

APPLICATION OF TELIDON-BASED INFORMATION  
SERVICES FOR COMMUNITY INFORMATION:  
METROPOLITAN TORONTO

By

Professor Donald J. Forgie  
University of Toronto,  
Faculty of Library Science

For

Department of Communications,  
Ottawa, Ontario

under

Department of Supply and Services  
Contract Serial No. OSU81-00233

Contract in force:  
August 14, 1981 to March 31, 1982

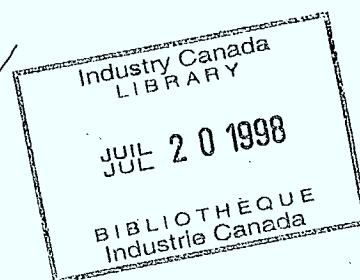
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APPLICATION OF TELEPHONE-RECORD INFORMATION  
SERVING FOR COMMUNITY INFORMATION  
INVESTIGATIVE REPORT

Professor Donald J. Harris  
University of Toronto  
Faculty of Library Science

1980

Department of Communications  
Ottawa, Ontario

Major

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Contact Serial No. 0001-0033

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Community Information Centre of Metropolitan  
Toronto: Application of Telidon Based  
Information Services for Community  
Information

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## Abstract

The purpose of this report is to provide an initial basis for evaluating the application of Telidon information services within the existing context of community information services in Metropolitan Toronto.

Section I describes the Community Information Centre of Metropolitan Toronto in terms of its existing system and services and includes information on its background, selection procedures, organization and processing of information. Categories of questions received are identified and the types of services provided are described.

Section II describes the Telidon-based information system developed by CICMT between September 1981 and March 31, 1982. The rationale for participation in the Bell-Vista Field Trial by CICMT and details concerning the development of a database by the CICMT Telidon team are reported.

Section III provides an overview of CICMT prior to the discussion in Section IV of assumptions, expectations, and conditions for the assessment of comparable systems. Hypotheses for testing comparative systems are identified. Section V provides conclusions and recommendations. In summary these are as follows. As the field trial proceeds it should meet conditions designed to ensure that meaningful statistical comparisons can be drawn from observations. An agreement on data gathering procedures should be obtained by CICMT. The depth of the database should be extended and broadened if the extent to which Vista can substitute for a telephone counselling service is to be determined. Basic research concerning conventional query systems, the value of graphics as an aid to comprehension and the comparative roles of humans and computers in query driven systems should be undertaken.

### Acknowledgements

The assistance and cooperation of the Community Information Centre of Metropolitan Toronto, Bell Canada and the Department of Communications, is gratefully acknowledged. The analysis and conclusions, however, are the responsibility of the research team for the University of Toronto, composed of D. Bellamy, Faculty of Social Work; C.C. Gotlieb, Department of Computer Science and Faculty of Library Science; K. Packer, Dean, Faculty of Library Science; and D. Forgie, Faculty of Library Science, Principal Investigator. Research Assistants: A. Clement, Computer Science; H. Cooper, Computer Services; M. Michaud, Centre for Research in Librarianship; and E. Jones, Reference Librarian, Faculty of Library Science Library.

March 31, 1982

SECTION I THE COMMUNITY INFORMATION CENTRE OF METROPOLITAN  
TORONTO - EXISTING SYSTEM AND SERVICES

Background

The Community Information Centre of Metropolitan Toronto (CICMT), which became a full-time operation in 1952 as part of the Social Planning Council, was incorporated in 1970 as an independent non-profit organization managed by a voluntary board of directors. Major funding is provided by the United Way of Greater Toronto, the Municipality of Metropolitan Toronto, and the Province of Ontario. In addition to the funding provided by these three sources, the CICMT has made a major commitment to generate revenues through special project funding, publication sales, fees for services and donations.

The CICMT is a member of the Association of Community Information Centres in Ontario (ACICO), The Federation of Community Information Centres (Toronto area), the Social Planning Council of Metropolitan Toronto, the United Way of Greater Toronto, and the Videotex Information Service Providers Association of Canada (VISAPAC). (For a listing and location of the member organizations of ACICO and the Federation of Community Information Centres, see maps I and II.)

Location

The CICMT is located at 34 King Street East, Toronto. Approximately 90% of its daytime operations are on the third floor of that building. Located on that floor are the reception area, workroom, executive director's office, community education

COMMUNITY INFORMATION CENTRES IN TORONTO  
AND SURROUNDING DISTRICTS

CALEDON

↑  
VAUGHAN  
VAUGHAN COMMUNITY  
INFORMATION (ITALIAN)

↑  
RICHMOND HILL  
HELPMATE INFORMATION  
AND REFERRAL CENTRE

↑  
MARKHAM  
INFORMATION MARKHAM

BRAMPTON

REXDALE COMMUNITY INFORMATION  
DIRECTORY  
(DUTCH, FRENCH, ITALIAN,  
SPANISH, UKRAINIAN)

LINK COMMUNITY INFORMATION AND  
REFERRAL SERVICES

INFORMATION AGINCOURT

NORTH YORK

COMMUNITY INFORMATION FAIRVIEW

SCARBOROUGH

ETOBICOKE

YORK

CITY  
OF  
TORONTO

EAST YORK

BLOOR-BATHURST  
INFORMATION CENTRE  
(SPANISH,  
PORTUGUESE)

NEIGHBOURHOOD INFORMATION  
CENTRE (MULTILINGUAL)

NEIGHBOURHOOD INFORMATION POST

PARKDALE  
COMMUNITY INFORMATION CENTRE

COMMUNITY INFORMATION CENTRE  
OF METROPOLITAN TORONTO  
(MULTILINGUAL)

YMCA ACTION SERVICE CONTACT CENTRE

MISSISSAUGA



COMMUNITY COUNCIL FOR  
SOCIAL DEVELOPMENT  
(SAULT STE. MARIE)

## COMMUNITY INFORMATION CENTRES IN ONTARIO

INFORMATION GLOUCESTER  
(OTTAWA)

COMMUNITY INFORMATION  
CENTRE OTTAWA-CARLTON  
(OTTAWA)

MIDLAND CONTACT CENTRE (MIDLAND)

INFORMATION ORILLIA (ORILLIA)

COLLINGWOOD AND DISTRICT  
INFORMATION CENTRE  
(COLLINGWOOD)

INFORMATION BARRIE  
(BARRIE)

BROCK INFORMATION CENTRE (CANNINGTON)

PETERBOROUGH INFORMATION CENTRE  
AND VOLUNTEER BUREAU (PETERBOROUGH)

CONTACT ALLISTON (ALLISTON)

INFORMATION DUFFERIN  
(ORANGEVILLE)

HELPMATE  
INFORMATION (RICHMOND HILL)

INFORMATION MARKHAM (MARKHAM)

WOOLWICH COMMUNITY  
INFORMATION CENTRE (ELMIRA)

VAUGHAN COMMUNITY  
INFORMATION (WOODBRIDGE)

SHARE INFORMATION COMMUNITY INFORMATION CENTRE INC.  
(COBURG)

INFORMATION GUELPH  
(GUELPH)

TORONTO (SEE DETAILED MAP)

COMMUNITY INFORMATION  
CENTRE (KITCHENER)

INFORMATION CENTRE  
STRATFORD (STRATFORD)

INFORMATION SERVICES FLAMBOROUGH  
(WATERDOWN)

ANCASTER INFORMATION  
CENTRE (ANCASTER)

INFORMATION BURLINGTON (BURLINGTON)

INFORMATION OXFORD (WOODSTOCK)

COMMUNITY INFORMATION SERVICE HAMILTON-WENTWORTH (HAMILTON)

INFORMATION LONDON  
(LONDON)

INFORMATION DUNDAS  
(DUNDAS)

INFORMATION NIAGARA (ST. CATHERINES)

INFORMATION NIAGARA (NIAGARA FALLS)

THE INFORMATION CENTRE  
(BRANTFORD)

INFORMATION  
SARNIA-LAMBTON  
(SARNIA)

STRATHROY  
-MIDDLESEX  
MULTI-SERVICE CENTRE  
(STRATHROY)

INFORMATION TILLSONBURG  
(TILLSONBURG)

COMMUNITY INFORMATION CENTRE HALLAMAND-NORFOLK (SINCOE)

ST. THOMAS/  
ELGIN INFORMATION  
SERVICES (ST. THOMAS)

COMMUNITY INFORMATION + HELP CENTRE (AYLMER)

WINDSOR-ESSEX COMMUNITY INFORMATION SERVICE (WINDSOR)

COMMUNITY INFORMATION ESSEX (ESSEX)

AMHERSTBURG,  
ANDERDON + MALDEN  
COMMUNITY SERVICE CENTRE (AMHERSTBURG)

SOUTH ESSEX COMMUNITY COUNCIL (LEAMINGTON)

office, interview rooms, staff lounge, and the work areas for the counsellors, the information division and the Telidon division staff. The catalogues, files, directories, and library are also on the third floor as are the xerox machine and the word processor. An additional room on the seventh floor of the same building serves as a storage room for the Centre's publications and a conference or work room.

Night-time telephone operations are provided through service centres which are located in individual counsellors' homes and are connected to the CICMT's central switchboard.

#### Staff

The CICMT is operated by a mixture of staff (full-time, part-time and purchased services) and volunteers. As of December 31, 1981 the distribution of the staff was as follows:

Administration 2 (including Elizabeth M. Wray, Executive Director); Publications 5; Resource Office 4; Telidon 2; Information and Community Education 11; Emergency Community Information Service 10 (all purchased services); and Summer Students 7. During 1981, 18 regular volunteers and occasional volunteers from Lorimer Lodge and the Queen Street Mental Health Centre provided a total of 4,446 direct service volunteer hours.

#### Goals

The major goals of the CICMT are to link people with services by providing individuals, organizations, and governments with

information on resources available in Metropolitan Toronto and to identify trends and demands for services and unfulfilled community needs. The CICMT sees information on community services as a means of increasing an individual's independence, ability to solve problems and participate fully in the life of the community. The set of assumptions or principles underlying the provision of community information service include:

1. Any person has the right to free information on community services.
2. Information on community services must be integrated, presenting programs provided by governments, voluntary and other organizations.
3. Confidentiality must be ensured for the inquirer.
4. Information must be accurate, unbiased and present the full range of available options.
5. Information must be presented in a simple, nonthreatening, nonpatronizing manner directed to people and their needs.
6. Individualized problem-solving must be a component of any community information service.
7. Information must be relevant and adaptable to the changing needs of users.
8. Information should be provided in languages other than English and French where numbers warrant and resources permit.
9. The structure of the database must allow for frequent updating and expansion in order to accommodate the rapid rate of change in information on human services.
10. Organization and presentation of the information must facilitate use.

### Corpus of Information

The sources of information for the CICMT can be divided into two main categories. The first category is made up of primary sources and includes the federal government, the provincial government, the municipal government, non-profit organizations and selected commercial organizations.

Services which require licensing or regulation, governmental programs, and services that are purely voluntary are considered for inclusion. Commercial organizations are excluded unless non-profit bodies are unable to meet the need for service. The information takes the form of bulletins, pamphlets, newsletters, annual reports, brochures, maps, government acts and legislation as well as answers to a questionnaire which is sent out by the CICMT to organizations and departments involved in community information or services. The questionnaire covers a broad range of information including name of organization, address, telephone number, executive officer, funding community accountability, statement of services, eligibility requirements for service, fees, after-hour services, education/training, and languages. When necessary, the questionnaire is followed up by telephone calls. (For a copy of the questionnaire, see Exhibit 1.) Additional sources of information include letters, telephone calls, and community meetings attended by CICMT staff or volunteers.

Secondary sources for community information include radio, television, newspaper and magazine articles and directories which



PLEASE RETURN THIS QUESTIONNAIRE BY NOVEMBER 21, 1980

- I 1. Official name of organization \_\_\_\_\_  
\_\_\_\_\_  
Other names by which your organization is known \_\_\_\_\_  
Administrative address \_\_\_\_\_  
(no.) (street) (postal area & code)  
Mailing address if different from above \_\_\_\_\_  
(no.) (street) (postal area & code)  
Located in \_\_\_\_\_ (municipality)  
Telephone \_\_\_\_\_  
Regular office hours and days \_\_\_\_\_  
Executive officer \_\_\_\_\_  
(Miss, Mrs., Ms., Mr.) (Please specify if M.D., Rev., etc.)  
Title of position \_\_\_\_\_

2. List branch offices or services at other addresses:

<u>Name</u>	<u>Address</u>	<u>Telephone</u>
_____	_____	_____
_____	_____	_____

- II 1. President/Chairman of the Board \_\_\_\_\_  
Usual month of annual meeting \_\_\_\_\_  
Are you part of another organization e.g. Y.M.C.A.? YES [ ] NO [ ]  
If yes, please specify \_\_\_\_\_  
Are you sponsored by another group e.g. church? YES [ ] NO [ ]  
If yes, please specify \_\_\_\_\_  
What is the purpose of your organization? \_\_\_\_\_  
When did your service begin? \_\_\_\_\_  
Are you a non-profit organization? YES [ ] NO [ ]  
Date of incorporation \_\_\_\_\_
2. Funding  
(a) Are you registered with Revenue Canada to give receipts for income tax purposes? YES [ ] NO [ ]  
(b) What are your sources of funding in 1980? Underline your major funder.  
\_\_\_\_\_  
(c) Do you anticipate any changes in funders for 1981? \_\_\_\_\_  
(d) Would you describe your financial prospects for 1981 as:  
secure ( ) stable ( ) shaky ( )
3. Community Accountability  
(a) Do you have a voluntary board of directors? \_\_\_\_\_  
(b) Are you part of the government of Canada, Ontario or a municipality?  
YES [ ] NO [ ]  
(c) If neither of the above applies, please describe how your service/organization is accountable to the community, e.g. membership, public annual meeting.  
\_\_\_\_\_  
\_\_\_\_\_

III Statement of Service

1. (a) Describe the services and/or programs you provide. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

NAME OF ORGANIZATION \_\_\_\_\_

(b) What are the eligibility requirements for service (age, sex, health, financial status, etc.)? \_\_\_\_\_

(c) Is there a fee for your service? YES [ ] NO [ ]

If yes, is your fee standard? [ ] set on a sliding scale? [ ]

If yes, is there full disclosure of fees when application for service is made? YES [ ] NO [ ]

(d) Geographic area(s) served \_\_\_\_\_

(e) Application procedure \_\_\_\_\_

(f) Waiting period \_\_\_\_\_

(g) Capacity \_\_\_\_\_

2. Do you provide after-hours/emergency services? YES [ ] NO [ ]

If yes, what provision do you have for people contacting your after-hours service by telephone?

i) a full extension of your daytime telephone service i.e. 24 hours [ ]

ii) a partial extension of your daytime telephone service (specify hours) \_\_\_\_\_

iii) an after-hours answering service (specify hours) \_\_\_\_\_

iv) a telephone answering machine (specify hours) \_\_\_\_\_

v) a recorded telephone message (specify hours) \_\_\_\_\_

3. Specify languages in which you deliver service \_\_\_\_\_

IV Changes 1980-81

Indicate any changes in program(s) or location(s) expected in 1980-81. \_\_\_\_\_

V Education/Training

(a) Do you provide formal training for your staff and/or volunteers in the use of community resources? YES [ ] NO [ ]

(b) Do you offer pre-retirement courses for your staff? YES [ ] NO [ ]

VI Wheelchair Accessibility (to your premises)

Are your facilities, including washrooms, suitable for wheelchairs? If so, please give details. \_\_\_\_\_

VII International Year of Disabled Persons - 1981

Are you planning any special events for the International Year of Disabled Persons?

YES [ ] If yes, please specify \_\_\_\_\_

NO [ ] \_\_\_\_\_

VIII Additional comments: (Use other side if necessary) \_\_\_\_\_

Please enclose a copy of your most recent annual report, newsletter, brochures and maps.

Information provided by \_\_\_\_\_ Name)

(Title)

Date \_\_\_\_\_

Telephone \_\_\_\_\_

are produced outside CICMT. These constitute the second category.

