BIDS: The Revolution in Database Access

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Introduction

Although the concept of information technology in libraries and access to information resources from libraries is becoming firmly established particularly in areas like OPACs (Online Public Access Catalogues), automated management systems, stand alone and networked CD – ROMs and online searching there is a current development which is likely to have a profound effect on the role of libraries and information centres and their personnel and on the status of the end-user.

This development is BIDS, the Bath (University Computing Services) ISI (Institute for Scientific Information) Data Service, which is a networked data service to over 50 academic sites, available over JANET (The Joint Academic Network) and comprising a range of ISI databases leased on behalf of the academic community by CHEST (Combined Higher Education Software Team).

This is the first time that virtually unlimited end-user access to a nationwide dataset has been established anywhere in the world. Technologically the concept is relatively simple but the breadth of the development is likely to induce a paradigm shift in the role of the library/information centre and librarian/information professionals and the nature of dataset access.

It re-emphasises the primacy of information technology within a modern library and information service, the efficacy of inter-disciplinary cooperaton in effecting the establishment of such services, the wonderful potential of JANET and the emerging primacy of the end-user.

Access to Bibliographical Databases

The concept of access to databases is well established within library and information settings. Their original format consisted of printed abstracts and indexes which are still extremely important. From the mid 1970s the development of computer technology allowed the establishment of computerised databases which are now extremely diverse and popular. In 1977 there were 15 identified online search services available including BRS, Lockheed Dialog, OCLC and SDC (now ORBIT). The development of these services has grown dramatically since to the extent that there are now 4869 online databases, 2120 database producers, 718 online services and 99 gateways (1).

The popularity of locally available databases is a fairly recent development and has been due in large part to the introduction of CD-ROM products. These became a viable and popular medium between 1985 and 1987. The capacity of a CD-ROM disc is currently 550 Mb but production of higher density discs is being pursued vigorously. The portable database products include 409 on CD-ROM, 66 on diskette and 180 on magnetic tape (2). Although there is still a large gap between the number of these databases and the number (cf above) of remotely-located ones (the classic online databases) this gap is narrowing quickly and will continue to do so. The attraction of portable products is that they are physically tangible, easily

accessible and easy to use although they are limited technologically and quite expensive. Despite these drawbacks CD-ROM products have prompted both information professionals and end-users to look for more access to more databases.

Local area networks (LAN) of CD-ROMs are popular but the expense of substantial networking of CD-ROMs is not really worth it. Access to locally mounted large bibliographical databases on mainframes (magnetic tape products) has never been popular especially within the academic community in Britain although some commercial organisations are enthusiastic advocates of such systems. Certainly this form of database access is more popular within the academic community in the US. The lack of custom-built menu-driven interfaces is one of the main reasons for such lack of interest but this should not have been the limiting factor. This is also true of the online products where cost and unfriendly interfaces are the main reasons for the restriction of access. BRS were one of the first commercial vendors to introduce a reasonable menu-driven interface although it is still far from ideal for inexperienced end-users. For that reason, in the current BIDS project, there was a lot of thought and work put into the creation of a user interface that would allow a complete computer-novice end-user to access the ISI databases and to effect meaningful searches.

There are a number of bibliographical databases in existence in specialised subjects such as computer science and artificial intelligence which are available to the academic community in Britain and these are usually maintained by local professionals as a service to the academic community. BIBLIO (The Birbeck Computer Literature Database) indexes a range of periodicals in the field of computer science and related topics and is accessible over JANET. The Durham-Rutherford HEP (High Energy Physics) Data Archive available over JANET includes the SLAC (Stanford Linear Accelerator Centre)

preprint/anti-preprint database as well as a citations database.

A mailserver has been developed at the Computer Science Dept. of University of Saarbruecken in Germany which allows access to a large database of bibliographical data of articles in the field of artificial intelligence. This mailserver is a by-product of the LIDO bibliographical information system and allows searching via electronic mail by author(s), title and year of publication.

In America and Canada some universities have negotiated with commercial hosts and vendors to allow access to database products for their students and staff at reduced or zero rates for the end-user. Such schemes are operated by Mead Data who made LEXIS available to law students over ten years ago, by BRS who offer their 'BRS after dark' scheme (which is the one with the most appealing name at least) and by DIALOG. The Lippincott Library of the Wharton School, University of Pennsylvania is one of many campuses where such schemes operate (3). See Dempsey (4) for further examples.

