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## PUTTING CONTENT ONTO THE INTERNET

The Library's Role  
as Creator of Electronic Information



By [NANCY R. JOHN](#)

### Abstract

*This paper addresses several experiments that the University of Illinois at Chicago (UIC) University Library has undertaken to shape how information is presented on the Internet and to contribute to the quality and quantity of information accessible via the Internet. Four projects were begun under UIC's Great Cities Initiative. This paper describes each project briefly; reviews the significant issues addressed by the development of each project; discusses the future of each project; and identifies areas for other organizations, but especially libraries, to become involved with Internet publishing. The four projects include: a partnership with the Chicago Public Library (CPL) to make information about the Library and the City of Chicago available to eight CPL branches as well as to Internet visitors from more than 30 countries; a pilot project, now under contract, with the United States Department of State to provide State Department information world-wide on a timely basis, resulting in more than 3,000 full-text, fully indexed items distributed via Gopher and the World Wide Web over 300,000 times each month; a project with Pemberton Press to provide selected articles from four print journals, plus tables of content, author's guidelines and other information; and a collaboration with the Illinois State Archives to provide access to specialized databases of interest to genealogists and historians, such as the Federal Land Sales in Illinois.*

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### Introduction

Academic libraries in the twentieth century owe much of their reputations to the sheer magnitude of their collections - how many kilograms and pieces of printed matter are available on-site to their users. For much of this century, access to remote information was discouraged in libraries by the length of time it took to procure it and by the associated costs (e.g. postage, copying, loan fees) that were often passed over to the user by the library.

Large networked computer systems, such as OCLC, have helped to change this paradigm remarkably. The drop in the cost of locating remote items, through the use of a large, shared bibliographic database, and the availability of alternative methods for fast delivery, such as Federal Express, Priority Mail, United Parcel Service, and others, have led to a marked shift in academic library values. Academic libraries increasingly are emphasizing quick access to print information - anywhere - rather than attempting to own all known print information locally, on-site.

The power of technology has not only allowed libraries to share resources more easily and less expensively, it has also allowed the library to bring more information and more up-to-date information to its users. Two examples that come immediately to mind are the [United States Census](#) data and the [United States Securities and Exchange Commission's](#) (SEC) 10K reports. Now researchers can have access to very current and nearly complete information from the Census Bureau or SEC, in a format that allows researchers to perform their own analyses of trends, instead of poring over older print volumes or just selected variables. Instead of wrestling with six-month old copies of 10K and other government forms submitted by America's public corporations, a researcher can view information submitted as recently as the last 24 to 48 hours.

Access to electronic information is highly dependent on access to computers and to networks. Much has been written about "wiring the last mile" (that is, bringing the network to the home) and about making computers more available to those who can least afford them. While issues of connectivity are important, three more fundamental forces limit access to electronic information. These are:

1. how much older, print-based information has been converted to digital format

2. how much new information is coming out in digital format
3. whether electronic information is network accessible

The lack of data conversion usually can be traced to a perception of the actual value of information in the marketplace. Since the information is usually available in one format (generally print), it must be shown that there is some exceptional added value to re-issuing it in another (digital) format.

The second category, how much new digital data is being issued, is difficult to analyze succinctly. Marketplace considerations are very real and very complex. In some cases, the lack of the means to use electronic formats will further reduce the number of potential customers for digital information. Simply put, it just doesn't pay to digitize information that few want, and even fewer can use. Before the current era of digitized and digital information, librarians addressed the need for dissemination of information by persuading publishers and authors to create books using the force of the marketplace, i.e. demand and supply. Publishers helped librarians by reprinting out-of-print books and by encouraging authors to create books on certain topics. Librarians helped publishers and their editors to identify key topics that needed to be addressed with new publications.

In the digital era, these same techniques are being applied but in slightly different ways. For example, the efforts of librarians have contributed greatly to the development of large bibliographic databases, such as [RLIN](#), [OCLC](#), BRS and [Dialog](#), to the creation of electronic versions of print texts such as [Britannica Online](#), and also to the publication of electronic journals and full-text repositories of journals articles.