### Selection Criteria for CICMT's Information Bank

The general selection criteria for what information becomes part of the information bank of the CICMT are based on three main principles:

1. Information must be relevant to goals of CICMT.
2. Information must meet the needs of its users through direct inquiry, publications and community education programs.
3. Information must be accurate; accuracy of information is crucial to all aspects of the quality of service provided by the centre.

These three criteria determine whether the information is accepted into the CICMT's information bank and if accepted, in which components it will appear and in which forms it will be disseminated i.e. the Directory, pamphlets or guides. The various components of the information bank and the products which are disseminated will be described more fully in succeeding sections. Frequency of enquiry about a service is also used as a criterion for deciding on inclusion.

Selection of information is also based on the type or class of information and on a priority system. Classes of information which fall under the Centre's mandate of human services include counselling and the provision of information on a wide range of social services: health, rehabilitation, human rights, legal matters, citizenship, immigrant and ethnic services, as well as

employment, consumer, housing, education, recreation and leisure services.

In terms of priorities, CICMT has drawn up a four level priority system to deal with the inclusion of information in its systems, reflecting its current operational practice. (These practices are undergoing review and refinement.)

FIRST PRIORITY:

1. A human service available to all persons in Metro Toronto.
2. Services whose object is the relief of poverty or the effects thereof.
3. Programs to address emergency or crisis situations.
4. Programs to enhance the individuals ability to cope with life situations (budget counselling, home help, day care, self-help groups).
5. Programs which provide essential life services (housing, nursing care, meals-on-wheels).
6. Services for special needs groups.
7. Information in subject areas which the community has come to expect to be maintained by CICMT. (Day care)
8. Information on interagency networks which assist in the co-ordination and efficient delivery of human services.
9. Umbrella or central organizations which provide the information needed to access numerous services in their area of responsibility.

SECOND PRIORITY:

1. Programs of recreational entertainment or leisure time activities for families, seniors, disabled and other special needs groups.



2. Information about certain types of organizations not providing direct services (e.g. service clubs, research groups).
3. Programs where the information is otherwise generally available.
4. Services restricted to small, special interest groups not open to general membership (e.g. clubs for retired CN employees).
5. Short term projects which do not fall into the above category, but which are of a human service nature.
6. Informally structured programs offered at the local level.

THIRD PRIORITY:

1. Time-sensitive information which is labour intensive to maintain (registries, calendars, and lists) but relates to subject areas identified under First Priority.
2. Service statistics and other administrative data on human service organizations.
3. Funding programs, resources, service clubs.

FOURTH PRIORITY:

1. Groups which are in the formative stage which may or may not become operational.
2. Special events, trust funds.
3. New items of interest but with limited life span (newspaper clippings, articles, notices of meetings, forums and events).
4. Items of general recreational or cultural interest.

Organization of Information

As information is acquired through the various sources outlined above, it is verified, screened and then entered (if

accepted) into the major information components which form the backbone of the CICMT's information bank. The information in the components is organized alphabetically, geographically, and by subject or by a combination of these.

The CICMT's information bank can be divided into 2 broad and sometimes overlapping categories: 1) resource files and materials and 2) publications.

The resource files and materials constitute the main internal information database and contain information on approximately 3,200 human services available through government, voluntary organizations and other groups. The components of this information bank and modes of organization are:

1. Master File (card file) :

Includes voluntary organizations and government departments, including information on services. Arranged alphabetically by name of organization.

2. Subject File (card file)

Agencies are indexed according to service areas and entered on subject cards which are arranged alphabetically by subject heading. Clarification of a subject area in the form of a definition or scope note may also be included. Publications are subject classified.

Both of the above files include numerous cross references.

3. Agency Files (vertical files)

A back-up resource arranged alphabetically of annual reports, pamphlets, newsletters, etc., received from organizations contained in the Master File.

4. Government Files (as in #3)

For pertinent federal, provincial, and government information.

5. Street Files (loose leaf binders)

Provides a listing by address of agencies and government departments in Master File and main publications of CICMT. Arranged alphabetically by street name with borough name at top of page.

6. Legislation File (vertical files)

Provincial and federal acts relevant to CICMT. Arranged alphabetically by title of Act.

7. Author/Title Catalogue to CICMT library (card file)

Publications are given subject headings and entered in the Subject File #2.

8. Mailing List (located in Resource Office File)

Names and addresses of agencies and government departments from the Directory of Community Services. Includes names of executive officers.

9. Subject Authority File (card file)

Lists each subject heading used in the subject file together with all cross references to and from the subject heading. (A working tool for the Resource Office.)

10. Library (books)

This material is divided into a directories section (arranged geographically) and a library collection (arranged according to broad subject areas). The directories are used for quick reference as a supplement to CICMT publications and files and the library materials provide a small resource of background and subject material.

11. Current Awareness Reading Files (folders)

Include newsletters, pamphlets, reports, newspaper articles etc. Circulated to staff on a weekly basis.

## 12. Clipping Files (folders)

Includes clippings of background and more general articles.

These internal information components then form the bank of information from which the services and publication products are developed. The publications in turn become both internal and external information sources and are used by the CICMT staff, other professionals involved in community information centres or community and social services, and the general public.

The major publication produced by the CICMT is the Directory of Community Services in Metropolitan Toronto (the Blue Book) which lists over 700 organizations and departments providing community and social services.

Although they meet criteria for inclusion, many organizations and services are not included in the Blue Book because of the limited resources of the CICMT. About a third of those eligible are included in the Blue Book. Among those excluded are provincial associations, rate-payers groups, and newly emerging services. Organizations may wish to be excluded for their own reasons, often from a desire not to overload their own service delivery system.

Supplementing the information contained in the Directory are specialized guides and booklets, which totalled 18 publications as of December 1981. Examples of these guides include:

1. Day Care and Nursery Schools (400 listings)
2. Summer Camps and Programs (300 listings)

3. Home Services and Transportation (100 listings)
4. Homes for the Aged (40 listings)
5. Clubs for Older People (350 listings)
6. Social Activities for Adults (35 listings)
7. Information for Seniors
8. Information for the Physically Handicapped/Disabled
9. Federal M.P.'s for Toronto and Cabinet Ministers (30 listings)

The CICMT also publishes training materials and provides a detailed Publications List of its materials.

Only five of these publications are available without charge, and even for these a donation is requested. Prices range from \$3 to \$25 with most items priced between \$5 and \$8 each.

Publications are generally promoted by mail (an agency mailing list, based on the Blue Book, can be purchased for \$20) as well as through personal contacts with users on the telephone or at meetings and training sessions. Experimental approaches to increase sales of publications have been tried, such as a direct mailing to 18,000 doctors, lawyers, and personnel managers in December of 1980.

Most publications are purchased by human service professionals, or on their behalf by their employing organizations. Users often purchase pamphlets for seniors either for themselves or for aging relatives. Penetration into some professional groups or occupations is weak, for instance legal and medical practitioners.



New publications are added according to the need expressed by resource counsellors at CICMT or based on actual community demand for the particular information. Update takes place as errors and changes are identified by resource staff, users or the services concerned. Publications can be retired when demand falls and revenues fail to justify continuation. The history of publications has been one of revision and expansion, especially since 1979.

#### Processing and Maintenance

The processing and maintenance of information is done through the Information Division which is responsible for the gathering, updating and dissemination of print information. After the information has been received, either from CICMT initiative (i.e. by sending a questionnaire or telephoning), or from outside initiative (i.e. an agency contacting the CICMT or publishing an item in its newsletter), it is verified and screened according to the selection criteria outlined in a preceding section. If the information is accepted, it is then entered into (or deleted from) the various components of the information bank in terms of a priority list:

1. Urgent revisions i.e. changes in service, requirements, boundaries, eligibility, telephone numbers, addresses, etc.
2. New services or trends
3. Weeding of irrelevant information

The information supplied by the organization is generally accepted. The main exception is in the case of organizations which are covered by regulations and standards under licensing or registration; the appropriate licensing authority is contacted in order to verify the details supplied on returned questionnaires. Any discrepancies are reported back to the respective service organizations. Otherwise, if there are reports from any source of any service offered being different from the description in the Directory, a telephone check is made for verification.

Information in the CICMT's information bank changes at a rate of 65% annually making ongoing maintenance essential. It is estimated that the average cost of maintenance is \$100 per organization. Information for revision comes from both the primary and secondary sources discussed earlier. Maintenance and revision, like the organization of information, can be divided into internal and external categories.

Incoming information affecting the internal resource files and materials is processed daily and the accuracy of information is maintained by a regular process of manually updating and adding to agency and subject files. The revisions are then circulated internally using both the revision slips and a weekly revision bulletin. The bulletin also includes short notes on current events, changes in the internal files structures, additions to the library collection, staff announcements, and items of interest in the files of community information and

social services. (For an example of a revision slip, see Exhibit 2.)

Currency of information is also provided by the Resource Office which operates a current awareness program for the staff which includes highlighting reading material (newsletters, pamphlets, etc.), creation of reading files for circulation, posting of newspaper articles on the bulletin board, creation of clipping files of background or more general articles, and reports of staff meetings. The library collection is maintained through scanning numerous lists in the subject areas, and then selecting, ordering, cataloguing, classifying and shelving the items.

As well as adding information to the various information components, maintenance also involves weeding out irrelevant or dated material from all the components of the CICMT's information bank.

With regard to the external information components such as the publications, the maintenance schedule is more flexible. Revisions are compiled monthly for both the Directory of Community Services and Day Care and Nursery Schools and are available for sale to subscribers to both publications. The other publications which include guides, booklets, and training manuals are revised on a less frequent basis, depending on how much information has changed. In general, new editions of these publications are produced every year or two.

INFORMATION REVISION FOR  
RESOURCE OFFICE:

Directory  
Day Care

Home Services  
Nursery Schools

Info for Srs or PH  
Other:

File Card

*EXHIBIT 2*

PAGE(S)

ORGANIZATION or SUBJECT - please indicate below

Source

Date

Obtained by

R.O.: MF St.F Subj ML PG FF Q CR ECIS

In addition to the daily processing of material/information, updating also occurs on a scheduled basis e.g. a complete updating annually of the organizations in the Master File which are not in the Directory. This is done manually. The CICMT has recently acquired a word processor which is used for the preparation of publications and questionnaires and has made possible the provision of replacement pages for Day Care revisions.

#### Dissemination of Information

The CICMT uses 4 basic systems for the dissemination of information. The first is used primarily for exchanging information internally within the organization, and the other three for providing information externally.

1. Resource Files and Materials
2. Publications
3. Information and Referral Service/Emergency Community Information Service
4. Community Education Service

The Resource Files and Materials are a print based internal dissemination system which form the basis of the other subsystems. The various card files, information folders, and items in the resource collection are available to all CICMT staff and the method by which new information is disseminated has been discussed in the previous section.



Publications, which are also a print based system, are part of both an internal and external system. The counsellors use them both for their information and referral services and also for their community education programs. The publications are available for purchase by both individuals and organizations.

The Information and Referral Service and the Emergency Community Information Service are external query systems. The relative distribution of inquiries by mode of contact is telephone 98.5%, personal interview 1.2%, and correspondence 0.3%. Four languages including English, French, Italian and Spanish are available during regular CICMT hours. In 1981, counsellors and volunteers handled 87,426 inquiries. The Emergency Community Information Service is provided on a 24 hour basis, 7 days a week. As of October 1980, a commercial answering service was discontinued and calls are now handled directly by counsellors in their homes. In 1981, this service handled 12,396 inquiries. Together, the 2 services handled 99,822 information requests in 1981 which was a 20% increase over 1980. The 1979 to 1980 increase was 21%. The increased demand is believed to result mainly from the listing of the CICMT on page 2 of the telephone directory for the first time in 1980.

A query is essentially a verbal interactive dialogue between a counsellor and an enquirer in which either party may raise questions or provide information. Each query received is classified according to a predetermined set of terms and the counsellor then selects referral or information sources from a

variety of data sources i.e. the Directory or the resource files. Either during or after every query, the counsellor fills out a data collection form detailing categories such as type of contact, client profile, type of enquiry, service provided. A breakdown of the categories of information requested in 1981 is as follows:

Category	Number of Inquiries	Percentage
Counselling (personal, family)	3,000	3.0
Services for children	9,811	9.8
Community services (general)	8,679	8.7
Consumer	5,866	5.9
Documents	2,161	2.1
Education	1,553	1.6
Employment	2,453	2.4
Environment	1,001	1.0
Financial programs	16,856	16.9
Government (general)	5,687	5.7
Health	5,327	5.3
Home support services	4,780	4.8
Housing, accommodation	9,408	9.4
Immigration, citizenship, interpretation	1,652	1.7
Community Information Centre	8,575	8.6
Legal	3,723	3.7
Recreation	6,217	6.3
Transportation	2,301	2.3
Volunteerism	772	0.8
	-----	-----
Total	99,822	100.00
	=====	=====

An analysis of statistics, gathered from the reporting system which has been established for CICMT, showed that approximately 21% of the inquiries related to services for seniors, 10% to services for children and 4% to services for the physically handicapped.

### Users

The users of the information systems fall into three main categories:

1. Internal staff and volunteers
2. Other professionals and agencies
3. General public

Users in the first two categories obtain information to serve their clients while users in the third category obtain information or services for themselves or their family and friends.

The initial inquiry may prompt follow up work on the part of the counsellor in order to gather collateral information, clarify the problem, or ensure access to the referred service by obtaining an appointment with a specific person as needed. A check on the outcome may also be made, as needed. This is considered part of the interactive process touched off by an inquiry. Beyond this, follow up information may be secured on a selective basis for some special purpose. An illustration is a survey of inquiries on the children's services category with

follow up contacts regarding infant day care and day care for older pre-schoolers, August to October 1979. A more recent survey of inquiries for one month (August-September, 1981) concerning full day care of children involved 499 inquiries. Follow up contact was successful with 88 per cent of the cases.

User satisfaction relates to whether or not the service to which the user was referred was available and was obtained as well as to the quality of the CICMT service. High quality service is necessary, but not sufficient to ensure user satisfaction. Evaluations of the CICMT information service must take into account the tendency of users to assess the CICMT on the basis of their level of satisfaction with the referred service.



SECTION II THE COMMUNITY INFORMATION CENTRE OF METROPOLITAN  
TORONTO - TELIDON-BASED INFORMATION SYSTEM

Rationale for Bell-Vista Field Trial Participation

The Community Information Centre of Metropolitan Toronto had been interested in developments in information technology for some time before its participation in the Bell-Vista field trials. The Board of Directors decided to become involved in the trial only after careful study and discussions with representatives of the Canadian and Ontario Governments and Bell Canada. The detailed study of the relevance of videotex for the future operations of CICMT, identification of the options before it, and the development of recommendations for action by CICMT were entrusted to a special committee, the Videotex Committee, established by the Board.

In 1980 it was generally recognized that Telidon-based videotex had potential as an important medium for delivery of community information services. Because of its position in the field as a major community information centre, CICMT wanted to learn at first hand about the emerging technology and the rapidly developing videotex information environment. The Bell-Vista field trials gave CICMT the needed opportunity to identify questions and issues concerning the development application and diffusion of Telidon and related technologies in delivering community information services.

An added reason for its active participation in the trials was CICMT's desire to have a voice in any public discussions with regard to possible changes in public information systems. Of special concern were the issues surrounding basic policy and value assumptions, among them the vital importance of open access to information and services. There were also such unknowns as: how the provision of the service would be paid for, how and for whom access to the technology would be provided if access were free, and how concerns about privacy and confidentiality would be resolved. At an operating level, CICMT recognized that eventually it might have to convert its existing manual systems for the organization, storage, updating and dissemination of information to an electronically based system using word processing, database and electronic messaging technologies. Initially CICMT believed its participation in the Telidon field trials would facilitate automation of its internal information bank, but it soon came to recognize that participation in the trials would not be of assistance in reaching this objective.