Others have obtained products on magnetic tape and mounted these locally. Rensslear Polytechnic Institute in NY mounts the IEEE (The Institute of Electrical and Electronics Engineers, Inc) file. Five years of MEDLINE and Current Contents are accessible to the nine ·University of California campuses. The Georgia Institute of Technology mounts INSPEC locally. Carnegie Mellon University has a range of IAC (Information Access Company) databases as well as a section of the INSPEC database.

In Europe the commercial host STN has offered free access to Chemical Abstracts to 14 institutions in Germany. STN also offers access to Chemical Abstracts on very favourable terms to academic centres in Britain who subscribe to the printed Chemical Abstracts.

In Illinois there is access to the CARL (Colorado Alliance of Research Libraries)

Uncover database which contains over a million articles from 10,000 unique serial titles with two or three thousand added daily. There is access to 38 member libraries and to the headquarters of each of the state's 18 regional multitype library systems through the ILLINET Online network. There is also access via 11 public dial access nodes that are maintained across Illinois.

Later this year they hope to have ERIC (Educational Resources Information Centre) databases (over 700,000 records) available across ILLINET Online network using BRS Search software.

Prime Movers Behind the BIDS Project

Among library professionals in Britain there were a few notable exceptions to the general inertia in regard to the provision of end-user access to large bibliographical databases. These included Derek Law of King's College London, Peter Stone of University of Sussex and John Lambe of the University of Bath. They were inspired for example by the success of access to large datasets over LANs in American Universities, as outlined above, and the realisation that end-user access is the next major development in information resource provision. The fact that the basic electronic framework, JANET, necessary for the effective implementation of such a service had been in place for some years was also a major motivating factor. Recent direct access to the commercial bibliographical database hosts DIMDI and STN (and DATASTAR in the near future) across JANET is another example of how this network is, and is going to be, a key element in the future of database access.

JANET *

JANET was established in 1984 by the Computer Board (for Universities and Research Councils), the Science and Engineering Research Council (SERC) and

* see refs 5,6 and 7

the Natural Environment Research Council (NERC). Its establishment allowed the coalescing of ten existing networks into one joint network. JANET is a private network, funded directly from the Computer Board and is administered by the Network Executive from the Rutherford Laboratory (near Oxford). In April this year the Computer Board was reconstituted as the Information Sub-Committee of the UFC (Universities Funding Council) with more direct responsibilities for libraries and their funding. For the purpose of this paper this body will be referred to as the Board.

The aim of the network is to facilitate access to academic computing resources across Britain in the interest of teaching and research. As well as encouraging this by technical means it also invokes the philosophy of effective 'free' access for end-users.

The trunk network comprises four central switches at Rutherford Laboratory, London, Manchester, and Daresbury Laboratory (near Warrington) and four Packet Switching Exchanges at Bath, Belfast, Cambridge and Edinburgh. Each academic or research site LAN for example is then connected to the nearest switch so that JANET constitutes a network of networks. There are currently 150 sites, representing over 30 operating systems and supporting over 20,000 terminals.

Cambridge University Site for example has 850 direct terminal links to the CUDN (Cambridge University Data Network), 30-40 connections of a suitable speed for PADS (one X.25 port for example has 7 PADS), 50-60 PADS with up to 16 terminals per pad and 15 Ethernet PADs with nearly 200 terminal ports. The Macintoshes on the PWFs (Personal Workstation Facilities) are currently connected via CUDN and PAD terminal lines. In addition there are over 100 machines on MEDLAN at the clinical school as well as quite a number of large multi-user departmental machines connected to the network (8).

JANET Facilities

The three types of service of interest to library and information professionals available over JANET are:
    Electronic mail
    Connection to a remote computer
    File Transfer

JANET and Electronic Mail

Electronic mail allows the transmission of messages within the network and to the US and Europe through gateways. It is fast, does not depend on receiver presence, allows detailed response, is economical, can be used for one on one communication or for multiple transmissions which forms the basis of e-mailing lists. Text files may also be easily transmitted by this means.

Many library routines which are currently administered by mail, telephone and direct human interaction could be replaced by e-mail provided there was a good distribution of terminals. These include ILL requests, reference questions and book requests and reserves.

