SHARING AND DOBIS

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ABSTRACT

The shared aspects of DOBIS automated library management system development and operation in the Government of Canada are discussed, including sharing evaluation and development costs among institutions, and sharing in the construction and use of a common data base. Some observations on these shared aspects are then given.

PARTAGE ET DOBIS

RESUME

Les aspects du système DOBIS, gestion des systèmes de développement et d'opération des bibliothèques automatisées, sont analysés. Nous voyons aussi le résultat d'un partage de frais de développement et d'évaluation et de données entre les différentes institutions. Enfin quelques observations de son application.

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INTRODUCTION

DOBIS is an on-line, integrated, bilingual, MARC compatible, multi-institution library management system for searching, cataloguing, acquiring, controlling and circulating library material. Its characteristics (IBM, 1975a; IBM, 1975b; Newman, 1977a; IBM, 1977), the background of Phase I evaluation, Phase II development and operation in the Government of Canada and future plans (CISTI, 1976; DOBIS Project Team, 1977; Forget and Newman, 1977; Newman, 1977b; National Library of Canada, 1978) have already been described in a number of sources. We were therefore pleased that the theme of this conference suggested that other aspects of DOBIS be discussed, those of sharing resources and costs in DOBIS development and operation, and the implications of such sharing.

SHARED ASPECTS OF DOBIS

Evaluation and Development

The evaluation of DOBIS cataloguing and searching in 1976/77 was a shared venture on the part of the National Library, CISTI and the Council of Ontario Universities. In total, this rigorous evaluation cost $660,000 in salaries and overheads, computer time, terminal hardware, etc. The cost to accomplish the evaluation was not borne by any one

of the institutions, so that the objectives of the comprehensive evaluation were achieved at a lesser cost to each of the participants than if the evaluation had been a one institution effort.

CISTI and the National Library decided to continue along the DOBIS trail. After garnering Treasury Board approval, DOBIS Phase II was established with the objectives of modifying DOBIS cataloguing and searching to suit National Library and CISTI requirements, and then operating pilot projects to see how the system performed in real life. During fiscal year 1977/78 and 1978/79, the National Library will have spent $1,418,479 and CISTI $634,434 including all costs and overheads, for Phase II development and pilot operation. If these figures seem high to you, on-line cataloguing systems of equivalent or lesser scope than DOBIS have cost in the neighbourhood of five to ten million dollars to develop in the U.S. and Canada. We therefore continue to believe that the course of action of taking and modifying an existing system was cheaper than developing from scratch.

The cost of development of the DOBIS cataloguing and searching modules also illustrate that sharing results in lower costs per institution to obtain the product. More importantly, people from different institutions work together toward a common goal. A wide range of expertise and backgrounds have been brought to bear on solving problems. For example CISTI has contributed management expertise toward DOBIS policy development and project management decisions; the National Research Council Computation Centre has dedicated on-line operating system expertise; staff from the National Library were seconded on a half time basis to the project team, bringing expertise on the user requirements in their respective areas. This secondment tactic has worked out particularly well. The staff learned the system thoroughly in order to conduct training sessions, contribute requirements and specifications during development, participate in planning new work flows, and develop user oriented documentation.

The testing of DOBIS is also being shared. The National Library pilot projects include the Union Catalogue of Serials, an in-house serials list, and inter-library loan and reference searching. In preparation for publication of a union list of serials in the social sciences and humanities, holdings information is being added to CONSER and CAN/MARC records, and to newly input serial records. The major CISTI pilot project is testing the cataloguing features, and developing and testing inter-library loan and reference search strategies. To ensure comparability of results, the pilot project testing criteria for the two institutions have been developed jointly.

Institutions other than the National Library and CISTI are also interested in investigating the use of the Canadian government DOBIS

installation and participating in DOBIS development, in particular, the Library of Parliament and the Public Archives of Canada. The Library of Parliament has contributed resources to plan its use of DOBIS, and to perform other tasks similar to those of the National Library personnel secondments. The Public Archives of Canada seconded a programmer/analyst to the project in November 1978 to participate in the development of resource accounting/library management statistics capabilities and to study the feasibility of DOBIS for use in various areas of the Public Archives such as the National Map Collection, and the National Film Archives. Other federal government libraries are also interested in DOBIS, with twenty-one of the departmental libraries examining the system and pilot project results.

