The development of the BRANZ computerised information service

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ABSTRACT

BRANZ has purchased a system based on a VAX 11/750 computer to allow dissemination of its information resource to the New Zealand building industry. Nationwide access will be available via the packet switching system. Within the information system will be a group of data bases controlled by CAIRS information retrieval software, including the library data base of 20,000 items. The long term goal is that a comprehensive and integrated information resource be available to the building industry. Towards this end other information services are being developed. These include knowledge based systems and other software for presenting research and other information, and facilitating the use of building codes. Servicing external users will involve a program of user education, and of marketing both the information resource and products from the resource.

Le développement du service informatique BRANZ

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MOTS-CLES

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SOMMAIRE

BRANZ a acquis un système basé sur un ordinateur VAX 11/750 pour permettre la diffusion de son fonds d'informations à l'industrie néo-zélandaise du bâtiment. L'ensemble du territoire y aura accès par l'intermédiaire du réseau packet switching. Le système informatique comprendra un ensemble de bases de donnees commandees par des logiciels CAIRS de depistage de l'information, ainsi qu'une bibliothaque de bases de données comportant 20 000 articles. L'objectif à long terme consiste à mettre à la disposition de l'industrie du bâtiment un fonds d'informations complètes et intégrées. A cette fin, d'autres services informatiques sont en cours d'étude. Ceux-ci comprennent l'utilisation de systèmes spécialisés et autres logiciels pour assurer la présentation de recherches et autres informations, et faciliter la mise en oeuvre de directives relatives à la construction. La prestation de services aux utilisateurs externes impliquera un programme de formation de l'utilisateur, ainsi qu'une stratégie de commercialisation du fonds d'informations et des réalisations qui en découlent.

INTRODUCTION

The Building Research Association of New Zealand (BRANZ) sees the identification and satisfaction of the technological information needs of the building industry as its major role.

Currently BRANZ information is made available in many ways: through publications such as Information Bulletins, Appraisal Certificates, Research and Technical Papers; through a nationwide advisory service, and through the BRANZ Library collection, which is available to the industry. BRANZ staff also give seminars to the industry, and provide input to codes and standards.

The volume and complexity of information is increasing. In a study into the use of information in decision making in the New Zealand building industry, Patterson and Farrant (1) identified the need for a co-ordinated information system, an important component being the system's completeness.

Computers are now widely used within the building industry. Telecommunications, transfer media and protocols are developing such that information can be readily distributed between computers. Computers therefore have an integral part to play in making the above and other information readily accessible to the industry. Information will have to be presented in a way in which it is easily and rapidly accessed and used via computers. Failure to utilise these developments would seriously jeopardise the ability of BRANZ to fulfil its role.

There are two main options for making this information available, either through a centralized system, accessed via telecommunications networks; or by packaging for use by the industry's own computers. Both options are valid depending on the nature of the information and the potential users.

In 1984 it was decided to computerise the Association's Library Catalogue, and the opportunity was taken to purchase computer hardware and information retrieval software with sufficient power to enable the development of an information resource greater than the library holdings alone.

This paper describes the BRANZ system tentatively called BRANZ-INFO, reviews the type of information to be computerised, and provides a basis for discussion of the future development of this information resource. Some of the ideas first presented by Whitney and Dechapunya (2) are extended.

COMPUTING FACILITIES

The information service is being built on a VAX 11/750 minicomputer running a VMS operating system, with 4Mb of memory. On-line storage is provided by a 454Mb fixed Winchester disk drive, with tape drive for media transfer and maintenance.

A link with the public packet switching network (PPSN) at a speed of 9600 baud has been set up. It is anticipated that the system will allow for up to 10 concurrent outside users.

INFORMATION RETRIEVAL SOFTWARE

CAIRS (Computer Assisted Information Retrieval System) is a text information retrieval system which enables the searching of an index of keywords taken from the records comprising the data base. The British Food Research Association developed and now market CAIRS extensively.(3). It was chosen for the ease with which it can be managed by library staff, and for its ability to provide an on-line thesaurus. The thesaurus helps in developing search strategies by establishing relationships between synonyms denoting the same concept, broader and narrower concepts etc.

LIBRARY DATA BASE

The library data base is based on the existing optical coincidence information retrieval system. This contains references and abstracts for books, reports, trade literature, standards, and individual periodical articles indexed by the library since 1975, amounting to about 20,000 items. Material from the pre-1975 card catalogue is being entered selectively. Retrospective input should be complete by late 1986. Current cataloguing and indexing is being added directly to the data base. At present the library data base is used for on-line searching by library staff, and increasingly by staff within BRANZ. The Library's list of selected acquisitions, Selected Building References, which is seen by approximately 500 people in the building industry, is being produced from the data base, resulting in a great saving in effort compared with its manually produced version.

THE MARKET

The following target groups have been identified as having a likely need for the services to be offered: consulting engineers in the civil, structural and mechanical disciplines; architects; quantity surveyors; construction management consultants; building contractors (especially office based personnel such as estimators, planners and contract managers); developers (especially in the design and build field); manufacturers of building products; central government departments; local government engineering and building inspectors; and universities and other tertiary educational institutes. Libraries, particularly where they exist within the above organisations, are initially expected to play an important role, accessing information on behalf of the target group.

The potential user profile within and between groups is likely to be quite diverse. From present contact with the industry it is known that some groups already have extensive computer systems and access to computerised bibliographic data bases, whilst others have never had contact with, and may not know of the existence of, such services. Also, records show that parts of the industry use BRANZ's existing information services extensively whilst others rarely if ever make use of them.

The Building Industry has an immense appetite for information which is:
o   easily and quickly available from a minimum number of sources
o   accurate and complete
o   up to date
o   endorsed by a sourced authority
o   available at reasonable cost

The BRANZ computerised information service should attempt to satisfy these requirements.