#### The Telidon team in CICMT

As noted above, the CICMT Board established a Videotex Committee concerned with setting directions for the use of videotex. On deciding to become an information provider, the Committee had to determine the nature of the service and the category of information for the trial. The development of the

CICMT's Vista database was seen as a specific project and additional staff was contracted for that project. The staff included a developmental coordinator who was hired for the initial project (to be replaced by a videotex manager responsible for the extended project), a full-time videotex editor/writer who was in charge of preparing the page format and verifying information, a graphics consultant, and a creator/artist from a commercial firm to prepare Telidon pages. The coordinator (later supervisor) and the editor/writer were full time positions while the graphics consultant and the page creator were contracted on a per use basis. In the early stages of the project other CICMT supervisors were actively involved in choosing the subject area as well as in deciding on the content and format of the database. As the project operation became routine, it was expected that their involvement would decline. Since the project was a fairly separate and self-contained entity within the organization, a newsletter was initiated to keep members of CICMT and others informed of progress.

#### Corpus of Information and Type of Query Search

Project planners at CICMT expected originally that they would be able to create a database on Telidon that would meet the information requirements of any user. As experience accumulated, it became evident that a choice had to be made between two main audiences, the professional user and the lay public. As was seen

in Section I, professional users of CICMT draw upon a very large database of heterogeneous, unstructured materials, and it soon became very clear that there was no possibility of converting this into electronic form within the scope of the Vista project. It was therefore decided to concentrate on lay users.

In selecting a database to serve the lay public a further narrowing was required. It was agreed that, until more experience had been acquired, it was essential to avoid the risks of misinterpretations that could arise when the public sought information on certain difficult or sensitive topics. For this reason it was decided not to attempt to provide information to those seeking, for example, medical help, or advice regarding financial programs. After a great deal of consideration it was decided that in addition to some general information about CICMT, the videotex database would consist of data relating to recreational facilities provided by non-commercial organizations. This general subject area was chosen for the experiment because the information changes relatively slowly and is not of an essential nature. Categories within the subject area covered are:

1. Noms and Tots
2. Public Libraries
3. Parks, Pools & Arenas
4. Continuing Education
5. Sports and Fitness
6. Entertainment

At present, little new information has gone into the information bank beyond that which was initially available in

CICMT files. The major change has been in the improved organization of the recreational category. With additional funding, extension into more specialized areas such as women's interests and the handicapped might be considered.

Originally the CICMT planners hoped that the Telidon information system could emulate counsellor-user dialogue and help users to assess and reformulate queries. It soon became apparent that, at least in the Bell-Vista trial, the dialogue would have to be much more limited. The top categories in the tree structure, characteristic of videotex, are very abstract, and a search is conducted by making selections which become more and more specific until the information being sought is found. This is not the way that clients conduct their dialogue in seeking information from CICMT counsellors. Instead, if they use categories at all, they use much more specific terms which encompass fewer instances of what is wanted. Some psychologists have called these "basic level categories", and the effect of their use is that searching through dialogue is much less systematic, and guided more by the ability of the counselor to interpret what is wanted than by the client. This in turn has an effect on the level of detail that might be reached through a videotex search. It was felt necessary to limit the detail, and in most situations be content with providing the enquirer with a reference where further questions could be directed. This is not inconsistent with CICMT's general approach to queries. CICMT regards itself as a "gateway" service which integrates



information from many sources and helps clients find the information sources most appropriate to their particular problem. When information is easily accessible to a client, the CICMT directs the client to the organization which provides the necessary information rather than providing the information itself.

Within the database, CICMT intends to use Vista cross-references to allow a client to link directly into another information provider's database. No attempt has been made to invite other information providers to make reciprocal links into the CICMT database.

#### User Aspects of the CICMT Videotex Service

##### (1) Accessibility

The majority of terminals are currently located in public places such as department stores. This situation is changing and increasing numbers of terminals will be located in private homes. Although the system is officially available 24 hours per day, it has sometimes been impossible to get access to it for technical reasons.

##### (2) Access Mode

All user terminals in the Vista trial are linked by 1200 baud phone lines to the database. Although this baud rate is acceptable for displaying text, significant delays in

transmission can occur if complicated graphic images are used. No writing materials or writing surfaces are provided for transcribing information from the screen by users of terminals in public places and printing devices are not available.

### (3) Integration with Other CICMT Systems

A step towards the integration of the videotex service with other CICMT services has been made by including the CICMT's phone number on every page. However, there is no evidence yet that this has been used by clients. The information has not been volunteered and counsellors do not ask clients if they have seen the Vista database. The counsellors have not been able to use the videotex database as a source of information for answering queries because to date there has been no user terminal at CICMT. This lack of an internally located terminal has also hindered initiatives to involve CICMT staff in the videotex experiment during this period.

### (4) Languages

All entries in the database are in English, although the general introduction to the CICMT will also be done in French and Italian. Given additional funding, CICMT plans to provide service in other languages, especially when information is of specific relevance to a particular ethnic community.

#### (5) Strategies Employed to Make the System User-Friendly

A great deal of attention has been paid to ensuring that the videotex service is appropriate to a general population, rather than to a professional audience. In order to make the database as "client oriented" as possible, the CICMT counsellors, who are familiar with handling direct user requests, were consulted to find out how potential users are likely to look for information. This knowledge, supplemented by intuition, was used in the design of the information structures, page content and interaction style.

#### Categories and Vocabulary

Categorical structures, e.g. Moms and Tots, are broken down by locality to provide maximum ease of access to relevant information. Simple, conventional, and uniform terminology is employed throughout, e.g. "doctor" not "physician".

#### Format

Headings on every page provide summary information and context for the content. Dense packing of textual material on a screen which decreases the level of legibility and comprehension is avoided as much as possible. Wide margins and carefully selected colour backgrounds are also used to enhance readability and compensate for the lack of multiple type fonts.

## Use of Graphics and Colour

The graphics capabilities of Telidon have been explored by CICMT in various ways; for example they created a menu page which identifies their list of services. Distinct graphics symbols have been associated with different major information categories, e.g. a teddy bear for Day Care. These symbols enhance the appearance of the page and provide a visual cue.

The intensity of colour is used to indicate the relative importance of the information. The brighter colours are used to highlight the most important text while the less intense colours such as the various shades of grey are used for less important information.

## Consistent Command Format

A consistent command format was adopted to avoid confusing users. Instructions are placed where users can see them; the command syntax is kept simple and consistent; and the database is structured to take advantage of the computer's programming capabilities rather than putting the emphasis on the user's knowledge and familiarity with technology. For instance, a user never has to enter a long page number because the page can always be accessed through a menu choice.

(6) Price of Services

During the trial the user bears no costs, either for the terminal equipment or for access. Although CICMT hopes to keep access to its pages free, residential users will likely have to pay to maintain a Telidon reception facility (a colour television, Telidon interface equipment and possibly an extra telephone line).

(7) User Support/Help Facilities

There is a "Help" button on the keypad (the purpose of which is not clear to some people), a general Vista Help section on how to use the system, and CICMT's telephone number on each of its pages. A special number for Vista-related queries was contemplated but rejected. CICMT decided that a second telephone number would diminish public awareness of CICMT's usual phone number (863-0505). Apart from this, there are no other facilities provided to assist users experiencing trouble finding information. Various technical changes might bring improvements such as the ability to connect with an on-line counsellor.

(8) Confidentiality Protection

Household users sign a waiver form allowing Bell Canada to collect details about their usage and agree to respond to opinion surveys conducted on behalf of Bell Canada. A certain amount of anonymity is guaranteed since the individual does not actually

identify him or her self to the system. There has, however, been some discussion about assigning individual user numbers so statistics can be associated with particular persons and possibly related to various socio-economic parameters. The problem is compounded by the possibility that the information collected might be valuable commercially, e.g. for market research firms. Confidentiality is a high priority for CICMT which takes every possible step to protect the privacy of its users.

#### Technical Aspects of the CICMT Videotex Service

##### (1) Structure

The menu structure is used to guide the users through the database. Over 80% of the pages in the database are treated technically as menu pages directing users to information such as a telephone number rather than to document pages which actually contain descriptive information.

Experience has shown that it is difficult to predict where users will look for information. Part of the problem stems from the fact that menu choices must start at a categorical level higher than most people would expect. This problem has been dealt with, to some extent, by giving examples that show the range of information items that would be available for a particular menu choice. The menu structure is very susceptible to loops. Users frequently find themselves back where they started. The objective is to provide cross links without leading the user into a dead end or a perpetual loop.



A diagram of the overall Vista database is shown in Fig. 1. The structure and sample pages of the CICMT database are shown in Figs. 2, 3, 4 and 5.

## (2) Page Creation and Conversion to Online Database

A 4-stage process has been developed for creating the CICMT database to make information available via Vista.

### Story Board

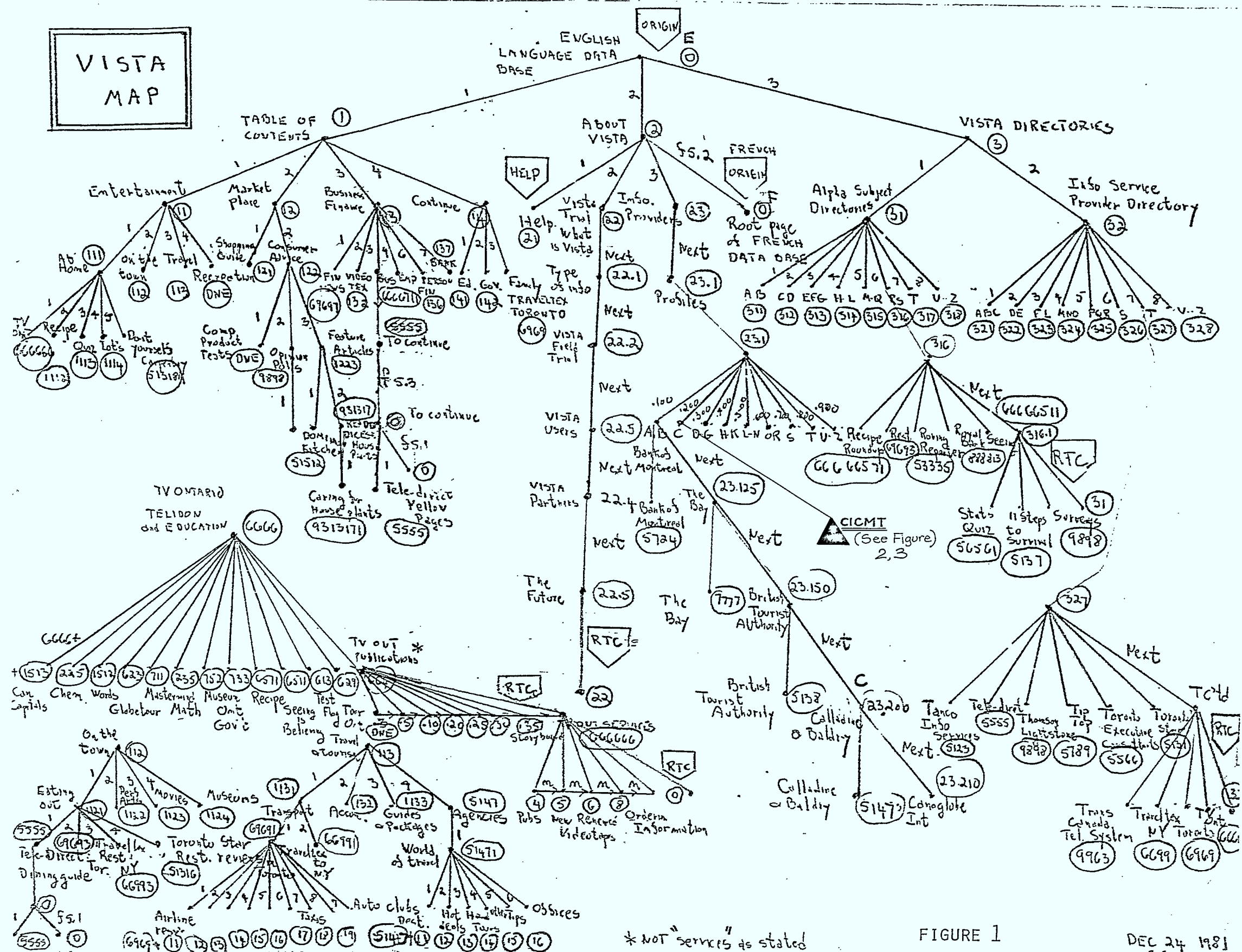
A point-by-point description of what the videotex department plans to do is developed. It outlines both the proposed approach and the content and is submitted for approval to both the videotex group and the CICMT supervisors.

### Conversion to Vista Entry Record Forms

These forms contain the precise instructions for page creation and are also submitted to the supervisors for approval.

### Page Creation

This step is contracted out to a commercial firm (Video Page) which creates pages for videotex applications. The results are proofed on their mini database system for content and linkages. CICMT pays \$18 per page created. New pages take about 5 working days (@30 pages/week average) and updates take 2 working days.