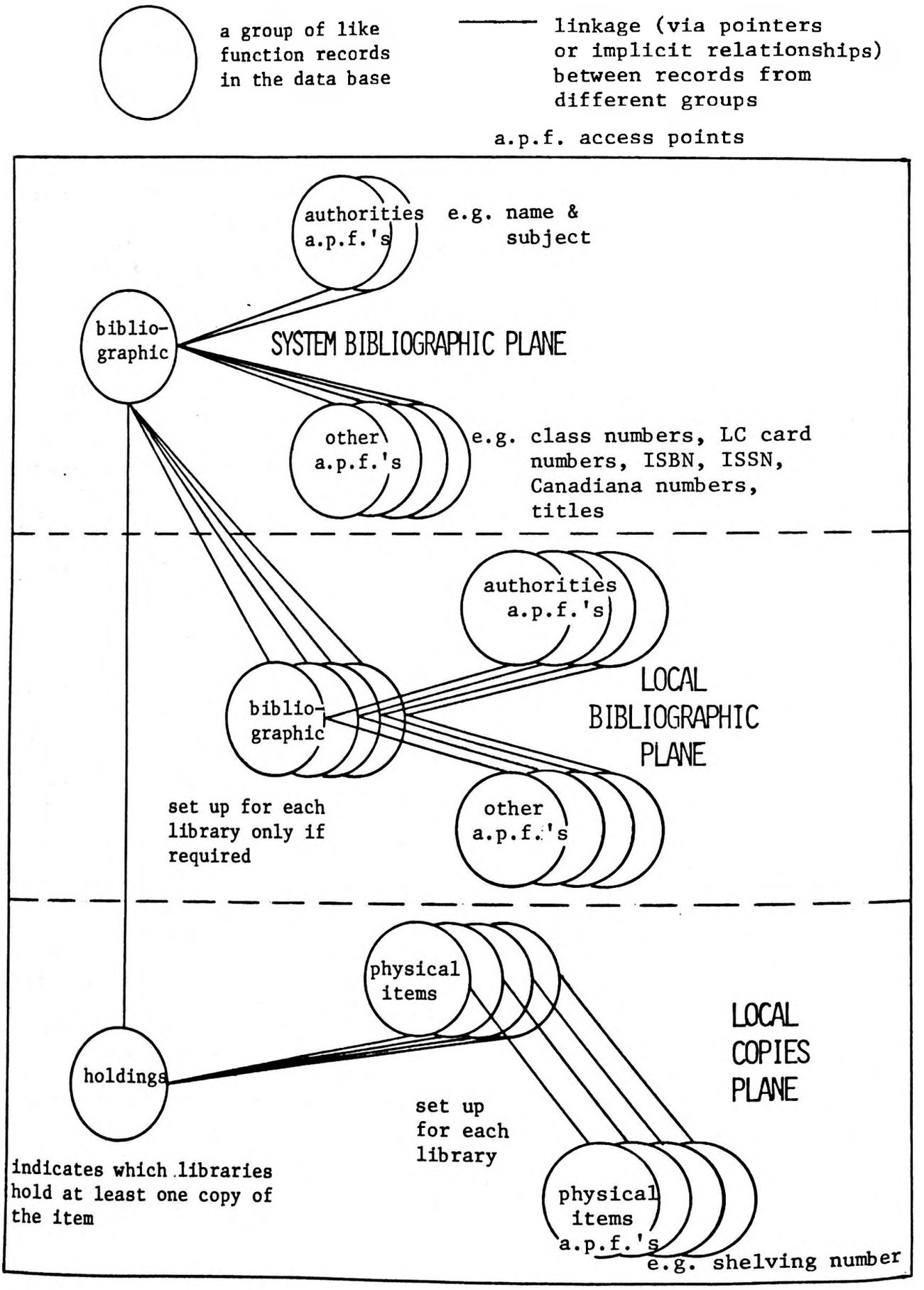
Computing environment

In the years prior to 1978, the National Research Council had been attempting to upgrade the hardware facilities of its Computation Centre due to expanding workloads. The advent of DOBIS and its computing requirements was an issue which helped the NRC Computation Centre management get Treasury Board approval for the first steps in a long term hardware upgrade plan. The duplexed IBM 360/67's were replaced with an IBM 370/3032 in order to handle NRC laboratory computing and the expanding CISTI computing requirements for CAN/OLE and CAN/SDI. In addition, an IBM 370/148 was installed in June 1978 at NRC to handle the existing National Library batch Canadiana, cataloguing, authorities, and MARC Record Distribution Service loads, and the DOBIS development and operation computing requirements. This move heralded a milestone in NRC/National Library co-operation; and, in the longer term, will bring about increased benefits through linkage of the machine dedicated to NRC computing with the machine dedicated to National Library batch and DOBIS computing. If one of the machines "goes down", the hardware redundancy will allow a reduced level of computing from both machines to continue on the operational machine.

