

OPEN LEARNING AGENCY  
Electronic Library Network Project

Final Report

November 1989

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# **LIBRARY RESOURCE SHARING IN BRITISH COLUMBIA**

**POST-SECONDARY LIBRARIES**

**A Report Prepared For**

**The Electronic Library Network**

**Open Learning Agency**

**Basil Stuart-Stubbs**

**November 1992**



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## Prologue

### *Towards the year 2000*

*Terry checked the time as she parked the car. Although it was only mid-September the mornings were noticeably darker marking the approaching winter. Still, it was 8:30 and the library would be open. Terry wanted to get an early start on her final research project for the Business Practices Class.*

*When Terry had started the degree program in 1993 she hadn't been sure if she would find business classes that would stimulate her interest. However, the past four years had passed quickly. After graduation next spring she planned to stay in this northern city that she had always called home. Terry reflected that colleges such as this one were providing many British Columbians with an education that they had not dreamed possible or could not afford if they had to find the financial support to move to another city for four years.*

*Terry's moment of daydreaming was brought to an end with the click of another student working on a portable computer. Time to get to work.*

*Terry's first stop was the online library catalogue. She allowed herself a smug grin as she confidently operated the keyboard to conduct various searches. Just a few years ago Terry had never been in a library, let alone found information for herself. However, during her first year on campus the Library's course on research tools and methods had quickly disabused her and her classmates of any negative ideas they may have had about the value of the library and information. In fact, the initial three months of the first year class 'Business Information and Research Methods' was conducted in the Library by the library staff with the students using all imaginable sources of information.*

*The topic of Terry's present paper was the 'history of and potential for trade between B.C. and Pacific Rim countries'. China in particular was going to be a focus of the paper. Terry planned to travel to China next year.*

*Terry was confident that a search on the online catalogue was the place to start and in fact had already done some preliminary searching from home. This database contained references to all the library's books, journals and non-print media. Her search showed that there was a good selection of core materials and journals that would provide the basic background information she needed to get started.*

*The library's circulation records were integrated with the online catalogue. Although the borrower's name was suppressed, Terry was able to determine which books she could expect to find on the shelves. In addition two particularly relevant journal articles were indicated by the search. And the library had a video of travel in China. Terry could arrange to have that transmitted to her home over the local cable TV network. Seeing a documentary of a country certainly provided a background and an understanding that was not always easily expressed on a printed page.*

*After she had gathered together several books and located the two relevant articles, Terry spent some time reviewing the material. This material was interesting - but was not going to provide the depth of understanding that her professor would expect in an honours level term paper. She decided it was time to broaden the search.*

*The librarian's words rang in her ears "Don't limit yourself to just material that this library may have. The college library provides a core collection for course work and basic research but through our facilities and telecommunications networks you have access to information from around the world. Your workstation puts you in the centre of the global village." So Terry went upstairs to one of the information retrieval booths and plugged in her portable workstation.*

*Every student in college used a small but very powerful microcomputer to manage their research and studies. Terry kept all class notes and term papers in the computer and had the capability to integrate information from statistical, database and wordprocessing programs to produce her term papers. The computer was also equipped with a modem, a fax board and software which allowed her to plug into the campus and wide area networks to access online information. Each student who registered at the college was provided with a special program which supported information retrieval from a variety of online sources.*

*A menu presented the options and today Terry started with the research interests database which was international in scope and located in Hong Kong. Through this database she identified two researchers in Wollongong, Australia who were working on the same aspects of trade with China that she was planning to study. One of them had published a paper last month which was very relevant to her interests. She immediately flagged the item and sent a message to the researcher asking for a copy. The cost of transmitting the document via digital facsimile to her electronic mailbox would automatically be charged to her account and debited from the amount available on the smart charge card that was used to gain access to these services.*

*The common command language provided in the information retrieval package made searching a variety of databases quite straightforward. Searches in other local and remote databases provided lots of references - more than she would be able to use for this paper. But Terry had come prepared. She downloaded the references to the hard disk on her computer. Terry was building up a small database of references on trade with China on her personal computer. The last stop on her tour of online resources was a database of newsletters and current affairs information. She was able to capture several recent commentaries on recent changes in trade patterns due to Hong Kong having been handed over to the Chinese.*

*This completed, Terry went back into her original search and tagged the most relevant items. Then, with a few keystrokes, Terry was able to link the references to a database of serials held in B.C. post-secondary libraries and find out which library owned the journal. Another few keystrokes took Terry into a database of non-print material and she was able to locate additional relevant items.*

*Feeling satisfied, Terry took her information over to the librarian at the Reference Help Centre. A librarian was always available at this Centre to help students locate materials not held in the library and give advice on other sources they might not know about.*

*Based on what she had been told in class and the experiences of some of her friends, Terry knew that items not held in the library could be obtained through a cooperative program among the post-secondary libraries in B.C., other libraries in northern B.C. and even across Canada and internationally. This ability was provided by a mosaic of libraries and information resources called HyperNet that had developed since 1990. This network put Terry in touch with a vast array of research materials.*

*The librarian showed her how to use the workstation software to locate references in other libraries. After formatting the references as inter-library loan messages the system checked that they were really not available in the college library and then sent them to a series of library systems where searches were recognized in an international format. As locations were found the items were flagged and the lending libraries retrieved the items for delivery to the requester. The progress of Terry's requests was reported back to her mailbox, and her college library was also notified when the request had been satisfied.*

*Underlying the services that Terry had used to locate materials was a complex web of cooperative library programmes. The libraries in B.C. share information about the materials they own and through the communications networks are able to exchange cataloguing information, share acquisitions and lend to each others' patrons when items are requested. Beyond B.C. the same principles apply and are coordinated by national libraries around the world.*

*Over the next few weeks the material requested by Terry's searches arrived. Terry marvelled at the inventiveness of the delivery systems that B.C. librarians have developed. Some books were forwarded to the library by courier, while journal articles were routinely sent by facsimile. Since the introduction of fibre optic cables for telecommunications the volume of data that can be transmitted at very low cost and high speed had made it affordable for students to benefit from these advances in technology. Terry read the documents that were transmitted directly to her mailbox at home. The entertainment centre in her home included a high definition TV which means that reading from a screen is quite comfortable and can be done whenever it was convenient for her. A video was transmitted via satellite from a central distribution point in Vancouver using the Knowledge Network. Terry also watched the video in the comfort of her own home. The cost of these transmissions were subsidised by the Ministry of Advanced Education under their 'Access for all' programme and are considered to be an integral part of the educational process.*

*Throughout this whole project Terry carried on an electronic correspondence through Envoy with the researchers in Australia. Her professor, who already knew of their work, agreed to review an article that they were hoping to distribute electronically for peer review in the near future.*

*The honours paper that Terry submitted to her professor was very well received and she realised that B.C.'s Electronic Library Network supported a very important component of her education. Having learned how to tap into the global pool of information she was certainly well equipped to tackle any research projects in her future employment.*

## **Executive Summary**

The scenario in the Prologue to this report describes one student's use of the post-secondary library networks and electronic information sources in the 1990's. The whole picture is much more complex and diverse, limited only by the user's imagination and the availability of network access mechanisms and electronic information.

This report is the first step in the development of a vision of post-secondary libraries in B.C. as key participants in the provincial programme to provide "Access for All" with respect to post-secondary education and job training. The libraries' role in this policy is to provide the core materials at the institutional level that are required for teaching and basic research and then, through the Electronic Library Network, to provide access to a virtually unlimited range of electronic resources and delivery mechanisms, essentially becoming part of the 'global village' that is predicted for the 1990's.

The immediate benefits of the plan described in this report will be to lay groundwork through research, product development and the provision of basic equipment to minimize the distance factor in the supporting library resource sharing. Over the next decade post-secondary libraries will then be well positioned to build on this infrastructure and take advantage of electronic resources and telecommunications networks as they are developed.

## **Background to the study**

In Spring 1989 the Open Learning Agency (OLA) was asked by the Ministry of Advanced Education and Job Training to coordinate an investigation of the Electronic Library Network (ELN) for the provincial post-secondary system. An Advisory Committee identified two primary issues: access to bibliographic records for shared cataloguing and/or inter-library loan and document delivery, that is, access to the various types of materials represented by those records. Two surveys of post-secondary libraries were conducted to determine the extent and type of resource sharing activity at present. Following the surveys consultants were hired to analyse the survey results, consult with the post-secondary and other library managers, and develop a list of projects in priority order which should be considered for the development of the defined elements of an Electronic Library Network.

## **Methodology**

To accomplish the tasks identified in the consultants' terms of reference, two working papers were prepared, meetings with the Advisory Committee were held, and a workshop was convened in order to solicit expert opinions from a wide range of interested parties.

## **Exploring the concept of HyperNet**

The Electronic Library Network is conceived as a mosaic of services based on machine readable information and electronic networks to support sharing among the post-secondary and other libraries. The significance of any resource in the network is determined by the types of users, their location, the nature of their information requirements and possibly the equipment available. This mosaic suggests an unstructured network of services and information sources which can be configured to meet the needs of the user - either researchers, students or library staff.

In order to support the "Access for All" concept the network must have an infrastructure consisting of a series of "nodes" which are online electronic sources of information such as library catalogues, union lists, reference tools, directories, non-print media, and full-text databases. These nodes have to be easily accessible by authorized users of the network on an 'as needed' basis through a variety of computer and telecommunications networking facilities. These facilities support "links" to whichever



node the user requires for online retrieval, data capture, exchange of messages and data, and the processing of retrieved information.

A close analogy to this concept is that of Hypermedia. Hypermedia, in the information management context, permit the user to organize text and graphics in different ways depending on requirements and personal associations. The user can make links between associated pieces of information (nodes) that suit information retrieval requirements. In the electronic library network the vision is similar, the user should be able to create the links needed to retrieve information and documents appropriate to immediate needs. Hence, the name HyperNet for the concept of B.C.'s post-secondary Electronic Library Network. The permutations and combinations that are possible are limited only by the imagination of the user and the technologies available to support the links.

### **The components of the Electronic Library Network**

While the ELN is a conceptual network, the components and users of the network are real. It was from the perspective of the users of the network that we attempted to define its components.

There are two distinct groups of users of the electronic library network: patrons who identify, request and receive documents and other media, and library staff who describe, manage, locate, and deliver the materials. At present the capability to serve these users adequately is somewhat limited by distance from the the major resource libraries of the province. This does not need to be so and the Electronic Library Network is intended to remove the distance factor.

The results of the surveys indicated that there is already a good foundation for the network in the availability of collection information in machine readable form, a base of computer hardware and other equipment, use of electronic mail, cooperative resource sharing procedures, and ongoing pilot projects and local initiatives.

Gaps in the network were identified in terms of limited acquisitions budgets which are putting undue pressure on resource sharing activities, and the absence of basic equipment such as microcomputer workstations and facsimile machines in some of the more remote institutions. Without union catalogues or more sophisticated online access to individual catalogues, resource sharing among post-secondary libraries is time consuming and uneven. The uneven availability of bibliographic reference tools is another impediment to effective resource sharing among post-secondary libraries. Finally, document delivery mechanisms need attention. Knowing about the existence of materials is of no benefit if it cannot be delivered in a timely manner. Many of the technologies being incorporated in resource sharing networks have been more successful in addressing the problems with access to bibliographic information than dealing with physical delivery of information, especially if it is more than several pages in length or in a non-print format such as film or video.

The projects identified during this study are intended to address the gaps described above.

### **Electronic Library Network projects**

The identification of four project categories -- basic, primary, future, and management/research -- reflects the required activity continuum. Some can be worked on concurrently, while others are prerequisite tasks that must be completed at an early stage in the proposed implementation schedule. The required human, equipment, and financial resources also vary. The outcomes of each project will range from the conceptual to the tangible.

The basic projects address hardware and equipment deficiencies that should be resolved as quickly as possible in order to support a minimum, but standard, level of resource sharing activity. They do

not require complex project management support and can be resolved quickly through some capital funding support.

The **primary projects** address the gaps that presently impede resource sharing among the post-secondary libraries. They will require the application of human, equipment, and financial resources in varying combinations. Most will need a feasibility review and detailed identification of requirements before progressing to a pilot, or implementation phase. They are identified as 'primary' because, once the basics are in place, the required technology is available to implement solutions now.

The **future projects** identify areas where the necessary standards, systems, or technologies are still under development or just emerging. However, they are important elements in realizing the complete ELN concept, and must be kept in mind as viable projects in the near future.

The **management and research projects** address the conceptual, organizational, and management issues for the electronic library network. They require primarily human resources, ideally from the participating libraries.

The following table summarizes the projects in each groups. More detailed descriptions and explanations are provided in the main report

Summary of ELN projects			
Basic	Primary	Future	Management and Research
Microcomputer workstations (basic information retrieval workstation)	Union List of Serials (ULS)	Network Directory Service Protocol (NDS)	Definition of network users
	Media Union Database (MUD)	File Transfer Access and Management (FTAM)	Network technology ELN management issues
Facsimile machines	Shared reference tools (CD-ROM and mounting tapes on local computers)	Cataloguer's workstation	Document delivery options
Cooperative access arrangements	ILL workstation	Information Retrieval workstation	Use of standards
	CD-ROM union catalogue		

It is important that an appropriate mix of projects is agreed upon for the coming year. Some initiatives that are already under consideration as projects at local libraries have been included as potential ELN projects. Such activities should be encouraged and considered as part of the total implementation strategy. An ideal balance of different types and levels of projects will ensure that the essential planning and study that is still required will be offset by immediate and tangible improvements for present resource sharing activities. An implementation strategy is discussed in the final chapter of the report.

### Recommendations

The foundations of any resource sharing network are the many local collections that contain special and often unique collections in certain subject areas. The impetus for development will often come from local libraries and projects, or applications of new technology, that will be implemented independently.

Cooperation is the key to sharing local collections and the results of local initiatives. It is appropriate that any management model be based on the same concept.

A tradition of cooperative resource sharing already exists through the provincial NET and MEC structures. Emphasizing a cooperative management model will provide an opportunity to review and to strengthen these existing networks with the intent of identifying new or enhanced roles, projects, and funding opportunities. However, cooperation cannot rely on the goodwill of some of the participants. There has to be explicit funding and support for the resource sharing and the development of the Electronic Library Network.

With these caveats in mind we conclude this report by making the following recommendations and suggesting a phased implementation approach that can be adjusted to match the funding and resources available in the next few years.

**Recommendation #1:**

**That the Electronic Library Network concept be accepted as a diverse but coordinated structure of networks that is configured by the user to provide the most appropriate logical or virtual view required to satisfy an information need.**

Development of the ELN does not replace the need to strengthen and to develop existing collections to meet basic teaching and research needs. However, it is through appropriate sharing of resources that the full potential of B.C.'s post-secondary libraries to support research needs will be realised.

**Recommendation #2:**

**That an ELN Board of Directors be established and consist of representatives from the post-secondary libraries.**

This group would be the decision making body responsible for establishing priorities, approving projects, distributing and monitoring the use of Ministry funds, reviewing progress on any ELN projects underway, approving subsequent phases of the network implementation plan, and ensuring that the views and concerns of the network participants, both user and institutional, are addressed. The structure of the Board should also accommodate representatives from the B.C. public libraries and appropriate government ministries and agencies.

**Recommendation #3:**

**That an ELN Secretariat be created to provide central coordination and support for the network; and that it operate under the framework of the Open Learning Agency.**

The ELN Secretariat would coordinate the implementation of approved projects; distribution of funds; act as secretary to the ELN Board of Directors; prepare short, and long, term plans for them; and monitor and evaluate the progress of projects underway.

Three positions should be funded for an initial period of three years. The staffing required will include an ELN Coordinator, secretarial and administrative support, and within one year a Technical Support Coordinator. These positions, and options for ongoing funding of the ELN Secretariat, should be reviewed after two years. Funding for the Secretariat should be through the Open Learning Agency as a new line item. We envisage the ELN as another activity under the umbrella of the OLA, similar to the position of Knowledge Network and the Discovery Training Network.