# OVERVIEW OF CIC DATA BANK (MARCH 1982)

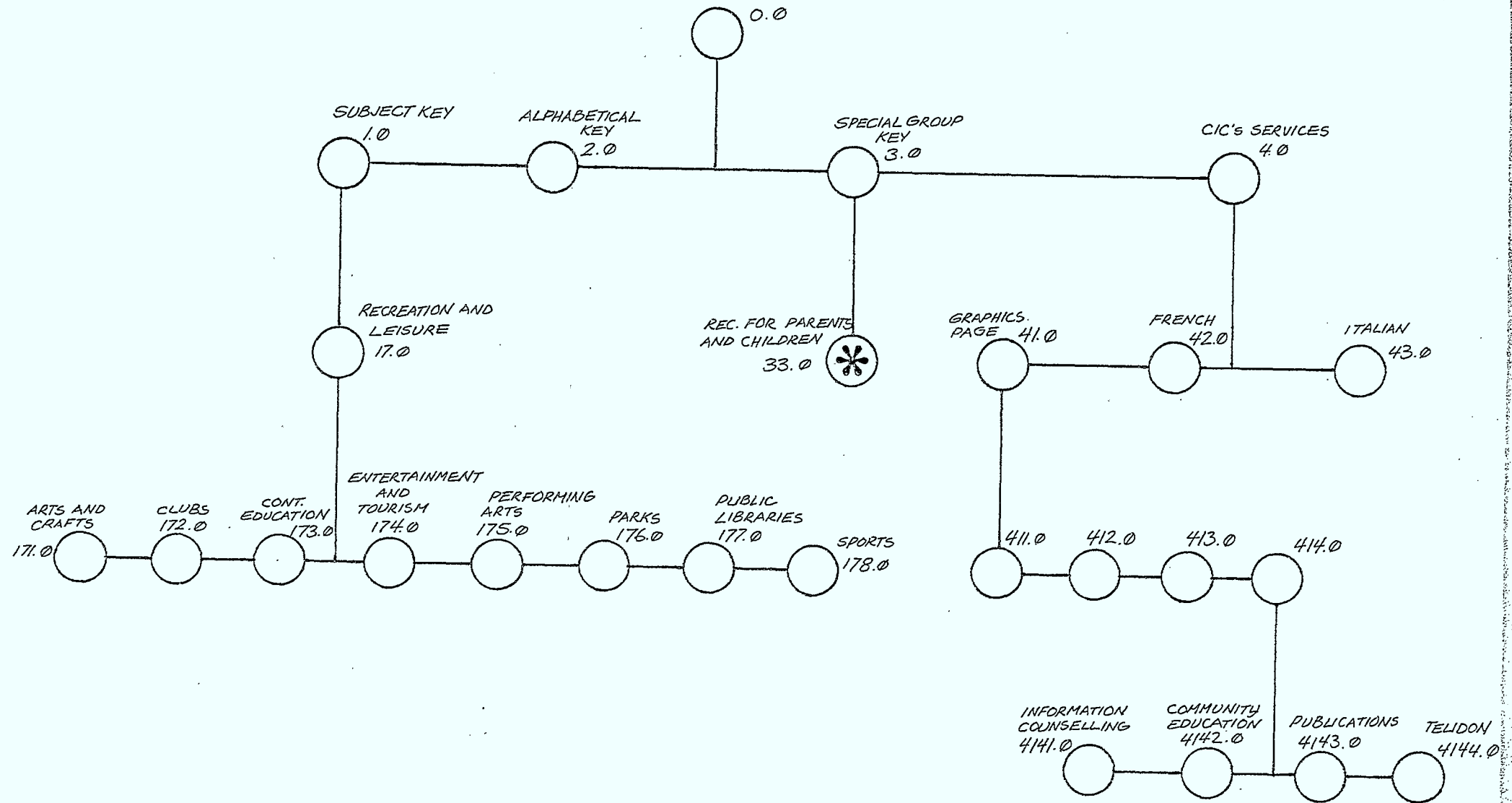


FIGURE 2

# OVERVIEW OF RECREATION FOR PARENTS AND CHILDREN

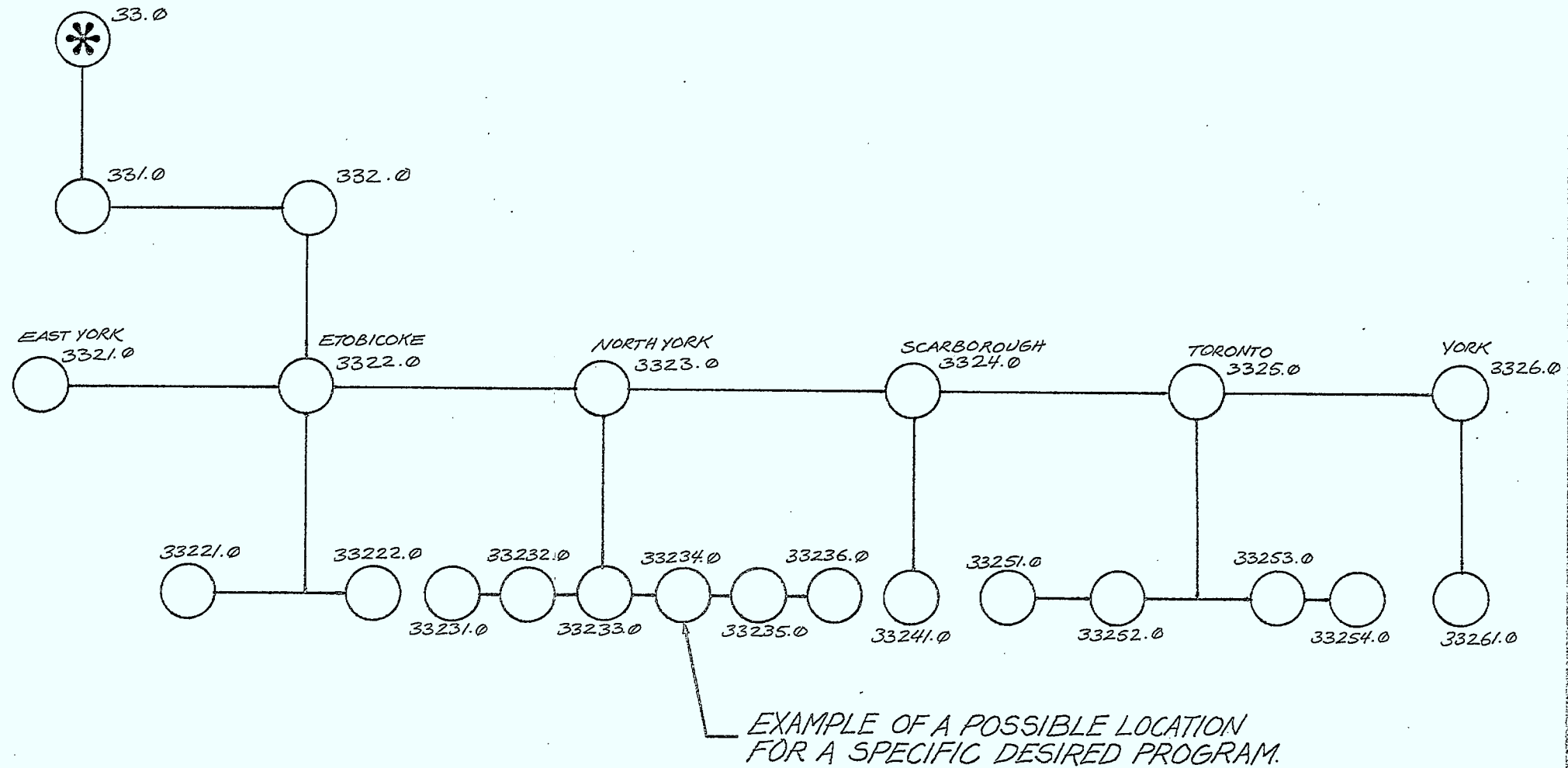


FIGURE 3

# EXAMPLES OF TELIDON PAGES DEVELOPED BY CICMT

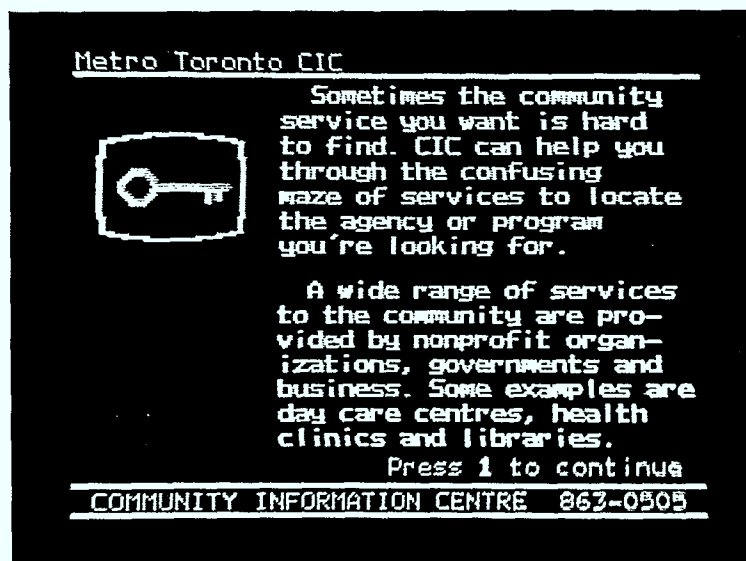



FIGURE 4

# EXAMPLES OF TELIDON PAGES DEVELOPED BY CICMT

<b>METRO CIC</b>	<b>863-0505</b>
	<b>SUBJECT GUIDE TO SERVICES</b>
	<input type="checkbox"/> COUNSELLING
	<input type="checkbox"/> EMPLOYMENT
	<input type="checkbox"/> FINANCIAL PROGRAMS
	<input type="checkbox"/> HEALTH
	<input type="checkbox"/> HOUSING
	<input type="checkbox"/> LEGAL SERVICES
<b>9 Metro CIC Directory</b>	<b>7 RECREATION AND LEISURE</b>


<b>METRO CIC</b>	<b>863-0505</b>
	<b>CIC PUBLICATIONS</b>
	<input type="checkbox"/> Day care/Nursery Schools
	<input type="checkbox"/> Summer Camps and Programs
	<input type="checkbox"/> Services for Parents and Children
	<input type="checkbox"/> Home Services and Transportation
<b>6 to continue</b>	
<b>7 to order publications</b>	
<b>8 previous menu</b>	
<b>9 Metro CIC Directory</b>	

FIGURE 5



### Loading

A diskette containing the created pages is taken to the Bell data centre on Simcoe Street, by either CICMT or Video Page, for loading. This is usually done at night with priority apparently given to updates (as opposed to new pages) so changes can be made daily. The results are checked by direct user access and backup copies are kept.

Two problems that have been encountered in the later stages of page creation are difficulties in the correction of text (due to a lack of good text editing software for the system) and the inability to fine-tune the page appearance (due to CICMT's lack of direct access to an information provider terminal). For example, subtleties of text placement cannot conveniently be expressed on Entry Record Forms. These problems obviously also relate to changing pages already loaded as well as to creating new pages. Updating or changing pages which are already on the system is handled by annotating a copy of the original Entry Record Form and then changing the copy of the page which is kept on a floppy disk and loading the updated page in the system to replace the original. The charge for an update is substantially less than the \$18 charge to create a new page. Some information providers have a communication link to the Vista database and are able to do updates directly.

The procedure for page creation has been evolving and is still under development. During this period, the focus of

attention has been on gaining familiarity with the potential and limitations of the new medium and in working out the relationship between the various members of the Telidon Department and other CICMT supervisors. The CICMT has developed procedures to balance the need to retain flexible control over the style and content of the videotex service with the need to maintain an adequate level of productivity. The page creation process (except the use of graphics) has stabilized to a point where it is considered by CICMT to be competitive in terms of cost and production time with that of other information providers. The average total cost per page is about \$80 (including \$18 page creation fee), although there is considerable variation between pages depending on the actual content.

### (3) Time to Update

The question of frequency of information updates and weeding policies will be dealt with once the database is functioning. No strict schedule has been established yet and the frequency of updating will vary with the specific type of information.

### (4) Usage Statistics

At this stage in development CICMT has no information about the user population of the Telidon database, or about the use of pages. A suggestion was made that some attempt to obtain basic information about persons accessing the CICMT pages be made by including pages to gather a few key characteristics of the user,

e.g. age group, sex and for whom the information was being requested. Pages were drawn up for this, but there was no reply from those responsible for the Vista trial about permission to include these in the database.

Although raw usage statistics are currently being collected very little data has been made available yet to information providers. The understanding was that a program written by the Department of Communications for analyzing data on page usage would be available to the Vista system project. (See Appendix C.)

#### Interaction with Other Services

The videotex project has had no noticeable impact on the other CICMT services. The project has operated as an independent, parallel service in a distinct area with little interaction, direct or indirect, with other CICMT operations. This is in part due to the lack of a user terminal in the CICMT office during the early development of the database. It is a policy of the CICMT to avoid competition with other services. However, because of the lack of coordination between information providers, it is possible that information in the CICMT database is duplicated in the databases of other information providers. There are some references to the CICMT entries in the root pages of the Vista directory.

Size of the Videotex Service

CICMT had hoped to have 250 to 300 pages on the Vista system by the beginning of March 1982, but had encountered a series of problems and changes which made this goal unattainable. As of the end of March, approximately 40-50 Telidon Pages had been created, although not all of them were available to Vista users. Another 90 pages had been prepared inprint form and were ready to be converted to electronic form.\*

\* As of June 30, 1982 there were 154 pages on the service.

### SECTION III OVERVIEW OF CICMT

To summarize, the CICMT system, described in the preceding pages, is concerned with the provision of the following basic systems for the dissemination of information:

1. Resource Files and Materials
2. Publications
3. Information and Referral Service/Emergency Community Information Service
4. Community Education

Figure 6 illustrates the process whereby government departments or agencies, non-profit organizations, and some commercial organizations are selected on the basis of their programs and services as the source organizations for information and referral. The inquiries concerning these numerous organizations are grouped in nineteen classes of queries for statistical purposes. From the universe of organizations CICMT selects approximately 3,500 organizations to provide the corpus of information on which its services are based.

The principal activities undertaken by the community information centre are to:

1. Select appropriate organizations
2. Identify and classify the information services and resources available from each organization
3. Organize and file the information generated from the organizations to produce a body of information essential for its service outputs.

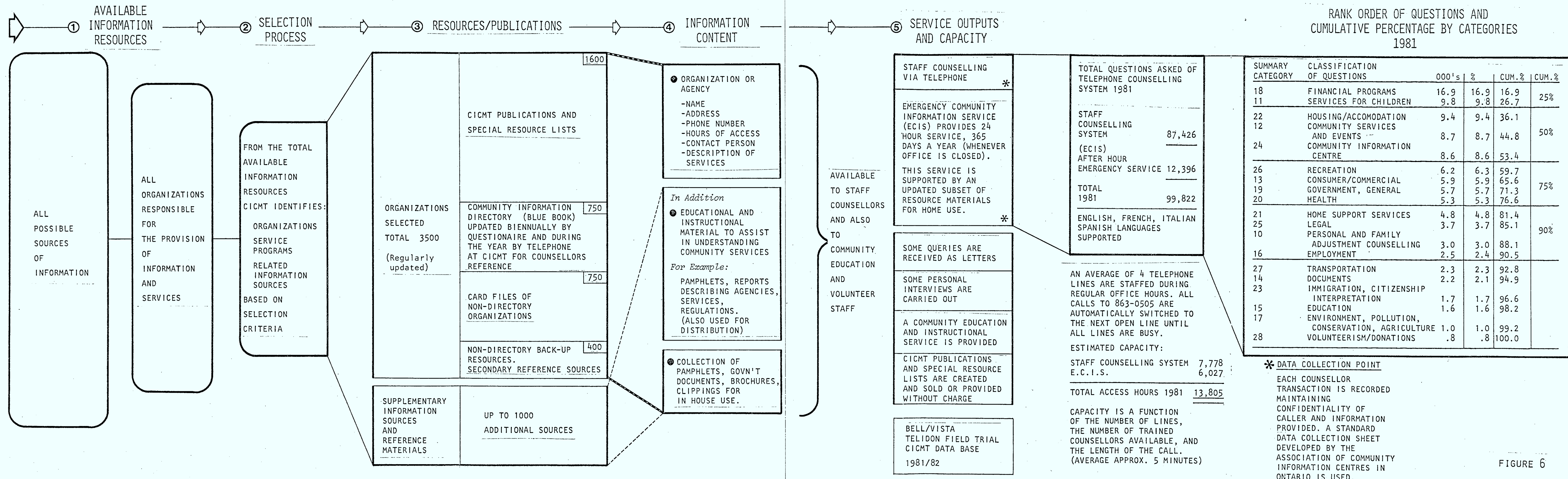


FIGURE 6



The major personal service provided by the CICMT is the telephone based information service whereby either private citizens or members of the helping professions can call and obtain advice from trained counsellors. These individuals talk with the caller, identify the class of problem for which assistance is required and through use of the information resources and contacts available to them, refer the caller to the appropriate agency or department with programs or services that can meet the caller's needs. Some 72,000 of these information or referral interviews were logged in 1980 and 87,000 in 1981.

The counsellors classify the calls for data collection purposes using a standard system of classification agreed to and used by cooperating community information centres in Ontario.

This telephone counselling service, along with the Blue Book or Directory and 18 specialized publications, are the major service outputs of CICMT. A Telidon-based information service could either complement or replace service outputs. These alternatives will be considered in Section V of this report. For both the existing and Telidon Information System, however, there are key areas in which measurement and comparative information can be collected. Some of these areas are briefly outlined below.

1. Corpus of Information

One key area is the corpus of information selected by CICMT and organized to provide the basic elements of information and referral which are ultimately provided to persons accessing either the existing or the Telidon-based system.

## 2. User/System Contacts

An attempt to access either system may be successful or unsuccessful. This attempt is the major point for data collection and estimation of the success rate of the system.

## 3. Definition of Success

CICMT is in most cases a facilitator rather than an ultimate service provider. However, in terms of the agencies providing services and those who need service and assistance, the ultimate criterion of success is a satisfied user.

## 4. Barriers to System Use

Persons who need service or assistance may fail to obtain access to the system for a number of reasons including lack of awareness of the service, insufficient capacity of the system to respond to queries, and lack of access capability available to the user.

It is important to recognize that the type of system with which we are dealing is a dynamic, open system. It is also only one part of a large, changing and complex human welfare services delivery system involving all levels of government, as well as commercial and not-for-profit organizations.

At any moment any of the 2 million or more people in Metropolitan Toronto might identify a need for community information and might seek this information from a large number of alternative sources. One source is CICMT. The existence of one or more direct access databases, available through terminals located in the home or in other agencies, provides additional channels for information. The volume of requests through all channels is not known, nor is the pattern in terms of specific needs. The rate of increase or change in this volume over time,

the reason any particular channel is chosen, and the market share of services rendered by alternative channels including CICMT is not easily estimated. These factors are beyond the scope of this study, however they represent the context within which alternative information providing systems function.

