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The Evolving Database Marketplace

BY JEFF BARRY & CAROL TENOPIR

INITIALY PROPELLED by online searching and CD-ROM networking, and now given added momentum by the Internet, electronic reference resources are changing the way librarians provide reference service. Library users are accessing traditional citation and abstract databases with greater ease and efficacy than before, thanks to more consistent and friendlier interfaces and the integration of full text and graphics.

How fundamental are the changes to library reference services? According to *LJ*'s 1996 Reference Survey, librarians estimate that in the next three years their CD-ROM reference sources will grow by 51 percent and their online sources by 43 percent, vs. fairly static growth for print.

An array of new products

Rapid changes in technologies, particularly the emergence of the web, are speeding the release of new products. Web access has appeal for both librarians and for library users. The web browser interface is fast becoming a familiar standard; multimedia documents are attractive; and web access to reference sources can be integrated with other library online services.

The Internet's emergence as a popular means to access resources raises questions about the future role of other

electronic media, in particular CD-ROM networking and traditional online searching. Still, the congestion and sometime sluggishness of the Internet lessens its viability as a reliable alternative.

At least for now, a complex combination of networked CD-ROMs, web services, and dial-up remote online services will likely coexist, as librarians seek the best value and options. A single-stop electronic superstore for reference sources is getting closer, but it is not yet here.

As the marketplace expands and evolves, electronic reference service providers have moved into multiple formats. They are adopting strategies based on content, partnerships, pricing, and technology to gain customer loyalty.

This overview focuses on suppliers of databases that are of general interest to many libraries and many library users. These include databases that index (and may provide full text to) journals and magazines of broad interest—from companies such as H.W. Wilson, UMI, Information Access Company (IAC), Dia-

log, EBSCO, SilverPlatter, and OCLC. These companies all serve the public, academic, and special library markets.

Full text—but not always

Indexes and abstracts are still the most popular type of electronic resource provided through the library. Linking full texts to these bibliographic files is rapidly becoming the rule rather than the exception. Many general interest database providers are moving beyond article citations and abstracts to providing full-text documents.

"Full text" used to mean simple ASCII text. Today it may mean ASCII text, full images, or a combination of images plus ASCII. "Full-content" databases now include images, graphics, and the original formatting of articles, sometimes in addition to fully searchable ASCII text. The same service may mix all of these in a single file, depending on the electronic licensing rights it has for each journal.

Libraries hoping to rely on full-content services to supplement (or replace) depleted serials collections must remember that even full-content databases often may not exactly replace printed magazines and journals. Suppliers of the electronic versions may cut some graphics, such as images that serve aesthetic purposes. For example, InfoTrac SearchBank from IAC only includes "images that are essential to understanding the full editorial content of an article," according to Dan Woods, VP for library marketing at IAC.

Studies of electronic full texts find that coverage varies greatly even for a single journal title. Electronic versions may include only major articles, or only those articles for which the author

has turned over copyright to the publisher, or only articles from a certain time period. Some graphics, tables, or photographs may be omitted.

Rights issues

More than a decade ago, Ruth Paggell, director of the Emory University Library Center for Business Information, was one of the first to document the deficiencies of electronic full texts. Now, she says, "the situation has gotten more complicated," because so many electronic full-text products compete in very dif-

As media proliferate, vendors offer a multitude of formats to access citations, abstracts, and articles themselves

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ferent distribution media. Electronic full-text providers such as UMI or IAC must obtain separate rights for each version. The rights they have for CD-ROM products will differ from the rights they have for online, dial-in, and web versions.

Coverage in electronic versions of journals has actually gotten worse recently, according to Pagell, because "authors and photographers are exerting their rights more." If an author or photographer retains copyright or electronic rights, chances are that that article or photo will be left out of the electronic versions of the journal. Pagell calls this "a subtle form of censorship" on the part of the database providers. Even worse, she says, "You don't know what you are not getting—users don't know what is left out and sometimes not even the system reps know their products are not cover-to-cover full text."

Pagell, like many librarians, would love to get rid of print journals and replace them with electronic access. "I hate microfiche, I hate the binding process, I hate the space requirements." Still, "we can't replace print with electronic versions yet," she acknowledges.

Multiple strategies

Libraries looking to replace declining print journal collections must

employ a variety of strategies, including full-content databases, full-text databases, electronic-only journals, document delivery services, interlibrary loan (ILL), and cooperative collection development.