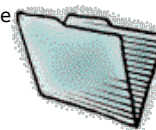
The final area, whether electronic information can be used over the network, presents a different set of considerations. Traditional data-processing professionals may not be knowledgeable about internetworking issues or understand the intrinsic value of information. In some cases, data-processing staff are knowledgeable about the audiences for electronic information, but are extremely concerned about the security risks that open networks and information access present. In both these cases, what is needed is the ability to convert data from a proprietary to an open format and to provide a low-risk access method.

As librarians have become more involved in addressing these issues, a new role for the library has emerged. The library is now becoming the distributor of information online, moving this function from a locally-based one designed just for the library's own clients to a national, and even international, one serving many information seekers from around the world. This new function of the library - the library as electronic publisher - has evolved thanks to the comparatively lower start-up costs of electronic publication/distribution over publication/distribution of paper information and by the library's strong desire to provide off-site access to information. In the case of universities, the network infrastructure needed to publish information electronically is often already in place to support the research and teaching roles of the university. The electronic distribution of information is a natural evolution of the use of this infrastructure, and from there the activity of creating or promulgating electronic information follows quickly.

At the Johns Hopkins University, the collaboration of the library staff, the computing center, and the university press led to the creation of [Project Muse](#) - the Johns Hopkins World Wide Web server of more than forty scholarly journals. At the CIC (Center for Institutional Cooperation), the collaboration of computer specialists and librarians had led to the creation of a huge archive of [electronic journals](#). The [University of Illinois at Chicago University Library](#), has also embarked on a series of efforts in this area. To date, UIC has established a number of partnerships, to put information out onto the Internet - that is, not simply to collect the information but also to distribute it widely.

## The UIC Internet Initiative

It was mid-1993 when the UIC Library decided to begin to create electronic information, not just provide access to information made by others. UIC's librarians began by scouting potential sources of information in an aggressive campaign to find organizations and individuals with important, useful information that the Library could develop and deliver over the Internet. The Library was motivated by the belief that electronic information would be increasingly important to the university community to support teaching and research. Furthermore, the Library felt that direct involvement in providing electronic information would give the Library firsthand knowledge of the issues that needed to be addressed for electronic information to be incorporated into the daily routine of the library and the library user. The Library felt that it could leverage the Internet expertise of its staff as well as the staff of the University's Computer Center by developing partnerships with information owners to explore these issues.



The campus itself was embarking on a major program called [The Great Cities Initiative](#), an institutional commitment to increasing, facilitating and highlighting work serving the Chicago metropolitan area. Through this ongoing initiative, UIC is implementing teaching, research, and service programs designed to improve the quality of life in metropolitan Chicago and urban areas worldwide. These efforts may become a model for other universities in urban settings.

Under the umbrella of the Great Cities Initiative, the Library is able to form partnerships to further the Initiative's goals. UIC's librarians felt strongly that there was a lot of useful government information that should be made more accessible. We were also interested in working with a variety of partners to learn more about the issues of partnering and particularly about the technical issues of disseminating information via Internet. We also wanted to develop several models and experiments to demonstrate the appropriateness of different approaches to electronic information to different segments of the information provider community. We were seeking information for which there was a public demand, but we were

also exploring the issues of distributing information where the information owners would be concerned about marketplace issues.

## Increasing Access to Electronic Information: The Illinois State Archives

At the 1993 Illinois Library Association meeting, UIC Library staff urged departments and agencies of the State of Illinois, participating in the exhibition area, to consider sharing information with the Library. With this data, the Library could demonstrate, in a pilot test, how information could be distributed over Internet. The Illinois State Archives agreed to a trial project. During the fall of 1993 and winter of 1994, two databases, that had been available only to researchers on-site at the State Archives in Springfield, Ill., were converted from proprietary database formats into searchable Gopher-accessible files. These databases were the Illinois Public Domain Land Tract Sales Archive and the Index to the Chicago City Council Proceedings, 1833-1871.

The [Illinois Public Domain Land Tract Sales Archive](#) contains transaction data for approximately 545,000 public domain land sales in Illinois, supplied by the Illinois Secretary of State and the State Archive to the University of Illinois at Chicago's University Library and Computer Center. Public Domain Land Tract Sales are the sales of parcels of Illinois land by the government to U. S. citizens. The great majority of transactions date from 1815 to about 1880, when most public domain lands had been sold. Only the first sale of public lands is recorded in this database; subsequent sales of the land are not. This database is particularly useful to genealogists trying to locate information on family land holdings.