SECTION IV PROVIDING COMMUNITY INFORMATION THROUGH TELIDON -  
ASSUMPTIONS, EXPECTATIONS AND POSSIBLE ASSESSMENT  
CONSIDERATIONS

In this section we ask what can be learned about providing community information through Telidon from the Vista field trial conducted at CICMT. In particular we would like to know how a Telidon-based service compares with the services presently available from CICMT with regard to such factors as accessibility, quality and user satisfaction. The tried and proven method of answering such questions is first to state the hypotheses to be tested and then to design an experiment to compare the two systems, take observations of their use, and perform statistical analyses on the observations to test the hypotheses. But for reasons which were presented in part in Section II, and which are elaborated in this section, the Vista trial at CICMT did not provide a service comparable to any of those currently offered by CICMT. Choice of the contents of the Vista-trial database, and of the mode of providing information, were based on implicit assumptions about what it is feasible to do by means of Telidon. Moreover, during the period covered by this report (April 1, 1981/March 30, 1982), the Vista system continued to grow and change, and the database size, even at the end of the period, was not large enough for it to be regarded as an alternative to even a small part of CICMT's working database.

Thus it has not been possible to conduct any comparisons of services provided by CICMT to the public through its present system and through Telidon. It would still be desirable to carry out such comparisons, and moreover it would be desirable to conduct experiments which would test whether at least some of the assumptions which were made in creating CICMT's Telidon database are valid. In what follows we review the assumptions, examine the conditions that have to be satisfied to allow comparisons to be made, and pose some of the questions that might be asked in comparing the systems.

#### A priori Assumptions about the CICMT Vista Trial

Certain assumptions about the requirements of a CICMT-operated Telidon database, or about strongly desirable features of it, are based on CICMT's general approach to providing public information. They are imbedded in the system design and can be accepted without testing. Examples are the desirability of free, public access to information, and of the dissemination of information about public or non-profit bodies. For other assumptions, regarded as equally important, the system may be intended to fulfill the requirements, but it is conceivable that the system as actually built does not do so, and a test might therefore be in order. An example is the assumption that the privacy of the enquirer and the confidentiality of client information must be inviolable. Other attributes of a Telidon

system might be regarded as strongly desirable, and it might be expected or hoped from the design that they would be present, but only tests could determine whether the system actually works as desired. Examples of such features are that the system serves a targeted sector of the population, or that the system is capable of providing satisfactory answers to a particular class of queries.

In constructing the CICMT Telidon system the design embodied certain other assumptions, stemming not from CICMT's view of what should be in community databases or how such databases should be presented, but rather based on views of what should be in a Telidon database, and how Telidon can provide information to a user. The effect of these assumptions on the design was such that the views themselves are untestable in the present Vista system, and would be so even in a system containing a larger amount of information, i.e. one which could be compared with other information disseminating mechanisms of CICMT. One such view is that a Telidon database ought to be on a non-sensitive, non-critical subject, so that there would be no risk that a user would receive insufficient information or be wrongly informed about a potentially serious matter. This is the reason that a medical information system, first regarded by CICMT as a good subject for a Telidon database, was rejected in favour of an information system about recreational activities. Now it is a matter of some importance to know whether a Telidon query system can provide answers to the public about health related questions.



Can the language be non-technical so that the public can understand it, but sufficiently precise that answers are correct? Are there problems of liability? Apparently the CICMT group were not ready to cope with these questions, at least not in its first encounter with Telidon. It is interesting to note that there has been an announcement of another experiment where there will be an attempt to provide medical information to the public via Telidon. A group in Toronto General Hospital, supported by the Department of Communications, is undertaking to put on Telidon a database relating to drugs, with a view to providing information and answering queries in this area. It is of course, a medical group which is undertaking this experiment, and it is not hard to see why CICMT would be reluctant to embark on a similar task. But it should be noted that the CICMT trial, as currently conceived, will not be able to answer questions about the range of subject matter appropriate for a Telidon database queried by the public.

There is another aspect to the kind of information provided by Telidon which cannot be investigated through the CICMT database because of its design. The decision was made not to attempt to furnish specific answers, but rather to provide pointers to where answers might be obtained, mainly in the form of telephone numbers of appropriate organizations. Now this decision was probably made because it was recognized that, to provide detailed answers, the query path for a user would be much longer and that a much larger database would have to be built up. But the question as to whether a database can be designed so that

it is navigable by the general public using a menu system - (can suitable categories be defined? will the lay public follow a path down many levels?) - this question cannot be asked from the present CICMT Vista trial. The design of the system, as presently conceived resulting from assumptions made about how a Telidon conversation is carried out, leaves little room for experiments which might provide an answer.

Here again it is interesting to note that there is in the Vista trial a database which does attempt to provide moderately specific answers to the public about a technical subject. This is the legal database of Concord Publishing Company, which deals with a number of topics relating to work, under the headings:

- Hours of work
- Wages
- Holidays and vacations
- Rights as a woman employee
- Notice when fired
- Discrimination at work
- Working conditions and job safety
- Unemployment insurance

Each of these topics is divided into subtopics, and for each subtopic there is information intended to satisfy particular queries. In a preamble there is advice about seeking professional help, and many of the topics refer to government and other agencies where more information can be obtained, but the text as displayed does contain, in simple jargon-free language,

factual information about legal questions. It may be noted that Concord Publishing's legal database is completely textual, with almost no graphics. In essence the system is videotex, but makes no use of Telidon's graphics capabilities.

#### Comparable Systems

Nevertheless there are some lessons to be derived from the Vista trial being conducted by CICMT. There is certainly something to be learned from the experience of mounting a database on the new medium. But this learning experience is probably not much different for CICMT than it is for other groups through the same process. Of special interest in the CICMT context is what can be said about the performance of a community information system based on Telidon, vis-a-vis the performance of that based on telephone counselling. In addition it would be of interest to observe how the presence of a Telidon-based information system would affect the operations of the telephone counselling system and the internal operations of CICMT itself. In designing an evaluation in which the counsellor information system is to be compared with a Telidon information system certain conditions can be identified as being essential to ensure that the systems are really comparable.

1. An operational prototype videotex system must exist to be tested. This would differ from the initial field trial system which lacked sufficient information resources to

permit testing. In addition both operating systems must be stable and functioning at normal levels within their design capacity. Basic changes in hardware, software, method of display or other system characteristics cannot be made during the test period.

2. Systems being tested must be available to users during common time periods, that is, tests must be conducted during the same monthly periods, on the same days of the week, and hours of the day or night.
3. Methods for data collection must exist that permit collection of comparable data from both systems. Thus search sequences in both systems must be able to be associated with an identifiable user, seeking answers to an identifiable question or question area. It must be possible to conduct follow-up research to determine answers to questions concerning the extent to which the information received met the user's needs.
4. While Telidon cannot initially cover the full range of main subject categories dealt with by CICMT, comparable subject subsets must be included in both the telephone-based system and in the Telidon system, so that tests can be carried out on these common subject areas.
5. Information must be available as to the similar groups that have access to the two types of system. Ideally user groups would be identified.

The five sets of conditions identified above are essential if comparisons are to be made between systems. But, as spelled out below, only some were met during the initial test period (October 1981 to March 1982).

- 1) For a variety of reasons neither the CICMT system nor the Bell-Vista system functioned at normal operating levels during the period. Due to a rapid increase in demand, the CICMT counselling system functioned beyond its operating capacity, during much of the period. Tests taken by Bell Canada showed that many callers were unable to obtain access due to system overload. The Bell-Vista system was in its initial test phase and did not have the full complement of user-terminals in the field, and experienced periods in which the system could not be accessed at all for test purposes. During the test period basic changes affecting the form of the database were introduced, and decisions were made during the period to shift from Bell to Infomart-based operating systems, necessitating changes to page format and other aspects of the system.
- 2) Both systems were generally available for the same time periods.
- 3) The Telidon data collection system was not operationally effective during the period and no evidence could be obtained

that statistical data could be collected for the Telidon system that would be comparable to that collected by CICMT. The method of data collection in Bell-Vista trials does not permit identification of the actual user of the system, only the terminal used whereas CICMT statistics are based upon specific user queries. Also it is not possible to know the type of search being undertaken, or its purpose, when Telidon is accessed. This information is readily identified in a counsellor interview. To obtain such data for the Telidon based system, a telephone interview or questionnaire would be required. For this field trial, such interview methods can be carried out only through, or with the approval of, the field trial management.

- 4) Due to funding constraints and the lack of experience in page creation in the initial development period, the database chosen by CICMT was not comparable in size, or content to any of the 19 major Community Information Centre service categories or even major segments of them.
- 5) CICMT had no influence on the placement of any Telidon sets. Distribution of sets tended to be skewed toward higher income brackets representative of those potentially able to purchase a videotex service, rather than toward those likely to need community information services. Furthermore as noted in

Section II, no statistics about users have been made available.

#### Future Assessment

It is clear that by March 30, 1982 the CICMT Telidon system had not developed to the point where it was comparable to any part of the other information providing services of CICMT. Thus no assessment of the operational effectiveness of the Telidon service could be made for this report. However CICMT is continuing to develop its Telidon database, and it is possible that the conditions outlined in the previous section will be met eventually. Of the five conditions identified, those relating to system availability and contents can probably be satisfied. But condition three, relating to data collection, continues to present problems. Even when the DOC data collection and analysis programs are in place, in a normal encounter with Telidon the user will not be identified, and no information will be automatically collected on his information need, or the success or failure of the system to satisfy the need. This shortcoming would have to be overcome by including pages which would enable the system to collect information from the user or by conducting user surveys. Both techniques have their weaknesses. Assuming, however, that the conditions listed above can be satisfied, it is



useful to suggest what tests might be carried out to assess the CICMT Telidon-based service, and its effect on CICMT itself.

In order to compare the two systems, hypotheses are posed and stated in their null form - i.e. it is assumed that no significant differences would be found between the two. Random samples would have to be drawn using approved statistical methods.

Hypotheses I

There will be no significant differences found between the telephone counselling system and the Telidon system with respect to Accessibility and Length of Interview/Search.

Category: Accessibility

Variable: Success/failure in establishing contact  
on the part of the user

Telephone

% of calls answered by  
counsellors (Bell Canada data  
analysis - blocking factor)

Telidon

% of calls answered by system  
(Bell Canada data analysis -  
blocking factor)

Variable: Effort required

Telephone

No measurement required

Telidon

Sample of Telidon users ques-  
tioned about relative ease of  
operation compared to using the  
telephone

Category: Length of time of interview/search

Variable: Length of time required  
to obtain information

Telephone

Sample of interview reports  
to determine length of time of  
interview, by type of query

Telidon

Interviews with sample of users to  
collect data on length of time re-  
quired to locate information, by  
type of query

Variable: Tolerance of time required  
to obtain information

Telephone

Sample of users surveyed  
concerning attitude

Telidon

Sample of users surveyed  
concerning attitude

Hypotheses II

There will be no significant differences found between the telephone counselling system and the Telidon system with respect to user satisfaction.

Category: User satisfaction

Variable: Satisfaction with system response

Telephone

Sample of users tested for perception of satisfaction with response

Telidon

Sample of users tested for perception of satisfaction with response

Hypotheses III

There will be no significant differences found between the telephone counselling system and the Telidon system with respect to the quality of information provided.

Category: Quality of information

Variable: Accuracy

Telephone

Sample of responses as provided by counsellors checked against source data for accuracy

Telidon

Sample of database pages checked against source data for accuracy

Variable: Level of detail

Telephone

Sample of question from telephone system searched in Telidon system to determine level of detail available

Telidon

#### Hypotheses IV

There will be no significant differences found between the telephone counselling system and the Telidon system with respect to volume of use, categories of use, and types of users.

Category: Volume

Variable: Number of users, by category of use

Telephone

Telidon

Volume of use of both systems will be counted during the test period by category of use

Category: Type of user

Variable: Age, sex, language, socio-economic background, educational level, metropolitan area, lay public or professional user

Telephone

Telidon

For both systems data will be collected on the attributes listed and comparisons will be made between systems and with metropolitan population census data

#### Hypotheses V

There will be no significant differences found between the telephone counselling system and the Telidon system with respect to costs a) to the system users and b) for the information providers, CICMT.

To test this hypothesis, fixed, variable, and total costs of both the present CICMT telephone counselling system and the Telidon operating system would have to be determined for various levels of use.

Hypothesis VI

Operation of a Telidon system in combination with the telephone counselling system will have no effect upon the existing telephone counselling system, or upon CICMT in terms of organizational structure, staff size, staff skills, services rendered and budget requirements.

Data will have to be collected on the operation of CICMT both before and after the introduction of Telidon.

## SECTION V CONCLUSIONS AND RECOMMENDATIONS

Through an extension of its contract with the Department of Communication, and additional financial support from Wintario and the Department of Employment and Immigration, CICMT is continuing with its participation in the Vista trial. In this section, based on the observations of the preceding sections, some conclusions are drawn about the trials to date, and recommendations are made about their continuation.

### Comparable Systems

To date the stability of the system and size of the Vista database have not been adequate to permit any useful comparison between CICMT's present methods of disseminating information to the community, and providing such information through Telidon. Enough has been learned and accomplished to make it reasonable to expect that within a year the Vista delivery system will have stabilized, and CICMT will have enough display pages so that comparisons could be made between Telidon as a mode of disseminating community information, and other modes such as telephone counselling and publications. Such comparisons will only be possible if the Vista trial meets certain requirements.

#### Recommendation I

"It is recommended that CICMT's Vista trial be conducted so as to meet the conditions outlined in Section IV, conditions designed to ensure that meaningful statistical comparisons can be drawn from observations of the Telidon system and of the telephone counselling system."

#### Statistics Gathering and User Identification

It is to be expected that the statistics gathering and analysis package of Vista will be put into place. This package will have to be operational if any conclusions are to be drawn about the commercial potential of Vista, and since the commercial aspects for the Bell-Vista trial are so important, it can be assumed that statistics gathering and analysis will be possible.

But it must be realized that the present form of the statistics package does not allow identification of the user during a query search, nor is any data being gathered which might make it possible to determine how successful a user has been in his or her search, or how much satisfaction there is with results. Now the ultimate importance of knowing something about the user population and the quality of the service rendered through Telidon cannot be overemphasized. When the time comes, as it surely will, that the support for CICMT's Vista service as an experiment is diminished or withdrawn, the justification for continuing with Telidon will certainly have to be based on



demonstrating that Telidon can reach the population group CICMT wishes to serve, and can be useful to it. This means that CICMT's Vista trial must include methods of gathering more specific information about users, and follow-up information about user satisfaction. Such information might be obtained by incorporating special pages in the query path, or by distributing questionnaires to users of the database. At present there is no provision for either of these, and there are some serious questions about invasion of privacy, and the authority to gather data about users.

In the whole Vista database there are at present very few places where information is solicited from a user about his or her characteristics. These are found mainly in some surveys which are being conducted by Statistics Canada. It is easy to see why there is a reluctance to have many Vista pages devoted to gathering information about users. Many such pages would compromise the prime purpose of providing information to users, and would soon lead them to feel that the system was intrusive. The main way data on user reaction is being gathered in the Vista trial seems to be from questionnaires which are being distributed through an independent marketing survey organization. It is not known how or whether reactions are being sought from users in public places, e.g. department stores and libraries, rather than those in the home. Yet the ability of CICMT to identify its Telidon user population, and to obtain information about user reaction and satisfaction is of paramount importance.

## Recommendation II

"It is recommended that an explicit agreement be reached between CICMT and the sponsors of the Vista trial about methods for identifying users of the CICMT database and for soliciting information about user satisfaction. Possible methods are: including special pages designed to obtain such information, conducting telephone interviews with users, and distributing questionnaires to users. Data should be gathered which will make it possible to answer specific questions and test specific hypotheses such as those suggested in Section III of this report."

