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The unchained library

A C C E S S 2 0 0 0

BY WILSON DILLAWAY

In the latter half of the 1990s, the Library must address a rapidly emerging new order of academic information needs. Teaching and research require, in addition to books and other print materials, greater access to knowledge and information in electronic formats. With increased electronic access, there is a complementary need for technologies to use, manage, and preserve the growing variety of information media. The Library must respond to the additional layers of cost created by these new resources in a period of tight fiscal constraints. The added cost of electronic access, coupled with the ever-rising demand for and costs of print materials, threatens to restrain the expansion and quality of Library resources. Access 2000 is the Library's plan for managing the University's increased reliance on electronic information. It will sustain the growth of the Penn Library Information Network (PennLIN) as it incorporates new information resources, on campus and beyond. Exploiting the capabili-

ties of client/server-UNIX design, Access 2000 will support the storage and delivery of higher volumes of information at lower costs than currently possible. Along with real economies of scale, it will allow Library media to expand promptly and systematically, making information service more responsive to the diverse needs of Schools.

Managing cost while enhancing service

The Library's online catalog and locally mounted information bases are currently based on IBM mainframe technology, using high-performance hardware and a sophisticated operating system environment that allows large numbers of complex searches to be in progress simultaneously. The proprietary character of the Library's current mainframe environment carries very high costs, relative to more generic technology (*continued on page 16*)

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such as UNIX-based servers using multiple RISC processors. As the Library expands its electronic infrastructure this cost differential grows more visible, while the performance difference between the two environments is no longer so dramatic. Rather than continue to upgrade and expand the mainframe hardware infrastructure, the Library will procure a new integrated library automation software package that is UNIX-based, and over the next several years, migrate all current services off the mainframe.

The long-term objective is to have a variety of locally provided server-based electronic offerings, coupled with licensed access to off-campus resources, all available via PennNet from any location. Achieving this objective will take time, with campus participation in the planning process a vital part of integrating these services into the fabric of other campus resources.

Meanwhile, new Library services will be implemented on UNIX servers as early as this fall. Here is a sampling of the projects planned.

Library Gateway: access to extended resources

The current PennLIN menu of services is limited by a fundamental design constraint of the mainframe operating system—it cannot link to resources that are not based on mainframe technology. As the Library begins to offer new locally provided services based on UNIX and as it expands availability of other resources accessed via the Internet, the mainframe menu can no longer serve as the inclusive entry point for all of the Library's electronic services.

This fall we are therefore introducing a new gateway to PennLIN, in order to provide easier access to the full range of electronic resources which the Library supports or

has licensed. The selection of any item will initiate a session with that resource. Over time, this gateway will be expanded to include additional items as they are acquired or made available.

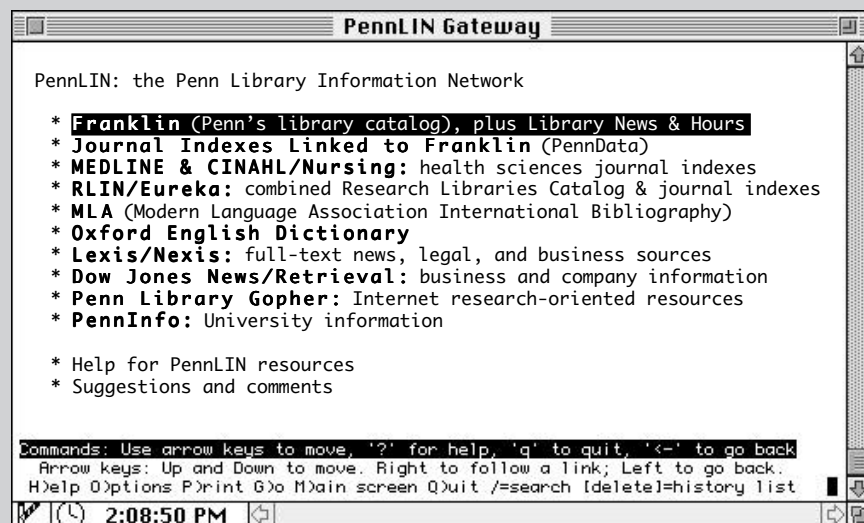
Because of the strong campus interest in the World-Wide Web (WWW) protocol, we will base our gateway presentation on this environment. The initial offering will focus on character-based menu presentation, with support for graphical Web clients such as Mosaic to be offered later this fall. Most of the individual resources listed on the menu tend to support character-based interfaces themselves, but over time graphical clients for the individual resources may also become available. An immediate exception, the Library's new offering of the electronic version of the *Oxford English Dictionary* (OED), uses the Web itself to support graphical clients right from the start (see the OED description below).

New MEDLINE and CINAHL/Nursing

Access 2000 will enable the Library to acquire a new MEDLINE system to better meet the research and patient-care needs of the Penn community. The Library has licensed the OVID search software from CD Plus Technologies, and will offer it this fall as the first of the Library's information services based on UNIX technology. With the new system, the Library also provides online access for the first time to CINAHL (the *Cumulative Index to Nursing and Allied Health Literature*).

