SHARING RESOURCES -- SHARING COSTS THROUGH THE SHARED INFORMATION SERVICE

Adrienne Herron
Marketing Manager
QL Systems Limited
220 - 90 Sparks Street
Ottawa, Ontario
K1P 5T6

ABSTRACT

The use of the computer provides a practical, efficient, and rapid means of information dissemination. QL Systems Limited, a Canadian company, has been sharing its technology, costs, and revenues with its customers since incorporation in 1973, and now is providing a low cost, wholly Canadian service.

Information retrieval has become an accepted technique for librarians in Canada, with most libraries now providing an on-line search service to their patrons.

Information specialists are looking at other potential uses for their computer terminals and are investigating such services as the creation of data bases of their own collections and the use of electronic mail, not only to correspond with others but also to initiate inter-library loans. Several are using terminals to input documents for photocomposition, and others are running programs to perform updates of their own data bases.

This paper provides a profile of QL, describes its cost and revenue sharing policies, and indicates the services through which information may be shared.

PARTAGE DES RESSOURCES -- PARTAGE DES FRAIS A L'AIDE D'UN PARTAGE DE SERVICES D'INFORMATION

RESUME

La raison d'être de l'ordinateur est de rendre possible la dissémination d'information de façon rapide, efficace et économique. Les Systèmes Ql Ltée., une compagnie canadienne, partage avec ses clients sa technologie, ses frais et ses revenus depuis 1973 et offre maintenant un service à frais raisonable, un service totalement canadien.

Les systèmes de relevés d'information sont devenus une technologie acceptée par les bibliothécaires à travers le Canada, de toute façon la majorité des bibliothèques canadiennes peuvent maintenant offrir à leurs lecteurs cette technologie.

Les spécialistes en information sont présentement en train d'étudier les différentes méthodes d'améliorer les services qu'ils ont à offrir au public à travers les bibliothèques. Ils étudient la possibilité d'établir des centres de données qui seraient accessibles à un grand pourcentage de la population canadienne avec l'aide de techniques tel que le prêt-inter bibliothèque et un système de poste électronique. Plusieurs bibliothèques sont présentement en train d'utiliser des grands centres afin d'obtenir des reproductions sur film pour mettre à jour leur propre centre de données.

Enfin cette étude est un profile du système QL; ses politiques de partage des frais et revenus et de ses services d'information.

PROFILE OF QL

QL Systems Limited was incorporated in 1973 after the termination of the QUIC/LAW project at Queen's University. The project had been directed by Hugh Lawford, a law professor at Queen's, and by Richard von Briesen, a computer expert who also taught as a law professor. The QUIC/LAW Project had been established to investigate possible uses of computers by lawyers, with particular emphasis on the use of computers to assist research concerning the law. The project was supported by Queen's University, by IBM Canada Limited, by the TransCanada Telephone System, and by the federal government and the governments of British Columbia and New Brunswick.

In 1973, because of the rapid growth of the project and the possiblity of commercial use of the systems which had been developed, Queen's University asked that the project be incorporated as a separate entity outside the university. QL Systems Limited was incorporated by Hugh Lawford and Richard von Briesen, who became President and Vice-President respectively.

Incorporation enabled the new company to continue the development of the information retrieval and text editing systems and to provide the first Canadian commercial information retrieval service. Since 1973, the company has been dedicated to developing and maintaining this system.

Information retrieval in Canada in these past few years has become a rapidly growing industry and QL has been joined by competitors in the market place. The wide spectrum of data bases from several suppliers has stimulated the information retrieval industry and, as a result, better services are being provided, the number of users has multiplied, and the industry as a whole has been protected from monopolistic control.

The market for Canadian data bases is so small that it is essential to maintain prices at a level which will attract all of the potential Canadian users. For QL, the maintenance of low prices during the period of growth has been achieved by a revenue-sharing policy, which has attracted data bases, and by commercial sales of QL's software which has provided funds for on-going system improvements.

THE SHARED INFORMATION SERVICE

"The Shared Information Service" has been the name used by QL's Information Retrieval System since the company was incorporated. As the name suggests, it is a service which allows Canadians to share their data bases with one another and to share the revenues which result from use of these data bases. Although a few data bases are run by QL for private users, the revenue-sharing policy has encouraged data base owners generally to open the availability of their data bases to users across Canada. The system currently is shared by over 400 librarians and others from Newfoundland to Vancouver Island. Some data bases are sponsored by Canadian federal and provincial government agencies, several by publishing companies and some by QL itself.

