

Online Integrated Automation of the Metropolitan Library System

By Paul F. Little & Jimmy C. Welch

ON JULY 1, 1985 the Metropolitan Library System, serving Oklahoma County and City, brought up its on-line, integrated system of automation as custom designed by library staff. The first and second days of operation revealed a few minor adjustments that were needed in two subsystems.

These were software problems that were quickly adjusted by the designer of the system, the chief of automation and technical services for the library system. The July 1st event activated these major computer subsystems: bibliographic database (including OCLC interface); circulation; patron reserves for materials; online catalog for library staff use; borrower registration; materials selection and acquisition. Many routines were included in these major subsystems.

Accounts payable, purchasing, and word processing had previously been installed between July 1, 1984 and June 30, 1986. Electronic mail, payroll, and personnel records have since been added. Booking of meeting rooms and 16mm films are scheduled to be installed within 12 months after July 1, 1986.

A prototype online public catalog is now developed. It will be tested at one or more pilot library sites beginning in the fall of 1986. Use of the online catalog will be evaluated from both the users and staff points of view. Evaluation of the current usage

of the microfilm catalog that is updated every three months will be used as the control factor for evaluation of the online catalog. If the prototype that emerges from testing and evaluation proves to be a viable alternative, then its implementation will likely occur between July 1, 1987 and June 30, 1988.

"The recommendation of the study was that the library system should seek to replace its current batch system with an online integrated system that would be owned by the library . . . this alternative would ultimately provide more benefits to the community"

The system is based on hardware from Tandem Computers Incorporated of Cupertino, California. Early in 1984 the library purchased and installed three Tandem NonStop II model processors with peripherals. In early 1985, the original processors were upgraded to the capabilities of Tandem's new TXP model, which is considerably faster. Some major reasons for the selection of Tandem equipment were: local sales and service; experience with libraries; non-stop capability without requiring purchasing of redundant hardware; expandability in small increments without experiencing large hardware obsolescence; relational files configuration; price.

The library system currently has 1.25 gigabytes of mirrored disc storage in its Tandem system. There are presently 202 terminal devices distributed throughout the 11 full-ser-

vice agencies of the library system. These agencies are connected to the mainframe computer in a point-to-point, synchronous communications network at 9600 baud. The 11 remote service sites are as close as three miles and as distant as 21 miles from the central processor. All hardware is

Tandem. The central processor operating systems, word processing, and electronic mail software are also Tandem products. The remaining software systems that are already installed, or planned for installations, are totally developed by the data processing staff of the library system.

The library system has enjoyed good support at both the system analyst and maintenance levels from

Tandem. In 22 months of operation there have only been two instances of computer down time, and neither have been computer failures. One instance was a one-hour power failure at the building housing the computer, and another was for several days required to remove asbestos from the building. The library has been a "beta" test site for some Tandem products such as word processing and some equipment configurations. The word processing test was placed at the library by Tandem to make it available earlier than would have otherwise been possible.

Involvement of library staff in designing and testing the various subsystems is a vital part of the project. User groups were formed from persons who would be using the subsystems and they assisted in designing and testing the software programs. This practice is still being followed

Paul L. Little is Chief of Planning Services and Jimmy C. Welch is Chief of Automation and Technical Services, Metropolitan Library System, Oklahoma City

with current programs in development. The user groups have helped solve problems during the design stages, have made certain that system instructions and sequences were logical to users, and have helped to avoid major problems after a subsystem becomes operable.

Staff training is necessarily an integral part of the automation system and planning for its implementation. It was recognized early that a large number of library staff who had no previous experience or exposure to computers would be required to operate computer terminals and other peripherals. The first step taken was to arrange with a local college for a computer literacy workshop for any staff who needed an initial, basic explanation and hands-on experience with computers so that they felt more comfortable about the pending automation.

A written tutorial was developed for the two subsystems that 150 or so staff members would have to learn to use. A duplicate of the actual subsystem was installed in a protected part of the computer so that learners could practice using the subsystem without running the risk of costly errors that possibly occurred if the actual database records had been used for practice. Special materials for their practice were provided, such as barcoded records for library cards and books.

The persons who have served on user group committees to design and test subsystems are also serving in the role of tutors in training other staff members to use those subsystems. The library system established a dedicated staff training room early in 1985 and equipped it with terminals and other computer peripherals so that training could be held in an adequate learning environment, away from interference involved with actual job sites.

The custom programming accomplished to date has been done in approximately 25 months lapsed time, mostly by one staff member of the library data processing unit who did this work as well as carry out other regular duties. It is most difficult to translate this accomplishment into terms of how much time it would take to do the same programming in an-

other organizational situation by other persons. The programmer involved was also the developer of the old batch system, has over 15 years experience in building large computerized operations, and over the years has developed extensive knowledge of the intricacies of public libraries. One Tandem expert recently commented that her best guess was that it would have taken two to four experienced programmers about three years, working full-time, to achieve the same work.

To a large extent the subsystems that were activated on July 1, 1985 were ones that had been in use by the library system in a batch mode since 1974. The system designer rewrote and converted them for the Tandem online environment rather than IBM and batch modes. The original system utilized NCR 275 "smart" terminals at the library units for data cap-

batch system with an online, integrated system that would be owned by the library. It was shown that this alternative would ultimately provide more benefits to the community than an attempt to pursue the batch system further.

