RLIN system scheduled to be operational this summer. The proposed test will involve eight members of the reference staff—four from each department—who will be trained to search on OCLC and RLIN. Those selected will include both librarians and library assistants who regularly provide reference assistance. The results obtained from such a representative group will better enable us to assess the impact on the whole reference staff should we later decide to fully implement the service. They will be the only ones involved in sampling questions and conducting comparative searches.

The test will have two components, the first of which will be a twenty-week period to collect at least 400 sample questions. During their regularly scheduled reference hours, the eight specially trained librarians will collect samples of reference requests for materials that, based on the information initially given by the patron, cannot be identified in the card catalog. After checking the catalog, the librarian will then complete the top portion of a two-page self-carbon form with all of the information that is known about the requested item. Then, at regular intervals during the semester, the pages of each form will be separated and distributed to other members of the test staff for batch-mode searching. The manual OCLC and RLIN searching for each query will be done by different staff members to eliminate crossover effects. Each request will be searched on both OCLC and RLIN with the following information being recorded:

1. Date of the material requested (if known).
2. Type of material (e.g., conference proceeding).
3. Amount of time required to do the search.
4. Success or failure of the search.

This information will then be cumulated in a statistical table, and the results of each search will be keypunched for computerized analysis using the BMDP (BioMedical Computer Programs) statistical package to determine whether or not effectiveness and efficiency have been improved significantly.

In addition, on twenty-four randomly selected days during the semester the trained searchers will count the total number of questions received by them on that day that would have been appropriate to search on RLIN or OCLC. By using these data it will be possible to extrapolate the potential usefulness of the systems for the entire semester.

The second component of the test will be a two-week real-life test during which all questions requiring further verification would be searched immediately on RLIN, OCLC, and in the appropriate printed sources to compare time required, success rate, and type of material requested. This sort of test would permit the searcher to continue to negotiate with the patron as the search progressed, which is the usual situation. Also, this would provide the only opportunity to have the patron judge the value of subject searches done on RLIN.

If funding is received, preliminary results should be available in early 1982. Anyone conducting similar or otherwise relevant studies is asked to contact the author.

Replicating the Washington Library Network Computer System Software

Thomas P. BROWN: Manager of Computer Services, and Raymond DeBUSE: Manager of Development and Library Services, Washington Library Network, Olympia.

The Washington Library Network (WLN) Computer System supports shared cataloging and catalog maintenance, retrospective conversion, reference, COM catalog production, acquisitions, and accounting functions for libraries operating within a network. The system offers both full MARC and brief catalog records as well as linked authority control for all traced headings. It contains more than 250,000 lines of PL/1 and IBM BAL code in more than 1,100 program modules and runs on IBM or IBM-compatible hardware with IBM operating systems (MVS,OS/VS1). All database management functions are provided by ADABAS, a product of Software A.G. of North America. The online system runs un-

der CICS/VS 1.5. A set of assembler codes called the TP Monitor Interface defines a standard service interface between the applications programs and the TP monitor. This allows easy upgrade to different TP monitors and convenient points for collecting performance statistics.

The majority of the Bibliographic Subsystem updating is done in batch mode to conserve online resources. A new version of the system with interactive updating is currently being planned, for use in special environments.

The applications software was designed and implemented with a number of important conventions:

1. Top-down design.
2. Standard use of IBM environments.
3. Structured coding techniques.
4. Interfaces to a database management system (ADABAS) and teleprocessing monitor (currently CICS).
5. Standard naming and formatting.
6. Use of a standard set of data structures and assembler subroutines to manipulate data.
7. Identification of maintenance changes in source programs.

In addition, programming for the online functions meets other conditions:

1. Load modules less than 20K bytes.
2. No PL/1 run-time subroutines.
3. Reentrant coding.
4. Standard services for the TP Monitor Interface.
5. Applications are kept as terminal independent as possible, with the TP Monitor Interface performing input and output translations.