**Recommendation #4:**

**That the ELN Board of Directors establish a standing committee for monitoring standards appropriate in ELN projects.**

The goal of ELN is to develop a resource sharing network that is appropriate for B.C.'s post-secondary libraries and their users while also taking advantage of work underway at the national and international level to standardize the exchange of bibliographic information. The standing committee should evaluate progress in this area and make recommendations to the ELN Board of Directors. This committee, which would be coordinated through the Secretariat, is envisaged as a small group of post-secondary librarians and/or industry experts. Representation from the NLC Networking Committee would also be advantageous.

**Recommendation #5:**

**That the ELN Secretariat be responsible for monitoring, evaluating and working with any provincial initiatives or projects with implications for the Electronic Library Network.**

It is important that ELN projects are not developed in isolation from other information access and resource sharing projects. For example, the proposed BCInfoNet has similar objectives to the ELN and it may be more appropriate and cost-effective to consider the use of a larger, multi-purpose provincial network. Library databases and information would enhance any broader information network and advantage should be taken of common interests in distributing information. Libraries have been leaders in developing and implementing such networks and their expertise could be a useful addition to these other initiatives. Projects undertaken by the public libraries, government and special libraries should also be monitored with a view to eventually including all types of B.C. libraries in the ELN.

**Recommendation #6:**

**That a phased implementation strategy, as described in the following chapter, be accepted to address the basic gaps immediately while undertaking longer term projects to establish the Electronic Library Network.**

There is no 'deus ex machina' network solution that is appropriate for B.C.'s post-secondary libraries at this time. Promising network systems and standards such as OSI are emerging but not completely realized. Existing network systems such as IRVING could be acquired, but they are not economically feasible or sufficiently standard to be long term solutions. There are more fundamental gaps that hinder resource sharing among B.C.'s post-secondary libraries that can be addressed immediately.

**Implementation plan**

Implementation of the initial ELN concept will require three to five years in order to complete projects in an appropriate and logical fashion. This phased approach has several major advantages. Initially, it provides sufficient time to complete the basic projects that have been proposed at the same time as many of the management/research issues are being resolved. The primary projects can commence during the first year, but completed as time, resources, and priorities dictate. Finally, it provides time for B.C.'s ELN members to monitor the technologies and standards that are still at developmental stages and to implement them at the appropriate time.

Several elements must be balanced in the implementation plan. It is important that there is an appropriate combination of both conceptual and tangible projects. Feasibility studies and reviews of organizational issues can be done concurrently as other projects provide basic, but immediate, solutions

to some of the gaps in present resource sharing activity. It is necessary to encourage local library initiatives and projects while also identifying and implementing the tasks and services that require central coordination and shared effort.

The proposed projects contribute towards establishing the proposed Electronic Library Network and should not be treated as a smorgasbord to be sampled in an arbitrary fashion. It is important to retain a strong vision of, and commitment to, the concept that is generated in this study: the establishment of an electronic library network that will support effective resource sharing among the post-secondary libraries and truly provide 'Access for All', whether they are students at a community college in Northern B.C. or faculty at a large, urban university.

The table provided in the report shows the implementation plan developed with the ELN Advisory Committee.

As we have mentioned several times in this report and the Working Papers, B.C. post-secondary libraries have a long history of creative resource sharing. The work done in establishing the B.C.U.C. provides the basic building block of machine readable records for on-going networking activities. This study was an opportunity to take stock of a process that began 10 years ago and to prepare for the next decade when advances in communications and other technologies will eliminate the distance factor in access to information. In 1989 the post-secondary libraries have an excellent opportunity to start taking advantage of emerging network standards and changing technologies to develop new concepts in library resource sharing that are innovative and designed to meet the changing needs of the B.C. advanced educational system. We believe that the Electronic Library Network can become a reality in B.C. and that the concept is flexible enough to begin now and to carry the post-secondary libraries well into the next decade.

## 1. Introduction

Libraries do not operate and serve their clientele in a vacuum. Post-secondary institution libraries in British Columbia have a long history of cooperation and sharing with each other. In the library context sharing involves many activities ranging from coordinated collection development, through sharing the effort of cataloguing and recording their holdings, to borrowing each other's materials on a temporary basis in order to satisfy a patron's need for information which is beyond their established collection policies and service criteria.

Borrowing from another library should never be a substitute for owning a well developed collection of materials that are needed by patrons on a day-to-day basis to support the courses taught at the institution and the majority of requests. However, when the library does not own the required material it has the choice of purchasing it for the permanent collection, acquiring a copy from a 'document on demand' service or full-text electronic source for patron retention, or acquiring it temporarily from another library. Whichever decision is made, post-secondary libraries are making increasing use of computers and telecommunications to facilitate this acquisition and management process.

In British Columbia the provincial government has made a commitment to 'Access for All' as a strategy for the development of post-secondary education.<sup>1</sup> In this age of telecommunications location should have less relevance in the provision of information and services. This strategy is designed to overcome geographic barriers to post-secondary education. Hand-in-hand with educational courses is the need to provide educational support materials. Libraries play a critical role in the education process and one initiative in the 'Access for All' strategy is the creation of electronic links between libraries at universities, colleges, institutes and the Open Learning Agency. This study is about the concept of the Electronic Library Network (ELN) to support the 'Access for All' strategy.

### 1.1. Background to the study

In Spring 1989 the Open Learning Agency (OLA) was asked by the Ministry of Advanced Education and Job Training to coordinate an investigation of the Electronic Library Network for the provincial post-secondary system.

An ELN Advisory Committee with representatives from the ministry, OLA, various post-secondary institutions, the B.C. Library Association, and the Library Services Branch of the Ministry of Municipal Affairs, Recreation and Culture was formed. The Library Services Branch is responsible for B.C. public libraries and was invited to participate as they had recently completed a similar study on an interlibrary loan network for public libraries.

Two primary issues were identified -- access to bibliographic records for shared cataloguing and/or inter-library loan and document delivery, that is, access to the various types of materials represented by those records.

In May and June 1989, the Advisory Committee undertook two surveys of B.C.'s 24 post-secondary libraries (plus Yukon College) in order to:

- o determine the extent and availability of machine readable bibliographic catalogues;
- o identify the types of automated library systems in use and related projects underway;
- and

- o elicit comments from the post-secondary library community on such issues as sharing and networking.

Staff at the OLA library tabulated the survey responses and prepared an initial summary which was circulated to the Advisory Committee. After reviewing that information, the Advisory Committee decided it would be appropriate to engage consultants to proceed with the next phase of the study.

The consultants' terms of reference were to:

1. Review and summarize the existing level of library automation and electronic services in post-secondary libraries with a view to determining what elements could be built upon or used to create an electronic library network.
2. Review and summarize shared electronic library projects elsewhere in North America that may have relevance to the B.C. post-secondary electronic library network.
3. Consider the relationship of the ELN with other non-post-secondary B.C. libraries and services outside B.C. which are used by B.C. libraries.
4. Develop a selected list of projects in priority order which should be considered for the development of the various defined elements of an electronic library network.
5. Consider the management and organizational issues with respect to the proposed projects with special attention given to: continuing cost recovery of operations, maintaining responsiveness to user needs, and cost-effectiveness of operations. The consultants also recommended an organizational and management structure for the electronic library network.
6. Provide the opportunity for the Electronic Library Network Advisory Committee, post-secondary library directors and other appropriate library officers in B.C. to review a preliminary report and recommendations in order to provide feedback for the final report.

## 1.2 Methodology

To accomplish the tasks identified in the terms of reference, the consultants prepared two working papers<sup>2</sup>, held meetings with the Advisory Committee, and convened a one day workshop at which other interested parties had an opportunity to contribute to the network plans.

The objective of the first working paper was to review and summarize the existing level of automation and electronic services in B.C.'s post-secondary libraries. This document identified elements already present that could be used, or built upon, to create an electronic library network, and those elements that were absent, or incomplete, and require further development.

The second working paper identified and described the relevance of networking activities in B.C. to the proposed ELN; the relationship of B.C. networking initiatives to other activities and services at the national level; and reviewed selected electronic networking initiatives in North America and general trends in technology that are important to libraries and networking activities.

The working papers provided background information for a workshop on November 7, 1989 sponsored by OLA and intended to secure input from as wide a circle of experts as possible. Following the workshop the consultants completed this report which incorporates some of the information prepared for the working papers, summarizes the suggestions gathered at the workshop and attempts to provide a vision of the Electronic Library Network which will support post-secondary library resource sharing in the next decade.



## 2. Exploring the concept of HyperNet

The electronic library network is conceived as a mosaic of services based on machine readable information and electronic networks to support sharing among the post-secondary libraries. The significance of any resource in the network is determined by the types of users, their location, the nature of their information requirements and possibly the equipment available. This mosaic suggests an unstructured network of services and information sources which can be configured to meet the needs of the user - either researchers, students or library staff.

A close analogy to this concept is that of hypermedia. Hypermedia, in the information management context, permit the user to organize text and graphics in different ways depending on requirements and personal associations. The user can make links between associated pieces of information (nodes) that suit information retrieval requirements. In the electronic library network the vision is similar, the user should be able to create the links needed to retrieve information and documents appropriate to immediate needs.

In order to support the 'Access for All' concept the network must have an infrastructure consisting of a series of 'nodes' which are online electronic sources of information such as library catalogues, union lists, reference tools, directories, non-print media, and full-text databases. These nodes have to be easily accessible by authorized users of the network on an 'as needed' basis through a variety of computer and telecommunications networking facilities. These facilities support 'links' to whichever node the user requires for online retrieval, data capture, exchange of messages and data, and the processing of retrieved information. Tables 1-4 attempt to show graphically the components of HyperNet and two views of the HyperNet from different user perspectives. The permutations and combinations that are possible are limited only by the imagination of the user and the technologies available to support the connections.

HyperNet components are only part of resource sharing and networking among libraries. A more general definition (which is adapted from a statement of the Network Advisory Committee of the Library of Congress) might be that it:

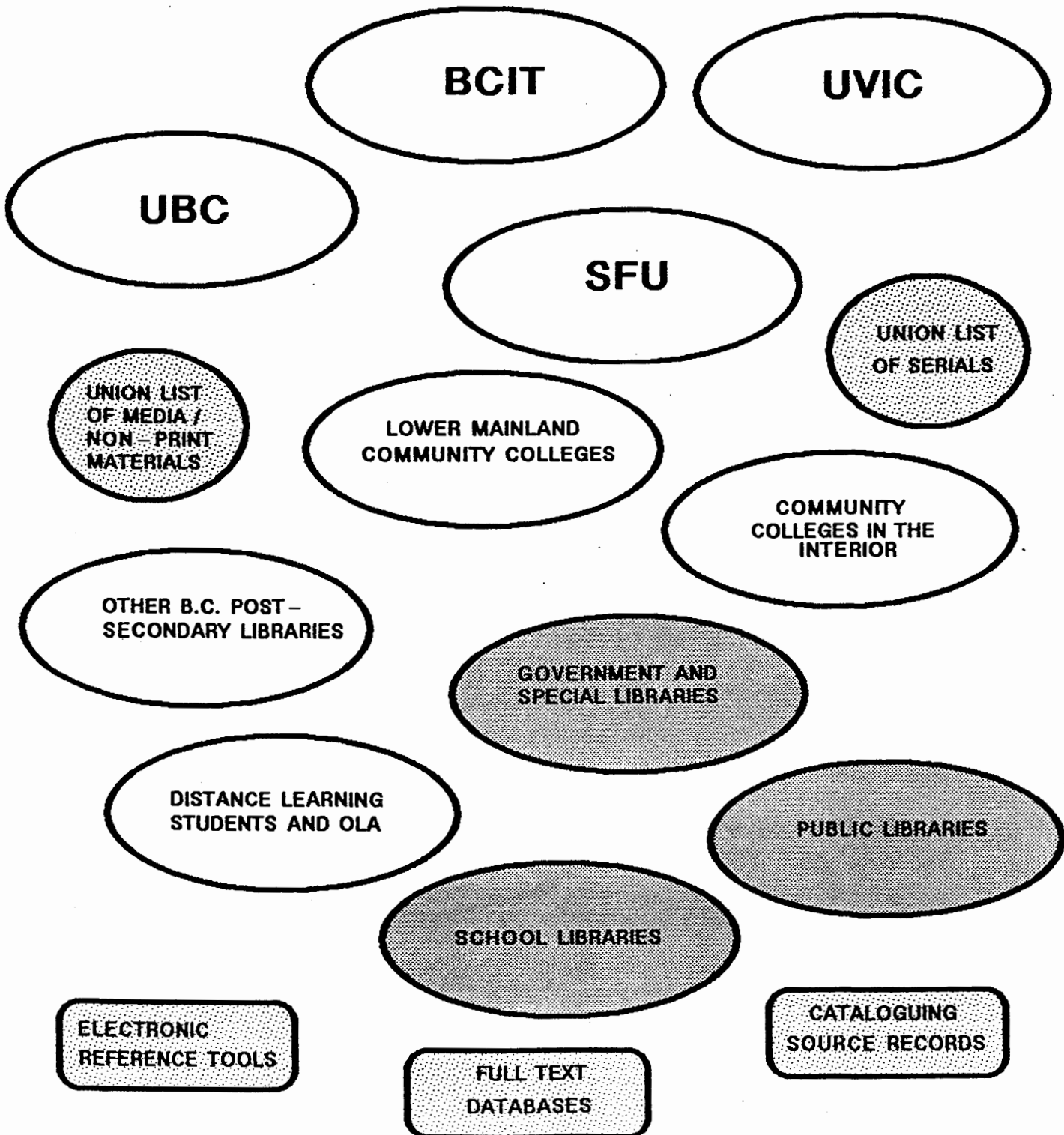
"Supports an environment in which post-secondary and other libraries can provide each individual with equal opportunity of access to resources that will satisfy their information needs and interests. All users should have access on a timely basis to information they require without being faced with costs beyond their own and society's means."

This implies:

- o the capability to accommodate the diverse missions of different types of libraries and to benefit from the strength that is implicit in diversity;
- o a diverse but coordinated structure of networks which encourages local initiatives and local autonomy rather than a monolithic, hierarchical structure; and
- o a network that is configured to provide the most appropriate logical or virtual view of the network required to satisfy an information need.

# Table 1: HyperNet overview

**NATIONAL AND REGIONAL CATALOGUES AND ELECTRONIC INFORMATION SOURCES**



To 'see' the HyperNet draw a link from any one node to any or all of the others. Links are combinations of hardware /software and/or a document delivery infrastructure. Nodes are sources of information.