Library staff determined that there were a number of potential benefits to the library system if it was possible to purchase a viable hardware and software package from a turnkey vendor that would meet the needs of the library system. The needs were established by the staff and included in a Request for Information.

A comprehensive technical Request for Information was sent to all potential vendors of turnkey systems who could be identified on March 15, 1983. The request specified an integrated, online system and provided adequate information for an experi-

enced vendor to adequately project the hardware size of the system required. The sizing information included organizational, community descriptions as well as projected average and peak transaction loads and expected minimal response times from the computer. The RFI listed and described these major subsystems that vendors should provide:

"the MLC expressed their faith in the competency of the library staff and also exhibited their concern for continuing to improve library service to the community"

ture on magnetic and printed tape. The magnetic tape was then converted for batch, centralized processing on an IBM mainframe computer located at and owned by the Oklahoma County government. The library utilized the computer on off-peak hours in a time-sharing arrangement of varying costs over the years it existed, including no charge in the three years or so preceding 1985.

In a study we completed for the library system in 1982, it was shown that the size of the library's automated activities was steadily approaching the point that would require significant investment in hardware in the county situation to even continue. Hosting the library activities was placing a strain on the facilities of the county processing unit. The recommendation of the study was that the library system should seek to replace its current

1. Online Catalog (how to query, record formats)
2. Online Circulation and Bibliographic Inventory Control (Patron Files and Booking AV Materials included)
3. Serials Control
4. Materials Selection/Acquisition
5. Word Processing
6. Electronic Mail
7. Personnel Management (payroll)
8. Financial Management (general ledger, accounts payable)
9. Fixed Assets Management
10. Research and Planning
11. System Back-Up; normal, emergency recovery procedures.

Another major requirement contained in the information requested of turnkey vendors was that hardware and software that they proposed should either be compatible with existing machine-readable files and instruments or the firm should state details and costs of any conversions

that would be necessary. This stipulation included barcoded borrowers cards and inventoried books and other materials and a MARC-formatted bibliographic database.

Seven responses were received to the Request for Information. Library staff analyses of these returns found that there were two major groups among those who answered the request. One group was able to provide the business-type functions with existing hardware and software and the other was able to provide the library-type but not the business-type functions. There were large variations among these responses. None of them offered the complete range of services in either of the two major areas that were described in the proposal. The costs varied, for different levels of service, by more than 100 percent from the lowest to highest estimate for providing the services requested.

There were no vendors able to fulfill all of the software requirements, and at least one could not meet all hardware requirements. Many vendors listed software as "not available" and some stated that they

had packages "under development." It was also obvious that at least one vendor that specializes in library turnkey packages had not specified nearly enough computer memory and data storage capacity for even the beginning phase of the proposal specifications. Some of the vendors proposed that they be allowed to use third party software as a subsystem solution. Several vendors indicated their resistance to the library system or other parties modifying the vendor software; some stated that it would not be allowed under any circumstances, others commented that such modification would negate vendor software support and warranties. Most of them stated that the vendor would be willing to make requested modifications, at what the library thought were relatively expensive costs to the purchaser.

Some vendors additionally objected to the possibility of the library running any third party software on purchased equipment if the software had not been supplied by the vendor. Their logic was that such software might degrade the required guaranteed response time, which would

make it necessary for the vendor to void the guarantee.

Not one of the responding vendors provided a definitive response to the question of compatibility of proposed software and hardware with machine-readable files and input barcodes currently in use at the library system. They did not assert definitive compatibility or deny it. Neither did they provide any useful conversion information if there was not compatibility.

The library system was faced with some basic possibilities at this point. If they were willing to relinquish the benefits of an integrated system, then they could purchase two or more turnkey packages and obtain most specific subsystems; however, the costs for this would have been almost overwhelming. A more viable route could have been the purchase of one turnkey system and development of other subsystems by library staff; again, the costs would have been higher than had been hoped and the benefits of integration would be lost.

The members of the Metropolitan Library Commission accepted the recommendation of library staff that the integrated system be developed by the staff. In so doing, the MLC expressed their faith in the competency of the library staff and also exhibited their concern for continuing to improve library service to the community.

As a result of the commission approval, the library system issued a Request for Proposals September 2, 1983, to all known to maintain permanent sales and services in Oklahoma City/County. The final results of this series of actions led to purchase and installation of the Tandem computer equipment and ultimately the integrated, online system that is now operating smoothly.

The Tandem system purchased represents approximately 1.3 million dollars invested. This compares with the lowest bid that was received from all other vendors. Yet the lowest bid did not include communications hardware; the hardware configuration was undersized for even beginning full-scale library operations and lacked the ability to fulfill some other requirements as well. Conversion of 700,000 data files and 300,000 barcoded plastic patron cards also was not included. The lowest bidder did not offer the nonstop feature of Tandem that has been responsible for zero computer down time in 22 straight months of operation.



The ISN CCS System from Byerly can improve your library's circulation control.

The ISN CCS can bring these same savings to your library.

The ISN CCS will easily handle these functions:

- patron control • item control
- check out functions • check in functions
- renewal functions • reserve functions
- overdue/fine functions • bookmobile functions
- statistical reporting.

Space does not allow us to tell the whole story, so for a more detailed explanation of the functions the ISN CCS will perform and what information is tracked, call or write us today and we'll send you our brochure and pricing information.

BYERLY
COMPUTER SERVICES, LTD.

Efficient, cost-saving technology for today's library.

P.O. Box 968 • Williston, North Dakota 58802 • (701) 774-1858