"The world is more than just full-text online," says Tam Dalrymple, director of marketing for OCLC's FirstSearch. In many cases the user desires an exact reproduction and not just the ASCII text of an article. Using OCLC's union catalog and ILL system, FirstSearch displays local holdings information and can electronically send marked citations to a library's ILL office.

Dalrymple says the "key components of a database service are the features that help people connect with the actual information," as opposed to its bibliographic record. Document delivery services are being integrated into many electronic databases to meet the expectation not always filled by full-text. FirstSearch provides links to a

number of document delivery services. UMI, EBSCO, and Knight-Ridder's UnCover offer document delivery services linked to bibliographic databases. H.W. Wilson is phasing in links to document delivery services in its array of electronic reference products.

Sometimes a new way of implementing an old-fashioned service such as ILL is the best way to achieve full-text delivery. When the Chattooga County Library (GA) began offering FirstSearch two years ago, librarian Susan Stewart found "the users discovered the interlibrary loan workflow feature and are using it for requested information. It certainly streamlines [the] work."

New alliances

Electronic reference suppliers are now allying with integrated online library system vendors to allow a library to use their online catalog interface to search periodical databases.

Joe Tragert, product development manager for EBSCO Publishing, explains, "We recognize the benefits to our customers of working closely with library automation vendors and other content providers. In order to reach as many of our library customers as possible, we have distribution relationships with almost every ILS vendor."

The move by large publishers to acquire information suppliers is consolidating the industry. IAC is now owned by Thompson Corporation, which also owns Gale Research and the Institute for Scientific Information. The UnCover Company was acquired from CARL Corporation by Knight-Ridder Information, Inc. (KRI) in 1995. Reed Elsevier owns both LEXIS-NEXIS and R.R. Bowker (the latter now under an umbrella with *LJ*, *School Library Journal*, and *Publishers Weekly*).

An example of the synergy possible through such corporate acquisitions is KRI's SourceOne/UnCover partnership, which combines the strength of KRI's electronic full-text and citation files with UnCover's expertise in document delivery. The resulting combination provides a variety of document supply solutions.

Traditional online and CD-ROM services have always included content from a variety of producers. The rela-

tionship between the services and publishers has been criticized by those publishers as being too much of a lessor/lessee relationship and too little of a partnership. A new generation of agreements, such as that between Wilson and UMI, better uses the strengths of both parties.

For years, Wilson has produced two dozen well-known bibliographic databases, made available with its own Wilsondisc and Wilsonline software as well as by several other CD-ROM and online systems. In 1996 Wilson went a step further, signing an agreement with UMI to create combination bibliographic and full-text databases. Wilson will provide the bibliographic information, and UMI will provide the full text and full content for those journal titles for which they have (or will obtain) electronic licenses. *Applied Science and Technology* will be the first product.

Cracking the pricing puzzle

It's not easy to understand pricing options for these new products. In fact, librarians may find it hard to select the best option for their library. Traditional online schemes—charging by connect time or amount of use—have proven impractical for large-scale end user searching. Charging by article or citation retrieved is more equitable but adds up quickly if a library does not pass on costs to users.

OCLC FirstSearch was the first company to implement the option of charging by the search, which is a variation on the traditional pay-for-use schemes. Each FirstSearch password issued under this scheme allows a set number of paid searches. Since usage may be difficult to determine ahead of time, libraries may purchase blocks of searches for a low price per search.

In the last two years, the most common pricing arrangement has been an annual subscription price based on the number of concurrent users. This provides a fixed price for which a library can budget but allows a library to control costs based on how many users it anticipates will need access simultaneously.

Even subscription pricing can get complicated. Pricing will vary based on discounts negotiated by librarians. Discounts may be based on distribution channels through regional library networks, large volume of searching, licensing multiple databases through one supplier, or consortia agreements. Libraries that continue subscribing to the print version of a database may also get a discount.

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A surcharge may be added for remote access or for multiple sites within a library entity, such as off-campus branches. Suppliers may differ in how they define a library site, so libraries should examine usage restrictions closely. The costs for remote access may add as much as 25 percent to the price of a database.

Pricing is affected by the royalties paid by the supplier to the owner of the database's content. In most cases a supplier will license a resource from a database producer and pay royalties on the content. UMI, for example, has over 8000 different contracts with publishers for the various electronic rights and royalties to their full text and full content.