Table 2: SFU Faculty 'view' of HyperNet

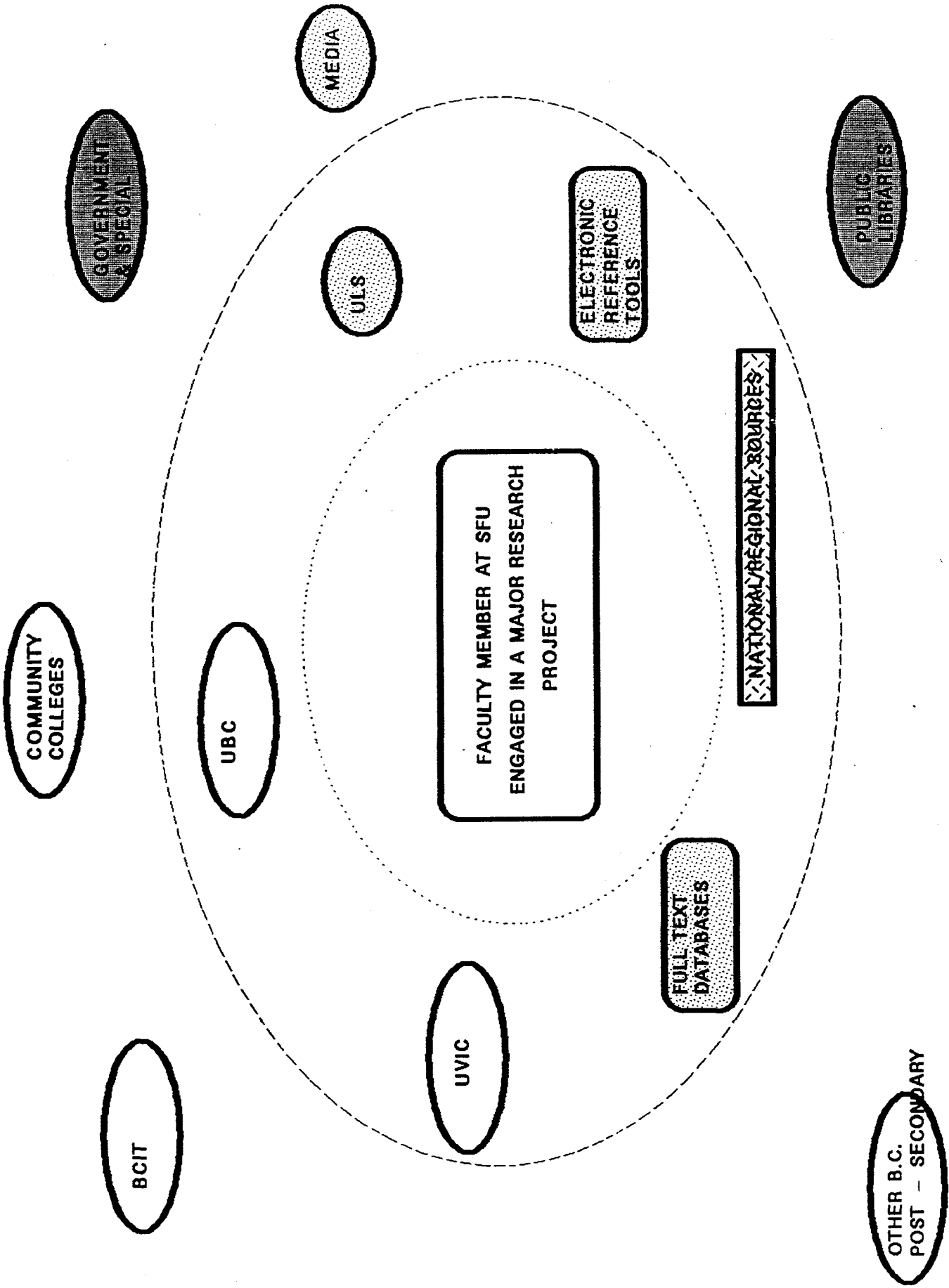


Table 3: A student 'view' of HyperNet from Cariboo College

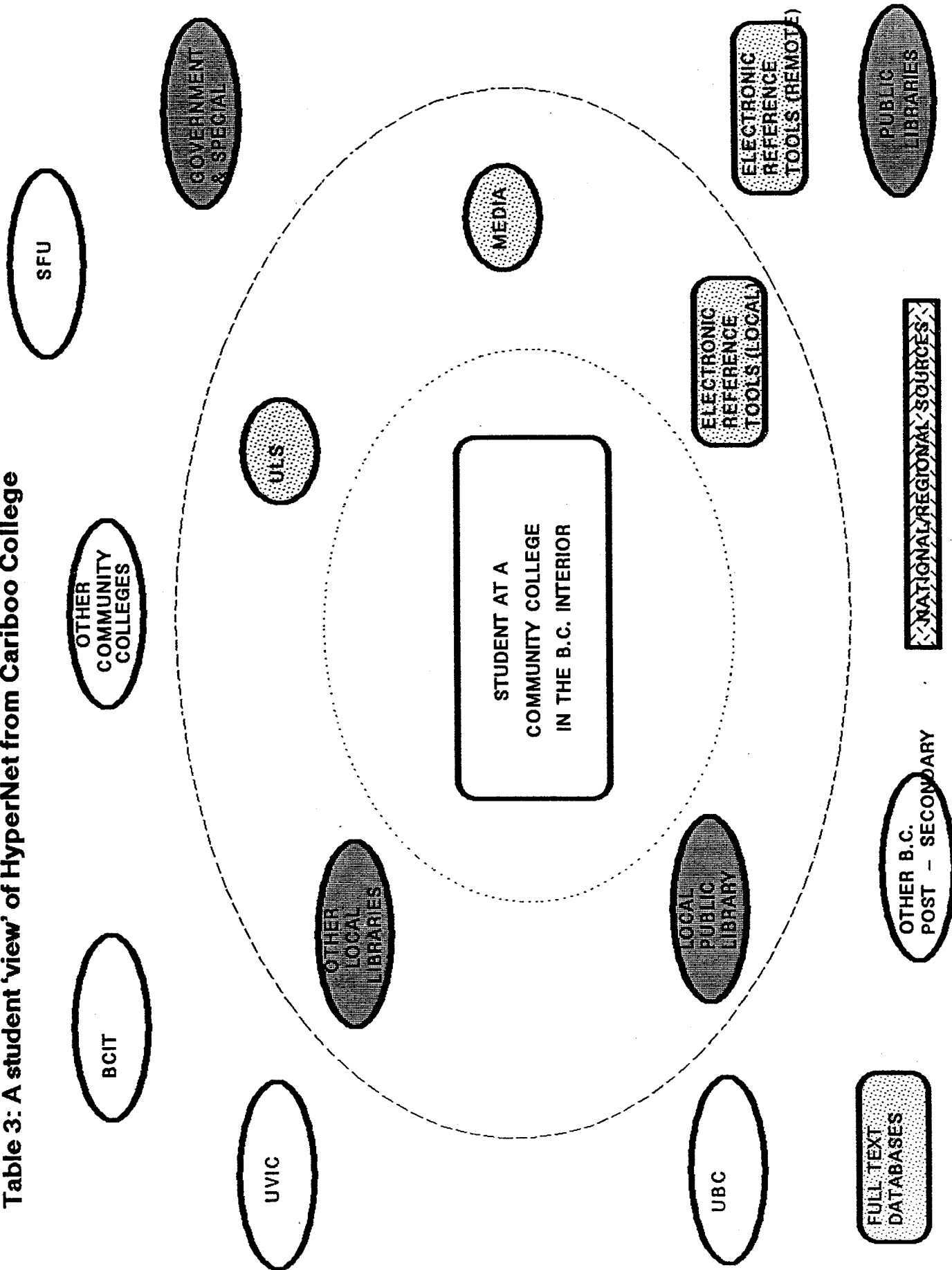
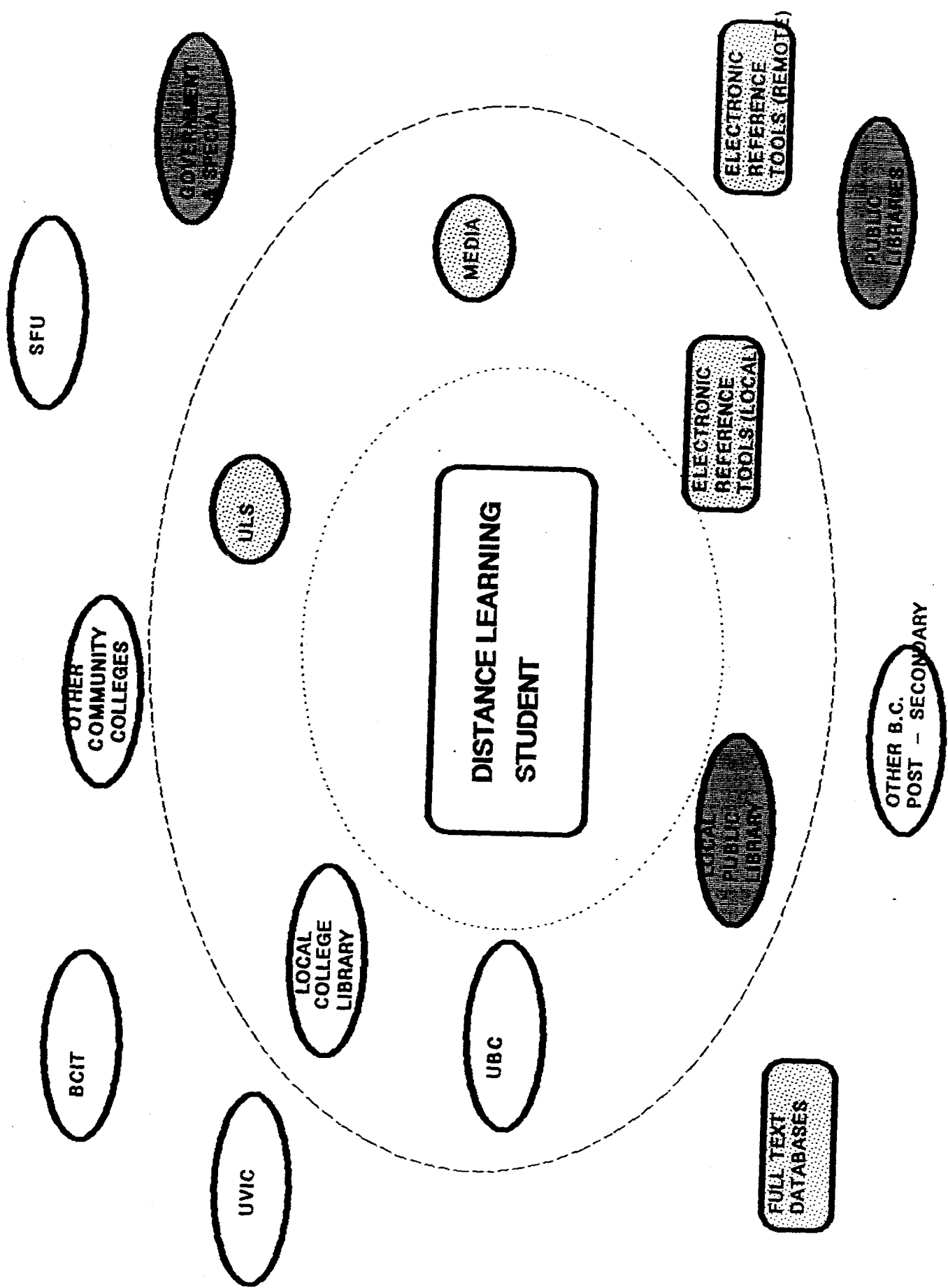


Table 4: A distance learning student's view of HyperNet



Not all of the possible views can, or should be, anticipated or defined in advance. At times, the mixture of components will also introduce limiting factors. For example, lack of certain equipment components will place limits on the type, variety, or amount of information that can be provided. It is also likely that certain policy or organizational limitations or defaults may be deliberately introduced. For example, undergraduates might only be provided with a list of materials actually available in a local library or retrievable within 48 hours.

These concepts are appropriate now because of rapidly developing technologies, common standards and shared communications facilities, including:

- o Low cost local computing power and new microprocessor and computer architectures. These provide local power for intelligent workstations, and the capability to manage significant amounts of information on small in-house machines.
- o Distributed processing which means there is the capability to decentralize information, support local autonomy and still cooperate and access information in other libraries.
- o Database management systems and application development tools for lower cost development of applications and greater flexibility for the end user.
- o Optical alternatives for mass storage providing a secure, easily distributed medium for text information.
- o Service and delivery options are increasing to the advantage of libraries all over North America. (1989b, pp. 6-10)

Finally, post-secondary library patrons are becoming more sophisticated, computer literacy is increasing and some patrons are beginning to want their information in an electronic form. Libraries want to respond to these expectations. However, as technology costs are decreasing, corporate costs of management are increasing. We have to look for solutions that do not carry a high overhead, and/or which provide an opportunity for cost recovery.

It is difficult to represent graphically the concept of HyperNet in the somewhat static 1970's and 1980's style of network structures that are based primarily on hardware and/or location schematics. HyperNet, B.C.'s Electronic Library Network, is a conceptual network in which library patrons and staff can make associative network links or views depending on the information needed to satisfy the initial query. The conceptual network needs a tangible infrastructure to be functional and the elements of the network are developed in the following chapters.

### **3. The components of the Electronic Library Network (ELN)**

While the ELN is a conceptual network, the components and users of the network are real. It was from the perspective of the users of the network that we defined its components. The workshop participants assisted in defining these users who are briefly described below.

#### **3.1. The users of the network**

There are two distinct groups of users of the electronic library network: patrons who identify, request and receive documents and other media; and library staff who describe, manage, locate, and deliver the materials.

The first group of network users, library patrons, are the students and faculty of the post-secondary institutions. However, the definition is not as simple as that. We identified the following groups who in today's environment can be served with varying degrees of effectiveness.

1. Students and faculty on a B.C. university campus.
2. College students and faculty in the lower mainland.
3. College students and faculty outside the lower mainland in a town that has a college campus and library.
4. College students registered in one of the 3rd./4th. year courses at a college.
5. Distance learning students with a local college or public library
6. Distance learning students without a local college or public library.

Each group, including the distance learning students, has a 'home' library which should be developed to provide a core collection to support the teaching and research activities of the post-secondary institution. The effectiveness of post-secondary libraries, from the patron point of view, in providing materials from beyond the base collection can be assessed in terms of the libraries' ability to provide:

- o access to reference tools to enable the patron to identify information sources;
- o a mechanism for patrons to forward or deliver requests to the library; and
- o timely delivery of the requested documents and media to the patron.

After reviewing each of these criteria for the patron groups identified above we concluded that the best served patrons are those in the lower mainland. At present distance from the major resource libraries is a limiting factor in terms of finding out about relevant information and getting timely delivery. This does not need to be so and ELN is intended to remove the distance factor.

The second group, library staff with a variety of responsibilities, are partners in the network.

In the **acquisitions and collection development** area knowing what other libraries hold in their collections can help in the decision making process. Easy access to such information could make cooperative acquisitions programmes for expensive and/or little used materials a reality. Cooperative acquisitions only works if the information about who holds the item is easily accessible and the material can be conveniently delivered to the patron when needed.

Sharing **cataloguing** information is a long established tradition. Access to other libraries' cataloguing and to other electronic sources of national standard cataloguing must be a component of the ELN.

Finally, **reference and inter-library loan** staff provide support to patrons in identifying information sources, locating materials not in the library's collection, and arranging for delivery to the patron.

As with the case of patrons, distance from the major resource libraries in B.C. and inconvenient access to information about who holds which various resources are the limiting factors in service delivery.

### 3.2 Staff and patron requirements

In order to identify elements of the ELN, we defined a framework in which resource sharing activities occur. Table 5 summarises the initial framework that was presented to the workshop participants and used to set the ELN projects in the context of staff and patron needs.

**Table 5: Framework for the ELN**

<b>Activity</b>	<b>Requirements</b>	<b>Pre-requisites or assumptions</b>
Describe materials in the libraries	Access to shared cataloguing, source bibliographic and authority records	International standards, such as MARC and AACR2 are followed.
Identify a need for information or a known item	Library is able to receive the request from the patron and/or perform reference interview to clarify request	Cooperation among all types of libraries
Locate item(s) needed to satisfy information requirement	Union catalogue or access to multiple databases, or a structure to broadcast the request and wait for responses	Machine readable records with holdings. Cataloguing standards and authorities. RECON. An update mechanism.
Transmit request for loan	Communications mechanisms	Accounts, equipment, procedures and protocols.
Deliver document or other media	Timely delivery services	Ownership of the item and copyright clearance



### 3.3. Existing components of the network

There are significant network components already in place among the B.C. post-secondary libraries. In most instances, these components are not complete or ideal and some are discussed below in the context of network gaps. Nonetheless, some elements are present and can be used immediately either to support initial electronic library network activities, or developed further to achieve the complete network vision described earlier.

There are 3.6 million **bibliographic records** in machine readable form (generally MARC) for almost all of the materials collectively held by the post-secondary libraries. In most instances, those records are available for online inquiry at the local level. As the MARC format and shared cataloguing standards have been used by all libraries, the records provide a basis for collective processing and merging to produce products for general union catalogues or lists of specific material types.

An **extensive computer hardware and equipment base** is present in the post-secondary libraries. There is considerable variety in the type and extent of the equipment among the libraries, but the continued development of communications interface systems and adoption of Open Systems Interconnection protocols suggests that the linking of non-standard systems will be commonplace in the early 1990's. For the immediate future, there are basic (albeit inelegant) ways to link these systems in an electronic library network.

**ENVOY** has been adopted as the common electronic messaging system among the post-secondary libraries and is already used for inter-library loan and resource sharing activity.

**Cooperative resource sharing** procedures and standards are already in place through the NET, MEC and CILS networks. Groups such as TRIUL and CPSLD meet regularly to discuss common issues and develop shared programs and initiatives. The participants have experience with the activities, responsibilities, issues, and problems associated with shared ventures.

Many local, often **informal, resource sharing** arrangements are operating successfully among various combinations of the post-secondary libraries and occasionally other types of libraries. These groupings are usually based on proximity and necessitated by geographic isolation from other information resources.