REPLICATION

A system with these characteristics, even though large, can easily be transported to a different site. While WLN was not designed with multiple replications in mind, a policy decision made by the network a few years ago made replication an attractive possibility. Recognizing that it had a capability that would be highly competitive with other online shared bibliographic services, WLN expanded its service area beyond the state of Washington. It set limits to its expansion, however, having determined that it would remain a small, responsive organization providing what it hoped would be superior service to its participating libraries. Having set such limits, however, created two impediments to its achieving superior service: WLN would have a smaller base of libraries from which its participants could obtain the benefits of shared cataloging, and there would not be the fiscal resources necessary to support a large continuing development effort. Both would penalize libraries for joining WLN, the first with a lower hit rate against the database and the second with fewer added capabilities.

Replication provided a possible answer to both of these problems, as well as a potential source of income. In its software license agreements, WLN asks the licensee to agree to bibliographic data sharing. All cataloging done by a licensee or its participants would thus be available for loading on WLN's own database; likewise, all WLN participant cataloging will be made available to the licensee. WLN, at least, would accept catalog records only from libraries that follow its bibliographic standards; that is, the standards of the Library of Congress. Currently this sharing is accomplished via magnetic tape, but in the future, online record interchange may be possible, given WLN's current work in this area.

WLN also explicitly asks in its software license agreements that the replicating institution carry out an organized program of development to meet the latter's particular needs. Such development is monitored by WLN in order that redundant work is not undertaken and to ensure that the various efforts relate coherently. There is a built-in constraint upon major modification and redesign: WLN is packaging enhancements and changes into periodic releases of the source code and requiring that the replicants install these releases within twelve months of the date issued.

Because of the interest in shared development and because WLN itself is not in a position to provide first-level program maintenance, the system is distributed in source-code form. The initial installation, however, is of load modules (programs in a form efficiently read and executed by machine), allowing immediate testing of the system's capabilities in its new environ-

ment. WLN is currently negotiating a contract with a new firm, Biblio-Techniques, that will offer a more nearly turnkey version of WLN, packaged with ADABAS and Software A.G.'s TP monitor, COMPLETE, and, if necessary, with the required hardware.

NATIONAL LIBRARY OF AUSTRALIA

The first replication of the system was made at the National Library of Australia (NLA) in Cranberra in early 1979. NLA had its own IBM 370/148 and an established data processing staff. ADABAS had been installed prior to the arrival of WLN's installation consultant. Minor changes are necessary in CICS to support dedicated WLN terminals, and these were quickly made and the system was up within days. Further work allowed searching on the system from the library's 3270 terminals. After a couple of weeks of shakedown, a WLN staff member spent about two weeks training NLA staff in the use of the system. It has been in full production for in-house production cataloging for more than a year now, and this spring is being extended to other libraries around the country on a pilot basis, testing the concept of the newly defined Australian Bibliographic Network (ABN). NLA has replaced the 370/148 with a larger machine.

UNIVERSITY OF ILLINOIS

The second installation occurred earlier this year at the University of Illinois, where the system was obtained to carry out a pilot project in which the Urbana campus and the River Bend Library System will use it as an online public-access catalog in conjunction with the LCS circulation system. Again, load modules were installed and the system was up within a few days, running on the University's administrative computer at the Chicago Circle campus. Illinois staff have had some difficulties in recompiling all of the source code, but these problems are being worked out. WLN will warrant that the source code supplied corresponds to the load modules it installs. The system as presently distributed by WLN can in no way be considered turnkey. Local computer operations or JCL require-

ments as well as differing levels of staff expertise can create problems. Furthermore, WLN handles source management through WYLBUR, a text-editing system, and this is not included with the WLN software. The module descriptions, programming language, mode, link-edit information, etc., maintained through this facility are supplied, however. Either a test or, if contracted for, a full database is also supplied. WLN has had some difficulties in creating a valid test database for Illinois, but has now defined procedures to better control the process.