The impact of e-mailing lists is hard to quantify but it certainly seems to be significant. In relation to the initiation of the BIDS deal and later at the front-end menu design stage for instance the e-mail facility proved of great value in correspondence between the various groupings involved in these deliberations.

In the current project e-mailing lists are being used as a forum for discussion by users of the data service and by the various working groups involved in the design and implementation of BIDS. The e-mail facility is also being used in the downloading of results of end-user online searches.

JANET and Connection to a Remote Computer

Connection to a remote computer on JANET is possible from any network connected terminal. It allows interactive

dialogue which is an extremely powerful information technology tool, particularly for libraries.

The services available over JANET in this category include:

OPACS including those on software in NISSPAC.

Reference Databases: BIBLIO, BLAISE-LINE, OCLC, CURL, SLS, BIDS; STN & DIMDI via IXI; DIALOG, ORBIT etc via PSS and IPSS.

Source Databases: DATALIB, ESRC Archive, NPDSA, Oxford Text Archive, UMRCC (inc. Cambridge Crystallographic Data).

Systems for Information Exchange and Delivery
Campus Wide Information Systems (CWIS)
    Bulletin Boards-JANET. NEWS,
    NISSBB, HUMBUL, BUBL.

JANET and File Transfer

File transfer involves the transfer of data files from one computer to another across a communication network such as JANET. Files can be taken from a remote machine or pushed to a remote machine. Within the library community the CURL project is one famous example of file transfer where catalogue records may be added to, and abstracted from, the large database of such records held in the host computer at Manchester. Other examples include NPDSA, OCLC, SLS, and BLAISE-RECORDS. Local file transfer allows files to be transferred to and from your own microcomputer from and to the local mainframe or minicomputer. The use of software such as KERMITS and Rainbow in conjunction with these transfers is well known.

JANET and Libraries

The potential of JANET within library environments may be seen from the services listed above and its utility has been

recognised for some time but the BIDS project is an ideal one for expanding its role and accessibility within the academic community and perhaps beyond.

Project JUPITER was established in February 1989 and it exists to promote JANET to academic libraries in Britain. It owes its funding to the Universities Funding Council and is based in Glasgow University Library. JUPITER stands for JUGL Project for Information Transfer, Education and Research.

JUGL is the JANET User Group for Libraries which was established in 1987 as a formal JANET Special Interest Group for Librarians. Through Project Jupiter they have published a Guide for Libraries on JANET which is a very concise and very readable publication and should be in every library (5). They have established the electronic bulletin board BUBL to complement other bulletin boards HUMBUL, NISSBB and JANET. NEWS available over the Network.

JUGL have also encouraged the use of electronic mail, in particular by launching a new series of mailing lists. They have utilised a mailserver set up by the JANET Networked Information Services Project (NISP) based at Newcastle called MAILBASE which is a mailing system to manage electronic mail distribution lists and files (5).

The EARN-RELAY provides a gateway (for mail and send only file transfer) between JANET and EARN, BITNET, NETNORTH and GULFNET which are technically a single network. The NSFNET-RELAY provides a gateway for mail, file transfer and interactive access between JANET and Internet in the USA.

Through the JANET gateway, JANET-PSS (Packet Switching Stream), databases such as SCISEARCH, COMPENDEX, INSPEC2, BIOSIS PREVIEWS and MEDLINE can be interrogated via a host such as DIALOG and this constitutes the basis of online searching services with which most library and information professionals are familiar.

UK Office for Library Networking (UKOLN)

The primary goal of UKOLN has been set as the production of a common strategy for the use of networking by the UK Library and information community (9). A common strategy is desirable in this area particularly since preliminary investigations indicate that UK libraries have adopted a variety of approaches to networking. A series of workshops are to be held this year culminating in a major conference in 1992 which will act as the final stage in the production of a recommended networking strategy. In the US the Coalition for Networked Information (CNI) was recently formed by the ARL (Association of Research Libraries) and EDUCOM (Interuniversity Communications Council) to influence the development of the National Research and Education Network. The primary aim of CNI is to effect a situation where 'researchers will use computers and networks to access a vast array of information resources (functioning as a) virtual library'. The BLRDD and UKOLN will be closely monitoring progress with CNI.