Many of the **human resources** required for the establishment of an electronic library network are already available in the provincial post-secondary libraries. Many staff have developed expertise with a wide range of automated library systems and online information services.

There are several **pilot projects and local initiatives** already underway that can be treated as 'building blocks' for an electronic library network. These projects provide useful experience with new products and technologies and offer an opportunity to evaluate their suitability for the province-wide network. Many of the post-secondary libraries have introduced CD-ROM based bibliographic reference tools. Recently, NET has introduced the NETFAX service which provides the option of transmitting requested periodical articles by facsimile equipment. Increased use of courier services rather than regular mail has also been implemented and shown significant improvements in turnaround time for document delivery.

It is important to remember that the primary objectives of the electronic library network are to improve resource sharing among the post-secondary libraries and to provide patrons anywhere in B.C. with more equitable access to information and materials. These objectives are familiar and desirable ones for all libraries and many of their resources, services, and efforts have been,

and are being, focused in that direction already. That traditional commitment provides a strong and well developed foundation for the electronic library network but does not replace the obligation of post-secondary institutions to build and manage an adequate core collection of materials to meet immediate needs.

### **3.4. Gaps in the ELN**

Both working papers and the November 7, 1989 workshop on Resource Sharing: Defining the Electronic Library Network contributed to the identification of serious deficiencies in the present post-secondary library resource sharing situation. Some, such as limited acquisitions budgets for new materials and availability of human resources, are not the direct focus of this study, but must be noted. However, there is little point in developing the ideal information delivery system if there is nothing to deliver and nobody to use it effectively.

Limited acquisitions budgets for new materials have become a chronic problem in all libraries and the phenomenon is not unique to British Columbia. Changes in government and/or parent-institute funding priorities in conjunction with higher than average inflationary increases for library materials during the 1980's have made it difficult to build and maintain adequate collections. In many post-secondary libraries the budget problem has extended beyond the objective of providing a comprehensive and current research collection; it also erodes the ability of many libraries to support basic curriculum and teaching activities.

It is inappropriate and ineffective to share high demand and high use materials intended for basic teaching and course work through a resource sharing network. It is equally futile to develop a network with a paucity of library collections that do not contain, at least, some subject areas where a strong, comprehensive body of materials exists. A resource sharing network DOES provide the vehicle to share these materials effectively, and offers the opportunity to distribute rationally the responsibility of providing a comprehensive and current research collection among many libraries.

Basic library resources -- trained staff, adequate physical facilities, suitable computer hardware and other equipment -- are another commonplace deficiency. In British Columbia, this situation is generally worse in the areas outside the Lower Mainland. Almost all of the post-secondary libraries have a microcomputer workstation available for inter-library work. In the smaller college libraries the workstation is often used for cataloguing, database searching, and other processing activities, and is often located in another department. In the ELN surveys, most of the respondents indicated they had access to a fax machine, but in many instances it was not actually in the library. The fax machine was usually in the parent institute's general administrative services department, and, in one instance, located on another campus.

Current and emerging technologies offer potential solutions to limited local resources and the problems of geographic isolation. But they also introduce increased expectations and new demands. Most libraries have discovered that the introduction of services based on new technologies requires additional staff time and effort. Although many of these services are designed for use by patrons, initial instruction and ongoing assistance from experienced staff are still required.

There are provincial gaps in the information tools and resources that are needed to support an effective resource sharing network. Most of the post-secondary libraries have machine readable bibliographic records for their collections, but there are no available union catalogue products that present these separate databases in a single, unified sequence. Most libraries have local online access to their machine readable bibliographic databases, but there is no

communications interface or linkage among these separate databases that provides remote users with a 'single lookup' online facility.

Without union catalogues or more sophisticated online access, present resource sharing among the post-secondary libraries is time consuming and uneven. Many separate library fiche catalogues, printed lists, or multiple access to different computer systems must be employed. The larger libraries, especially the UBC Library, end up supporting most of the resource sharing activity because it is easier to go directly to UBC with a request than spend time checking for alternate locations.

There is a very specific deficiency in the amount of information available on serials held by the post-secondary libraries. Although machine readable records exist, many are brief, bibliographic title information records. With the exception of the UBC Library, no detailed holdings information is available in machine readable form for serials. Requests for periodical articles account for approximately two-thirds of ILL activity through NET. Obviously, current serials holdings information would be an asset in the electronic library network.

In addition to serials holdings information, pre-1978 bibliographic catalogue information is not generally available in machine-readable form. Until these records are converted there will not be a complete machine-readable record of B.C.'s library holdings.

The uneven availability of other bibliographic reference tools -- commercial and non-commercial and in a variety of formats -- is another impediment to effective resource sharing among the post-secondary libraries. New information storage and delivery technologies such as CD-ROM have made it possible for individual libraries to acquire many information databases for local use. It is also possible to load indexing and abstracting databases on local computer systems for online searching by patrons. These systems are still costly and B.C. libraries have only begun to explore the options in this area. If this trend develops the smaller and more isolated post-secondary libraries will be at a disadvantage. They will not be able to afford many of the new systems, and may not have affordable access to them in neighbouring libraries.

A serious deficiency in many resource sharing networks, and one that is exacerbated by B.C.'s geography, is the time required for document delivery. It sometimes takes up to ten days to send an item from one B.C. library to another, especially if the latter is located outside the Lower Mainland. NETFAX and use of courier services are steps in the right direction but more research is needed in this area. Many of the technologies being incorporated in resource sharing networks have been more successful in addressing the problems with access to bibliographic information than dealing with physical delivery of information, especially if it is more than several pages in length or in a non-print format such as film or video.

The weaknesses described above are being aggravated by the emergence of the university colleges offering 3rd and 4th year courses. While the the problems apply across the board to the existing base of libraries, new courses are adding another layer of demand on an already stretched system. In particular the colleges supporting these courses need increased acquisitions budgets and basic library resources to meet the growing demand for services.

#### 4. Electronic Library Network Projects

No single project will achieve the proposed electronic library network for B.C.'s post-secondary institutions. There are weaknesses that impede present resource sharing arrangements and the application of technology only will not be sufficient to alleviate deficiencies. Material, financial, organizational and human resources will also be required in various combinations. Potential projects have been arranged into four categories -- Basic, Immediate, Future, and Management/Research.

##### 4.1. Four types of ELN projects

In order to implement the electronic network envisioned for B.C.'s post-secondary libraries, the gaps identified above have to be addressed, existing network components must be adapted or expanded to fit into the new network, and organizational and management issues must be discussed and resolved. The ELN concept that is proposed is not unrealistic or unattainable, but it is dependent on taking advantage of emerging technologies, standards and products as they become available during the early 1990's.

At the same time, it is important to be practical -- 'You have to walk before you run.' There are projects and other tasks that can be started right now. They will provide some immediate improvements for present resource sharing while also developing a solid foundation for the ultimate electronic library network.

The issues of copyright and performance rights were raised during discussions with the Advisory Committee and at the workshop. While not directly related to the ELN, it should be noted that the cost of these rights will have to be budgetted for when planning increased distribution of materials.

The identification of four project categories -- basic, primary, future, and management/research -- reflects the required activity continuum. Some can be worked on concurrently, while others are prerequisite tasks that must be completed at an early stage in the proposed implementation schedule. The required human, equipment, and financial resources also vary. The outcomes of each project will range from the conceptual to the tangible.

The basic projects address hardware and equipment deficiencies that should be resolved as quickly as possible in order to support a minimum, but standard, level of resource sharing activity. These projects do not require complex project management support and can be resolved quickly through some capital funding support.

The primary projects address the gaps that presently impede resource sharing among the post-secondary libraries. They will require the application of human, equipment, and financial resources in varying combinations. Most will need a feasibility review and detailed identification of requirements before progressing to a pilot, or implementation phase. They are identified as 'primary' because, once the basics are in place, the required technology is available to implement solutions.

The future projects identify areas where the necessary standards, systems, or technologies are still under development or just emerging. However, these projects are important elements in realizing the complete ELN concept, and must be kept in mind as viable projects in the near future.

The management and research projects address the conceptual, organizational, and management issues for the electronic library network. They require primarily human resources, ideally from the participating libraries.

Table 6 summarizes the projects in each groups. More detailed descriptions and explanations are provided below.

**Table 6: Summary of ELN projects**

Basic	Primary	Future	Management and Research
Microcomputer workstations (basic information retrieval workstation)	Union List of Serials (ULS)	Network Directory Service Protocol (NDS)	Definition of network users
	Media Union Database (MUD)	File Transfer Access and Management (FTAM)	Network technology
Facsimile machines	Shared reference tools (CD-ROM and mounting tapes on local computers)	Cataloguer's workstation	ELN management issues
Cooperative access arrangements		ILL workstation	Document delivery options
	CD-ROM union catalogue	Information Retrieval workstation	Use of standards

It is important that an appropriate mix of projects is agreed upon for the coming year. Some initiatives that are already under consideration as projects at local libraries have been included as potential ELN projects. It is important that such activity be encouraged and considered as part of the total implementation strategy. An ideal balance of different types and levels of projects will ensure that the essential planning and study that is still required will be offset by immediate and tangible improvements for present resource sharing activities. An implementation strategy is discussed in the final chapter of the report.

A common external review mechanism can be used for all ELN projects to ensure they remain on schedule, within budget, and complete all necessary tasks. The present ELN Advisory Committee, or a similar body, would be an appropriate group to perform this function. Many of the projects will require internal committees or working groups comprised largely of staff from the participating libraries. A coordinating agency, for example an ELN Secretariat, could be responsible for administrative support required for the committees, institutions, and individuals involved in projects.

#### 4.2. Overview of the descriptive framework for the projects

Most projects have been described using the same common elements. Not all elements have been used in every project description, especially for the 'future' projects which have only brief descriptions. The common elements are as follows:

Description - provides a summary and general explanation of the project.

**Relationship to Other Services** - describes any existing, or potential, services that relate to the project, including services at the local library level, other provincial or network activities, and non-B.C. services such as NLC.

**Technologies Required** - identifies the hardware, software, and other equipment already available or required. Issues such as 'off the shelf' standard software versus customized, or new development programs are addressed.

**Organization and Management** - discusses recurring issues such as: local, distributed, or central management; use of existing human resources versus additional staff; skills required; additional training; and development of procedures.

**Cost Components** - summarizes the general capital and operating costs, both start-up and ongoing, associated with the project. Where possible the human resources, in terms of voluntary personnel, consultants and contract staff, have been identified.

**Cost Recovery/Alternate Funding** - identifies potential sources such as local library/institutional budgets, other agencies and ministries, and 'user pay.'

**Benefits** - lists the expected outcomes and benefits.

#### 4.3. Basic projects

##### 4.3.1. Basic microcomputer workstation

###### Description

At present, the type and availability of microcomputer equipment varies widely among the post-secondary libraries. Many of the college libraries have inadequate, or outdated, machines and must share them with other library departments for a variety of tasks.

This project would identify a standard workstation configuration and appropriate 'off the shelf' software to support current resource sharing activity. Standard telecommunications software and access scripts could also be developed and distributed. The selected equipment should also be capable of forming the basis for other projects likely to be undertaken in the near future.

Ideally, one standard workstation would be provided to each network participant regardless of their current equipment inventory. An alternative would be to identify the "have not" libraries and distribute the workstations only to them.

###### Relationship to other services

A basic workstation is a minimum requirement for a library's participation in any electronic library network. A standard equipment and software platform for resource sharing work such as sending and receiving ILL requests via ENVOY will provide an immediate and tangible improvement in daily operations.

Common equipment would also assist in the implementation of several of the other general projects proposed for the development of the electronic library network.

### Technologies required

Microcomputer workstation including 30-40 Mb hard drive, monitor, 2400 baud modem, basic dot matrix printer. An 80386 machine would ensure continued, productive use into the early 1990's.

Standard software for telecommunications support, basic word processing, statistics, and file management. Scripts and protocols that meet international standards or are agreed upon among B.C. participants.

### Organization and Management

A small technical committee could develop and/or approve the workstation specifications. The coordinating agency could be responsible for acquisition and distribution of the equipment.

### Cost Components

Microcomputer hardware and software. (Based on 1989 costs, the proposed configuration would cost between \$2500 and \$3500 per workstation). Thirty to forty workstations would be required.

Ongoing equipment maintenance will also have to be considered and should be the responsibility of the receiving institution.

### Cost recovery/alternate funding

Equipment and software could be acquired through available government purchasing programs, or in conjunction with other ministry equipment, to obtain a maximum discount.

Local institutes would be responsible for ongoing equipment maintenance.

### Benefits

Provides a basic, but standard, workstation for all post-secondary libraries that will support current activities and access to the ELN as it evolves.

Provides an immediate and tangible improvement for current daily resource sharing work.

## 4.3.2. Facsimile machine

### Description

Facsimile transmission is a technology that provides a timely method to deliver documents to any location with a telephone line and a fax machine. It is an immediate document delivery method as opposed to standard mail and courier services and is especially well suited to brief documents such as periodical articles which are a major component of resource sharing among the post-secondary libraries.

All of the post-secondary libraries indicated they had access to a fax machine on the second ELN survey. However, in 18 cases, the machines were not in the same building as the library

and were not dedicated to library use. Only nine of those libraries indicated they had plans to acquire a fax machine for library use.

This project would provide a standard fax machine to each of the post-secondary libraries with the intent that it be used to support resource sharing activities. A separate telephone line would also need to be installed at each location.

#### Relationship to other services

In 1989 a fax-based delivery service known as NETFAX was introduced and 20 NET members have agreed to participate in this service and send items by fax when that method has been explicitly requested. Fax machines dedicated for resource sharing activity would provide added support development of document delivery services.

#### Technologies required

Facsimile machines capable of supporting the Group 3 transmission standards.

An alternative to a standalone fax machine would be to equip the basic microcomputer workstation with a fax board and optical scanning equipment. The advantage of this configuration would be that the scanner could be used for other activities such as scanning graphics for desktop publishing.

Standard telephone service.

#### Organization and management

A small technical committee could develop and/or approve the equipment specifications. A coordinating agency, or the proposed ELN Secretariat, would be responsible for acquisition and distribution of the equipment.

#### Cost components

Facsimile machines. (Based on 1989 costs, appropriate equipment would cost between \$2000 and \$3000 each.) Between thirty and forty machines are required. Consideration should also be given to locating some machines in local public libraries for delivery to distance learning students who cannot easily reach a college campus.

Monthly rental of telephone line.

#### Cost recovery/alternate funding

Equipment and software could be acquired through available government purchasing programs, or in conjunction with other ministry equipment, to obtain a maximum discount.

Local institutes would be responsible for monthly rental of telephone line.

#### Benefits

Addresses the basic problem of timely document delivery.

Provides additional support to the recently implemented NETFAX service.



#### 4.3.3. Cooperative access arrangements

##### Description

At present, most of the post-secondary libraries provide online access to their local online catalogue systems in various ways -- direct dial-up, Datapac, or local campus networks. Access is often limited or difficult, especially at peak use times. Policy issues, such as service to local or institutional patrons before remote users, must be addressed

This project would identify, develop, implement, and document procedures to maximize the use of existing online access facilities to support present resource sharing activity among the post-secondary libraries. Implementation of this project would be an interim measure until a more suitable network mechanism for the reduction, or elimination of the need for multiple access methods to different local databases is available.

The cooperation of all participating libraries and their parent institutions would be essential as some additional local systems support could be required.

##### Relationship to other services

Essentially a rationalization and improvement of present online access mechanisms to local catalogue systems. These arrangements would be interim steps towards implementing a more easily accessible network through Open Systems Interconnection.

##### Technologies required

Employs existing telecommunications technology and equipment such as direct dial-up access, Datapac, and local networks.

##### Organization and management

Most of the project work could be performed by a working committee representing each of the university library systems, the IBM Dobis system at BCIT, at least one representative from a BUCAT site, and several representatives from other libraries with unique local systems.

A higher-level body would be required to secure the cooperation of all B.C. post-secondary libraries and their parent institutions.

A coordinating agency, could be responsible for administrative support including preparation and distribution of documentation.

##### Cost components

Administrative support required for committee meetings and preparation and distribution of documentation.