### The Type of Information about CICMT's Services which can be Disseminated through Telidon

As a final point, it is necessary to re-examine the a priori assumptions about the CICMT Vista trial discussed in Section IV. It is obviously a matter of considerable importance whether it is expected that a user's contact with CICMT via Telidon will provide the answer to a query or whether it will be followed eventually by a telephone contact. In the former case the Vista service is a (partial) replacement of the telephone answering system; in the latter case it is, in the main, an advertising or promotional activity which could result in more rather than fewer demands on CICMT's resources. To distinguish between these

possibilities it will be necessary to try and put into the database much more detail, i.e., more levels, with extra information beyond telephone numbers and pointers to additional sources. It will then be possible to carry out tests on user satisfaction and level of detail as suggested in Section IV.

By the same token it is necessary to review the range of topics which are regarded as being appropriate for a Telidon database. Recreation, the only topic currently on videotex, is one of the subject categories dealt with via the telephone system. In 1981 recreation accounted for 6,217 queries out of a total of 99,822 or about 6%. Consideration should be given to expanding the subject list so as to include topics which are more central to CICMT's services, and which concern more of the users who telephone in queries.

Unless it can be shown that the CICMT Vista database is capable of dealing with a much larger fraction of the subjects of concern to CICMT users, and is able to provide detailed answers so that the telephone counselling service can be bypassed, in part at least, the role of Telidon in Vista will have to be regarded as a supplemental one.

### Recommendation III

"It is recommended that CICMT's Vista database be extended in depth so as to provide more detailed information about recreation and leisure, and broadened in scope so as to deal with other

appropriate topics. These extensions should be made with the specific goal of determining the extent to which Vista can substitute for or supplement the telephone counselling service, and the extent to which it is to be viewed as a promotional activity, designed to inform the public about CICMT in a general way."

#### Basic Research about Videotex and Telidon

Even if the above three recommendations are adopted, and the CICMT Vista trial is continued so as to permit assessments and comparisons with existing services to be made, there will be many unanswered questions about the use of Telidon. For example, it will not be possible to make comparisons between the effectiveness of answering queries through a menu-driven system as compared with a conversational system with a counsellor. It would be unrealistic to expect answers about the general strategy of learning and information dissemination to emerge from tests carried out at CICMT. Research on these questions lies in the domain of artificial intelligence, expert systems and natural language processing. From another point of view the questions and problems are like those which arise in computer-assisted instruction - what is the role of the teacher? what class of educational materials and what skills are best presented by means of computers? how should the material be presented? Any light that could be shed on such questions would have important

implications for CICMT's computerized database. Thus it is necessary to continue basic research on computer-aided learning, on natural language processing, on query-answering systems, and on the use of graphics in order to better delineate the role that a Telidon-based service can ultimately play in an organization such as CICMT.

#### Recommendation IV

"It is recommended that basic research be supported so as to seek answers to such questions as: the extent to which a conversational query system can be replicated by a menu-driven database, the value of graphics when added to videotex as an aid to perception and comprehension, and the comparative roles of humans and computers in query-driven systems."

SECTION VI APPENDICES

APPENDIX A BIBLIOGRAPHY OF DOCUMENTS RELATED TO THE APPLICATION  
AND EVALUATION OF TELIDON FOR THE PROVISION OF  
COMMUNITY INFORMATION SERVICES

INTRODUCTION

This bibliography is designed to provide a list of sources for those interested in evaluating videotex and is especially tailored to the CICMT study. The annotations will both aid the selection of documents for reading and in themselves give some useful information.

Nearly 200 items are listed yet the bibliography is far from comprehensive. The public literatures of evaluation and videotex systems are large while the literature on how to evaluate videotex community information services is all but non-existent. Therefore, we have attempted to draw selectively from a broad perspective. The three wide topic areas are outlined below.

1. Evaluation of Information Systems.

Pertinent methodologies and criteria for the evaluation of efficiency and effectiveness, of information management and retrieval systems excluding cost; primarily in the library and information science literature but extending to social



psychology, ergonomics, etc.; example studies using various approaches.

2. Information and Referral Services.

Community information and referral (I & R) services, but generally excluding those offered by public libraries, are covered; evaluation and data file structures.

3. Videotext and Teletext.

Videotext and teletext systems and Telidon in particular; some overviews and general description but especially evaluation - both methodologies and results; non-business applications and limitations of the technology. Technical literature was not included, nor was the literature emphasising the marketing of systems for profit unless about a field trial.

The "General" categories contain both overviews and miscellaneous items.

The first and second sections cover items published from 1970-1981; the third section covers items predominantly from 1979-1981.

Bibliographic tools used included: the University of Toronto Libraries catalogue, the Faculty of Library Science Library

catalogue, The Annual Review of Information Science and Technology, Library and Information Science Abstracts, ERIC, Library Literature, Dissertation Abstracts International, and, less productively: Ergonomics Abstracts, Inspec, Management Contents, NTIS, and the Smithsonian Scientific Information Exchange. Bibliographies and the references in papers and reports were scanned for additional items. The most recent three years (1979 to date) of some journals such as the American Society for Information Science Journal, the Canadian Journal of Information Science, RO, Information and Referral, and Electronic Publishing Review were checked for relevant items.

All items have been inspected by one of the bibliographers unless otherwise specified. The location of a copy of each of the items is indicated in parenthesis after the citation, using the following abbreviations:

FLS - Faculty of Library Science, Library, University of  
Toronto

(items noted here may be available at some of the other  
locations as well)

Robarts - Robarts Library, University of Toronto

Engineering - Faculty of Engineering, Library, University of  
Toronto

Management Studies - Faculty of Management Studies, Library,  
University of Toronto

CICMT - Community Information Centre of Metropolitan Toronto  
Private Collection - not found in any of the above collections  
but owned by a faculty member  
Not Seen - not inspected by the bibliographers.

We gratefully acknowledge the assistance of Karen Wierucki for providing access to CICMT's collections, for outlining CICMT's operation, and for reviewing sections of the bibliography. Prof. Forgie provided initiative and guidance. The staff of the Faculty of Library Science Library were helpful in the location and rush cataloguing of items.

March 31, 1982

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## BIBLIOGRAPHY

### I EVALUATION OF INFORMATION SYSTEMS

#### I.1 GENERAL

- EVANS, Edward; BORKO, Harold; FERGUSON, Patricia (1972) "Review of criteria used to measure library effectiveness." Bulletin of the Medical Library Association January 1972 60(1): 102-110. (FLS)

This paper briefly discusses the advantages and disadvantages of 32 measures of library effectiveness, which are grouped under six criteria: accessibility, cost, user satisfaction, response time, cost/benefit ratio, and use.

- KING, Donald W.; BRYANT, Edward C. (1971) The Evaluation of Information Services and Products. Washington, D.C.: Information Resources Press 1971 306 p. (FLS)

Although focusing on document transfer systems in science and technology, much is pertinent. Evaluation consists of describing costs (input of resources), performance effectiveness (attributes that can be controlled by system management) and benefits (consequences of system performance in terms of value, return on investment, effect on user behaviour, effect on other systems). Measures are chosen to relate performance effectiveness to costs and to benefits so that the latter two might be compared. They are also chosen so as to aid diagnosis of system weaknesses. The system itself consists of organizational entities, components (documents, personnel, buildings, files, etc.) and six basic functions (and the processes by which they are accomplished): composition, reproduction, acquisition and storage, identification and location, presentation, and assimilation. The identification and location function is the major topic of this book. Much mathematical modelling is presented as illustrative techniques.

- KRIEBEL, Charles (1979) "Evaluating the quality of information systems." In: Szyferski, Norbert; Grochla, Erwin, eds. Design and Implementation of Computer-Based Information Systems. Proceedings of the BIFOA (Institute for Business Administration, Organization and Automation) Symposium, September 18-20, 1978 at Bernsberg and Cologne, West Germany. Alphen aan den Rijn, The Netherlands: Sijthoff & Noordhoff 1979 p. 29-43. (Engineering)

This article about quality from the user's point of view selectively reviews the 1970's literature of management information systems. Appended is a 39-item list of characteristics affecting computer user satisfaction.

LANCASTER, F. Wilfrid (1977) The Measurement and Evaluation of Library Services. Washington, D.C.: Information Resources Press 1977 395 p. (FLS)

A comprehensive review of library evaluation studies and their findings. There are chapters on catalogue use, reference service, the collection, document delivery, and technical services, as well as standards, surveys, and cost-effectiveness. Of prime importance.

LANCASTER, F. Wilfrid (1978) Guidelines for the Evaluation of Information Systems and Services. Paris: UNESCO August 1978 169 p. (FLS)

The first four chapters (p. 1-74) are relevant. Lancaster describes information systems and the evaluation process and then the evaluation of document delivery (collection, document availability, catalogue), and of information retrieval (question-answering and referral services, printed indexes, etc.). Finally he covers the efficiency of technical services, cost-effectiveness, and cost-benefit.

LANCASTER, F. Wilfrid (1979) Information Retrieval Systems: Characteristics, Testing and Evaluation. Second edition. New York: John Wiley & Sons 1979 381 p. (FLS)

Emphasizing automated bibliographic retrieval systems, Lancaster includes coverage of vocabulary control, indexing, matching document representations against request representations, searching, and user needs. Evaluation of effectiveness (user satisfaction -- user related cost, time, and quality criteria), cost-effectiveness, and cost-benefit are covered in several chapters.

ORR, R.H. (1973) "Measuring the goodness of library services: a general framework for considering quantitative measures." Journal of Documentation September 1973 29(3): 315-332. (FLS)

The indirect and direct measurement of goodness (which has two aspects -- quality and value) is discussed.

SWANSON, Rowena Weiss (1975) "Design and evaluation of information systems." In: Cuadra, Carlos A.; Luke, Ann W., eds. Annual Review of Information Science and Technology:

Volume 10. Washington, D.C.: American Society for Information Science 1975 p. 43-101. (FLS)

The emphasis of this well organized review is the evaluation literature of 1973-1974. Of particular interest are the sections on evaluations of information systems (categorized as consumer evaluations, operations analysis, noncomparative evaluations or comparative evaluations), performance measures, and various methodological approaches (system analysis, operations research, benefit-cost analysis, etc.).

SWANSON, Rowena Weiss (1975) "Performing evaluation studies in information science." Journal of the American Society for Information Science May/June 1975 26(3): 140-156. (FLS)

Conceptual and methodological components of evaluation studies are considered. This is less a review article than her later paper.

WHITE, G. Travis (1977) "Quantitative measures of library effectiveness." Journal of Academic Librarianship July 1977 3(3): 128-136. (FLS)

This brief review concisely describes 18 sets of measures which range in complexity, emphasis on outcome criteria, and scope.

WYLLYS, Ronald E. (1979) "System design - principles and techniques." In: Williams, Martha E., ed. Annual Review of Information Science and Technology: Volume 14. White Plains, N.Y.: Knowledge Industry Publications, Inc. 1979 p. 3-35. (FLS)

Much of this review article (primarily the 1975-1978 literature) deals with systems analysis techniques under the headings: cost analysis, flowcharting, job description and analysis, operations research and analysis, and simulation.

## I.2 RETRIEVAL EXPERIMENTS

BELKIN, Nicholas J. (1981) "Ineffable concepts in information retrieval." In: Sparck Jones, Karen, ed. Information Retrieval Experiment. London: Butterworths 1981 p. 44-58. (FLS)

The writer discusses, on a broad level, concepts related to users (information need, desire), texts (information, aboutness, meaning), and user-text (satisfaction, effectiveness, synthema).



KEEN, E. Michael (1981) "Laboratory tests of manual systems."  
In: Sparck Jones, Karen, ed. Information Retrieval  
Experiment. p. 136-155. (FLS)

Half of this review article is about controlling searches in experiments.

ROBERTSON, Stephen E. (1981) "The methodology of information retrieval experiment." In: Sparck Jones, Karen, ed. Information Retrieval Experiment. p. 9-31. (FLS)

This is the book's overview of the experimental testing of information retrieval systems.

SPARCK JONES, Karen (1981) "Retrieval system tests 1958-1978."  
In: Sparck Jones, Karen, ed. Information Retrieval  
Experiment. p. 213-255. (FLS)

This review, rather than attempting exhaustivity, tries to characterize the work done in terms of the purpose, quality and influence of the information retrieval tests which have been carried out. Investigations, which do not involve control over test variables, are not included. Organized chronologically by decade, it has sections on index language tests, indexing tests, and searching tests. This book also contains a lengthy bibliography.

TAGUE, Jean M. (1981) "The pragmatics of information retrieval experimentation." In: Sparck Jones, Karen, ed. Information Retrieval Experiment. p. 59-102. (FLS)

This is a practical guide to implementing tests, from deciding whether to test to deciding how to present the results. Some other sections are: how to operationalize the test, where to get the queries, how to process the queries, and how to assign treatments to experimental units.

### I.3 FIELD TRIALS

LUCAS, William A.; QUICK, Suzanne S. (1978) "Serial experimentation for the management and evaluation of communications systems." In: Elton, Martin C.; Lucas, William A.; Conrath, David W., eds. Evaluating New Telecommunications Services. Proceedings of the NATO Telecommunications Symposium, University of Bergamo, Italy, September 1977. New York, N.Y.: Plenum Press 1978 p. 181-198. (Robarts)



A field trial of an interactive cable television system for adult education classes was structured in a few short rounds so as to ease the conflict between project manager (who wants to modify and improve the system) and evaluator (who wants systematic and rigorous research). The system changes are made between rounds of evaluation. The process measure (instructional dynamics of the classes -- organization of time, nature of class activities, and patterns of classroom interaction) was chosen to provide insight into how the system actually operates to aid the manager in directing change, and also to help the teachers organize content and teaching styles in adapting to the potential of the technology. The outcome measure (a standardized test of educational achievement) was selected to be relevant despite system changes and still be descriptive of system value. The standard of comparison (same teachers giving the same classes on the same days in a conventional classroom setting) was essential for system replication and generalizability of results.

MANDELBAUM, Seymour J. (1978) "The design of the design community." In: Elton, Martin C.; Lucas, William A.; Conrath, David W., eds. Evaluating New Telecommunications Services. p. 663-679. (Robarts)

Although focusing on the design community itself, this discussion of three dilemmas is pertinent. They are: the conflict between the level of aggregation and penetration in the design of the innovation; a similar conflict in the design of the implementation and evaluation of the innovation; and the conflict between rigorous and robust design in the field trial or implementation.

SHINN, Allen M., Jr. (1978) "The utility of social experimentation in policy research." In: Elton, Martin C.; Lucas, William A.; Conrath, David W., eds. Evaluating New Telecommunications Services. p. 681-700. (Robarts)

Social experiments involve more theory and attempt more control than do demonstrations and field tests (which can teach much about how to make an innovation work, and can identify problems and provide impressions concerning effects both expected and unexpected but cannot provide cause-and-effect information). The advantage of social over laboratory experiments is the realistic conditions. The disadvantages are: high cost, political versus scientific design constraints, long planning and execution time, environmental noise (schedules slip, equipment doesn't work, objectives change, etc.), ethics (informed consent versus random sampling), inconclusive results (even were the innovation to work well) because of limited research design, little effect

on policy, and inadequate theory (hypotheses which should have been refined in laboratory studies are tested first in the field in vague forms). Many of these are common to field trials as well.

STOCKBRIDGE, C.D. (1978) "Planning exploratory trials of new interpersonal telecommunications." In: Elton, Martin C.; Lucas, William A.; Conrath, David W., eds. Evaluating New Telecommunications Services. p. 721-746. (Robarts)

The introduction to this paper (on selecting network locations to include in an exploratory field trial and the sequence in which to install them) states the essential question as "Will the service be used enough in nontrivial ways to justify its cost?". A more detailed set of questions is:

- 1) Will the concept work as conceived? Are worthwhile improvements to the concept possible?
- 2) Can necessary equipment be constructed, installed, and maintained as planned?
- 3) Are the design features appropriate?
- 4) Can people in relevant organizations make effective use of the service?
- 5) Will they actually use it?

In comparing costs against utility one must keep in mind that the network will be used for a number of purposes (applications). The two assumptions are that the network utility depends on the relative importance of each application times the frequency with which it is used for that purpose, and that it is the sum of each individual application utilities over all applications and locations.