WLN has distributed its second release to Australia as a full source update identical to what was installed at Illinois. In the future only the source changes in standard IBM IEBUPDTE form will be supplied to replication sites. This will better enable these sites to integrate the new version into theirs.

OTHER SITES

The University of Missouri is likely to be the third replicant of the system, since it has just selected WLN as the basis for its online catalog system. Installation is planned before the end of 1981. The National Library of New Zealand has also indicated that it intends to purchase the system. The Southeastern Library Network (SOLINET) has obtained the system in order to convert it to a Burroughs facility. While this is a software license, it is not a replication. The resulting system, however, would be available from WLN for installation on Burroughs equipment.

WLN has not implemented data sharing with Australia, but is testing the loading of Illinois data into its bibliographic file. WLN libraries should see Illinois records on a regular basis by late summer of 1981. Similar arrangements will be made with Missouri and SOLINET.

Shared development has gotten off to a start with the National Library of Australia having done the work necessary to add the IBM 3270 type of terminal to those that can support cataloging input and edit on WLN. Illinois will be undertaking the development of enhancements to make the system easier to use as a public online catalog, in addition to other possible areas of concern. WLN, of course, continues its in-house de-

velopment, which has recently seen the implementation of a new batch retrospective-conversion subsystem, and added COM catalog options and online authority verification during input/edit.

While not the only bibliographic system to be successfully replicated, the WLN Computer System is becoming the most systematically replicated main-frame facility, with a broad range of future possibilities, including that of a truly turnkey system. WLN's experience indicates that, if a system is designed for ease of maintenance at perhaps some sacrifice of efficiency, it will be readily transportable and allow others to obtain the benefits of a highly sophisticated bibliographic capability without the ever-increasing cost of original development and, more importantly, without having to support the ongoing maintenance of a unique system.

A General Planning Methodology for Automation

Richard W. MEYER, Beth Ann REULAND, Francisco M. DIAZ, and Frances COLBURN: Clemson University, Clemson, South Carolina.

INTRODUCTION

A workable planning methodology is the logical starting place for the successful implementation of automation in libraries. An automation plan may develop on the basis of an informal arrangement or from the efforts of one individual, but just as often, automation plans are developed by committees. An automation planning committee must determine and execute some kind of planning methodology and is more likely to be successful if it starts with clear guidelines, good leadership, and a thoroughly proven approach.

As a summary review of the literature will bear out, many libraries have developed their own planning techniques in-house. Some of these, which are addressed to the issues of cataloging rule changes and public-access catalogs, have been very well thought out.[1] However, these techniques are generally not directed to planning for

library-wide automation, and are usually designed to meet the specific needs of an individual library. Although the pattern for these studies is often similar, they do not seem to be based upon any general automation design methodology. Neither, in addition, does there seem to be a general methodology available through any external library agency. The Office of Library Management Studies of the Association of Research Libraries has developed a number of programs designed to assist libraries with their planning efforts, some of which appear to be useful in automation development.[2] But for many libraries, these programs may be too broad, too time-consuming or too expensive. As an alternative, some libraries will need to look elsewhere for a general automation planning methodology. This problem was addressed by the administration of the Clemson library, and was resolved in a unique way.

BACKGROUND

The Robert Muldrow Cooper Library of Clemson University has the responsibility of acquiring, preserving, and making available for use the many materials needed by faculty and students in their research and instructional efforts. At a typical land-grant institution like Clemson, the amount of scholarly publishing and the pressure to develop research proposals has risen sharply in recent years. The increased needs of users working with an expanding and diversified collection have resulted in a doubling of circulation activity, and have required the growth of library staff by 70 percent over the last decade. Furthermore, acquisition, processing, and access problems are compounded by the high inflation rate of materials, particularly serial publications, and manpower costs.

Even though user demands heavily burdened the traditional manual systems, the extent of library automation at Clemson had been limited to a batch circulation system, a simple serials-listing capability, and the use of bibliographic utilities. Although it had been generally accepted for some time that the acquisitions and fund-control functions at Clemson were in need of automation, no concrete approach to develop-