

Automation in the Cairns: progress report of a British library project

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November 1982 saw the start of a British Library sponsored project headed by Dr Peter Leggate, to evaluate the use of a multi-user microcomputer, or a network of micros, to automate a small library (the term small refers to libraries with a total staff and non-staff budget between £25 000 and £250 000).

Work began with a study of the available microcomputer hardware and software, and the initial few months were largely a period of learning about what was available and interpreting microcomputer jargon. The result of this exploratory period was a large file of trade literature relating to microcomputer equipment, from which a suitable machine had to be selected. Three factors influenced the initial choice.

1 *The size of the central processing unit (CPU).* The choice was between an 8- or a 16-bit CPU. An 8-bit chip is capable of reading data in chunks of 8-bits and of addressing memory up to 1 megabyte (MB) [1 kilobyte (K) = 1024 characters, 1 MB = 1000 K] in size. A 16-bit machine can read twice as much data (16-bits) at a time and is therefore much faster. It can also address up to 16 MB memory. The size of addressable memory affects the speed of operation of multi-user systems and of large programs. A 16-bit machine was therefore considered more suitable, in view of the possible need for a multi-user system and for large and powerful programs.

2 *The suitability of a multi-user microcomputer* (a single CPU supporting two or more 'dumb' terminals) over a network of single-user microcomputers accessing shared peripherals such as discs and printers. Because the CPU is shared, the multi-user computer is subject to response degradation as the number of active terminals is increased. Networks, on the other hand, have limited control over access to peripherals, which means that simultaneous read-write access to a record may result in data corruption. A multi-user operating system often has the facility to control access to a file or record, reducing this risk. In a library setting it was felt that the need to share files in a secure environment was of greater importance than speed of response and a multi-user configuration was therefore chosen.

3 *The operating system.* The operating system causes the hardware to operate in response to commands. For example, when a command is issued to load a file or a program, it is the operating system which causes the correct messages to be sent to the disc in order to locate and load the data. The efficiency of the operating system therefore affects the speed and efficiency of the computer.

There were three main groups of operating system to consider: Digital Research (CP/M, CP/M-86, MP/M, MP/M-86, etc); UNIX and UNIX look-alikes; and MSDOS. Each of these varied in the functions they could perform, the hardware which would support them and the library programs which were written for them. A few software packages were known to be written for other operating systems, but an insufficient range of functions was available within these packages for them to form the basis of an integrated library system.

The best-known operating system and the one for which most packages are available is CP/M. This, however, is a single-user 8-bit operating system and would not operate on the 16-bit, multi-user configuration which had originally been considered. This configuration would require its 'big brother', MP/M-86, for which few programs had been written or adapted.

UNIX and some look-alikes, such as XENIX, provide more powerful facilities than MP/M-86 and a secure multi-user environment. Only one library program, an information retrieval package called BRS/SEARCH, was available on UNIX (XENIX), but this appeared to be a powerful system, which could possibly be used to perform library housekeeping routines. MSDOS, developed and sold by Microsoft, is a 16-bit single-user operating system and therefore unable to work on a multi-user configuration.

It was recognized that without suitable software, any computer configuration would be rendered useless but, because of the rapidly changing nature of microcomputers and microcomputer software, it was also considered important to choose an operating system which would be suitable for future development. For this reason, it was decided to study the UNIX (XENIX) operating system and the information retrieval package, BRS/SEARCH, to see if this combination could be used to automate the housekeeping and information retrieval activities of the Cairns Library.

This proposal was made on the assumption that library housekeeping is primarily information retrieval. Information is required about particular records – for example, whether a book is out on loan or a journal at binding – and access to these records is needed from a variety of points such as author, title, subject and borrower. In addition to retrieving the records, however, it should be possible to amend them, for example to loan/discharge stock. In order to test the software, the Cairns Library was studied and a system written around the SEARCH package. BRS are currently developing a demonstration of the system, which, if it proves satisfactory, will be purchased.

In the meantime, the decision on hardware had still to be made. Certain additional criteria were defined:

- 1 More than 20 MB hard disc (a figure resulting from the study of the Cairns library files)
- 2 A facility for four or more terminals
- 3 UNIX/XENIX operating system (to support BRS/SEARCH)
- 4 One other operating system (Digital Research, or OASIS for which some interesting library software is currently being developed)

and the resulting shortlist was further refined by conversation with people working in the field, notably John Blair of Texas A&M who was visiting the UK on a study tour. Finally, an Altos 586-30 was chosen. We now await a satisfactory software demonstration before a purchase is made.

Acknowledgment

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