Article

CSIR's new integrated electronic library information system

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Abstract: *The CSIR has developed a CDROM-based electronic library information system which provides the ability to reproduce and search for published information and colour brochures on the computer screen. The system integrates this information with online updating, e-mail and offline user information manipulation and storage.*

1. Introduction

Four years ago the CSIR had a vision for the development of what was termed an electronic library: the ability to search for and reproduce the printed form in full colour and full size on a microcomputer screen. Initially the intention was to develop this and to introduce a commercial service around it for the Building and Construction industry; then to migrate this to other industry sectors.

A specification for such a system was produced and a system called QUANTARC was found in the UK which met the major criteria. South African documents and product brochures were scanned onto CDROM and various directories were developed prior to it being introduced into the South African market. Over the next twelve months, experience suggested that a more versatile and integrative system was necessary. The idea for the CSIR Integrated Electronic Library System was born. A specification was drawn up and work commenced on software development in October 1993.

2. Objectives of the new system

The objectives for the new system were:

- hardware independence;
- MS Windows-based;
- generic in concept — could be applied to other industry sectors/applications;
- should integrate with third-party CDROM and online services;
- should integrate with third-party application software;
- should integrate with Worldnet Africa;
- user-friendly, embracing the 'plug and play' concept;
- enhanced page attachment features to be incorporated;
- related linked document capability;
- should have integrated e-mail and fax capability;
- LAN/multi-user compatible;
- extended 'downline' updating capability, i.e. updating databases;
- incorporate document 'browse' facilities;
- should incorporate additional databases;
- in-house database control, scanning and CDROM production.

3. Development

The development took the form of three software modules:

(1) The Application Module written for users;
(2) The Database Editing Module for in-house use;
(3) The document scanning and CDROM production module for in-house use.

These modules have now been completed and the new CSIR QUANTARC Application Module was launched at the South African Building Exhibition in August 1994.

4. Description/features

4. 1. Description — Application Module (Building and Construction)

This is known as CSIR QUANTARC (Integrated Electronic Library Information System). The system has been designed to provide rapid access to a comprehensive range of electronic information services and construction-related software (Figure 1).

Integration is achieved at two levels. At the first level, general information services such as CompuServe can be accessed; at the second level, information services aimed specifically at the building and construction industry can be accessed. The integrated system provides a brief description of featured services at both levels, and menus link to these services. A subscriber to CSIR QUANTARC can, in addition, subscribe to one or more of these other featured services.

Construction industry information which is provided at the second level of integration gives access to information directories on hard disk, and to over 50 000 pages of published prod-

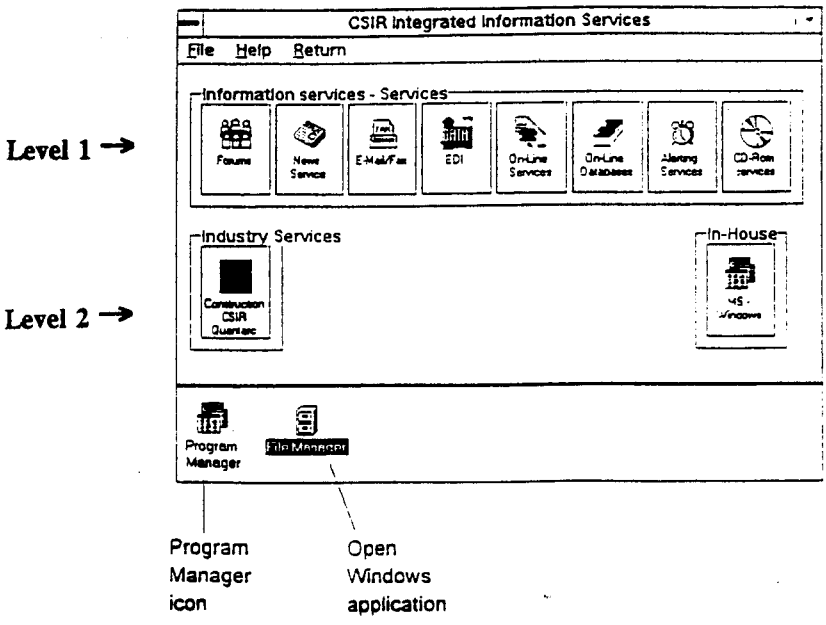

Figure 1: *The CSIR Integrated Electronic Library Information Services main menu screen.*

uct brochures and technical information which have been scanned and stored on CDROM discs. Facilities are provided for the regular downline updating of this information.

In addition to giving the professional specifier and buyer rapid access to product brochures and other published construction documents, the CSIR QUANTARC system enables immediate communication with suppliers via modem to their fax machines.

CSIR QUANTARC is more than just a system — it is a service. Regular updates ensure that the CSIR QUANTARC user obtains the latest information.

4. 2. The information

The information on CSIR QUANTARC includes:

- 1200 SABS Standards and Codes with keyword search;
- 1000 pages of technical documents;
- 800 colour product brochures — 25 000 pages;
- CAD product drawings — over 1000;
- Indexes to:
  - — 3500 supplier companies;
  - — 3500 trade names;
  - — 250 trade associations and professional institutes;
  - — 4000 professional firms — architects etc.