All these developments emphasise the growing importance of networks and trans-network links and will influence greatly how data is managed and accessed in the future.

CHEST (Combined Higher Education Software Team)

Another major catalyst in the realisation of this service was CHEST which was established in 1988 along with its sister organisation NISS (National Information on Software and Services) with funding from the Computer Board.

The primary aim of CHEST is to arrange and administer deals with suppliers of good quality commercial software on behalf of the academic community while NISS is concerned with the provision of a permanent information service for the

academic community over JANET and to act as a focal point for the exchange of information by means of easily-accessible online services. Towards this end it established a major Public Access Collection (NISSPAC) which is a collection of datasets of interests to members of the academic community who use computers. The installation of a user friendly Gateway to NISS services resulted in much higher use of the various services offered by NISS which demonstrates how a well designed interface encourages large scale end-user interrogation.

The value added to the community by CHEST activities is well over 60 million pounds sterling. An agreement with Manchester Computing Centre (MCC) was finalised to provide low cost documentation as well as being the centre for the distribution of software on behalf of CHEST.

The CHEST directory of software is now a well established source for both the academic community and commercial vendors who vie with each other for inclusion. A very notable development in 1990 was in the area of dataset acquisition. The first was the Bartholomews Digital Map data for Britain, Europe and the World and the other was the Bibliographical reference data from ISI. This latter deal forms the basis of the data service.

CHEST acknowledge the considerable assistance of the Computer Board who provided the financial backing for leasing the data and establishing the service, CHEST's own steering committee, SISC, (The Software and Information Services Committee), the IUSC (Inter-University Software Committee) which is a sub-committee of the IUCC (Inter-University Committee on Computing) and provides a lot of technical advice, evaluations and guidance to CHEST. Similar close ties with a matching sub-committee on hardware are expected as the significance of hardware acquisition becomes more important in the coming years.

In the formulation of the BIDS project they also acknowledge the considerable

input of librarians such as Peter Stone and Derek Law, the team of people at BUCS such as John Simmonds, the project manager, who was responsible for much of the design of the data handling and Terry Morrow who is a very effective front line person responsible for publicity and training and the very generous sponsorship of ICL who donated a processor, to the value of one million pounds sterling, which was needed to load the data and run the service.

The CHEST-ISI Deal

CHEST have signed an agreement with ISI to lease some of their databases on behalf of the higher education community in Britain for a period of 4 years from April 1991. This is a world first for nationwide, 'free' end-user access to significant database holdings. The impact of this event may not be realised for some time but it is likely to have a profound effect on the provision of information and of the role of information and library professionals in particular.

The databases concerned are the equivalents of the printed Science Citation Index (SCI), Social Science Citation Index (SSCI), Arts and Humanities Citation Index (A&HCI) and the Index to Scientific and Technical Proceedings (ISTP). Research Fronts from 1983 will also be available. In the initial service which was launched on Feb 18th, 1991 ISTP was not available but data for the other databases for the current year and 1990 were and these are updated weekly. By the summer it is hoped to have ISTP available back to 1982 and the others back to 1981. Cited-Author searching is not available as part of the initial service but this is also scheduled to be included by the late summer as are saved-searched sessions, an SDI (Selective Dissemination of Information) service, a KeyWords Plus facility and a research front searching facility by subject rather than number. A hundred simultaneous sessions are available at the moment and eventually this will be increased to 300.

Scisearch is the machine readable version of the printed Science Citation Index with additional coverage from the Current Contents series of publications. The journals which are indexed are carefully selected on the basis of several criteria, including citation analysis, resulting in the inclusion of 90 percent of the world's significant scientific and technical literature. Second, citation indexing is provided which allows retrieval of newly published articles through the subject relationships established by the author's reference to prior articles. It contains bibliographical references of , articles, reports, papers, discussion, editorials, notes, reviews and other items from over 4,500 journals in the field of life sciences, physical sciences, chemistry, earth sciences, agriculture, biology, environmental sciences, biomedicine, clinical medicine, engineering, technology and applied sciences. Each year contains about 700,000 articles.

