhioLINK-like library consortium need not be identical. Libraries in developing countries have more impetus for networked information access and resource sharing to make the best use of rather limited financial, material, technical, and human resources. But because of the different local conditions, each library consortium should be planned and developed according to local and regional needs and should develop its own unique feature. The OhioLINK approach can serve as a successful working example in maximizing information access and resource sharing in a networked environment among any group of libraries with a desire to cooperate. Taking the first step may not be easy, but once begun, the obvious benefits will be a driving force to move forward.

(收稿日期：1999年4月14日)

註　釋：

註①：The Ohio Board of Regents is a state coordinating agency reporting to the Governor with the responsibility of planning and overseeing the general policies and funding of all state-supported institutions of higher learning.

註②：Ohio Board of Regents. Library Study Committee. "Academic Libraries in Ohio: Progress Through Collaboration, Storage, and Technology", in Report of the Library Study Committee (Columbus, Ohio: Ohio Board of Regents, 1987).

註③：Request for Information for the Ohio Library & Information System (OLIS) on Behalf of the Ohio Board of Regents and Ohio Library & Information System (Columbus, Ohio: OLIS, August, 1988).

註④：OLAS Steering Committee. Ohio Library Access System Planning Paper, November 2, 1988 (Columbus, Ohio: Ohio Board of Regents, 1988).

註⑤：Request for Proposal for the Ohio Library & Information System (OLIS) on Behalf of the Ohio Board of Regents and Ohio Library & Information System (Columbus,.Ohio: OLIS, 1989).

註⑥：Ohio Library & Information System, Connecting People, Libraries, & Information for Ohio's Future (Columbus, Ohio: Ohio Board of Regents, 1989).

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