One of the earliest users of the Shared Information Service was the Water Resources Document Reference Centre (WATDOC), part of the Department of Fisheries and Environment. WATDOC was formed in 1971 to provide an information service for the Water Resources personnel within the department. This group provides an excellent example of information specialists who have moved from using a computer terminal solely for Information Retrieval to effectively using a full range of computer services. At the present time, the WATDOC group uses a text-editing system to input text for its data bases. Currently, some seven WATDOC data bases are operational on QL computer facilities. WATDOC operates from its own terminals the computer programs which update the WATDOC data bases on-line. And WATDOC takes full advantage of an electronic mail service. WATDOC, by taking this initiative in using other computer services now available through its terminals, has streamlined its operation, increased productivity, and achieved substantial cost savings.

REQUIREMENTS FOR DATA BASE CREATION ON-LINE

To create a data base or computer file for searching and retrieving documents, the information must first be input or "typed" into machine-readable form and stored on a magnetic tape or disk. Although generally this is done by keying on a computer terminal, sometimes the machine-readable data is captured as a by-product of a computerized typesetting or photocomposition process. If documents are available in printed form, it is quite likely that a machine-readable version already exists; and this possibility should be explored by contacting the printer of the publication. Where data is to be keyed on a terminal, the only normal requirement is that the terminal print both capital and lower case letters. The terminal is used, often with QL's text-editing or word processing system, to input the text which then is stored within the QL computer. The computer processes the text, using a "driver" program which reads the text and translates it into a suitable format for display on user terminals. The processing also automatically creates the sophisticated indexes which enable the system to find relevant documents quickly and to rank them in a useful order.

Before the owner of a collection of documents commences building a new data base, consultation with an information retrieval specialist is recommended. The specialist usually can make useful suggestions as to how the data should be input and can provide instructions for coding the data to produce the desired results. Following are some suggestions which a potential data base owner might be asked to consider prior to this consultation.

a) Determine how the final format should appear. Let us assume the following is a sample of the documents to be input.

Sample Document

AUTHOR: Fernald, Merritt Lyndon
TITLE: Two Summers Botanizing in Newfoundland
DATE: April - December 1926

Reprinted from Rhodona v. 28, nos. 328-336. At head of title: Contributions from the Gray Herbarium of Harvard University LXXVI

b) The next step is to determine how many documents or records will be input to create the entire data base. Let us assume, for this example, that the data base will consist of 4,500 documents or records.

The average length of each document must then be calculated. Generally, this can be done by glancing through the documents to determine what constitutes an average document size. Each field should then be measured for the average number of characters per field (spaces count as one character).

		Characters per field
AUTHOR:	Fernald, Merritt Lyndon	average 30
TITLE:	Two Summers Botanizing in Newfoundland	average 40
DATE:	April - December 1926	average 25
	Reprinted from Rhodona v. 28, nos. 328-336. At head of title: Contributions from the Gray Herbarium of Harvard University LXXVI	average 150
	Total Average Characters per Record	245

Total Number of Records	4,500
Characters per Record	X 245
Total Characters per Data Base	1,102,500

Multiplying the total number of records by the average number of characters per record will provide an estimate of the total number of characters to be stored in the data base.

In addition to these calculations, figures should also be presented concerning the expected frequency of updates and the expected average number of records per update. Using these computations and sample documents, QL's systems staff can evaluate the complexity of the job and provide an estimate of the expected cost in terms of programming and computer usage required.

Under QL's sharing policy, if the format of the desired data base is the same as or is similar to that of any other data base operated on the shared system, QL will provide use of these programs free of charge, or will charge only for the minor modifications which may be necessary. This policy usually reduces programming costs significantly to a data base sponsor.

Final costs will be itemized as follows:

1. Data conversion to machine-readable form (if required).
2. Personnel and computer costs for writing or modifying and then testing programs to be used to load documents into the data base.
3. Personnel and computer costs for loading the documents into the data base.
4. *Monthly storage costs.
5. Update costs.
7. Search costs.

* QL's Monthly Revenue Sharing Policy -- Once a data base has been used in any month for more than 200 searches by all QL users, including those by the data base sponsor, QL will share with the data base sponsor 25 percent of all search revenues generated after the 200th search.

USING YOUR TERMINAL TO ARCHIVE DATA

Bibliographies, catalogues, reports, theses, and other collections of data may be typed at a terminal on-line to a text-editing system to provide a machine-readable version. Upon completion of the keying, the text, which is now machine-readable, may be archived to a magnetic tape for storage until future use.

This method of storing data provides the information specialist with the following advantages:

1. The magnetic tape is an inexpensive storage device and occupies little space.

2. The magnetic tape can be used to re-enter the information into the computer to allow additions, deletions, or corrections to be made from the computer terminal.

3. The magnetic tape can be used to produce inexpensive multiple copies of the data.

4. The magnetic tape can be used to provide an inexpensive printed copy at the computer's high-speed printer.

5. The magnetic tape can be used as input to photocomposition equipment to produce a "camera-ready copy" to be used for a quality printed product.