Some financial subsidy to local sites for any capital equipment expenditures required for improving or extending local system access should be considered, for example dedicated ports and/or phone lines, or use of inter-university networks for ILL purposes.

Possibly some increased ongoing operating costs at local libraries or parent institutions for additional telecommunications services.

### Benefits

Maximizes use of existing local access provided by the post-secondary libraries and their parent institutions.

Provides standard documentation on access, and online searching, procedures to various local online systems.

## 4.4. Primary projects

### 4.4.1. Union list of serials (ULS)

#### Description

The union list of serials (ULS) is conceived as a merged file containing information on the holdings of all post-secondary libraries in B.C. Sufficient information will be included in the descriptions to identify the serials correctly and to indicate the holdings of each library in enough detail to determine whether the library has a current subscription, when a subscription ceases if it has, and if there are major gaps in the holdings. Although this is envisaged as a post-secondary library project initially, it should be implemented with the intention of extending the holdings to the major public libraries and special libraries in the Province.

Access and products from the ULS could be any or all of: direct dial-up; a COM product; printed lists of selected records by subject or regional holdings; machine readable records for inclusion in library catalogues or reporting to National Library; copies of the database installed on local computers; and inclusion of the B.C. records in a national CD-ROM ULS.

#### Relationship to other services

This product would be complementary to the online catalogues of individual libraries. Merging of information on serials holdings is considered beneficial because about two-thirds of the ILL requests going through the NET office are for journal articles.

#### Technologies required

Computer system with sufficient disk storage, and a DBMS, or library serials management system to support union catalogue capabilities, i.e. multiple holdings statements attached to a bibliographic description.

Support for MARC serials format with minimal level of fields to be defined along with holdings information required. International standards should be followed.

File Transfer, Access and Management (FTAM) conformance is required in future for transferring records from reporting library to ULS, and also for reporting on the National Library ULS.

ILL protocols and autosearch capabilities for receiving requests from libraries, searching and re-directing requests to other libraries.

### Organization and management

Cataloguing and holdings data maintenance would continue to be the responsibility of local libraries. However, not all libraries have to do full cataloguing, some libraries, for example universities and specialized collections could have prime responsibility for cataloguing and others would report holdings only along with ISSN and basic information for matching and 'attaching' library holdings information to ULS bibliographic record.

Coordination is needed for development and maintenance of standards. This could be a small working committee composed of representatives from the post-secondary libraries. It could also coordinate provincial work with NLC activities.

A coordinating agency, or the proposed ELN Secretariat, could be responsible for the initial coordination of ULS creation and maintenance. It is also possible to assign the responsibility to the NET office.

### Cost components

Feasibility study to determine approach and costs.

Computer system including DBMS or library serials management software. Use of a service bureau, or an existing computer facility at one of the university libraries are options.

Retrospective conversion of some local library records, and holdings information upgrading for most will be required.

Generation of various printed and machine readable products.

Ongoing operating costs for central coordination and standards committee.

### Cost recovery/alternate funding

ULS products could be developed and distributed on a cost-recovery basis.

Automatic billing for auto-searching and message redirection in the ILL process to provide some cost-recovery for central coordination.

### Benefits

Provides integrated access to serials holdings of the post-secondary libraries. This is an important resource as periodical articles are the major component of present resource sharing.

Provides automated system for serials record conversion and ongoing control at both the central and local level. Would provide a potential shared cataloguing facility for serials materials.

Provides a basis for developing auto-search mechanisms. Libraries could go direct to source instead of having to go to NET office.

Provides a basis for reporting to national union catalogue and being included in NLC/CISTI CD-ROM ULS if this national project goes ahead.

Could be included in a B.C. CD-ROM based union catalogue.

#### 4.4.2 Media union database (MUD)

##### Description

A proposal for a media union database was prepared by the Media Exchange Cooperative (MEC) in early 1988 and is summarized in Appendix III. This version has been developed within the context of the electronic library network study and incorporates recent changes in the role of the Provincial Educational Media Centre (PEMC) for obtaining provincial clearance rights for audio/visual materials.

The main purpose is to create and to maintain a central database of films and videotapes held by the 22 B.C. post-secondary institutions which belong to MEC. MARC formats would be used and standard cataloguing and authority work would be applied to all materials. Access to, and products from, MUD could be any or all of the following: dial-up online access to the central database; copies of the database installed on local computers; machine readable records for inclusion in library catalogues or reporting to National Library (when NLC develops a standard for reporting A/V materials); printed lists and catalogues based on various criteria – union, library-specific, subject or course areas.

The central database could also be used to support the work required to obtain province-wide clearance rights for audio/visual materials in the post-secondary libraries. This would include negotiation and acquisition of clearance rights, and related work such as notification of expiry dates for these rights.

##### Relationship to other services

There are no current products or formal services providing union catalogue access to audio/visual holdings in the B.C. post-secondary institutions. At present, VCC Library provides a card file-based location search service for MEC members.

##### Technologies required

A computer system with sufficient processing capacity and disk storage for the central data base of initially 30 - 40,000 titles, and an annual growth rate of about 3,000 titles. Dial-up access should be supported. (The 1988 MEC report recommended an 80386 class microcomputer with 115 MB storage capacity.)

Each library that wanted to mount the database locally for inquiry purposes would require a similar computer workstation, or the ability to load MUD records on the local computer system used for cataloguing, and other local database, support.

Computer software able to support cataloguing and authority work using MARC formats; additional data requirements for clearance rights work; general database maintenance; and telecommunications.

##### Organization and Management

A central facility is required, especially if clearance rights work is to be performed. In this instance, it might also be more appropriate to do all cataloguing work centrally and distribute it for subsequent loading in local library systems.

The present MEC structure is insufficient to support this project. In fact, this could provide an opportunity to strengthen MEC and provide it with a 'home'. Several libraries, especially VCC Library, have been carrying most of the administrative load for the MEC network.

A working committee composed of representatives from MEC members would be required to develop appropriate cataloguing and authority control standards.

#### Cost Components

Creation of master data base using existing record information from MEC participants, and the appropriate computer hardware and software. (The 1988 MEC report estimate was \$157,240. This included staffing, equipment, and other costs.)

Province-wide clearance rights for materials. (In 1989, VCC Library was given a budget of \$150,000 from the government as part of the contract for providing this service, however this does not appear to be adequate.)

Additional computer workstations and software for all MEC members to support local online access to copies of MUD. (The 1988 MEC report estimate was \$148,000.)

Ongoing annual operating costs. (The 1988 MEC report estimate was \$43,000. This did not include clearance rights work or provision of A/V cataloguing which would require at least another \$20 - 30,000 annually.)

#### Cost Recovery/Alternate Funding

Ongoing annual operating costs could be funded by MEC members and also offset through sales of database products.

If this project also assumed responsibility for management and recording of clearance rights on behalf of all provincial educational institutions, it would be appropriate for the Ministry to redirect the financial support already provided for this function.

#### Benefits

Provides a complete, current union catalogue of audio/visual materials which are a major component of present resource sharing activity among the post-secondary libraries despite current access limitations.

Provides a database that employs library standards for creating and maintaining records that could also be used in local library systems and catalogues.

Provides a facility to enable libraries to share expensive resources effectively and to support rationalized, or shared, acquisitions programs among the MEC members.

Provides a facility to produce special subject and discipline listings for instructors and other users of audio/visual materials. This would assist in course development, instruction, and planning learning assignments at the post-secondary institutes.

#### 4.4.3. CD-ROM union catalogue

##### Description

A CD-ROM union catalogue has been investigated by the college libraries and the report of the BCCD Task Force is summarized in Appendix III. The purpose of the union catalogue, which would consist of the merged catalogue records of the B.C. post-secondary libraries, is two-fold:

- o To provide a product for ILL purposes, including the capability to capture information from the union catalogue and reformat it for transmission as an ILL request to the owning library.
- o To provide a local online catalogue for individual libraries. In order to limit displays to a library or region, the system will require what is known as a scoping capability.

Although not discussed in the BCCD report, there is the option to consider other combinations of library catalogues such as: colleges only; regional groupings including special libraries; or other products such as the Union List of Serials (ULS), the media database, and/or an ILL directory with collection information.

##### Relationship to other services

This product would be complementary to the university library catalogues which are currently available in microfiche or by online access, and an alternative source of location information which does not incur telecommunications costs.

CD-ROM could be considered as a distribution mechanism for groups of resource sharing tools and/or an interim solution until communications networks and OSI are well established.

While the CD-ROM union catalogue could provide a 'one-stop' look-up for a group of libraries' holdings it does duplicate information available in individual online catalogues and involves ongoing costs for updating and replicating the catalogue.

##### Technologies required

Local online catalogues with machine readable records, and the capability to output those records in MARC format.

A CD-ROM vendor who is familiar with bibliographic information and has the facilities to merge the holdings information; to perform the premastering process for the catalogue; and to master and to duplicate the final catalogue product.

Each library that wants to use the catalogue will require a microcomputer with two, or more, CD-ROM drives and the necessary software, documentation, and training.

If the library wants to use the disc as a public online catalogue, then multiple workstations will be required.

### Organization and management

Data creation (cataloguing) will continue to be a distributed activity at the individual libraries. Some decisions will have to be made about the standards for merging records and whether duplicates and inconsistencies will be tolerated in the interests of economy and efficiency.

All the processing and merging of holdings can be contracted to the CD-ROM vendor.

The update process is complex and will have to be carefully examined. It appears the vendors offer the option of maintaining the master file in which case all record deletes and changes by the member libraries will have to be reported and processed. The alternative is to recreate the union file from scratch periodically. The BCCD Task Force assumed the latter option.

### Cost components

Data creation and preparation of MARC records at the member libraries. Most, if not all, of this activity is already supported locally as part of the cataloguing process.

Processing, premastering, mastering and duplication of discs by the CD-ROM vendor. Software licences, support and the ILL module for all member libraries. (The report of the BCCD Task Force contained two vendor quotations ranging from \$65,000 to \$100,000 annually for these services.)

CD-ROM workstation equipment for the libraries and linked electronic mail for ILL messages. (A basic microcomputer workstation would cost between \$1,500 and \$2,500, each CD-ROM drive would cost about \$1,000. Some CD-ROM vendors offer attractive package prices, especially on multiple workstation purchases.)

### Cost recovery/alternate funding

It is unlikely that all start-up costs can be recovered, especially for workstations. The requirement for ongoing funds will depend on the update mechanism selected and the feasibility of generating income from the sale of products.

There may be some sales potential to other libraries in B.C. and nationally. Individual libraries that plan to use it as a public online catalogue would require additional copies.

Members could be asked to contribute some funds in return for the local online catalogue facility. Assessment could be based on the size of individual databases.

### Benefits

Provides a union catalogue containing the holdings of B.C. post-secondary libraries. This eliminates the need for multiple look-ups, decreases the time required to locate items, and reduces telecommunications costs for remote libraries.

Provides stand-alone public online catalogue option for each participating library.

#### 4.4.4. ILL workstation and support system (UBC Library)

##### Description

This is a local project already in the planning stages at the UBC Library. It has three objectives: to support remote access and inquiry using microcomputer workstations to the UBC Library's online system; to provide an interface between the online searching results and the formulation of a subsequent ILL request; and to support central NET office functions such as tracking and shipping ILL requests, borrower/lender information, invoicing for NET charges, and ILL statistics.

Initially, the project will be developed to support ILL activity among the three university libraries and the three college libraries supporting third and fourth year courses. It will use the UBC Library's LDMS system and be maintained on the library's IBM mainframe. A simplified, microcomputer based version could be made available to all members of the network to support other inter-library communications and ILL management.

##### Relationship to other services

The project is included in this report as the first two objectives described above are relevant to the other proposed workstation projects, especially if it can be extended beyond its initial user base, or components such as the interface between remote database searching and the generation of standard ILL requests can be adapted by ELN projects.

The NET office will be involved in the UBC Library project through the automation of its files and processes which are maintained and performed manually.

University of Victoria is presently working on a Macintosh based version of the University of Calgary's ILL management system.

Work being done at NLC in this area should also be monitored and utilized where appropriate.

##### Technologies required

Microcomputer workstations at remote locations for access and inquiry purposes and a mainframe computer system at UBC Library for catalogue, and other databases including the ILL administrative support system.

Database management system (LDMS) and telecommunications support for NET management.

##### Cost components

This project does not have any impact on ELN plans at present as it is already sponsored and funded by UBC. Development of the generalized version for a ILL microcomputer workstation would need additional funding.

##### Benefits

Provides online access to UBC Library's catalogue and other databases with direct support for ILL requests.

Provides automated administrative support for the NET office.



The next three projects represent variations of the trend to enhancing the library catalogue with a variety of in-house online retrieval tools for access to journal articles and other materials. Each needs an initial feasibility study to determine cost-effective implementation. It is expected that combinations of the three approaches eventually will be implemented at different nodes in the network depending on local needs and resources..

#### 4.4.5. Shared reference tools - CD-ROM

##### Description

A number of the B.C. post-secondary libraries have begun to acquire CD-ROM based reference tools which are an attractive local alternative to accessing remote databases or equivalent print products. However, these products are still costly, require microcomputer workstations, and the development of staff expertise to assist patrons in the effective use of them. Many libraries will find it difficult to provide the required financial and human resources.

A feasibility study should examine the options for shared, or cooperative, acquisition, implementation, and use of CD-ROM based reference tools. The following issues should be addressed:

- o can single copies of some CD-ROM products be used by two or more libraries and are site-licences available?
- o can cooperative selection and purchase of single, or multiple, copies of CD-ROM products be used to achieve cost savings and rationalize distribution of them among the post-secondary libraries?
- o can hardware and support software required for CD-ROM products be standardized and purchased cooperatively?
- o can the development of staff expertise on specific CD-ROM products and preparation of documentation and other training materials for patrons be shared?

##### Relationship to other services

The feasibility study should examine the implications that the introduction of CD-ROM based reference tools have to existing print-based reference materials already available in the local library, and the relationship between CD-ROM based products and equivalent online database services, both commercial and non-commercial. Several of the latter are proposed as potential ELN projects.

More widespread access to CD-ROM based reference tools in local libraries will require that patrons understand the relationship between the information they find in these databases and the materials available in the library or, by extension, through any provincial resource sharing network.

##### Technologies required

Present microcomputer workstations are able to support single user access. Further development is still required for CD-ROM workstations capable of supporting multiple users and remote access.

### Organization and management

A working committee composed of representatives from the post-secondary libraries, or a consultant, could undertake this project.

A higher-level committee would be required to review the completed study and determine the most appropriate next steps.

The ELN coordinating agency could be responsible for administrative support required for the working committee.

### Cost components

Administrative support required for committee meetings and preparation of feasibility study.

### Benefits

Reviews the issues associated with the introduction of CD-ROM based reference tools before most libraries make significant local commitments to products.

Provides an opportunity to coordinate the implementation of CD-ROM based products on a province-wide basis and in the context of other electronic library network projects with similar objectives.

## 4.4.6. Shared reference tools mounted on a local computer

### Description

A trend in the provision of bibliographic reference tools is to load commercially available indexing and abstracting databases on local mainframe or minicomputer systems. The databases are generally made available in much the same manner as the local library's online catalogue to library patrons at little, or no, charge.

Commercial database vendors have begun to market tape copies of their products for local use. Many of the major vendors of automated library systems (e.g. BuCAT, CARL, CLSI, DRA, Dynix, Innovative Interfaces, NOTIS) have introduced, or announced, support for the loading of such files. Locally, the UBC Library is planning to load two commercial databases, ERIC and Psychinfo, into files on the Library's LDMS system. It is not yet clear whether this move will jeopardize the access that SFU and other researchers presently have because the files are mounted on the central university computer. This is a library policy decision that has to be resolved.

This feasibility study would examine the options and issues involved with loading selected commercially available databases on local computing facilities. The following issues should be addressed:

- o which post-secondary libraries, or parent institutions, have the computer system capacity and the willingness to load large commercial databases locally? Are there other provincial computer systems available?

- o can the selection, loading, and access to, appropriate commercial databases be coordinated on a province-wide basis?
- o what are the purchase, distribution, licencing and use issues that must be resolved in a multi-library network?
- o should online access systems already available in the province be used, or should other systems be examined and acquired instead?

The study should also review the experience of any local libraries that decide to load commercial databases in the next year.

