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Predicting the Online Future

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Predicting the online future

Full Text:
Major changes will mark the future of online. Five major forces are shaping online searching and the online industry. These forces are at work now and will continue to shape online in the future.

The five forces are:

1. developments in telecommunications;

2. improvements in scanning and storage technologies;

3. expansion of database distribution options (CD-ROM fits here as well as many other formats);

4. a broader user base with new needs; and

5. changes in the dynamics of database production.

Developments in Telecommunications

The Internet clearly represents a major force in current informational telecommunications. Everywhere I go in the world people ask for my Internet e-mail address. A few years ago, they asked for fax numbers, although that query still persists. Internet is significant for many reasons beyond traditional online searching, including electronic mail, online journals and newsletters, resource sharing, and online public access catalog (OPAC) access.

As a telecommunications development shaping the online industry, the Internet now accesses many major commercial online systems like Dialog, BRS, Orbit, Mead, OCLC's EPIC, Data-Star, and NLM. As such, it represents an alternative to standard packet-switching networks like BT Tymnet or Sprintnet. Some Internet users can save money using the Internet for access to commercial search services. For example, if a university or company doesn't charge back each department for its Internet use, the department can access Dialog for just $3 per connect-hour in telecommunication charges on the Dialog bill.

Internet can also work faster than most commercial packet-switching networks, depending on the speed supported by your Internet connection and other local factors. For example, in my office through my direct line to the computer center, I get 9600-bps access to online systems now. Others will soon get up to 56,000bps.

Many online searchers now also search at 9600bps through packet-switching networks and a 9600-bps modem. As telephone companies around the world continue converting to digital lines, speeds will continue to increase, soon to 56,000bps and beyond.

I've heard some searchers say, "I can't read that fast on-line and I certainly can't type that fast, so what's the point? I'll stick with my 2400- or even 1200-bps modem, thank you." Well, the point is this: faster transmission will have some major impacts on the way we search and, as a result, on the information industry.

At fast speeds on connect-time based systems like Dialog it makes more sense to upload your best guess at a search strategy, download titles or another intermediate result format, log-off, and do all of your thinking and reformulating offline. Then you log on again and re-execute the search, downloading or printing all results offline rather than picking and choosing off the screen. For connect-time-priced systems at fast speeds this would prove the most cost-effective way to search.

Unfortunately for the on-line industry, I hate to search like that, and end-users just plain don't search like that. Connect-time priced

systems don't like you to search like that either when it cuts into revenues.

So faster transmission speeds press online search services to rethink pricing policies. Some systems like Mead and the National Library of Medicine (NLM) changed their pricing policies a long time ago, charging for the mount of work you ask the computer to do, the mount of information you search, and how much you retrieve. Almost all databases on connect-time-priced services have carried online display charges since downloading became widespread about ten years ago. Currently, as you may have noticed, those charges are rising. More changes in pricing algorithms will come, including differentials based on access speed like Dow Jones News/Retrieval and NewsNet, flat-fee contracts that some privileged heavy users get now, and more emphasis on the mount of information transmitted. These changes will not always benefit the searcher.

Faster transmission speeds also mean faster transmission of more information. For the first time we will see high-quality graphics transmitted online in a reasonable amount of time. This means more charts, graphs, tables, and pictures online. Our text-only full-text online databases already look as outdated and old-fashioned as black and white television does to my seven year old.

Improved Scanning and Storage

Optical scanners drop in price and increase in quality all the time. Computer storage capacities continue to grow exponentially while the costs keep coming down. Combine these two factors and you have a scenario for some major conversion projects. Put these together with faster transmission speeds and you have lots more text and graphics available for users.

Some database producers have turned to scanning to add to their existing databases, for example, the new full text on UMI's ABI/Inform and PTS Prompt. Others will use scanning for retrospective conversion of bibliographic databases. Young researchers might even discover that the world didn't really begin in 1972. Look for new databases, larger databases, more retrospective coverage, and a larger variety of electronic texts. Full-text collec- tions online, ondisc, and on magnetic tape to support bibliographic files will become the rule rather than the exception. One big impact of all of these developements on search strategy is learning how to cope better with more and often too much information. Megabases with many millions of records searched and multifile searching through features such as DataStar's StarSearch or DIALOG's OneSearch -- though lovable -- quickly mean information overload. Already, end-users and customers of intermediary searchers are calling for "just the best" information. We need more quality filters to make information usable.

Of course, in many ways the online librarian is a quality filter, using appropriately precise search techniques and reviewing and cleaning search results. But databases and online services will need to help us out more, with better controlled vocabulary indexing, other value-added information that helps measure the impact or importance of articles, and better software sorting items by likely relevance. Experienced searchers need to work with online services and software developers.

Expansion of Database Distribution Options

With the expansion of distribution options, online is moving beyond the traditional remote, commercial online. The Internet not only accesses commercial database services, but also reaches alternative databases like CARL Systems' UnCover, networks of OPACs, and hundreds of full-text newsletters, journals, and books. The library marketplace's widespread acceptance of CD-ROM in just a few years illustrates another obvious distribution option.

CD-ROM as we know it is not and will not be the only non-online alternative. CD-I (Interactive), CDTV, and Sony Data Diskman vie for the home entertainment and education market; FM broadcast databases offer fast updating to compete with online. Other technological advances are just around the corner. Wireless computing will grow rapidly in the late 1990s, but as yet has hardly made a ripple in online.