This second index contains the subject terms and dates of over 35,000 files that comprise the [Chicago City Council Proceedings Index](#) for the years 1833 through 1871. Using these index entries, a searcher can find a citation to the information in the published proceedings, or in the archives of the City Council's proceedings.

Both these databases were in regular use every day at the State Archives by at least one researcher. In April 1995, average usage of the Land Sales file on the Internet exceeded 200 searches, with more than 300 records retrieved daily. This pilot project had taken the Library and Computer Center staff less than a week's time to complete, had increased access to the data immeasurably, and had increased actual use by 5000%. Spurred on by both the ease and the success of this first effort, the State Archives sent several more database files to add to the collection. The Library had addressed the issue of network access to local data by moving two existing electronic databases from a local-only access to worldwide access via the Internet using a standard protocol, a Gopher front-end to a SPIRES database in one case and to an SQL database in the other.

### Usage of the Land Sales database, April 1995.

Retrievals of the top level menu:	2670
Retrievals of the county code table:	885
Retrievals of the explanatory document:	851
Total searches performed:	6377
Individual items retrieved:	8133
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Total number of connections:	18916
average number of connections/day:	631

## Increasing Access and Coverage: U.S. Department of State

The Library's next effort was considerably more ambitious, as we turned our attention to the conversion of large paper and CD-ROM archives as well as the current output of a government agency, all so it would be accessible over the Internet. UIC's Documents Librarian negotiated a trial effort with the U. S. Department of State's Public Information Office to publish [State Department information worldwide via the Internet Gopher protocol](#). This effort required UIC to identify methods for the daily secure transfer of data from Washington to Chicago in a timely fashion; to train staff in Chicago and Washington about managing a Gopher server; and, to install and support the library's first standalone Internet server.

Colleagues at the [Coalition for Networked Information](#) in Washington assisted the Library and the State Department in trying out several Internet suppliers. Data issued on CD-ROMs was copied and converted to text formats of suitable length and style. A standard header and footer for documents was developed. Daily transmission of current documents via electronic mail and FTP (file transfer protocol) was monitored to develop a secure process for the transmission of files. The Library added indexing and searching capabilities to the server and developed a way for visitors to leave comments and ask questions. The State Department staff named the project the Department of State Foreign Affairs Network (DOSFAN) and agreed to open worldwide access to the server in December, 1994.

Soon the very popular DOSFAN Gopher acquired a World Wide Web front-end, [DOSWEB](#). Library systems staff added comment forms and searching capabilities to the WWW version. Graphics were developed and refined to load quickly even over slow connections. Image maps to allow visitors to clicks on graphics and retrieve documents were developed. A counter of visitors was used briefly, but with more than 300,000 visits per month from more than 80 countries, it was

decided that dedicating computer time to merely update the counter was unnecessary.

The Internet distribution project has given the State Department staff much to consider. Policies on which documents will be added to the Gopher and which to the Web are being developed. Electronic distribution via the Internet is affecting plans for paper and compact disk distribution formats as well. The impact of the speed of electronic publication versus other media is being assessed. Secretary of State Warren Christopher made the following remarks in his speech on U. S.-Vietnam relations given in Hanoi on August 6, 1995:

*Communications technology is pushing the expansion of freedom for the individual at the same time as it is shrinking the distances between nations. My speech to you, for example, will be broadcast back to the United States by satellite. Through the Internet, it will be available to almost anyone in the world with a computer and a phone line. Governments cannot control this movement of ideas in the Information Age, even if they want to.*

## Converting Paper to Bytes: Online, Inc.

While DOSFAN was gearing up to go live, the UIC Library was approached by Online, Inc. (Pemberton Press) to consider hosting a Gopher server for one of its journals *Multimedia Schools*. The Library looked favorably on this request because it was a natural extension of the work being done by UIC's College of Education in its outreach to the Chicago Public Schools and also because it would give the Library a chance to work with a for-profit partner, one who was interested in exploring the balance between making its content freely available on the Internet while protecting its print-based revenue stream. It became obvious early on that there was no reason not to include information from the three other Pemberton journals - *Online, Database*, and *CD-ROM Professional* - as long as the publisher was willing to take the risk that print subscriptions might be adversely affected.