The data base

The DOBIS data base is overviewed at Figure 1. The system level contains information that is used and shared by member institutions while the two local levels contain bibliographic information unique to a particular member library (such as non-standard classification numbers, etc.) and information on individual copies of works held by individual member libraries (such as circulation or acquisitions status, shelving number, etc.). Employing terminology like that of the University of Chicago and its quadraplanar data base structure (Payne et al, 1977), the DOBIS data base structure could be called triplanar with its 1) system bibliographic plane, 2) local bibliographic plane, and 3) local copies plane.

Figure 1. DOBIS data base structure overview



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The DOBIS data base structure is designed according to data base management principles; that is, an attempt is made to store a piece of data used for a specific function only once in the data base. For example, an authority heading is stored only once in the appropriate authority access point file rather than in each description making use of the heading. Relationships between bibliographic works are handled by pointers instead of repeating information concerning the related work in the description under consideration.

The system level plane of the data base is one of the most important shared aspects of DOBIS. If a description exists from the Library of Congress, CONSER, or a DOBIS member library for an item being catalogued, the description can be used as is; or upgraded at the system level if necessary; or information unique to the user library can be added at the local bibliographic plane. This should significantly cut down the amount of original cataloguing and keying that has to be performed by member libraries. The sharing of the workload of creating machine-readable bibliographic descriptions is a cornerstone of DOBIS operation.

Other DOBIS installations

Centennial College in Toronto, operators of the College Biblio Service, had the opportunity to examine the results of the DOBIS Phase I Evaluation. Based on the results, they decided to purchase the cataloguing and searching software in 1977 from the National Library, and are now in the process of implementing DOBIS for parts of the Biblio Service cataloguing operations (Khambatta, 1978). Although the versions of DOBIS employed by Centennial and the Government of Canada are diverging in terms of software compatibility, contact is maintained between the system developers from Centennial and those from the federal DOBIS Project Team. Solutions to common technical problems and decisions regarding user workflow are shared.

The Catholic University of Leuven in Belgium has operated DOBIS cataloguing and searching for over a year, and has developed modules for circulation and acquisitions called LIBIS (Regent, 1978). Circulation is now operational and acquisitions is being tested. Centennial College has purchased LIBIS, and the Government of Canada has started negotiating with the University of Leuven for the modules. Since LIBIS will require considerably less modification to suit the Canadian environment than cataloguing and searching, it is expected that development and implementation of LIBIS will require about six months elapsed time per module rather than two years as was the case with DOBIS. Sharing DOBIS development costs, across the Atlantic Ocean this time, will again lead to a reduction in development times and costs.

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As the number of separate DOBIS/LIBIS institutions grows beyond the University of Dortmund, the University of Leuven, Centennial College, and the Government of Canada, it is visualized that a DOBIS/LIBIS users group would be established to share management concerns and technical solutions.

SHARED IMPLICATIONS OF DOBIS

Development decision making

Before DOBIS Phase II development started, a detailed plan was drafted including project objectives, scope, budget, development schedule, DOBIS Project Team organization, and individual Project Team member responsibilities. This plan is updated monthly and has proved to be very valuable in forecasting problems and potential schedule slippages so that corrective action could be applied. However, one point which proved to be essential was overlooked in the plan.

One of the policies during DOBIS development was to maximize end user involvement in development. We hope we have succeeded in doing so. However, this policy together with the fact that multiple institutions were sharing in the development, led to a plethora of committees, working groups, and teams such as the DOBIS Analysis Round Table (DART), the DOBIS Input Group (DIG), the Working Group on Boolean Searching, the DOBIS Management Team, and the DOBIS Planning and Implementation Team (DPIT) not to mention one-institution committees, Treasury Board (who are carefully monitoring development), and the Council of Federal Libraries. Each group has a specific mandate and was doing its job. Perhaps the number of committees was simply due to the way we feds go about our bureaucratic business. In any case, it became apparent early in Phase II that policies were necessary on decision making. Who made which decisions? Where did the buck stop? How did the groups inter-relate? These policies were overlooked in the DOBIS Phase II plan.