Social Scisearch is the machine readable version of the printed Social Science Citation Index. It provides bibliographical references to significant items from over 1,500 journals in the behavioural and social sciences. Selected items from over 4,500 journals in the natural, physical and biomedical sciences are also included to provide multidisciplinary coverage. Subject coverage includes anthropology, archaeology, area studies, communications, community health, criminology and penology, ethnic group studies, demographics, economics, education, geography, geriatrics and gerontology, history, information and library science, international relations, law, linguistics, management, marketing, nursing, philosophy, political science, psychology, psychiatry, sociology, statistics, substance abuse and urban planning and development. This amounts to approximately 130,000 articles per year.

Arts and Humanities Search is the machine readable version of the printed Arts and Humanities Citation Index.

Subject coverage includes archaeology, architecture, arts, classics, dance, film, history, humanities, language and linguistics, literature, music, Asian studies, philosophy, poetry, radio, religion, television and theatre. Coverage includes articles, letters, editorials, notes, meeting abstracts, discussions, errata, music scores, poems, short stories, plays, excerpts from books, chronologies, bibliographies and filmographies plus review books, films, music and theatrical performances that are published in the journals indexed. It fully indexes over 1,300 journals worldwide. Selected items from over 5,700 science and social science journals are also included to provide multidisciplinary coverage. This amounts to approximately 115,000 articles per year.

ISTP Search is the machine readable version of the printed Index to Scientific and Technical Proceedings. Each year about 10,000 conferences are held and about three quarters of these are published. Of these, ISI index the most significant ones. In 1990, 4,186 published proceedings were indexed (2,540 as books and 1,646 in journals) corresponding to 158,382 papers, 449,904 authors and editors spanning 127 categories (from acoustics to zoology).

The concept of the Research Front Speciality (FRS) was developed by ISI as a method of identifying the core literature in areas of intense research activity and rapid advance. Through citation analysis, ISI's research staff has claimed to show that current articles can be organized into subject areas according to the clusters of older papers they cite in common and that current articles that cite these clusters correlate with active research specialities. A search by RFS would correspond therefore to a citation search on the papers in the core literature of the speciality so that you retrieve a bibliography of current articles which cite papers from the core literature.

The concept of citation indexing is the main selling point of most ISI products. Almost all authors of published items cite

previous publications in order to refute or support previous findings or perhaps to provide background bibliographical information for readers (usually scholars of some description). Through these citations an author seeks to identify subject relationships between the author's own paper and the cited documents. Other current papers by various authors that cite the same documents may have subject relationships with each other.

In 1990 KeyWords Plus was introduced for diskette products and Focus on: Global Change. The basis of this facility is that it supplies additional search terms extracted from the titles of articles cited by authors in their bibliographies and footnotes. So it is not based on key words in the title or the key words supplied by the author and in effect has no author input. The feature is based on an algorithm which identifies recurring words or phrases appearing in the paper's list of cited references.

The service is being run from Bath University Computing Services and is running on an ICL Series 39, Level 80 processor with 3 nodes. ICL donated the third node (processor) and it is expected to exploit a unique feature of ICL equipment in the implementation of the full service. The data occupy 80 Gigabytes of memory and are mounted under STATUS free text retrieval software running under VME with a menu driven interface which sits on top.

The user interface is cleverly written and the printed documentation is quite clear. A local help screen is available giving site contacts and other local news. Online documentation and help facilities are to be upgraded with the release of the new version. Funding has been provided by the Computer Board to design a set of instructional material which Terry Morrow has undertaken.

Searching is by word(s) in the title, author, institution, journal, Research Front Number, cited patent or combinations of these. Output can include all these fields plus cited references as determined by the

end-user. Searching is done a year at a time and a database at a time but this is a minor drawback especially when the search strategies are saved and can be transferred to other years and across databases.

The input from the computing services team in BATH in the launch of the initial service (Feb 18th) was tremendous. They had to write the software to manipulate the data, design the user interface, set up a help desk, hold demonstrations for the academic community, administer the distribution of usernames and passwords, liaise with ISI, CHEST and The Computer Board, negotiate with ICL for the delivery of the processor needed to run and mount the data and perform the myriad of other technical and administrative duties involved in the launch of such a comprehensive service. Any queries about the service should be on how they were able to achieve so much in the short time they had to launch the live service.

The Bath ISI Data Service (BIDS) is at the disposal, for non-commercial use, of all students and staff at sites which have signed an agreement for the provision of the service.