#### I.4 OTHER APPROACHES

"Techniques for analyzing systems. Second generation system analysis techniques." Part 2, Section II in: Couger, J. Daniel; Knapp, Robert W., eds. System Analysis Techniques. New York: John Wiley & Sons 1974 p. 83-204. (Engineering)

System analysis techniques for the documentation of existing information systems and the analysis of the system to establish requirements for an improved system are covered by papers on: the Study Organization Plan developed by IBM (a comprehensive system survey), flowcharts, decision tables, grid charts, information matrices, and the Accurately Defined System technique.

BAINBRIDGE, Lisanne (1979) "Verbal reports as evidence of the process operator's knowledge." International Journal of Man-Machine Studies July 1979 11(4): 411-436. (FLS)

This paper surveys the validity and usefulness of verbal reports as reports of behaviour. The four techniques examined are system state/action state diagrams (written "off-line"), questionnaires (written "off-line"), structured interviews (spoken "off-line"), and verbal protocols (spoken "on-line").

BAKER, J.D. (1970) "Quantitative modelling of human performance in information systems." Ergonomics Nov 1970 13(6): 645-664. (Engineering)

This paper describes a human-oriented model of a general information system. The five basic processes (the operations that people perform) are: screening incoming messages, transforming messages to the system's format, inputting messages, assimilating the resulting data, and deciding upon courses of action based on the information obtained. These are interrelated along three dimensions: data flow and processing, task analysis for each event in the data flow sequence, and outside sources of variation (e.g. level of training).

BATES, Marcia J. (1981) "Search techniques." In: Williams, Martha E., ed. Annual Review of Information Science and Technology: Volume 16. White Plains, N.Y.: Knowledge Industry Press 1981 p. 139-169. (FLS)

Although it does not focus on evaluation, this review of searching from a psychological approach is a valuable starting place for those developing or selecting descriptive or evaluative measures of searches. The emphasis is on the 1976-1980 literature.

FITTER, M. (1979) "Towards more "natural" interactive systems." International Journal of Man-Machine Studies May 1979 11(3): 339-350. (FLS)

This paper is about designing languages for structured programming and man-computer dialogue. A section on the latter covers the principles: use the user's model of the activity, introduce the system to the users through experience, make the system simple for the user to observe and control, and give the user immediate unambiguous feedback.

FORD, Geoffrey (1977) User Studies: An Introductory Guide and Select Bibliography. CRUS occasional paper 1. Sheffield,

U.K.: Centre for Research on User Studies, University of Sheffield 92 p. (FLS)

This extensive review summarizes the findings of information user studies and includes a chapter on techniques used.

HAFTER, Ruth (1979) "The performance of card catalogs: a review of research." Library Research Fall 1979 1(3): 199-222. (FLS)

This review evaluates major catalogue use studies, both their methodology and findings.

HAMILTON, Scott; CHERVANY, Norman L. (1981) "Evaluating system effectiveness -- Part 1: Comparing evaluation approaches." Management Information Systems Quarterly September 1981 5(3): 55-69. (Management Studies)

This overview of the evaluation of management information system evaluation presents objectives and performance measures for four levels of efficiency objectives for development and operations processes (information system requirements, resource consumption, production capability, and resource investment) and for three levels of effectiveness for system use processes (information and support provided), user performance and use, and organization's performance). Problems in evaluating and recommendations are summarized, as are nine evaluation approaches (quality assurance review, MIS personnel productivity measurement, user attitude survey, etc.). Part II, in the subsequent issue, will characterize and compare evaluation viewpoints (user, system developer, system implementer, internal audit, and management), and will recommend multiviewpoint evaluation approaches.

MICK, Colin K. (1979) "Cost analysis of information systems and services." In: Williams, Martha E., ed. Annual Review of Information Science and Technology: Volume 14. White Plains, N.Y.: Knowledge Industry Press 1979 p. 37-64. (FLS)

This review, which focuses on the 1975-1979 literature, is organized by the object of the studies: function or service operations within an information organization, the organization itself, the structure within which the organization is located, and similar types of organizations.

REYNOLDS, Linda (1979) "Legibility studies: their relevance to present-day documentation methods." Journal of Documentation December 1979 35(4): 307-340. (FLS)



The results of legibility research, primarily of traditionally printed materials but also of microforms and CRTs are summarized.

SARACEVIC, Tefko (1975) "Relevance: a review of and a framework for the thinking of the notion in information science." Journal of the American Society for Information Science November/December 1975 26(6): 321-343. (FLS)

This is a seminal review of relevance -- "a measure of the effectiveness of a contact between a source and a destination in a communication process". The various views are summarized and integrated.

SCHARER, Laura (1977) "Improving system testing techniques." Datamation September 1977 23(9): 115, 117, 120, 124, 128, 132. (FLS)

This concise article describes thorough and organized procedures for quality control in testing the computer system one produces. The checklist offered has five sections: test preparation, test operations, unit-test evaluation, system test evaluation, and acceptability test.

SHORT, John; WILLIAMS, Ederyn; CHRISTIE, Bruce (1976) The Social Psychology of Communications. London: John Wiley & Sons 1976 195 p. (Robarts)

This is a summary of social psychology studies relevant to the substitution of (person-to-person) telecommunications for travel (i.e. face-to-face communication). Nevertheless, there is much of interest, including sections on the classification of communication episodes, theoretical approaches to differences between media, communication modes and task performance, negotiation, and person perception and "metaperceptions".

## I.5 EXAMPLES - MISCELLANEOUS

DONOHEW, Lewis; TIPTON, Leonard; HANEY, Roger (1978) "Analysis of information-seeking strategies." Journalism Quarterly Spring 1978 55(1): 25-31. (FLS)

A conceptual model of information-seeking, avoiding, and processing whose central component is the kind of search conducted is applied in a laboratory experiment -- a simulated horse race in which the subjects are bettors and can use their play money to bet and to buy tips (information comparing several horses or information on specific horses).

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The variables studied were: personality measures (self-esteem, dogmatism, and sensation-seeking), information-strategy variables (information given, information received, amount of information bought, broad- or narrow-focus strategy, risk-taking, closure -- time spent before placing bets), mood variables (aggression, concentration, anxiety, etc.), and other variables (prior knowledge, success, and perceived availability of information).

TAGLIACOZZO, Renata (1977) "Estimating the satisfaction of information users." Bulletin of the Medical Library Association April 1977 65(2): 243-249. (FLS)

The writer presents a rationale for eliciting user opinions of a service, i.e., to determine the degree of user acceptance, which may be influenced by factors other than system "effectiveness". The responses of MEDLINE users to four questions about their searches (helpfulness, usefulness, number of useful references retrieved, and number missed) are compared.

ZIPPERER, William C.; PARK, Margaret K.; CARMON, James L. (1974) "The CA Integrated Subject File. II. Evaluation of alternative data base organizations." Journal of Chemical Documentation February 1974 14(1): 15-23. (FLS)

The relative retrieval performance of four data base files were measured. The analysis of retrieval failures involved fourteen causes (seven precision related and seven recall related) which fell into five major groups: index language, indexing, searching, clerical, and other (document not in file, marginal relevance, etc.).

## I.6 EXAMPLES - BRANCHING ANALYSIS

KANTOR, Paul B. (1981) "Quantitative evaluation of the reference process." RQ Fall 1981 21(1): 43-52. (FLS)

The technique of branching analysis is applied to the reference process. Two chains were used, one a failure analysis with the causes: question not understood by librarian, librarian cannot think of a source, the source not available, the source lacks the information, and information located but patron not satisfied. The other was an outcome chart consisting of the possibilities: patron quits, library terminates by giving up, by renegotiating, or by referring the patron elsewhere with high expectation of success, and user satisfied.



SARACEVIC, Tefko; SHAW, W.M., Jr.; Kantor, Paul B. (1977)  
"Causes and dynamics of user frustration in an academic  
library." College & Research Libraries January 1977 38(1):  
7-18. (FLS)

The technique of branching analysis was applied to obtain four document retrieval measures. These correspond to the four consecutive branches or alternatives involved in a patron obtaining a requested document: document not owned by the library, document in circulation, document misplaced, and patron error in his catalogue or shelf search.

#### I.7 EXAMPLES - QUEUEING THEORY

BOOKSTEIN, Abraham (1972) "Congestion at card and book catalogs - a queueing theory approach." Library Quarterly July 1972 42(3): 316-328. (FLS)

Three measures of congestion are developed from a queueing model - the likelihood that a patron must wait, the mean time he must wait, and the number of people using the system at any one time.

REGAZZI, John J.; HERSBERGER, Rodney M. (1978) "Queues and reference service: some implications for staffing." College & Research Libraries July 1978 39(4): 293-298. (FLS)

The extent of queueing was observed and models were obtained to rate the effectiveness and cost of alternative staffing patterns. The criteria were patron wait time and reference librarian idle time.

#### I.8 EXAMPLES - UNOBTRUSIVE TESTING

CHILDERS, Thomas (1978) The Effectiveness of Information Service in Public Libraries: Suffolk County. Final Report. Philadelphia, Pennsylvania: School of Library and Information Science, Drexel University July 1978 143 p. (FLS)

Reference service was evaluated by unobtrusive testing -- proxy clients phoned or visited libraries with test questions. The 20 questions each had variations in specific content, and three questions required negotiation to narrow the topic. The libraries were scored on the correctness of answers (four levels), the extent to which patrons were referred to other places, the extent to which patrons were "turned away", the extent to which question negotiation took

place, and the extent to which the referred-to-sources delivered the correct answer.

#### I.9 EXAMPLES - INFORMATION NEEDS SURVEYS

DERVIN, Brenda; ZWEIZIG, Douglas; BANISTER, Michael; GABRIEL, Michael; HALL, Edward; KWAN, Colleen (1976) The Development of Strategies for Dealing with the Information Needs of Urban Residents: Phase I: Citizen Study. Final Report. Washington, D.C.: Bureau of Libraries and Learning Resources. U.S. Dept. of Health, Education, and Welfare. April 1976 ERIC ED 125 640 968 p. (FLS)

This large study of how citizens obtain information employed an open-ended questionnaire administered by interviewers. Research design and methodology are described in detail. The first section of the questionnaire asked respondents to name their problems, worries and concerns of the preceeding month, first without prompts, then under fourteen topics (housing, employment, etc.). The word "information" was avoided. Section II asked respondents to describe in detail one of the previously named situations (resolved or unresolved). Ten approaches were used, including: a description in time order everything they did, others did, or just happened; an indication of their situation states (decision, problem, worry, comprehending); a description of things they tried to learn/find out/understand (how they went about finding, how did finding it help, etc.); a description of their use of a hypothetical expert (what questions they would want him to answer, what they would want him to know about them and their particular situation). The final section asked respondents what they would do in four hypothetical situations.

WARNER, Edward S.; MURRAY, Ann D.; PALMOUR, Vernon E. (1973) Information Needs of Urban Residents. Washington, D.C.: Bureau of Libraries and Learning Resources. Office of Education. U.S. Dept. of Health, Education, and Welfare. December 1973 ERIC ED 088 464 293 p. (FLS)

The conceptual framework focused on the four components: urban residents, their needs, sources of information, and solutions and the interactions among them. Data gathered by structured interviews with 1,000 Baltimore residents were analyzed in terms of information needs, information-seeking strategies, and search outcomes. A sample of problems identified by residents as "most important" to them were later presented to I & R services in order to evaluate their performance. Well documented.

## I.10 EXAMPLES - STAFF DIARIES

CASTENS, Maureen; AUCKLAND, Mary; PRITCHARD, Alan (1973) A Diary Survey to Establish Time and Cost Data for Library Processes. London: Library and Learning Resource Service. City of London Polytechnic September 1973 81 p. (FLS)

Diary forms, employing 112 activity and task codes and divided into fifteen-minute sections, were completed by 33 book cataloguing and processing staff for a four week period.

COOPER, Michael; DeWATH, Nancy A. (1976) "The cost of on-line bibliographic searching." Journal of Library Automation September 1976 9(3): 195-209. (FLS)

This study defined a set of seven common tasks, then monitored the time spent on them by means of a time sheet which travelled with each search request through its processing.

## I.11 CHECKLISTS

CRAWFORD, Walt (1980) "CRT terminal checklist." Journal of Library Automation March 1980 13(1): 36-44. (FLS)

Brief descriptions of characteristics of CRT terminals: display, keyboard, "environmental", and maintenance and durability.

STIBIC, V. (1980) "A few practical remarks on the user-friendliness of online systems." Journal of Information Science December 1980 2(6): 277-283. (FLS)

A checklist of system properties is presented. The redesign of display layout for readability is demonstrated.

## II INFORMATION AND REFERRAL SERVICES

### II.1 GENERAL

#### Training in Information and Referral: A Trainer's Manual.

Toronto: Community Information Centre of Metropolitan  
Toronto April 1981 50 p. (CICMT)

Essentially a training course, this publication covers the I & R process, the human services system, I & R communications skills, and sources of information.

#### UWASIS II: A Taxonomy of Social Goals & Human Service Programs.

Second edition of UWASIS (United Way of America Services Identification System). Alexandria, Virginia: Planning and Allocation Division. United Way of America November 76 319 p. (CICMT)

A four-level hierarchy is used: basic social goal (e.g., optimal income security and economic opportunity), service system (e.g., employment services system), service (e.g., employment training service), and program (e.g., internship). The elements of such programs and their suggested products, in terms of types of persons served and efforts expended on their behalf, are described. There are eight basic social goals in the classification scheme.

COLEMAN, Jean; LEVINSON, Risha; BRAVERMAN, Miriam (1979) Directory of Resources. Phoenix, Arizona: Alliance of Information and Referral Services, Inc. 1979 81 p. (CICMT)

Bibliography of publications (manuals, reports, research studies, position papers, etc.) of 72 I & R agencies. Arrangement is by agency.

DERVIN, Brenda (1976) "The everyday information needs of the average citizen: a taxonomy for analysis." In: Kochen, Manfred; Donohue, Joseph C., eds. Information for the Community. Chicago: American Library Association 1976 p. 19-38. (FLS)

This literature review is organized under the six linkages between the four elements: the individual citizen, information needs, information sources, and solutions to information needs. Her content-analysis scheme for information needs is discussed.

LESTER, David (1977) "The use of the telephone in counseling and crisis intervention." In: Pool, Ithiel de Sola, ed. The

Social Impact of the Telephone. Cambridge, Massachusetts:  
MIT Press 1977 p. 454-472. (Robarts)

The unique characteristics of telephone counseling are discussed: client control of the situation (e.g. abrupt termination), client anonymity, accessibility, and immediacy. Problem callers are also covered.

LICHT, Harvey A. (1976) "The information professional and the neighborhood information service." Special Libraries March 1976 67(3): 121-126. (FLS)

The seven activities of an I & R service are listed. Licht then describes information needs of three types -- based upon the stages in solving a problem: action-planning information (the client is completely unfamiliar with possible solutions), resource availability information (the client is unfamiliar with the specific help available), and access information (the client is unfamiliar with how to apply for the help).

LONG, Nicholas; ANDERSON, Jacqueline; BURD, Reginald; MATHIS, Mary Elizabeth; TODD, Seldon P. (1971) Information and Referral Centers: A Functional Analysis. Washington, D.C.: Administration on Aging. Social and Rehabilitation Service. U.S. Dept. of Health, Education, and Welfare February 1971 (1972 reprint) 47 p. (FLS)

Produced by the Institute for Interdisciplinary Studies (later Inter Study), this brief but seminal work includes a historical overview, a description of administrative structure, staffing patterns and user characteristics, an analysis of service activities, an examination of need and the barriers to need satisfaction, and the collection and distribution of data to aid the social agency planners. The concern is services to the aged but much is generalizable.

MEDNICK, Ruth W. "Staffing and training patterns for an information and referral service: the Baltimore experience." In: Kochen, Manfred; Donohue, Joseph C., eds. Information for the Community. Chicago: American Library Association 1976 p. 102-113. (FLS)

Major tasks are briefly presented. A description of the Baltimore I & R Service includes mention of an automated file used, in part, as an online terminal for making accurate referrals by matching a client's eligibility factors against the resources available.