#### Relationship to other services

The feasibility study should also examine the implications of loading commercial reference databases on local computer systems with respect to existing print-based reference materials already available in the local library, and equivalent CD-ROM based products.

Improved and more widespread online access to commercial databases on local systems will require that patrons understand the relationship between the information they find in these databases and the materials available in the library or, by extension, through any provincial resource sharing network.

#### Technologies required

Mainframe, or large minicomputer, systems with adequate disk storage.

Online access software with suitable sophisticated search, retrieval, and report generation capabilities.

Telecommunications support for users from other post-secondary libraries, if developed as a shared or cooperative venture.

#### Organization and management

A working committee composed of representatives from the post-secondary libraries, or consultants, could undertake this project.

A higher-level committee would be required to review the completed study and to determine the appropriate next steps.

A coordinating agency, or the proposed ELN Secretariat, could be responsible for administrative support required for the working committee.

#### Cost components

Administrative support required for the committee meetings and preparation of feasibility study.

#### Benefits

Reviews the issues associated with the loading of commercially available databases on local systems before most libraries make significant local commitments in this area.

Provides an opportunity to coordinate the implementation of such services on a province-wide basis and in the context of other electronic library network projects with similar objectives.

#### **4.4.7. Subset of shared reference tools mounted on local computer**

##### Description

This project is a more selective application of loading a commercially available database on a local computer system. The external database is processed in conjunction with the local library's holdings and only the information that corresponds to materials held by the library is loaded.

A proposal for such a project, known as Online Journal Articles Catalogue and Delivery Service, was prepared by SFU Library and Kwantlen College Library submitted to the ELN Advisory Committee. In addition to the creation of a citation database based on the periodical holdings of the SFU Library and accessible to the community colleges, it also addressed the issue of document delivery. A photocopy and facsimile transmission service for requested periodical articles was proposed. The OJAC proposal is summarized in Appendix III.

The ELN Advisory Committee has the following options in considering a project of this nature:

- o adoption of the joint SFU Library and Kwantlen College Library proposal as submitted and recommend support and funding;
- o adoption of a modified version of the joint proposal; or
- o a separate feasibility study on the whole issue of shared electronic services.

If the last option is selected, the project would follow the same framework used for the 'Shared Reference Tools mounted on a local computer'. It is also possible to expand the terms of reference for that study to include an examination of the desirability of selective loading of commercially available databases.

#### **4.5. Future projects**

In describing projects that are technically feasible now it is important not to lose sight of the long-term goal. That is, a 'seamless' interface to provide access to the resources described in the ELN which allows the user to conveniently access the appropriate system, extract required information, transmit requests, and receive the desired materials. The National Library's role in the development of international standards for information retrieval and management is important to the development of the ELN. A commitment should be made to adopt standards as they are confirmed. In developing interim solutions care should be taken not to preclude eventual adoption of the appropriate protocols. Some of the relevant standards and products which may be supported in the future, and which are essential to the concept of the ELN, are briefly described on the following pages.

#### 4.5.1. Information retrieval workstation

##### Description

This project would define the specifications for a microcomputer workstation with communications software and hardware to support the functions associated with information retrieval: preparing and storing search strategies; searching multiple information sources; and retrieving, capturing, and processing the results of information retrieval activities. In its simplest form this workstation would rely on existing communications software, scripts, uploading and downloading. (See the Basic Microcomputer Workstation project.) More advanced alternatives include the use of 'search helpers' that provide elementary common command languages for searching, and ultimately a workstation with all the required features based on the emerging Information Retrieval Protocols. Table 7 shows graphically the services that would be available through the IR workstation.

##### Relationship to other services

This workstation is fundamental to the ELN concept of convenient linkages to whatever information resource is appropriate to the situation. The functions of this workstation, or subsets of it, will be used by ILL and reference library staff, and patrons.

##### Technologies required

A microcomputer with telecommunications support.

Scripts and protocols that meet international standards or are agreed upon among B.C. participants.

Implementation of OSI based protocols: Information Retrieval including common command language; File Transfer; completion of retrospective conversion projects, and Network Directory Service.

##### Organization and management

This project needs to be explored further. A feasibility study is required to assess its practicality with current technologies and standards, and its potential in the future. Work on this project could be contracted out and should be coordinated with similar activity underway at the National Library of Canada.

A working committee composed of representatives from the post-secondary libraries should be involved in the definition of requirements for this project.

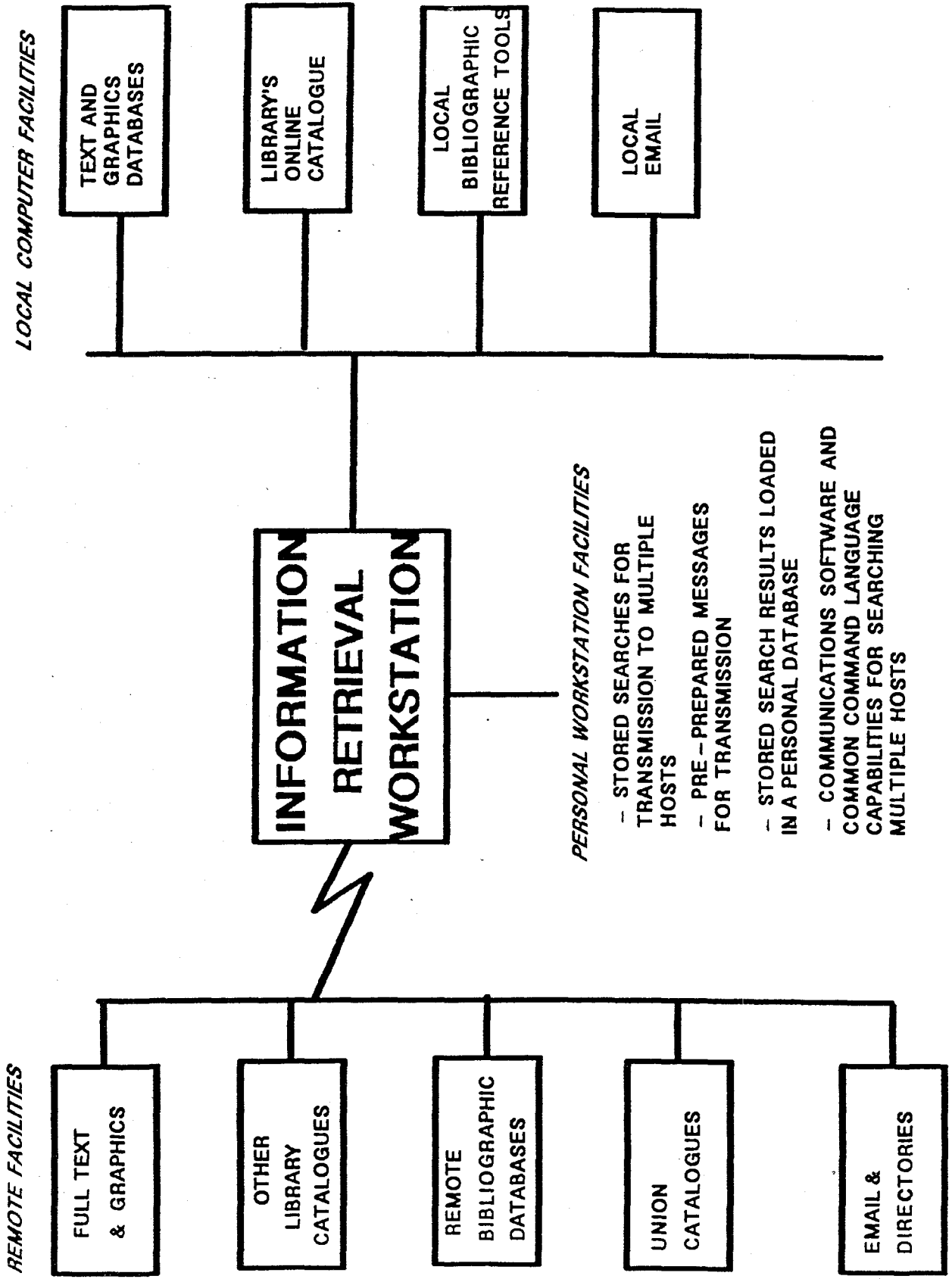
A higher-level committee would be required to review the work and final report from any consultants and to determine the appropriate next steps.

##### Cost components

Development costs, including consulting, programming, testing, documentation and training.

Some ongoing maintenance to remain in conformance with standards and meet changing needs.

Table 7: Information retrieval workstation



### Cost recovery/alternate funding

Sale of software and support?

### Benefits

This product is intended to be the user tool for access to the ELN. In its most developed form this workstation will support transparent access to multiple, distributed information resources. Simplification of access coupled with management and retrieval support will place users at the centre of the Electronic Library Network with the tools to take the fullest advantage of the resources available.

## **4.5.2. Implementation of the Network Directory Service Protocol (NDS)**

### Description

The NDS protocol will enable a user to locate, retrieve, and manipulate information about services, service providers, and other users from a collection of distributed directory databases. Examples of the directories applicable to the provincial electronic library network would be an expanded version of the ILL directory which included information about collection coverage and strengths, online resources and access mechanisms, and the databases of the Discovery Training Network.

### Relationship to other services

This protocol is an integral part of the cataloguing, ILL and information retrieval workstations described elsewhere in this report. The NDS protocol should be incorporated as the standards and services become available.

## **4.5.3. File Transfer, Access and Management (FTAM)**

### Description

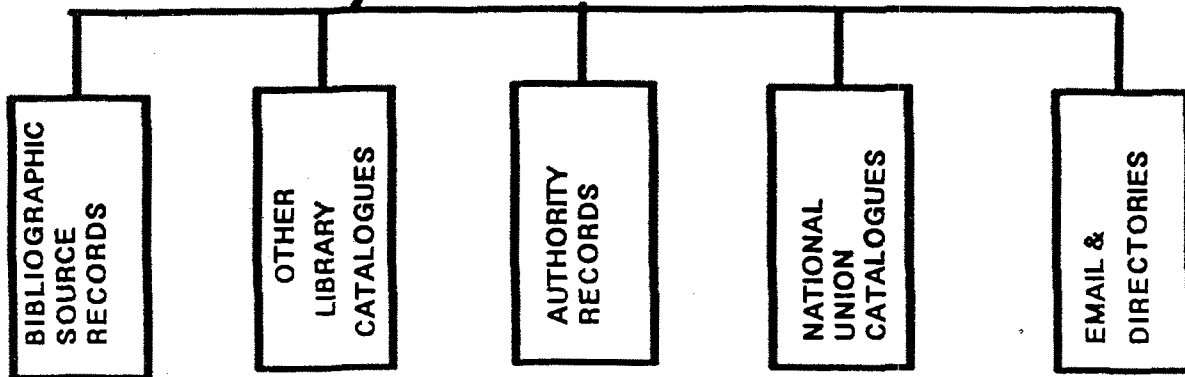
This standard supports the interchange of bibliographic records. National Library has implemented a modified subset of FTAM, an ISO File Transfer standard, known as File Transfer Protocol (FTP). NLC will be migrating its clients to FTAM and B.C. post-secondary libraries should be monitoring the progress of this project and preparing to implement the standard when appropriate.

### Relationship to other services

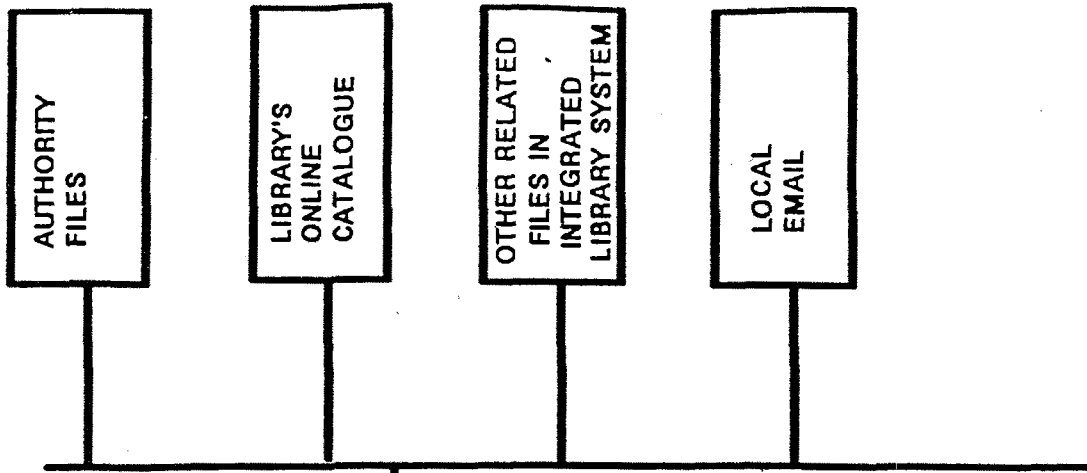
This standard is the 'building block' required for the transfer of files of data. It also includes some capabilities for data management. It should be implemented as the standard for the exchange of bibliographic information, particularly for sharing source cataloguing records, among the post-secondary institutions and reporting to union catalogues.

Table 8: Cataloguer's workstation

*REMOTE FACILITIES*



*LOCAL COMPUTER FACILITIES*



*PERSONAL WORKSTATION FACILITIES*

- FILE TRANSFER CAPABILITY FOR RECEIVING SOURCE RECORDS AND SENDING LOCATION REPORTS TO UNION CATALOGUES
- EDITING CAPABILITIES FOR PROCESSING RECORDS IN, OR TO BE ADDED, TO THE LIBRARY'S ONLINE CATALOGUE
- SUBSET OF INFORMATION RETRIEVAL WORKSTATION CAPABILITIES AS APPROPRIATE FOR THE CATALOGUING FUNCTION



#### 4.5.4. Cataloguing workstation

##### Description

Similar to the ILL and information retrieval (IR) workstations in the implementation of IR and file transfer protocols. This workstation would support cataloguing related functions such as: file transfer to incorporate shared cataloguing from remote and local sources on either a file or record by record basis; editing capabilities for processing records at the local level; file transfer for reporting to national and provincial union catalogues such as the B.C. Union List of Serials (ULS); and information retrieval as appropriate for this environment. Table 8 describes this product in a graphic form.

#### 4.6. Management and research projects

At the workshop a number of gaps in knowledge and understanding of how an electronic library network would function were identified. In order to have the basic management and technical information in place for the development of the network some research projects were defined. These projects could be undertaken by committees of post-secondary libraries, or contracted to consultants or the School of Library, Archival and Information Studies.

The cost components, unless otherwise noted, will include administrative support costs for a task force of post-secondary librarians and/or consulting support.

##### 4.6.1. Identification of users, their needs and skills.

##### Description

The purpose of this project would be to identify the specific characteristics of the users of the ELN. The project would take the form of a survey which would be divided into two phases. Phase One would be a survey of users in the Lower Mainland, and Phase 2 would extend this survey outside the Lower Mainland area.

Each phase of the project would be designed to collect and analyze information about:

- what level of course work are the students involved in? (1st year, 2nd year, distance learning and so on).
- what source / library do they turn to when they need information?
- where do they get the information to support their course work? (i.e. where does it come from?)
- how satisfied are they with the mechanisms/processes for obtaining material?
- what level of reference support are they getting?
- what level of bibliographic skills do they have?

##### Relationship to other services

This project would provide information required to identify the specific services that are necessary within the framework of the ELN. It is not anticipated that the findings in this survey will change the physical network 'links' or 'nodes' of the ELN, but rather will provide additional information of how each link can or should be used.

### Organization and management

This project would require management and coordination of data collection and analysis.

Some automated support may be necessary to aid in the data collection.

### Priority in overall development

This project can be carried on in parallel with other projects. While it is anticipated that the results of the survey will not dramatically alter the basic linking structure of the ELN, specific details of user requirements may help to 'fine tune' the processes established within the ELN. For this reason, it is important that this project be carried out during the early stages of ELN development.

### Cost components

It is anticipated that some funding may be available for this project. The faculty of the School of Library, Archival and Information Science at the University of British Columbia intends to apply for funding from the Council of Library Resources (CLR). The requests for funds will be submitted by April 1990 and the work involved in Phase I would be carried out by faculty and students of the School.

### Benefits

To gain an understanding of users and resource sharing patterns. To support funding requests for the development of the ELN.