A simple, yet effective tool called responsibility charting was employed to work out a solution to the decision making problem. In order to employ this tool, decisions were first categorized and listed. Twenty-five types of decisions resulted. These included combinations of policy, priorities, work flow and operational impact, functional capability, administration, budgeting, planning and scheduling; speed with which the decision was required; whether or not the decision was revocable; and the number of institutions that the decision impacted. Individuals and groups acting in decision making, called actors in responsibility chart, were also listed. Then the responsibility of each actor in relation to each type of decision was charted in a matrix.

The resulting responsibility chart was analyzed to identify

decision making bottlenecks, that is, situations where there are too many approvals under one actor or one type of decision; and to ensure that one and only one actor was responsible for a particular type of decision. This analysis pointed out the need for a new type of actor -- ombudsmen from each participating institution or user area -- to be responsible for decisions on functional capabilities of the system that had to be made quickly, were revocable, and affected more than one user area.

A condensed portion of the DOBIS Phase II responsibility chart is illustrated in Figure 2. This portion concentrates on functional capabilities.

Data Base

At the system level the DOBIS data base contains records from a number of different sources -- LC MARC, CAN/MARC, CONSER and Union Catalogue records, as well as full or brief catalogue records entered on-line by the participants. As you are well aware the cataloguing rules used by libraries have not been static and the forms of headings used have varied.

Since information of varying quality is entering the data base off-line from multiple sources and on-line from multiple users performing multiple functions, it is important to have a means of indicating the quality of the information. The DOBIS verification levels in authority and bibliographic records were designed for this purpose. Verification levels give an indication of the effort and research done in creating records, and thus give an indication of "changeability" of the record. The meaning of verification levels in DOBIS from the highest quality to the lowest quality, is summarized in Table 1. Note that user libraries can enter any record at any verification level desired.

Since multiple users from multiple libraries are searching and changing information in the shared system level plane of the data base, control over what each user is allowed to do is important to ensure that modifications to the data base are justified and consistent. The user security level feature of DOBIS has been designed to indicate which DOBIS functions and sub-functions a person may, or may not, perform. User security clearance levels must be set individually for each user in relation to each function. For example, a person might be cleared to search on the system and add holdings data, but not to update system or local bibliographic files. Or, a person might be cleared to update briefer records in the data base, but not records with the higher verification levels.

The subset of authenticated record in the data base would form the only true catalogue. However, the combination of verification

Figure 2. Responsibility chart for decisions on functional capabilities

DECISION \ ACTOR	One user area ombudsman	Ombudsmen	One user area - user committee	User committee (DART)	Management of one user area	Planning Committee (DPIT)	DOBIS Project Team
Function - one user area	R	I	S	I	A	I	S
Function - fast - revocable - more than one user area	S	R	I	A	I	I	S
Function - slow or irrevocable more than one user area	S	S	S	R	I	A	S

NOTES: 1. In the above chart "function" means "functional capability of the system".
2. "Fast" means a decision is required within a few days.
3.

R: Responsibility
A: Approval
S: Support
I: Information

Table 1: Verification Levels

Verification Level	Standards	MARC Content Designation	On-line or Off-line Created	Comments
1. Authenticated	AACR2,ISBD	Full	On-line	Highest quality
2. Verified-national	AACR	Usually Full	Off-line	CONSER,CAN/MARC, etc.
3. Verified	AACR	Usually partial	On-line	High quality
4. Unverified-national	Varies	Full except 008	Off-line	High quality
5. Unverified	Varies	Varies	Both	
6. Skeletal	Varies	Very little	Off-line	Created from parts of other records, e.g. relationships
7. Preliminary	Varies	Varies	On-line	Records created at the ordering stage would often be assigned this level
8. Saved	Varies	Varies	On-line	To save a partially created record

levels, security clearance features, DOBIS Input Group practices and conventions, and, the direction toward common practices and formats of ABACUS (the British Library, the National Library of Australia, the National Library of Canada and the Library of Congress) should insure that the shared data base is usable, and continuously moving toward being a catalogue.

CONCLUSION

In DOBIS system development, sharing has taken place on at least two levels -- at the international level, with Dortmund and Leuven; at a network and local level, through consideration of the needs of the individual libraries involved -- National Library, CISTI, Library of Parliament, Public Archives, and now, the other federal libraries. Considering data base development, only time and experience will indicate whether or not the verification and security clearance features have adequately contributed to a consistent and easy to use data base. This sharing of system and data base development has required a great deal of preparatory and on-going work, of clarification of user needs and expectations and of the roles and responsibilities of the individuals and groups involved. The method that was used in DOBIS development has been outlined. That it has worked is evidenced by the progress made in a very complex system. It has been an educational, exciting, interesting, and, at times, frustrating experience.

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