The funding within each site for the service which is £6,000 + VAT per year per site has been dependent on local circumstances. Some sites have paid for it from central resources, some from libraries, some from computing services or ·computing departments and some from departmental contributions. Participation in this major development in information provision within the academic and research environment of University of Cambridge was considered essential and it was sponsored in full for this site by The University Librarian, West Road, Cambridge.

Within many sites there has been extensive cooperation between computing centres and libraries in the establishment of the service. This was certainly true of Cambridge where the committment and technical expertise of Computer Services

and the Computer Laboratory were invaluable in bringing the service to Cambridge. Close ties were in place for some time already because there has been close cooperation with the automation section of the UL and the BIDS project is likely to be the first of many major joint ventures.

History of the Project

There was interest for some years in mounting major databases such as SCISEARCH, MEDLINE, BIOSIS-PREVIEWS, INSPEC and COMPENDEX on a campus wide or inter campus wide basis within Britain. This is in contrast to commercial companies which tend to be enthusiastic advocates of such locally mounted databases both in Britain and abroad. In the US academic community there is more support for intra and inter-campus bibliographical database access.

Approximately three years ago Derek Law at the University of London was actively investigating the possibility of establishing an intra-University of London based scheme accessing Science Citation Index. At approximately the same time The Radcliffe Science Library in Oxford were considering the networking of similar datasets throughout the University. The Librarian at the University of Bath, John Lambe was also considering an initiative to purchase the tapes for the South West region and needed five participating institutions to realise this. He consulted Derek Law, Peter Stone and others and as a result, a public meeting was called in Bath to discuss dataset provision and to set up a consortium of sites to fund a regional service. During the course of the meeting, Mike Johnson, the director of CHEST, had the idea of a nationwide service rather than a regional one.

A range of library and other professionals also began informal discussions to devise a policy in relation to dataset provision and networking.

In an effort to pull together the varied strands of separate initiatives to produce a united focus for a national initiative on dataset acquisition the SCONUL (Standing Council of National and University Libraries) Advisory Committee on Automation Policy invited Mike Johnson to a meeting to discuss such developments.

As a result CHEST initiated discussions with ISI in Britain (Spring 1989) to lease a range of their databases on behalf of the academic community. After successful initial discussions with ISI in Britain doubts began to be expressed by the parent company in the US but after further discussions with the parent company in the US these misgivings were allayed (Oct 1989).

Two key factors were regarded as essential in both the selection of the ISI databases and the way the dataservice was offered. The first factor was that the ISI databases span a very broad range of discipline interests and the second was that the aim of the service is to enable direct end-user access with little or no help from intermediaries.

CHEST then approached its funding body, the Computer Board, to recommend adoption of this project. A letter sent to the academic community outlining the proposed project was greeted enthusiastically with about 30 sites replying positively and this response was presented to the Computer Board as part of the submission.

The Computer Board provided funding and the Software and Information Services Committee (SISC) established the NDTG (National Datasets Task Group) to evolve a policy for this and further dataset initiatives. Part of their remit was to assess the future needs for national database and dataset services, funding, potential use by Polytechnics, Further Education Colleges and Schools and to review access and delivery mechanisms.

They agreed that the Board continue to spend a lot of money on data for the following three years (at least), that there should be a review of the options for service delivery, that the ISI service be monitored,

that the group or a successor be used to continue examining the issues and that sites be solicited about bidding to be hosts for other dataset deals.

All sites participating in the CHEST-ISI deal are paying a fee per year. This is likely to be the norm for further dataset provision especially those regarded as mainstream. For more specialised datasets participating sites are likely to have to pay more, basically because there are likely to be fewer of those. Personally I feel that datasets such as BIOSIS, MEDLINE, INSPEC and COMPENDEX should be regarded as mainstream.

CHEST drafted the basic specifications for the required data service which was refined by the NDTG and issued to a number of sites who had expressed interest in providing the service and Bath University Computing Services were offered the contract (late Spring 1990) to provide the service for CHEST to the academic community. CHEST handles the financial and contractual issues but the data service is run independently with its own steering committee to advise it on how that service is best provided.

Database Management and Access

Database management systems are used in a variety of applications from manipulation and management of numeric data at one end of the spectrum to free text at the other. The best known software packages for data management are those devoted to numerical and tabulated data such as dBase, Oracle and Paradox while at the other extreme software for the management of barely structured text include Dayflo and ZyIndex.