## **4.6.2. Identification of management issues associated with the ELN**

This project is intended to identify and provide optimal solutions for various philosophical, management and operational issues that are associated with the ELN. The project would take the form of a study which would identify specific issues, analyze options and provide recommendations for the management and operation of ELN.

Issues such as the following would be addressed:

- o what organization structure will facilitate the effective and efficient operation of the ELN?
- o what staffing complement, if any, will be required to support the ELN?
- o will the users of the ELN be:
  - college faculty members;
  - 3rd and 4th year college students;
  - 1st and 2nd year college students;
  - distance learning students;
  - public library patrons;
  - staff of the post-secondary libraries;
  - any combination of the above.
- o should reciprocal borrowing be allowed? if so, at what level?

- o who will be allowed access to the interlibrary loan component of the network?
- o what components of the ELN can/should be operated on a cost recovery basis? how can this be accomplished?

Relationship to other services

This project needs to follow this study as soon as possible so that the establishment of the ELN can proceed in a logical and organized fashion.

Organization and management

This project would require management, research and analysis skills.

Benefits

To determine how the various elements or components of the ELN will interrelate.

To identify the most suitable organization structure for the operation of the ELN.

The product of this project would be a detailed short and long term plan for the development of the ELN.

**4.6.3. Network technology**

Description

This project is intended to assess the feasibility and availability of various options for linking systems on incompatible hardware. The options to be investigated should include:

- o direct dial-up connections to systems in the library's local calling area
- o use of a public network such as Datapac
- o use of a private network managed by the post-secondary institutions or the libraries
- o cooperation with provincial networks developed for other purposes
- o implementation of a non-OSI solution, such as Irving, which provides value added services for library resource sharing.

The results of this project would be identification of short and long-term technical solutions to the requirement to develop 'seamless' interfaces between online library resources on incompatible hardware.

Relationship to other services

This project is essential to planning the infrastructure that will support the concepts of the ELN. Cooperative access arrangements which can be developed in the short-term using direct dial

access and/or Datapac need to be followed by longer term solutions which take advantage of the OSI protocols.

#### Cost components

This project will probably require consulting support to provide the technical knowledge of communications in partnership with members of the network.

#### Benefits

This project will lay the groundwork for development of the communications network that will support the ELN.

The project is necessary in order to prepare cost projections, identify suitable options, and provide members of the network with information about the hardware required to support access to online resources.

### **4.6.4. Identification of types and levels of standards required**

#### Description

The existing and proposed standards for the description and transmission of both print and non-print media need to be identified.

Issues such as the following would be addressed:

- o what standards exist?
- o what standards are under discussion and would be relevant to the ELN?
- o which ones should be adopted and to what extent?
- o how should B.C. post-secondary library management monitor developments in the standards area?

#### Relationship to other services

This project should be conducted in the early stages of the development of the ELN so that the components of the ELN will be compatible. Monitoring progress at the national and international level will be an essential component of this project.

#### Organization and management

This project would require management, research and analysis skills. It could be managed through a small standing committee of post-secondary librarians who are involved in these issues on a regular basis.

#### Benefits

To determine what standards are necessary to maximise appropriate resource sharing through the links of the ELN.

To ensure that network developments in B.C. are compatible with national and international developments.

#### 4.6.5. Identification of document delivery alternatives

##### Description

Continued attention needs to be paid to document delivery alternatives. Within the scope of this study it was not possible to assess the effect and feasibility of new delivery technologies. This study is intended to identify and provide optional document delivery solutions. The project would take the form of a study which would identify various issues related to the management of the document delivery issues associated with the ELN as well as identifying opportunities to use new delivery mechanisms.

Issues such as the following would be addressed:

- o what costs and delivery times are associated with delivery methods such as:
  - courier
  - Canada Post
  - regular mail
  - specialized services such as Priority Post, EnvoyPost, etc.
  - facsimile transmission
  - transmission via satellite
  - transmission on cable TV networks, etc.
- o what types of materials are appropriate for each of the above methods of delivery?
- o what optional arrangements are available using traditional delivery methods? For example, the use of normal mail but sending the book directly to the patron's home from the lending library or an article direct to the patron's facsimile machine.

##### Relationship to other services

This project is important because it addresses the 'other side' of the ELN, which is the fact that effective resource sharing has not occurred if the requested materials are not made available to the requester in a timely fashion.

##### Organization and management

This project would require management, research and analysis skills.

##### Benefits

The identification of fast, efficient document delivery methods which will support the goals of the ELN.

#### 4.7. Evaluation criteria

The projects described in this chapter do not necessarily define all the components of ELN. In order to remain responsive to changing needs the ELN must be seen as a flexible solution in which parts can be added, replaced and deleted as new technologies and solutions become available.

Flexibility will ensure that the electronic library network can take advantage of other relevant initiatives or projects. The provincial government has recently implemented several online databases – the B.C. Business Network and the Discovery Training Network – and provided province wide online access to them. An expanded and integrated network that would provide a single source of easy-to-access information for all British Columbians known as the B.C. Information Network (BCInfoNET) has also been proposed.

The proposed BCInfoNET would take the form of a communications network accessible through the telephone system and other existing network services from anywhere in the province. The network would support communications with virtually all types of computers and other forms of communications equipment that are currently available.

There are other solutions which are not suggested at this time. For example, implementation of the Irving network interface between the three university online catalogues and other lower mainland systems could be considered. This option did not appear as a priority at the workshop and it is likely that development of cooperative access arrangements will provide a partial solution until OSI based access and interfaces are available.

In order to assess the priority of projects in the overall development of the ELN some evaluation criteria need to be identified. Evaluation criteria for approval and funding of ELN projects should include some or all of the following:

##### Project or product capabilities

- capability to address a gap that has been identified by the ELN Advisory Committee and/or members of the post-secondary library community
- potential for local initiatives that could be replicated in other areas of B.C.
- availability of functions and capabilities that meet identified needs and requirements
- ease of operation
- priority in the overall development of the ELN and the elements that have to be in place to support the project
- expected benefits to the B.C. post-secondary libraries.

##### Technical considerations

- availability of hardware and software to support the project
- flexibility of the hardware and software solutions to meet various needs and evolve as needs change
- capacity
- capability for product expansion and upgrading
- flexibility of system interfaces to communications hardware and software
- product performance
- adherence to international standards for data transfer and exchange
- ease of data conversion

### Staffing and management considerations

- suitability for management in a distributed organization structure based largely on voluntary cooperation
- type and level of skills required to develop, manage and operate the project
- availability of required resources in B.C. post-secondary institutions
- availability of required resources on a contract or consulting basis
- potential for obtaining required resources if not currently available
- procedures required for periodic review of the cost-effectiveness of the project and its relevance to user needs.

### Cost

- cost of the initial project development and start-up
- maintenance and ongoing operations costs
- availability of funding from alternative sources
- opportunities for cost-recovery and/or revenue generation.

The projects described above are intended to take advantage of existing technology. However, it cannot be overemphasised how important it is to keep in mind the long-term picture of the ELN. With this vision in place the building blocks that are based on emerging standards can be implemented.

## 5. Recommendations

The foundations of any resource sharing network are the many local collections that contain special and often unique collections in certain subject areas. The impetus for development will often come from local libraries and projects, or applications of new technology, that will be implemented independently. Cooperation is the key to sharing local collections and the results of local initiatives. It is appropriate that any management model be based on the same concept.

A tradition of cooperative resource sharing already exists through the provincial NET and MEC structures. Emphasizing a cooperative management model will provide an opportunity to review and to strengthen these existing networks with the intent of identifying new or enhanced roles, projects, and funding opportunities. However, cooperation cannot rely on the goodwill of some of the participants. There has to be explicit funding and support for the resource sharing and the development of the Electronic Library Network.

With these caveats in mind we conclude this report by making the following recommendations and suggesting a phased implementation approach that can be adjusted to match the funding and resources available in the next few years.

### **Recommendation #1:**

**That the Electronic Library Network concept be accepted as a diverse but coordinated structure of networks that is configured by the user to provide the most appropriate logical or virtual view required to satisfy an information need.**

Development of the ELN does not replace the need to strengthen and to develop existing collections to meet basic teaching and research needs. However, it is through appropriate sharing of resources that the full potential of B.C.'s post-secondary libraries to support research needs will be realised.

### **Recommendation #2:**

**That an ELN Board of Directors be established and consist of representatives from the post-secondary libraries.**

This group would be the decision making body responsible for establishing priorities, approving projects, distributing and monitoring the use of Ministry funds, reviewing progress on any ELN projects underway, approving subsequent phases of the network implementation plan, and ensuring that the views and concerns of the network participants, both user and institutional, are addressed. The structure of the Board should also accommodate representatives from the B.C. public libraries and appropriate government ministries and agencies.

### **Recommendation #3:**

**That an ELN Secretariat be created to provide central coordination and support for the network; and that it operate under the framework of the Open Learning Agency.**

The ELN Secretariat would coordinate the implementation of approved projects; distribution of funds; act as secretary to the ELN Board of Directors; prepare short, and long, term plans for them; and monitor and evaluate the progress of projects underway.



Three positions should be funded for an initial period of three years. The staffing required will include an ELN Coordinator, secretarial and administrative support, and within one year a Technical Support Coordinator. These positions, and options for ongoing funding of the ELN Secretariat, should be reviewed after two years. Funding for the Secretariat should be through the Open Learning Agency as a new line item. We envisage the ELN as another activity under the umbrella of the OLA, similar to the position of Knowledge Network and the Discovery Training Network.

**Recommendation #4:**

**That the ELN Board of Directors establish a standing committee for monitoring standards appropriate in ELN projects.**

The goal of ELN is to develop a resource sharing network that is appropriate for B.C.'s post-secondary libraries and their users while also taking advantage of work underway at the national and international level to standardize the exchange of bibliographic information. The standing committee should evaluate progress in this area and make recommendations to the ELN Board of Directors. This committee, which would be coordinated through the Secretariat, is envisaged as a small group of post-secondary librarians and/or industry experts. Representation from the NLC Networking Committee would also be advantageous.

**Recommendation #5:**

**That the ELN Secretariat be responsible for monitoring, evaluating and working with any provincial initiatives or projects with implications for the Electronic Library Network.**

It is important that ELN projects are not developed in isolation from other information access and resource sharing projects. For example, the proposed BCInfoNet has similar objectives to the ELN and it may be more appropriate and cost-effective to consider the use of a larger, multi-purpose provincial network. Library databases and information would enhance any broader information network and advantage should be taken of common interests in distributing information. Libraries have been leaders in developing and implementing such networks and their expertise could be a useful addition to these other initiatives. Projects undertaken by the public libraries, government and special libraries should also be monitored with a view to eventually including all types of B.C. libraries in the ELN.

**Recommendation #6:**

**That a phased implementation strategy, as described in the following chapter, be accepted to address the basic gaps immediately while undertaking longer term projects to establish the Electronic Library Network.**

There is no 'deus ex machina' network solution that is appropriate for B.C.'s post-secondary libraries at this time. Promising network systems and standards such as OSI are emerging but not completely realized. Existing network systems such as IRVING could be acquired, but they are not economically feasible or sufficiently standard to be long term solutions. There are more fundamental gaps that hinder resource sharing among B.C.'s post-secondary libraries that can be addressed immediately.

## 6. Implementation plan

Implementation of the initial ELN concept will require three to five years in order to complete projects in an appropriate and logical fashion. This phased approach has several major advantages. Initially, it provides sufficient time to complete the basic projects that have been proposed at the same time as many of the management/research issues are being resolved. The primary projects can commence during the first year, but completed as time, resources, and priorities dictate. Finally, it provides time for B.C.'s ELN members to monitor the technologies and standards that are still at developmental stages and to implement them at the appropriate time.

Several elements must be balanced in the implementation plan. It is important that there is an appropriate combination of both conceptual and tangible projects. Feasibility studies and reviews of organizational issues can be done concurrently as other projects provide basic, but immediate, solutions to some of the gaps in present resource sharing activity. It is necessary to encourage local library initiatives and projects while also identifying and implementing the tasks and services that require central coordination and shared effort.

The proposed projects contribute towards establishing the proposed Electronic Library Network and should not be treated as a smorgasbord to be sampled in an arbitrary fashion. It is important to retain a strong vision of, and commitment to, the concept that is generated in this study: the establishment of an electronic library network that will support effective resource sharing among the post-secondary libraries and truly provide 'Access for All', whether they are students at a community college in Northern B.C. or faculty at a large, urban university.

Table 9, on the following page shows the draft implementation plan developed with the ELN Advisory Committee.

As we have mentioned several times in this report and the Working Papers, B.C. post-secondary libraries have a long history of creative resource sharing. The work done in establishing the B.C.U.C. provides the basic building block of machine readable records for on-going networking activities. This study was an opportunity to take stock of a process that began 10 years ago and to prepare for the next decade when advances in communications and other technologies will eliminate the distance factor in access to information. In 1989 the post-secondary libraries have an excellent opportunity to start taking advantage of emerging network standards and changing technologies to develop new concepts in library resource sharing that are innovative and designed to meet the changing needs of the B.C. advanced educational system. We believe that the Electronic Library Network can become a reality in B.C. and that the concept is flexible enough to begin now and to carry the post-secondary libraries well into the next decade.

**Table 9: Implementation plan**

	<b>Basic</b>	<b>Primary</b>	<b>Future</b>	<b>Management and Research</b>
<b>Year 1</b>	<p>Microcomputer workstations (basic information retrieval workstation)</p> <p>Facsimile machines</p> <p>Cooperative arrangements (start up)</p>	<p>Union list of serials (ULS)</p> <p>Media union database</p> <p>Shared reference tools and document delivery feasibility study</p>		<p>ELN management issues</p> <p>User identification</p> <p>Document delivery options</p> <p>Standards (Standing Committee)</p>
<b>Year 2</b>	<p>Cooperative arrangements (continued)</p>	<p>ILL workstation (network version adapted from UBC project if appropriate)</p> <p>Shared reference tools (continued)</p>		<p>Network technology</p> <p>Preparation of long-term plan</p>
<b>Year 3</b>		<p>CD-ROM union product ?</p>	<p>Implement File Transfer, Access and Mgmt. (FTAM) standard for reporting to ULS</p> <p>Information retrieval workstation</p>	
<b>Year 4</b>			<p>Cataloguers' workstation</p> <p>Network Directory Services</p>	

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## APPENDICES



## **APPENDIX I: ELECTRONIC LIBRARY NETWORK ADVISORY COMMITTEE**

### **Members**

Ved Arora, Project Manager, ILL Project, Library Services Branch

Gwen Bailey, Librarian, Malaspina College

Ross Carter, Director of College Resources, Vancouver Community College

Ted Dobb, University Librarian, Simon Fraser University

Connie Fitzpatrick, Librarian, Open Learning Agency

Ron Mackenzie, Library Services Branch, B.C. Ministry of Municipal Affairs

Jeanette Matson, Manager, Academic Programs & Open Learning, B.C. Ministry of Advanced  
Education and Job Training

Ian Mugridge (Chair), Principal, Open University

Paula Pick, Acting Vice-President, Student Services and Education Support, B.C.I.T.

Glenn Ruhl, Registrar, Northern Lights College

Marnie Swanson, University Librarian, University of Victoria

Bill Watson, Acting University Librarian, University of British Columbia

Ron Welwood, Public Services Department Head, Library, Selkirk College

Gwen Zilm, Director, Learning Resource Centre, Okanagan College

**APPENDIX II: RESOURCE SHARING: DEFINING THE ELECTRONIC LIBRARY NETWORK**

Participants at the OLA Workshop, November 7, 1989

ELN Advisory Committee Members

and

Paul Baldwin, Systems Librarian & Monographs Division, Simon Fraser University

Alan Ball, Vice President, Columbia Computing Services, Ltd.