MEDLINE is the premier database of the National Library of Medicine and provides comprehensive, thorough access to the world's biomedical literature. The OVID implementation includes foreign language coverage, provides backfiles to 1966, offers powerful mapping and thesaurus support, and adds new downloading and printing

A simulation of how the character-based interface to the PennLIN gateway will appear on your screen after you telnet to gateway.library.upenn.edu.



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PennLIN Gateway
PennLIN: the Penn Library Information Network
* Franklin (Penn's library catalog), plus Library News & Hours
* Journal Indexes Linked to Franklin (PennData)
* MEDLINE & CINAHL/Nursing: health sciences journal indexes
* RLIN/Eureka: combined Research Libraries Catalog & journal indexes
* MLA (Modern Language Association International Bibliography)
* Oxford English Dictionary
* Lexis/Nexis: full-text news, legal, and business sources
* Dow Jones News/Retrieval: business and company information
* Penn Library Gopher: Internet research-oriented resources
* PennInfo: University information

* Help for PennLIN resources
* Suggestions and comments

Commands: Use arrow keys to move, '?' for help, 'q' to quit, '<-' to go back
Arrow keys: Up and Down to move. Right to follow a link; Left to go back.
H)elp O)ptions P)rint G)o M)ain screen Q)uit /=search [delete]=history list
2:08:50 PM
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options. The October issue of *Penn Printout* will compare the mainframe and OVID presentations of MEDLINE, and describe why the OVID system is a superior access tool.

Electronic access to full-text information

The Library's first venture into online full-text information is the electronic version of the second edition of the *Oxford English Dictionary* from the Oxford Press. The electronic provision of a work previously available only on paper is in general very storage intensive. Electronic provision also raises difficult copyright enforcement issues; often publishers are reluctant to consider this, or choose to charge licensing fees that are much higher than the cost of the paper product. Today, much less than one percent of the Library's acquisitions are even available in electronic format. Moreover, the electronic format does not always displace the need to acquire the print or other formats, due to differing patron requirements.

For the present, electronic full-text acquisitions in the Library will continue to be focused and modest, but Access 2000's emphasis on flexible infrastructure with low unit hardware costs will make it easier to acquire material in electronic form than was previously possible. In addition, both the economics of electronic access and the tools for management of intellectual rights are likely to improve over time, as more publishers, authors, and consumers participate in the search for new methods of dealing with these issues.

Licensing and access control

The Library has historically provided several locally mounted commercial information bases, and has offered no-cost access to several commercial remote services as well. Each of these comes with licensing constraints that restrict access to only specific user groups at Penn. While the concept of "access control" sounds unfriendly, our ability to honor the intent of these agreements ensures the Penn community free access to expensive resources while protecting the property rights of the license holders. Since the Library's computers provide de facto services to the entire Internet worldwide, access control becomes an important way of distinguishing between Penn and non-Penn patrons.

For locally mounted commercial information on the mainframe, the Library has historically required patron's to enter their Social Security number at the beginning of each session. For remote resources, the Library generally has had to distribute separate passwords to each interested person. This fall, we are extending the use of the Social Security number, integrated with our new gateway service, to cover *all* locally mounted and remote licensed information resources. The aggregation of these resources onto the gateway, combined with uniform prompting for access identification, will eliminate the need for ad hoc password

distribution, make it easier to reach a larger campus audience, and increase awareness and ease of use of commercial services.

The ISC has recently formed a Distributed Computing Environment (DCE) Task Force that will explore technologies allowing the use of a single ID for access to all campus information systems (see *Penn Printout*, April 1994, page 19). Although implementing such a "single sign-on" system is likely to take several years, a single ID different from the Social Security number has a variety of advantages, and the Library hopes to make use of the technologies recommended when they mature.

This is merely the first step toward a broad set of changes that will increase the depth and scope of Library electronic resources. Gateway access to the expanded resources of PennLIN is available via Telnet to gateway.library.upenn.edu. We encourage you to take a look and send comments to pennlin@pobox.

WILSON DILLAWAY is Director of Information Systems for the Library at the University of Pennsylvania.

Oxford English Dictionary

The second edition of the *Oxford English Dictionary* is the Library's first full-text database to be offered fully networked. Much more than a dictionary (in its printed form the OED consists of 20 volumes covering four linear feet of shelf space), the OED is unique for its chronologically arranged quotations that illustrate the development of word meanings. Electronic search capabilities enable scholars to manipulate the text and rapidly discover interconnections and associations that hours of study with the printed text might never yield. A user can search by headword (the dictionary entry word), by quoted author, quoted mark, date of quotation, by any quoted word. In its electronic form, the OED can be searched with sensitivity to the context, because the text has been encoded using the Standard Generalized Markup Language (SGML), a tool that is expected to be used in the future to encode professional journals. Using SGML, a journal's online format would be both more compact and more easily searched and displayed than a visual page image file would allow, while still preserving content information beyond the text characters themselves. This programming sophistication makes the online OED a powerful research tool for scholars in language and literature, although straightforward word definitions are supported as well. The Library planned and implemented the OED working closely with members of the English department.