INTRODUCING BRANZ-INFO

Initially BRANZ-INFO will be the BRANZ library data base. It is intended to provide a menu interface which will enable effective searching with a minimum of training and practice.

Users of the BRANZ library data base will retrieve references and abstracts only. While these may sometimes contain useful information, there will be a demand for faster delivery of the actual documents. The use of electronic mail in the VAX will aid this, and as facsimile transmission equipment becomes more widespread, BRANZ may use this to deliver documents to the user.

It will be possible to provide users with the latest material added to the data base on a specific subject, by running suitable searches, tailored to a specific user, at regular intervals.

Electronic mail will provide a means for users to refer enquiries to BRANZ when the information they seek is not available through the computer system.

Patterson and Farrant(1) found that information coming into organisations is scrutinized by senior personnel before it is widely applied. Therefore these 'gatekeepers' are the most important people to convince of the worth of the BRANZ-INFO system.

Contact with such 'gatekeepers' is one of the functions of the BRANZ advisory field staff. Technical queries are often raised during these meetings. A very powerful way of demonstrating the worth of the new service will be to answer queries using the PPSN and the BRANZ-INFO system from the clients office, using a portable PC and acoustic coupler or modem.

Demonstrations will also be mounted at trade and professional institution meetings, with the aim of showing the use of the system to assist in solving real problems. With the close contact this method gives, a quick indication should emerge as to what further services are required by users. Such users will commonly be professional colleagues which should help in the formation of informal user groups.

Some training will be needed and this will probably be conducted at BRANZ headquarters, and in other major population centres of the country if there is a demand. News about the system should be available on-line but also a section in BRANZ's newsletter, BUILD, could inform users on such matters as: details of what hardware people are using to access the system, contacts for terminal emulation programmes which may be in the public domain, and news of BRANZ-INFO developments. The advantage in using BUILD is that the present membership covers a significant part of the target group. Computer users who receive it will become more aware of BRANZ's other activities.

POSSIBLE FUTURE DEVELOPMENTS

At present BRANZ has committed itself to providing the library data base on-line through BRANZ-INFO. In this section possible future developments are outlined.

It is possible that the most appropriate way to distribute information to the occasional user in the New Zealand building industry will be by videotex. Information could be presented directly as videotex pages and with the videotex software acting as a gateway to other services on BRANZ-INFO.

The importance of a coordinated information service has already been stressed. The industry clearly prefers to go to only one place for information. In this context the possibility of the networking of different data base host computers is a significant development, with the possibility of BRANZ-INFO linking users to other on-line information services.

The content of the present library data base will broaden as it becomes easily accessible to outside users, probably offering additional coverage of material of interest to the New Zealand building industry as a whole, rather than to BRANZ's specific research interests. It may include cover to cover indexing of important New Zealand building periodicals. BRANZ may wish to combine with other libraries working in the subject area, e.g. the New Zealand Concrete Research Association, and so provide a combined library data base.

A survey of building technology research activity in New Zealand was carried out by BRANZ and published in 1984 as the Directory of Building-related Research Projects in New Zealand (4). This is in a machine readable form and could be relatively easily mounted as a data base using the CAIRS software.

Other data bases may include: the full text of such BRANZ publications as Building Information Bulletins and Appraisal Certificates; a product data base (perhaps in cooperation with other groups who are already providing this information on paper or microfilm); the text of codes of practice, regulations and standards; and incident reports after the model of the University of Maryland's AEPIC data base (5).

If the promise of video discs to store large quantities of data is realised, BRANZ data bases may be distributed in this fashion for use on the industry's own PCs.

BRANZINFO could also be used to provide access to application software such as LINBEAM, which has been developed from a BRANZ design guide (Technical Recommendation No. 2) 'Lintels and beams supporting light timber frame construction' (6).

LINBEAM has been found to be easier to use than the original document. This is because of the way that the user is led through the design procedure. At each stage of the calculations the program asks the user to make a choice between the valid options which are listed. Output from the program can be printed in a standard format suitable for submission to a Local Authority building inspectorate. Where output from application software has this kind of quasilegal standing, it is desirable that it runs on BRANZ's own computer, rather than being distributed for use in the user's own machines.

Other possibilities for application software are: the structural design of reinforced concrete, steel and timber beams and columns; design codes; and energy analysis. A possible development in this area is to make available spreadsheet templates, which are in fact programs, into which the user enters data for the particular problem. This is not as easily used as a specially developed program but for experienced users it may be a quick way to disseminate information of the appropriate type.

BRANZ has now started to investigate how knowledge-based systems can be used to assist in the application of research and technical information by the building industry. Initial investigation suggested that the coupling of knowledge bases and inference engines can assist in providing ready access to building technology information, such as that in building codes, diagnostic tools and materials selectors.

Two knowledge bases are now being written for BRANZ as feasibility studies:
o A diagnostic system for moisture in houses.
o An advisory system for a fire safety code.

Other knowledge bases in the planning stages are:
o An advisory system for sealant selection.
o An advisory system for building energy management.

At present, the knowledge bases use text to communicate with the user. At a later stage graphics and sound may be used.

These knowledge bases could be made available on BRANZ-INFO. Later, the systems could be packaged and made available for industry PCs.

CONCLUSIONS

BRANZ has the facilities and commitment to develop a computerised information service. In the first stage the most recent decade of specialised building information in the Library data base will be able to be searched by computer by late 1986.

BRANZ is aiming to provide an integrated information system for the New Zealand Building Industry, with ease of use being a very high priority.

Other data bases, such as the full text of some BRANZ documents may become available on-line.

Specific building industry application software and knowledge-bases are being developed which may be available through the system.

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