The experiences from the projects for the Illinois State Archive and the U. S. Department of State gave us insights into working with a traditional publisher. For example, we agreed at the outset that Online, Inc. would control the information and that at any time, the Library would remove information at the request of Online, Inc. At the same time, the Library asked that it be allowed to review any information of a quasi-commercial nature, for example, the wording of the information about subscriptions. Both Online, Inc. and the Library agreed that the server would provide access to the texts of a selection of articles from each issue of the magazines. Each electronic version of an article would provide information on how to acquire *for a fee* a print copy that would include illustrations not available digitally. All information on the server would be freely available to anyone on the Internet, and updated regularly. Online, Inc. would not only provide information on how to subscribe to its journals but would also provide information on how to submit articles to the editors for potential publication. The articles distributed on the server would include both feature articles as well as regular columns.


From the very beginning it has been clear that the [Online Inc. Gopher server](#), and now the [Online Inc. WWW server](#), have increased the sales of both individual articles and subscriptions by giving customers a chance to sample the quality of the journals before making a purchasing decision. Demand for the journals in fact has led to their availability in individual paper issues on selected newsstands (which did not occur before the Internet project), in addition to the distribution of paper issues by subscription. Electronic access did not hurt the sales of Online's paper journals, it has actually helped to increase the demand for them. In addition, Online has diversified its periodical offerings, with a new journal entitled *Online User*. This project helped the Library to understand and explore first-hand many of the issues related to commercial publication via the Internet. It also helped a publisher understand the potential of the Internet to increase the sales of its products.

## Making Content: The Chicago Public Library

Based on the success of the DOSFAN and Online, Inc. projects, the Chicago Public Library (CPL) approached the UIC Library about participating in CPL's Library Services and Construction Act (LSCA; assistance from the U. S. government to improve library services) grant to put Internet access in eight library sites. The UIC Library agreed to provide its expertise to train and support the CPL staff's execution of the grant objectives. Unlike the other previously discussed projects, where agencies gave us the information and we figured out how to organize and distribute it effectively, the CPL staff knew what and how they wanted to their information to look. They needed the expertise of the UIC Library staff to make it happen. As a result, this partnership demanded more sharing and more joint work from the very beginning.

The Library agreed to train the CPL staff to manage and develop their server with the idea that eventually CPL would move its server to its own location and manage it without our assistance. The development of this server has pushed us to learn new and emerging techniques, such as writing common gateway interfaces to other software and Java scripts, always one step ahead of our CPL colleagues. The other UIC-based servers have benefited as our technical knowledge has grown, and ideas have moved quickly from one server to another. The CPL staff brought us ideas and documents and told us how they wanted them to look. The challenge has been to make the documents appear on the Internet as envisioned. Documents developed included a [clickable map of the library's branches](#), [a clickable portrait gallery of Chicago's mayors](#), and a [timeline of Chicago](#). The Library has been able to publish worldwide the [resume-writing workshop](#) of one of its branches. CPL maintains up-to-date lists of resources about Chicago and Illinois as well as showcasing CPL's own activities and services. This partnership helped the UIC Library to achieve its final goal, the creation and distribution of original electronic information.

## Conclusion

The University of Illinois at Chicago Library has been pleased to participate in the development of these projects. The story doesn't stop here. Since these activities first started, the Library has become publisher of an original electronic journal, the *AIDS Book Review Journal* (available via LISTSERV by e-mailing to listserv@uic.edu the message: sub AIDSBRV Your Name, and at <http://www.uic.edu/depts/lib/aidsbkrv/>), edited by one of the Library staff. We are at work on another group of partnerships and await the Chicago Public Library's graduation sometime next year to its own server. Our participation has benefited the University greatly in its goals to improve the quality of life in metropolitan Chicago and urban areas worldwide in an effort to become a model for a land-grant university in an urban setting. The Library now knows that academic libraries have an important catalytic role to play in making more useful, high-quality information available on the Internet. We learned that we can have an impact on the electronic availability of the information our users need for their teaching and their research. Through partnerships with organizations inside and outside the university, we've demonstrated that the academic library can leverage its expertise to help realize a goal of abundant, useful, and easily-accessible information for all. 

## The Author

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