More net, less LAN

In the past year, libraries have begun to move away from CD-ROM-based local area networks (LANs) to accessing resources either online from the vendor's site or to loading the databases on a library's local server. Part of this migration can be credited to new client/server software that creates an environment that encourages libraries to adopt new technologies while staying with a familiar search engine and interface.

According to Tamara Miller, head of systems at the University of Tennessee, Knoxville, libraries and former Library and Information Technology Association (LITA) president, "The trend toward remote access [over the Internet] has profound performance implications. The Internet is a very busy place. If you are relying on Internet access as your primary means to access information, you had better not plan on doing anything between 3 and 5 p.m."

Tests run by Miller's office showed much better performance accessing information loaded on a local server than accessing information on an Internet server, especially when full text or images are involved. Although Miller is optimistic that Internet traffic problems will be solved in the long run, "interim strategies for libraries are to mount heavily used databases locally."

The low cost of disk storage allows for databases to be loaded on a local server; it also avoids congestion on the Internet. Both local server access and access via the Internet offer the flexibility of easy remote access for users outside of the library. By contrast, restrictions on remote access is one of the main limitations of CD-ROM networking.

Mark Nelson, founder and president of Ovid Technologies, believes that

"online access is becoming an increasingly popular delivery mechanism again due largely to affordable Internet access, the availability of annual subscriptions, and attractive, end user-focused graphical user interfaces."

Access varies

The most distinguishing characteristics of a database product are still the interface and search engine. Each information supplier provides a distinctly different approach. Now that various access methods (CD-ROM, local server, remote online, and Internet) are being employed, the searching capabilities of a single supplier also may differ based upon access method. These differences mostly are based on the technological limitations of one access method over another. Librarians should be prepared to encounter a range of features as access methods multiply.

The benefit of Z39.50 is finally being realized as libraries are able to use a common search interface for disparate systems. Most major general-interest database suppliers now offer a Z39.50-compliant version. Libraries will usually select the interface of their local integrated library system, although database suppliers may provide other choices as well.

For example, with the Z39.50-compliant Ovid Web Gateway, says Bette Brunelle, Ovid's technical product manager, "Every site can choose an interface—either Ovid or the OPAC interface—for each group of users on campus. Typically, undergraduates might use the OPAC interface to search the OPAC and a simple Ovid bibliographic file, while faculty and graduate students will use the Ovid interface for more complex databases."

Watching the web

Suppliers are capitalizing on the momentum of the Internet by developing web-based interfaces. Since most users are likely to have some type of web browser, this interface represents a consistent search experience alongside other net resources. Tennessee's Miller echoes many librarians when she says, "The movement toward using the Internet is a good one; the movement toward a common browser interface is wonderful."

While the current limitations of HTML pose challenges for those trying to develop intuitive searching features, new capabilities found in the Java programming language and other emerging technologies present opportunities to make future web interfaces more interactive.

According to Pete Ciuffetti, director of corporate development at SilverPlatter, "Our development projects have revealed the potential power and flexibility of developing Internet-aware information technology using Java." Nevertheless, Ciuffetti notes, "Java will be just one of the focus points for future functionality."

Though the web is enormously popular, limitations of existing hardware mean many users still depend on the character screen front-ends of dumb terminals and telnet sessions. Many libraries lack the financial resources to replace terminals with newer workstations. This situation is likely to continue for several more years.

It's unclear what will happen with the continued development of proprietary interfaces using Windows and Macintosh GUIs. These were all the rage just

a year ago and are still used by many libraries. Companies may now opt to abandon development for these platforms and choose the web as a common denominator. Other firms may decide that a sophisticated Mac or Windows in-

terface provides a competitive advantage and is worth the extra development costs.

Looking down the road

Electronic reference sources are evolving from simple citation databases to integrated information solutions that not only aid the user in searching for articles on a subject, but also deliver a rendering of some of the original articles to the user's desktop. Advances in information technology have raised the expectations of users. Librarians can find solutions in electronic products that will meet many of these expectations, yet each solution also brings its own challenges.

With the number of databases offered and the technologies involved, companies supplying electronic reference resources are at the forefront of the library automation industry. To remain competitive, each company must offer the content libraries want in a multitude of media. No one medium fits every situation. ■

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