Brian Campbell, Systems Librarian, Vancouver Public Library

Ed Dubois, Project Manager, Discovery Training Network

Mary-Ann Epp, Media Librarian, Vancouver Community College

Margaret Friesen, Head, Interlibrary Loans, University of British Columbia

Dave Gilmore, Client Services Manager, Open Learning Agency

Barbara Greeniaus, Director, Library Services Branch

Richard Hopkins, Assistant Professor, School of Library, Archival & Information Studies

Hanna Komorous, Systems Librarian, University of Victoria

Bob McDonald, Assistant Librarian, University of British Columbia

Laura Neame, Public Services Librarian, Okanagan College

Brigitte Peter-Cherneff, Librarian, Kwantlen College

Gordon Ray, Chairman, Association of B.C. Public Library Directors

Peter Simmons, Professor, School of Library, Archival & Information Studies

Basil Stuart-Stubbs, Head, School of Library, Archival & Information Studies

John Weller, Technical Services Librarian, Cariboo College



## APPENDIX III: ELN PROJECT PROPOSALS AND REPORTS

### A ONLINE JOURNAL ARTICLES CATALOGUE AND DELIVERY SERVICE (OJAC)

#### Origin of the proposal

A proposal jointly submitted by the SFU Library and Kwantlen College Library to the Advisory Committee of the Electronic Library Network on May 15, 1989, a revised version on June 6, 1989. Finally, another version dated November 14, 1989 with corrections added was distributed to the Advisory Committee.

#### Description

Using software developed by TKM, the same company that markets BUCAT, a subset of relevant journal article citations and abstracts from several commercial database vendors corresponding to the SFU Library's periodical collection would be loaded on a computer facility at that library. The enhanced access to the SFU Library's periodical collection would be targeted for undergraduate students who make little, if any, use of traditional ILL services.

The resulting database would be available for online inquiry to other post-secondary libraries, initially Kwantlen College Library during the pilot phase. The BUCAT ILL module will be used to generate a request slip at the SFU Library for processing overnight. The articles would be photocopied and mailed, or sent by telefacsimile to the requesting library.

During the pilot phase, only Kwantlen College Library would have online access, but the system could be extended to the other community college libraries in support of the expansion of post-secondary course offerings. An anticipated outcome is a thoroughly developed methodology for building journal article catalogues at other B.C. college libraries.

#### Relationship to other services

The OJAC proposal could have a significant impact on present NET borrowing and lending patterns by re-directing many requests from the community college libraries for periodical articles to the SFU Library instead of the UBC Library. It could also increase ILL activity by encouraging undergraduate students to use ILL services.

NET presently charges for ILL transactions. Would OJAC transactions be considered as NET transactions for billing purposes?

The OJAC facility would provide an online service similar to those presently available through commercial database systems. It does not seem likely it would change use patterns of those remote systems significantly as OJAC is targeted for undergraduate users. At present, they do not appear to be major users of commercial database searching services available through the post-secondary libraries, unless the service is subsidized or the databases are available on local computer systems at no charge.

#### Technologies Required

Computer System: VAX computer system and TKM software, including BUCAT, to be installed at SFU Library. Commercially available periodical indexes and abstracting services would be processed to select records for periodical titles held by the SFU Library. The resulting subsets would be loaded on the computer system.

The OJAC proposal specified that TKM software would be used. However, several other vendors are marketing similar products such as CARL and ISI. The SFU Library has stated it would be their intention to issue an RFP before selecting a vendor and computer system.

Communications: X.25 based Datapac service available through B.C. Tel. Remote locations would have online access to the periodical articles citation database on the BUCAT system at the SFU Library.

Photocopiers: for document reproduction.

Fax: for document transmission.

### Organization and management

The report proposed that the project be managed by the SFU Library which would be responsible for appointing a Project Manager. A project Advisory and Review Committee would also be established and would report to the OLA Electronic Library Network Advisory Committee.

Apart from a project manager, only clerical support to retrieve, copy, and fax or mail requested articles would be required. SFU Library would absorb a large part of the indirect and overhead costs through its existing operations such as the Telebook Service.

The report suggests that extensive training and documentation would not be required. It would be a 'self-serve online service' that would use the BUCAT system already in place at most of the potential remote sites.

### Cost components

Year 1 expenditures during pilot project phase are estimated to be \$618,000 capital (primarily computer hardware, software, and database creation) plus \$16,000 annual maintenance contracts. If successful and extended to the other community college libraries with BUCAT systems, Year 2 expenditures are estimated to be \$955,000 capital plus \$86,000 annual maintenance contracts.

Operational costs such as labour, telecommunications, photocopying, fax transmission have been projected on a per item basis and range from \$3.90 to \$6.08.

### Cost recovery/alternate funding

Estimated operational costs on a per item basis, \$3.90 to \$6.08, are well below the present \$8.50 NET charge for ILL items. A major component of the cost is photocopying which users are already accustomed to paying for. This suggests the service could be maintained on, at least, a partial cost recovery basis.

The creation of periodical article citation databases at the SFU Library and potentially the participating community college libraries would provide significant local benefits. It would be reasonable to assume that institutes would be willing to provide some financial support through their local operating budgets.

In particular, it is likely that the SFU Library would be willing to cover some of the initial capital costs and assume a portion of ongoing maintenance costs for hardware, software, and database service subscriptions. SFU students and faculty would be a major beneficiary of the system.

Benefits

Provides service to undergraduates who are not presently well served by most ILL networks.

Enhanced online access comparable to commercial database services for the SFU Library periodical collection by remote locations.

Enhanced online access comparable to commercial database services for local community college library periodical collections if the project was extended.

Use of fax to improve document delivery time.

Based on online inquiry system already in use by a majority of the prospective participants.

Based on the report estimates, low item cost when compared to existing ILL document costs.

## B. B.C. COMPACT DISC PROJECT

### Origin of the proposal

The project originated with the community college libraries. A report was prepared by the B.C. Compact Disc (BCCD) Task Force, submitted to the Council of Post-Secondary Library Directors (CPSLD) Steering Committee on June 14, 1989, and subsequently presented to the ELN Advisory Committee for consideration.

### Description

The primary objective is to create a CD-ROM based union catalogue containing the holdings of all of the B.C. post-secondary libraries to be used for ILL purposes. A second objective is to provide stand-alone CD-ROM based catalogues for each of the participating libraries.

Nineteen B.C. college and university libraries are identified as potential participants with a total of approximately 3,275,000 machine readable records available for inclusion in the union catalogue. At least thirty percent of those records are estimated to be duplicates and would be matched and merged during product preparation. The union catalogue would be updated quarterly.

The BCCD Task Force have already solicited RFI responses from various vendors and evaluated them. Two vendors -- Autographics and Brodart -- met most of the stated requirements such as scoping ability, ILL request screen, and multiple disc ability. Sample CD-ROM products provided by the vendors were tested at several college library locations.

The size of the union catalogue would probably require two, or more, discs. Supplements would also be issued on CD-ROM discs, rather than relying on magnetic disk updates.

This project is similar in nature and intent to the microfiche based union catalogue that was produced in the early 1980's by the BCUC project. The last BCUC fiche was produced in 1982 and although outdated, is still in use as an ILL tool in many B.C. libraries.

### Relationship to other services

Apart from the outdated BCUC fiche, there is no equivalent service or product currently available that provides a single place to look for the holdings of B.C. post-secondary libraries. Most have never reported to the NLC union catalogue and with the conversion to local cataloguing systems, UTLAS is no longer a complete source for holdings information. B.C. post-secondary libraries must rely upon a disparate collection of fiche catalogues from individual libraries and limited dial-up access to local online catalogues.

It is not clear that a union catalogue would increase NET ILL activity. Instead, it would eliminate the time-consuming searching in multiple fiche products or individual databases. It is also likely that the UBC Library would experience some reduction in lending to other B.C. libraries as a union catalogue would permit a more equitable distribution of requests to other locations.

### Technologies required

Computer System: Microcomputer workstations usually based on IBM XT or AT compatible hardware. The size of the B.C. union catalogue would require at least 2 CD-ROM discs, preferably the workstation would have 2, or more, CD-ROM drives to avoid continual disc swapping. Most

CD-ROM vendors sell workstations for between \$1,500 and \$2,500, but each additional CD-ROM drive adds approximately \$1,000 to the unit cost.

A minimum of 30 workstations would be required.

The BCCD Task Force has already identified the two most appropriate vendors -- Autographics and Brodart -- to supply the required software.

Other: The project specified vendor software that would support ILL messaging. Items could be identified during searches, reformatted into appropriate ILL requests and subsequently transmitted via ENVOY. It is assumed that existing NET elements (use of ENVOY for messaging, photocopiers, fax machines) would continue to be used.

#### Organization and management

The BCCD report does not address this.

#### Cost components

The BCCD report identified start up/first year costs for database preparation, production of 30 CD-ROM catalogues, quarterly supplements, and software licensing and support. For Autographic's Impact system the total cost was \$90,704; for Brodart's LePac system the total cost was \$68,430.

Ongoing annual costs would be based on the premise that the entire database would be reprocessed and remastered annually. Therefore, they would be similar to first year costs. The growth rate of the union catalogue and the number of catalogue copies required would be significant components in determining the actual cost.

Initial hardware costs for 30 workstations would be between \$75,000 and \$100,000. Each additional workstation would cost between \$2,500 and \$3,500.

#### Cost recovery/alternate funding

On a per copy basis for the initial run of 30 copies, the annual subscription cost for the CD-ROM union catalogue would be between \$2,000 and \$3,000. This would drop to between \$1,000 and \$1,500 in subsequent years. As additional copies are inexpensive to produce, the annual subscription cost could decrease significantly if more than 30 copies were produced. Many of the B.C. post-secondary libraries are already subscribing to CD-ROM based products that cost at least that much.

The second objective of this project is to provide stand-alone CD-ROM based catalogues for each of the participating libraries. It would be reasonable to assume that institutes would be willing to provide some financial support through their local operating budgets.

#### Benefits

Provides a union catalogue containing the holdings of B.C. post-secondary libraries. This eliminates the need for multiple lookups and reduces the time required to locate items.

Provides stand-alone local catalogues for each participating library.

## C. MEDIA EXCHANGE COOPERATIVE (MEC) DATABASE PROJECT

### Origin of the proposal

The MEC Database Project was prepared in March, 1988 by Circa Communications for MEC. The report was subsequently presented to the ELN Advisory Committee for consideration.

### Description

The primary objective is to create and to maintain a computer database of films and videotapes held by the 22 B.C. post-secondary institutions which belong to MEC. The database would be accessible to MEC members for current holdings information and made available in a variety of formats to instructional staff, students, and others at each participating institution.

The report recommended that the master database be maintained and updated centrally by staff familiar with the database and its authority control requirements. There was also a strong interest in having copies of the database distributed to all participants for direct access on local computer systems. The procedures and systems requirements for updating both the master database and distributed copies are critical ones for this project.

At the time the report was prepared, none of the software vendors surveyed offered a product that met the stated requirements of MEC. These included use of a microcomputer hardware platform; support for the MARC formats; authorities control; batch loading and updating including duplicate identification; online inquiry; and a flexible report generator.

It was recommended that a pilot project be initiated to create a master database using the most suitable software available and that two sites be chosen to test access. Two critical requirements remained. The software must support the need for exportability to other database systems and it had to be MARC compatible. At the same time, MEC would continue to review any new software products that might be able to meet all requirements.

### Relationship to other services

There are no current products or formal services providing union catalogue access to audio/visual holdings in the B.C. post-secondary institutions. No national lists or services are available. The UTLAS system is the only national facility, but holdings in it are not complete. At present, the VCC Library maintains a location card file and acts as a location search service for MEC members.

Recent changes at the Provincial Educational Media Centre (PEMC) have significance for this project. PEMC negotiates province-wide clearance rights for audio/visual materials to be used by provincial educational institutions. The PEMC staff position responsible for this has not been filled following the resignation of the incumbent. Presently, the clearance rights work has been contracted to Vancouver Community College and being done by the Media Librarian.

Apparently, there are also problems with the PEMC database system used to maintain information on clearance rights and expiry dates. It is not always current or complete, is batch based and has limited online access, and is not being used to generate expiry notices on clearance rights.

The provincial coordination of clearance rights for audio/visual materials must be taken into consideration.

### Technologies required

Computer System: For the master database, an 80386 class microcomputer with a 115 Mb hard drive, modem, printer, and tape backup was proposed. For the test sites, an 80286 class microcomputer with a 70 MB hard drive, modem and printer was recommended. If extended to all MEC members after the pilot phase, 22 microcomputer workstations would be required.

No specific vendor's software package was recommended as being suitable to meet all requirements in the general areas of telecommunications, MARC record management and database management including authority control.

Communications: Access for inquiry and update purposes is required, both for specific items and possibly for distributing updated versions of the master database to remote locations. Several MEC members expressed a preference for using existing computer terminal networks at their institutions to access a MEC database.

### Organization and management

Staff would be required for the initial creation of the master database, and the ongoing database maintenance and authority control work. For the pilot project one project manager (4 months full-time equivalent, 6 months part-time), one full-time librarian, and one part-time technician were proposed. For ongoing operations, one part-time librarian and one part-time technician were proposed.

A decentralized model was considered but several limitations were identified. Different systems are presently in use at local libraries to maintain information on audio/visual materials. A distributed approach has already been employed by MEC for the past twenty years and some imbalances and difficulties are evident.

The report suggested that a MEC member committee on authority control would have to be established to address record coding standards and authority control issues.

### Cost components

Initial pilot project costs to create the master database were estimated at \$157,240. This included staffing at \$95,000; computer hardware/software at \$31,500; other expenses at \$17,500; and a ten percent contingency of \$13,240.

If the pilot project was successful and an appropriate software package was found, there would be an additional start-up cost of \$148,000 to purchase equipment and software for all MEC members.

Ongoing annual operating costs were estimated at \$43,600. This included staffing at \$30,000; administrative costs at \$6,600; software upgrades at \$4,000; and supplies and communications at \$6,600.

### Cost recovery/alternate funding

The report proposed that start up/pilot project costs be supported by special grant funding. Ongoing annual operating costs would be funded by the MEC members and revenue generated through sales of copies of the database. The latter is supported by past experience with sales of provincial union products for A/V materials.

If the clearance rights work currently supported by PEMC was incorporated in this project, it is possible the Ministry would be able to redirect some funding.

Benefits

Provides a complete and current union catalogue of audio/visual items held by the B.C. post-secondary libraries. These items are a major component of present ILL activity despite the current access limitations. A union database would facilitate resource sharing and improve ILL search procedures.

Provides a database that employs library standards for creating and maintaining information on audio/visual materials.

Provides a facility to produce special subject and discipline listings for instructors and other users of audio/visual materials. This would assist in course development and instruction and planning learning assignments.

Provides a facility to enable libraries to share expensive resources and to support more cost-effective acquisition processes.



#### APPENDIX IV: ACRONYMS AND ABBREVIATIONS

AACR2	Anglo-American Cataloguing Rules, 2nd. edition
BCCD	British Columbia Compact Disc [Task Force]
BCIT	British Columbia Institute of Technology
BCUC	British Columbia Union Catalogue
BUCAT	a commercially available online catalogue system
CD-ROM	Compact Disc - Read Only Memory
CILS	British Columbia College and Institute Library Services Clearinghouse for the print impaired
CISTI	Canada Institute for Scientific and Technical Information
CPSLD	Council of Post-Secondary Library Directors
DATAPAC	an X.25 type communications network
DBMS	Database Management System
DOBIS	a commercially available automated library system
ELN	Electronic Library Network
ENVOY	Telecom Canada electronic mail service
FIN	Federation (i.e. GVLF) Information Network
FTAM	File Transfer, Access and Management
ILL	Inter-Library Loan
ISBN	International Standard Book Number
ISO	International Standards Organization
ISSN	International Standard Serial Number
LDMS	UBC Library Data Management System
LSB	Library Services Branch
MARC	MAchine Readable Cataloguing
MEC	British Columbia College, Institute and University Media Exchange Cooperative
MUD	Media Union Database

NDS	Network Directory Services
NET	British Columbia Post-Secondary Inter-Library Loan Network
NETFAX	Fax based delivery system being used by some NET participants
NLC	National Library of Canada
NOTIS	a commercially available automated library system
OJAC	Online Journal Articles Catalogue
OLA	Open Learning Agency
OSI	Open Systems Interconnection
PEMC	Provincial Educational Media Centre
RECON	REtrospective CONversion [of a card catalogue]
SFU	Simon Fraser University
TRIUL	TRI University Libraries (UBC, SFU, UVIC)
UBC	University of British Columbia
ULS	Union List of Serials
UVIC	University of Victoria
VCC	Vancouver Community College