6. The magnetic tape can be used to create a data base when the size, content or the demand for the collection justifies the expenditure.

Clearly, computer archiving offers great flexibility. One of the most effective cost and time saving methods of building archive files is to add documents as they become available. By starting with incoming documents now, future collections will be in machine-readable form. Retrospective updating of the collection can occur when time or finances permit. The major consideration is to prepare for the future now.

SHARING THROUGH ELECTRONIC MAIL

Electronic Mail provides a vehicle through which thoughts and ideas may be communicated or documents and publications may be shared.

Most terminals linked to the DATAPAC, TELENET or TYMNET telecommunications networks have the capability of transmitting or receiving messages or documents from other terminals on these networks.

Essentially, this means that a report, letter, memorandum, or request for an inter-library loan can be typed at a terminal and then transmitted to any other system user.

A major benefit of Electronic Mail is speed. The transmitted message arrives at its destination instantly and cost is minimal.

This service can be used to communicate with customers, suppliers, and branch offices anywhere in Canada or the United States.

THE TERMINAL AS AN INPUT DEVICE FOR PHOTOCOMPOSITION

Technological advances in the printing industry have resulted in the wide spread use of photocompositon equipment to produce "camera-ready copy". Camera-ready copy is the final paper version available before producing printing plates. It contains the text in the selected fonts and fully formatted. Copy usually is prepared on photographic paper.

The use of photocomposition provides the fastest, least expensive, and most error-free method of producing a quality printed product.

Traditional printing methods require a document to be delivered to a typesetter in typewritten form. This involves typing, proofreading, re-typing, and more proofreading. Detection of errors often results in a necessity for re-typing of the full page of a manuscript, creating the chance for new typing errors. The cycle of typing and proofreading continues until the manuscript document finally is approved.

The approved manuscript is sent to a typesetter, who re-keys the entire document. Once again it must be proofread, and the correcting and proofreading cycle continue until correct copy is achieved. Finally, the document is approved for printing. Clearly, this method takes considerable time and involves the risk of error in the proofreading process.

Using photocomposition, a manuscript is typed at a computer terminal and stored in a computer. As typing errors occur, they are normally recognized by the typist, who can easily backspace to make corrections by using the quick correction features of the computer's text-editing system. Upon completion of the manuscript, a copy of the document, which is stored in the computer, may be produced at the computer terminal and delivered for proofreading or can even be proofread and corrected on the terminal. When changes to the manuscript are presented, the typist, using the copy of the document stored in the computer, changes only those words that are incorrect. It is not necessary to re-type entire pages.

Only the changes then need be proofread. It is not necessary to proofread the entire document as most of it has remained unchanged. This saves considerable time and eliminates several cycles of typing and proofreading.

When the text of the manuscript document has been approved, it is archived onto a magnetic tape at the computer site; and the tape is delivered to the photocomposer. This tape is used as direct input to the photocomposition equipment, which produces a camera-ready copy automatically. Note that the document does not have to be re-keyed or re-typed by the printing company. The original version produced becomes the final product.

The following charts show the results of studies done in the Ottawa area. Although both studies show limited proofreading, it may be assumed that additional typing and proofreading cycles would increase the time and money savings indicated.

1300-Page Manual

	Manual Hours	Automatic Hours	Hours Saved	Percent Time Saved
First typing	570	260	310	54%
First proofreading	130	130	0	0%
Second typing	50	10	40	80%
Second proofreading	40	2	38	95%
Total	790	402	388	49%

Cost Analysis Summary in Dollars

	(1) Manual	(2) Automatic
a. Operator Activity	$ 6,000	$ 3,600
b. Equipment	1,200	10,300
c. Service	0	0
d. Proofreading	25,500	20,000
e. Conversion	22,500	1,300
f. Photocomposition	12,500	12,500
Total	$67,700	$47,700

RUNNING COMPUTER PROGRAMS

Because the computer terminal provides access to a large scale computer, almost any capability of the computer may be accessed. Programs can be input, compiled, and executed. Although this type of operation generally is considered outside the realm of the information specialist, QL's data base sponsors have found it possible to run most of the programs used to update their data bases. This gives sponsors full responsibility and control over changes, additions or deletions to their data bases. It also enables sponsors to control the magnitude and frequency of updates, and it eliminates the expense of using QL's staff to perform this work.

CONCLUSION

The computer terminal today provides a vehicle through which information may be shared. Most Canadian libraries have installed terminals and are using various retrieval services to meet their information requirements. The computer terminal also can access many other services. Librarians now are exploring these new computer services available through the terminals in their libraries.