Poised for a big impact in the United States is the proposed National Research and Education Network (NREN). NREN was envisioned by Senator (and now, Vice-President Elect) Albert Gore as a telecommunications super-highway bringing broad-band information resources to virtually everyone in the United States. He likes to talk about his children getting on NREN to find picture books about dinosaurs, including text, pictures, motion, and sound. Although NREN is still only a vision on paper (with some money and support behind it), national ISDN-broadband networks in many countries could forever change the nature of online access. If they fulfill their promise, they will represent a combination of commercial and not-for-profit enterprises, a mix of text and graphics and sound, an educational, research, and even entertainment resource that will touch the lives of millions of people. Online may no longer be the province of just a few of us as it has been for twenty years and really still continues to be.

These changes depend on when or if NREN and other broadband networks reach their potential. At present many years of arguments and negotiations lie ahead of us. The American Library Association and the Information Industry Association have already squared off on their respective visions of not-for-profit versus for-profit domination of the network. Publishers worry about copyright violations and decreased revenues. We shall see, but I hope, not just see, but help realize the potential. No matter what happens, the awareness of the power and potential of online will take great leaps forward in the next decade.

More and Different Users

With or without the "super-highways," even the four-lane highways (or two-lane backroads) available now will have a profound impact on more and more people.

Additional distribution options have already brought more online awareness among categories of people that did not search databases before. Schoolchildren as young as five years of age use CD-ROM encyclopedias and other multimedia learning tools;

public library users go straight to CD-ROM indexes and databases loaded on library OPACS; college students line up to use dozens of CD-ROM databases; and students, faculty, and researchers in companies access locally mounted databases from offices or homes. The key to all these developments is easy, unintermediated, and free (to them) access.

All searchers know that our search results are not always as good as they could be or as good as we could do for clients. We also know that the interfaces of many of the best online systems are too unfriendly to be suitable for most end-users. The elusive end-user market is building, largely because of the efforts of libraries and librarians, but it will still take major improvements in interfaces, transparent search aids built into software, and lowered costs to reach the full potential dreamed of for years by the online industry.

At the local library or company level, the lines in online continue to blur. Inhouse systems, either through OPACs, or locally mounted databases on stand-alone systems, or decision support systems, or document-based management information systems in corporations, now sometimes link with external commercial database services. A one-stop shop, a workstation that allows access to all types of internal and external, bibliographic, directory, and full-text information has long been a dream of many of us. That dream is beginning to come true. Take a look at Hoover from Sandpoint Corporation.

Don't be surprised if expert system software designers ask you to be their "expert." More designers have begun tapping the expertise of experienced database searchers and building it into end-user software. Don't be surprised if your role as online instructor continues to grow both in person and online. When people search in their offices or dorm rooms, you lose contact with them. Libraries need to rethink this contact and build it into locally loaded databases on the OPAC. Take a lesson from Telebase Systems' EasyNet gateway and build in an SOS feature that provides interactive online help as needed from a human librarian at the other end.

Right now momentum is building, but we may expect a backlash from users who want more personal contact again and from those people who get tired of it all or feel over whelmed and want you to do it all for them again. Intermediaries have more challenges ahead.

Changes in the Database Industry

The fifth and final change involves changes in the dynamics of the database industry that are already occurring and will continue to shape the industry's future. For twenty years online was a nice little niche industry. We knew the companies involved and they knew us. Nobody made much money, but most people didn't lose much either. In the last few years this situation has begun to change as you have probably noticed.

Major companies have become interested in the electronic information industry with buy-outs and mergers common events. When such events occur, a favorite online system may change direction or tighten up by eliminating low-profit databases. (BRS and ORBIT are doing this now.) With more emphasis on profits, loyalty to professional searchers may diminish. Market fall-out occurs, and some favorite little databases may disappear.

Many database producers dislike being too dependent on large online services. Currently, the biggest trend in the industry is tape loading. High-volume users circumvent online services or CD-ROM vendors and lease databases .directly from the database producer for loading on local systems.

The big up-front investment makes this approach economical for only a few databases. Unless you are Folger's, you don't want to commit tens of thousands of dollars per year and a major project effort to bring coffeeline in house.

So, even though the overall number of databases will continue to grow, the number of dead databases each year will also increase.

Challenges and Opportunities

But let me conclude on a more positive note.

All the changes that are here now and coming soon mean not only challenges for the searcher, but also opportunities and choices -- more choices in ways to access databases, more choices in pricing, more choices in hardware. The challenges come in selecting the most appropriate medium of distribution for your users, choosing the best databases (not just the cheapest), and devising strategies that work best for increasingly large and complex databases and database arrays.

New opportunities create new challenges -- the opportunities to help software developers improve software for all levels of users, to let online services know what types of databases matter to the larger information community, to help database producers come up with better ways to improve the quality filter and precision problems that happen with huge databases , and, finally, the opportunity and challenge to keep up with a dynamic industry and help shape its future with your considerable experience and your unique view-points.

I first thought about these categories for a talk I presented in August 1991 at the New Zealand Computer Conference. In the following year, many more developments have occurred in each category -- emphasizing the rapid pace of the changes taking place and reinforcing my belief in these five major forces. A revised presentation appeared at the Computers in Libraries, Canada 1992 meeting in Toronto, Canada, October 1992, in TRACK 6: Online Information Industry: Systems, Services, and Practice, Part I, Bonnie Burwell, Convener.

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