The following building and construction-related services and application software are accessible via the Building and Construction main menu screen.

4. 3. The services featured

- Electronic news services;
- Other CDROM services e.g. WATERLIT;
- Reference databases and electronic alerting services;
- On-line tender and cost information services.

4. 4. The application software featured

- Estimating;
- Computer-aided drafting;
- Design expert systems.

4. 5. Project file capability

Information accessed can be stored in electronic project files under predefined sections for future reference.

4. 6. Page pre-iewer and viewer

Once a document has been selected, a page previewer is invoked enabling the user to identify the index page of the document and to print selected pages to a dot matrix, laser or colour printer, or to fax out copies of pages. CAD drawing sets are displayed in a similar way (Figure 2).

When the user selects an individual page or CAD drawing for viewing, this is then brought on-screen from the relevant CD and can be zoomed and scrolled for clearer viewing.

4. 7. Page attachments

The system can attach specific icons to any page as follows:

Specification updates: information updates regarding a given brochure page.

User annotations: annotations made by the user.

DXF

CAD drawing files: drawings, mostly DXF images, associated with a brochure page; these can be saved under a file name. These are usually positioned over technical drawings on a page.

T

ASCII text: text of a document page, which can be copied to the clipboard.

Software attachments: software programs associated with the brochure; they normally appear on the cover page of the brochure and when the annotation is invoked the software is run, provided it is installed on the hard drive.

4. 8. Related documents

From any document the system has the capability of identifying 'related documents' of any type, e.g. from a product brochure or other related type, standards, technical installation guides or CAD drawings. The user can choose to link any of the related documents to the primary document for storing, viewing or printing.

5. Database editing module

This module ensures the integrity of database development and updating, and tracks the related document linkages. It has the capacity of automatically faxing information with a covering letter for database updating purposes via X400 'Information Providers'. The Editor also has the ability to download updates to documents and directories on the users' computer via the X400 national e-mail service.

6. Scanning editor module

This module enables the scanning of documents and the treatment of different areas of the pages with selected file compression systems, e.g. fractals for colour images. The system then combines these into one file for display, printing or faxing. Selected pages can have Optical Character Recognition applied to them to create ASCII or SGML file formats.

7. Worldnet Africa

Worldnet Africa is the CSIR's new Internet/World Wide Web-based national online integrated information service. The electronic library information system will complement this service by providing offline information manipulation and the full-page full-colour capability that can only be delivered at present via CDROM.

8. Conclusion

This new integrated electronic library information system is set to greatly improve the processes used to access and manipulate external information by architects, engineers or businesses in general. It is set to reduce the number of documents and brochure copies printed significantly. It is for this reason, and its ability to integrate other information services, that the following marketing slogan has been chosen: *'productivity through **integrated** information technology'*. Those interested in obtaining further information about the system or wishing to discuss its application in their own markets should contact the author.

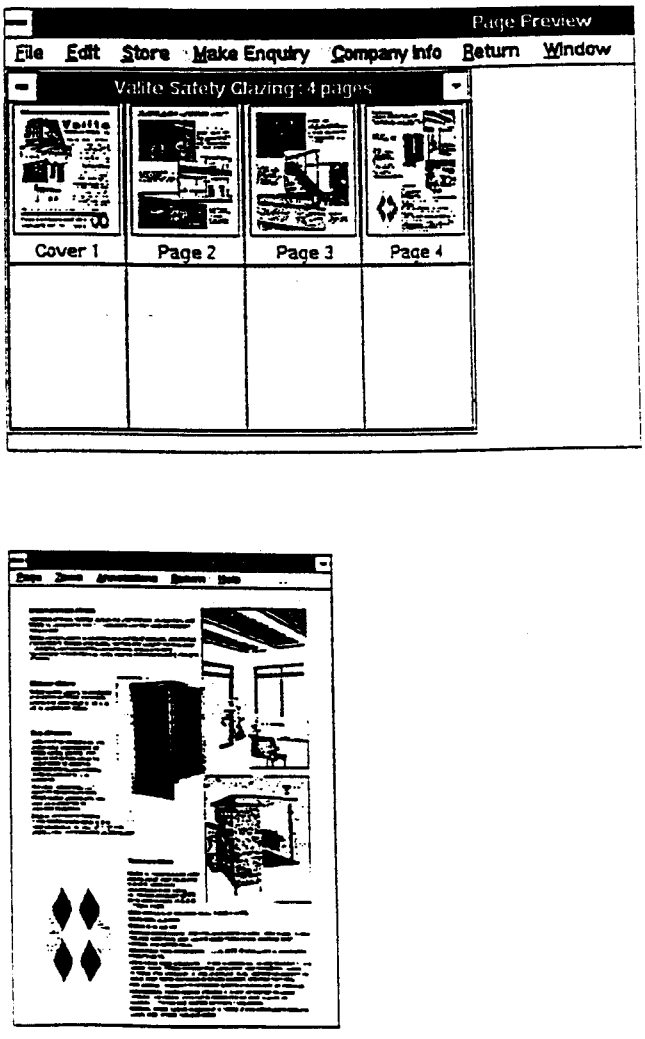

Figure 2: *Page preview screen (top) and page viewer screen (bottom).*