Text Retrieval

The early TR packages were based on mainframe computers and were usually written in-house and reflected the organisations particular TR needs. The development of micro-based systems has

increased tremendously since the mid 1970s allowing access by small organisations and research teams to TR packages of significant power. The management of structured text information is now a well established discipline within academic and commercial information professionals. Many of the software packages were developed by the producers of online databases such as BRS/SEARCH. Other notable packages include Assassin, CAIRS, Pro-Cite, Headfast and STATUS. There are currently over a hundred text retrieval packages available (10).

Bath University Computing Services have used STATUS in the BIDS project. The version they use under the VME operating system (which is the operating system of ICL computers) is very different from the Harwell version.

End-User Searching

The access to the ISI databases over JANET promotes the primacy of the end-user. Even computer novices experience little difficulty in accessing the databases, negotiating the menus and effecting meaningful searches.

The most recent trend in end-user on-line searching is likely to have a major impact on the role of the information professional especially within the academic environment. The traditional role of the librarian as the custodian of knowledge which he sometimes reluctantly imparts to the masses needs to change to accommodate the needs of the end-user.

The recent debate over the impact of and the appropriateness of CD-ROM technology (11) may be obscuring a more fundamental development which is that access by end-users to the databases on these machines has whetted their appetite for more of the same. They are likely to be more demanding of mediated on-line searching. The CHEST ISI deal is going to increase the confidence and the demands of the end-user for other databases, for text retrieval software and for increasingly

sophisticated search facilities through both expert and novice menu driven interfaces.

The relative inaccessibility to online databases has been mostly due to the cost of these services which meant the mediated searches were the only viable solution unless agreements with the commercial vendors could be formulated to allow 'free' end-user searching on payment of an annual fee. Some librarians and information professionals fear that they are likely to become de-professionalised as end-user searching becomes more widespread.

Although 'disintermediation' may become a reality de-professionalisation is not inevitable. It will require a different focus but the increased numbers of end-user searchers will probably entail collateral support in training, guidance, ancillary services such as ILL requests and reference enquiries (12, 13 & References therein), dealing with vendors and investigating new products and a fall in mediated online searching (13 and references therein). In addition end-user searching is not for everybody; controlled vocabularly is anathema to many, inter-database searching is not likely to become a reality for some time and will need the intervention of competent intermediaries. (14)

Acknowledgements

References

1.   *Directory of Online Databases.* 1991. 12 (1 & 2) NY.

2.   *Directory of Portable Databases.* 1990 1 (1) Cuadra/Elsevier. NY.

3.   Bell, S. J. Making end-users: does student online searching make a difference? *ONLINE* 1989 13 (6): 37-42.

4.   Dempsey, L. *Libraries, networks and OSI: A review with a report on North American Developments.* Bath: UKOLN, 1991.

5.   *Guide for Libraries on JANET.* Glasgow: Project Jupiter, 1990.

6.   Stone, P. *JANET: a report on its use for libraries.* (British Library Research Paper no. 77). London: British Library Research & Development Department, 1990.

7.   Buxton A. *JANET: The Joint Academic Network.* LIBS. 1989 (11).

8.   Stratford, R. Private communication May 1991.

9.   Smith, J. The UK Office for Library Networking: primary goal and related activities 1991-92. *Libr Ass Rec* 1991; 93 (4): 214-215, 217.

10.   *Text retrieval: a directory of software.* Ed Robert Kimberley. 3rd edition. Aldershot: ISI. 1990.

11.   McSean T., Law D. Is CD-ROM a transient technology? *Library Association Record.* 1990; 92 (11): 837-840.

12.   Salisbury L., Toombs H. S., Kelly E. A., Crawford S. The effect of end-user searching on reference services: experience with MEDLINE and Current Contents. *Bull Med Libr Assoc* 1990; 78(2): 188-191.

13.   Bellamy L. M., Silver J. T., Givens M. K. Remote access to electronic library services throughout a campus network. *Bull Med Lib Assoc* 1991;79(1):53-62.

14.   Peaffenberger, B. *Democratizing Information: Online Databases and the rise of end-user searching.* Boston: G. K. Hall, 1990.