NICKELSON, James S. (1975). "I & R: a social worker's perspective." Information and Referral Winter 1979 1(3): 32-52. (CICMT)

This paper describes historical influences on I & R services and their place in the human services delivery system. It also classifies the service providers (locator of services, enabler of services, creator of services), the clients (information seekers, problem solvers, persons in crisis) and the I & R centres (information dispensing, information and direction, assessment and referral, diagnosis and referral, casework and referral, intake, or referral).

TESSARI, Diane C.; ZIMMERMAN, Shirley; YONCE, Leslie J.; LONG, Nicholas (1974) Information and Referral Services: Information-Giving and Referral. Minneapolis, Minnesota: Interstudy. Available from: Washington, D.C.: Administration on Aging. Office of Human Development. U.S. Dept. of Health, Education, and Welfare January 1974 72 p. (FLS)

A manual for the linkage service of an I & R centre. Includes a 7-page procedures flowchart.

## II.2 GENERAL - CANADA, ONTARIO, TORONTO

Metro's Suburbs in Transition. Part I: Evolution and Overview. A Review of Trends in the Social Development of New Suburban Communities in Metropolitan Toronto. Toronto, Ontario: Social Planning Council of Metropolitan Toronto April 1979 293 p. (FLS)

This background report for urban planning is a description of changing social trends and patterns of new suburban areas in particular, and of Metropolitan Toronto in general. In addition to mention of information services for recent immigrants, numerous tables and maps detail the population and distribution of the unemployed, immigrants, sizes of households, children, appartments, etc.

Metro's Suburbs in Transition. Part II: Planning Agenda for the Eighties. Toronto, Ontario: Social Planning Council of Metropolitan Toronto September 1980 256 p. (FLS)

This policy report mentions the need for after-hours and crisis services.

HEAD, Wilson A. (1971) Partners in Information: A Study of Community Information Centres in Ontario. Toronto: Community Development Branch. Community Services Division. Ontario

Dept. of the Provincial Secretary and Citizenship. 1971 68 p. (FLS)

The organization and operation of fifteen information centres were studied by questionnaires sent to directors and board members of the centres, and to service agencies, and by phone interviews with users. Inquiry report statistics were also examined. These four forms are appended.

MARTENS, Debra K. (1979) A History of the Association of Community Information Centres in Ontario. Rexdale, Ontario: Association of Community Information Centres in Ontario August 1979 40 p. (CICMT)

Origins, issues and events of the 1969-1979 period are covered.

STEWART, Gail; STARRS, Cathy (1971) Community Information Centres: A Proposal for Canada in the 70's. Ottawa: Information Canada March 1971 68 p. (FLS)

A quick analysis of British and Canadian I & R services, some policy questions, and future courses of action.

### II.3 STANDARDS

National Standards for Information and Referral Services. Alexandria, Virginia: United Way of America 1973 16 p. (FLS)

These standards are organized under: auspices under which the service operates, program components (resource information, service methods, service records), facilities, financing, access to service, and staff.

National Standards for Information and Referral Services. Phoenix, Arizona: Alliance of Information and Referral Services, Inc. May 1978 16 p. (CICMT)

This publication covers the definition of auspices, the organization of services (auspices, staff, volunteers, financing, facilities, access to service) and the program components (resource file, classification scheme, simple and complex information, simple and complex referral, follow-up, advocacy, training, planning, publicity, data collection).

### II.4 EVALUATION



BELLAMY, Don (1968) A Study of Information and Referral Services for Metropolitan Toronto. Toronto: Social Planning Council of Metropolitan Toronto August 1968 87 p. (FLS)

Examining in particular the Central Information Service of the SPC, and in general all such services in the city, this study collected data by interviewing CIS staff, interviewing senior personnel of other I & R services, and by mailing questionnaires to lawyers, physicians, directors of service agencies, and members of governing committees of the S.P.C. In addition, telephone inquiries were sampled, the users being asked questions, and follow up telephone calls were made a few months later.

CHILDERS, Thomas (1976) "Community referral services: impact measures." In: Kochen, Manfred; Donohue, Joseph C., eds. Information for the Community. Chicago: American Library Association 1976 p. 183-199. (FLS)

General comments are made on evaluation, stressing useful measurement (i.e., impact and output in addition to input and process measures) and several criteria and measures are suggested for I & R services.

GANDY, John M.; TEPPERMAN, Lorne (1971?) Service Delivery and Client Satisfaction in a Public Neighbourhood Service Centre. Unpublished report 1971? 21 p. (Private Collection)

The authors (of the University of Toronto School of Social Work and Sociology Dept. respectively) studied a centre established by the Ontario Dept. of Labour in a low income neighbourhood. They conducted follow-up interviews with 175 of its clients to determine attitudes toward the service received at the centre, the type of problem for which help was requested, the outcome of the service provided, and the present status of the problem. They also recorded occupation level and language, constructed geographic mobility and social isolation scales, and classified the method of service delivery (linkage, advocacy, direct).

KOCHEN, Manfred (1976) "What makes a citizen information system used and useful." In: Kochen, Manfred; Donohue, Joseph C., eds. Information for the Community. Chicago: American Library Association 1976 p. 149-170. (FLS)

Used/valued (indicated by a user's acts of choice and use) is distinguished from useful/valuable (indicated by the prevention, solution or partial alleviation of the user's problems). Described are five system qualities accounting for its use: relevancy, significance, validity, clarity, and novelty. Two levels of information networks in a community

are simply modelled -- the peer-kin network and the referential consultants.

LONG, Nicholas (1975) Information & Referral Services: Research Findings. Volume 1 of the final report of Inter Study's Information and Referral Center Study. Washington, D.C.: Administration on Aging. Office of Human Development. U.S. Dept. of Health, Education, and Welfare 1975 427 p. (plus Appendix 1, 177 p.; Appendix 2, 149 p.). (FLS)

A two-year demonstration program by Inter Study with the statewide Wisconsin Information Service was monitored with an evaluation scheme based on both goal model (hierarchy of objectives) and system model (objectives stated as tasks, including custodial and maintenance tasks). Effort, performance, adequacy of performance, efficiency and process (program attributes, recipients, conditions, and effects) were measured. The five main system functions were: obtaining inputs (resource file, callers' needs, etc.), encoding inputs (publicizing the centres, coordination with the service providers and other I & R programs, etc.), maintaining system components (training, evaluation, and supervision of staff workers, etc.), decoding outputs (reporting on services and needs to governmental planners), and producing outputs (accurate up-to-date referrals, follow through services, etc.). Over a dozen report forms were used, including a two-page user questionnaire.

## II.5 RESOURCE FILES, DIRECTORIES

Directory of Community Services in Metropolitan Toronto 1981 edition. Toronto: Community Information Centre of Metropolitan Toronto 234 p. (FLS)

The service agencies are organized into 12 broad subject areas and 58 finer ones, and three indexes aid access.

KOSOWAN-HINES, L. (1979) Directory of Community Services in Metropolitan Toronto: an Evaluative Study. Toronto: Community Information Centre of Metropolitan Toronto August 1979 33 p. (FLS)

A questionnaire survey of the purchasers of CICMT's 1979 Directory to determine its use and usefulness.

LONG, Nicholas; REINER, Steven; ZIMMERMAN, Shirley (1973) Information and Referral Services: The Resource File. Washington, D.C.: Administration on Aging. Office of

Human Development. U.S. Dept. of Health, Education, and Welfare May 1973 115 p. (FLS)

This manual for creating and maintaining the resource file of service agencies includes an overview of six taxonomies: the "Questionnaire for Community Resources Survey" by Inter Study, UWASIS I (United Way of America Services Identification System), the "Agency Survey" by Inter Study, SEARCH (Los Angeles), IRMA (Information and Referral Manual, New York City), and NEXUS (Network Exchange of Human Services, Philadelphia). A seven-page flowchart of the development and updating activities is appended.

## II.6 RESOURCE FILES - AUTOMATED

BROOKS, Rae; EASTMAN, Dan (1975) "Different strokes: a response to 'Linking consumers and services -- classification or chaos' -- Frances Gilbert." In: Proceedings of the Information & Referral Roundtable. At the 102nd Annual Forum National Conference on Social Welfare, San Francisco, May 11-13 1975. Phoenix, Arizona: Alliance of Information and Referral Services 1975 p. 97-107. (CICMT)

This paper describes New York City's IRMA and compares it to ICSIS.

CAUFFMAN, Joy Garrison (1981) "SEARCH: a link to services." Information and Referral Spring 1981 3(1): 89-105. (CICMT)

A brief overview of Los Angeles' online health services oriented I & R system. Inquiries are classed as non-emergency non-urgent, non-emergency urgent, and emergency. The data bank of human services is itself divided into non-emergency (organizations and individuals) and emergency segments.

CARROLL, John M.; TAGUE, Jean M. (1975) "Community information centers and the computer." In: Marshall, Eric; Pare, Marcel, compilers Third Open Conference on Information Science. Proceedings of the Third Annual Canadian Association for Information Science Conference, May 8-10 1975 Quebec City. Ottawa: CAIS p. 1-7. (FLS)

Two online files of service agencies were created - one with a fixed record format permitting Boolean searches on the classification codes for services provided; the other with an unstructured record format and browsable under two levels of subject headings. A retrieval experiment with test questions

was carried out on these two files and a manual file (telephone directory).

DEAHL, Thomas (1976) "The Model Cities Community Information Center: the Philadelphia experiment in automating an information and referral program." In: Kochen, Manfred; Donohue, Joseph C., eds. Information for the Community. Chicago: American Library Association 1976 p. 114-132. (FLS)

Reasons for the lack of staff use of the online resource file are presented.

DEAHL, Thomas F. (1975) "Vocabulary control in an automated I & R directory system." In: Proceedings of the Information & Referral Roundtable. At the 102nd Annual Forum National Conference on Social Welfare, San Francisco, May 11-13 1975. Phoenix, Arizona: Alliance of Information and Referral Services 1975 p. 83-96. (CICMT)

The author describes the disadvantages of ICSIS and similar systems. Follows the GILBERT paper.

GILBERT, Francis B. (1975) "Linking community consumers and services -- classification or chaos." In: Proceedings of the Information & Referral Roundtable. At the 102nd Annual Forum National Conference on Social Welfare, San Francisco, May 11-13 1975. Phoenix, Arizona: Alliance of Information and Referral Services 1975 p. 72-82. (CICMT)

This paper describes the automated resource file of Hampton Roads, Virginia -- ICSIS (Information Center's Services Identification Scheme) which is based on the UWASIS scheme and thus service, not problem, oriented.

LIGHT, Jane Irby; YANAMOTO, Carol (1981) "An online information and referral file: Penisnsula Library System's Community Information Program." RQ Winter 1981 21(2): 146-155. (FLS)

Description of a file using Stanford University's retrieval system SPIRES for public online access at public libraries (patron is given a printed copy of the research result), for specialized large printouts or inventories or mailing labels at the request of service agencies, and for a printed directory. Five print format examples are appended.

MERSHON, Lorretta K. (1980) "A model automated resource file for an information and referral center." Special Libraries August 1980 71(8): 335-344. (FLS)

Mershon describes a demonstration file consisting of 25 records in MARC-type format. Each record corresponds to a



service agency and contains up to 21 items of information. Six reference tools are generated: a master list of full entries, three indexes (keywords in the agency names, subject headings based on the UWASIS thesaurus, hierarchical arrangement of subjects in the thesaurus), and 2 other reports (a listing of departmental agencies under their parent administrative agencies, and a chronological list of agency records updated).

SLATER, Cynthia (1981) "Automated information and referral at Pikes Peak Library." RQ Winter 1981 21(2): 140-143. (FLS)

A brief description of four files: CALL (social service agencies), CLUBS (clubs, associations and other social groups), COURSES (adult educational and recreational courses), and CALENDAR (cultural events).

TAGUE, Jean; CARROLL, John; WATTERS, Carolyn; SHEPHERD, Michael (1976) Computer Utilization in a Community Information Center Ottawa: Canadian Dept. of Communications March 1976 80 p. (FLS)

The CACTIS (Computer Assistant for a Community Telephone Information Service) system of Information London is described in detail.

### III TELETEXT AND VIDEOTEX SYSTEMS

#### III.1 GENERAL

BORRELL, Jerry (1981) "An overview of computer graphics technology and applications." In: 5th International Online Information Meeting, London, December 8-10, 1981. Oxford: Learned Information 1981 p. 223-232. (FLS)

"The integration of information technologies -- data processing, communications, display, and ergonomics -- are examined in light of recent developments in computer graphics. A review of technical improvements of the past two years is given, followed by a discussion of the applications of computer graphics and future developments." (p. 223)

CLARKE, K.E.; CHILDS, G.H.L. (1981) "The future of videotex." Electronic Publishing Review March 1981 (1): 43-51. (FLS)

"This paper describes the likely trends in videotex systems with particular reference to the U.K. Prestel service. The paper starts with a summary of the display technologies that have emerged so far. These are alpha-mosaic serial, alpha-mosaic parallel and alpha-geometric. It then describes three technologies which are regarded as being particularly important. These are Dynamically Redefinable Character Sets (DRCS), PREXTEND (non-spacing serial attributes) and photographic techniques. Other likely developments not relating to display technology such as telesoftware, data encryption, and database distribution are also discussed. Considerable importance is placed on the likely impact of developments in the telephone network that is used for the conveyance of Videotex information and the proposed integrated services digital networks are seen as having particular importance because of their provision of high speed data transmission. A note on the latest state of the debate in the international standardisation bodies is also included." (p. 43)

Gutenberg Two: The New Electronics and Social Change. 2nd ed. (1980) Toronto: Press Porcepic Ltd. 1980 224 p. (FLS)

Chapter 1 asks what it will be like to live within Gutenberg Two? Chapter 2 provides a guide to the major terms and concepts underlying the technologies which will combine to form Gutenberg Two. Chapter 3 looks at ways of reshaping the development of these technologies to provide maximum participation in information-creation as well as maximum

access to information. Chapter 4 examines the existing media, their current impact, their relative profitability and power and their vulnerability to the new technologies. Chapter 5 examines television and the societal implications of the technological innovations. Chapter 6 deals with the mechanization of education. Chapter 7 provides a guide to home-computers and discusses the resulting demystification of the technology for the citizen. Chapter 8 contains a glossary of terms.

Inside Videotex: The Future...Now: Proceedings (of) a seminar held March 13-14, 1980. Edited by Richard Larratt. Toronto: Infomart 1980 121 p. (FLS)

A collection of papers given by an international group of experts on the 1980 state of the art. Several papers have been individually annotated in this bibliography.

MONEY, Steve A. (1979) Teletext and Viewdata. London: Butterworth & co. 1979 151 p. (FLS)

"Explains in simple terms, the principles of operation of the teletext and viewdata systems and describes the various electronic techniques employed to decode the data signs and to produce a display of text on the television screen."  
(LISA May/June 1980, p. 182)

RAITT, David (1981) "What's in a name." Electronic Publishing Review. March 1981 1(1): 16-20. (FLS)

The author has classified many teletext and videotext systems by their transmission medium and presents a table of information on applications in several countries.

SIGEL, Efrem et. al. (1980) Videotext: The Coming Revolution in Home/Office Information Retrieval. White Plains, N.Y.: Knowledge Industry Publications, Inc. 1980 154 p. (FLS)

A general overview treatment of the topic looking at the technology of teletext and videotext, the British, U.S. and other countries applications. Appendix A lists organizations involved with videotext and Appendix B lists Prestel Information Providers.

STOKES, A.V. (1980) Viewdata: a Public Information System. 2nd ed. Ashford, Middlesex: Langton Information Systems 1980 133 p. (FLS)

"The UK Post Office viewdata system -- Prestel -- will have an impact on both corporate information systems and on the daily life of UK citizens. This book covers every aspect of



the system. It traces the development of viewdata from its conception to the present day. It relates it to the broadcast systems such as Ceefax and Oracle. Of particular importance is the way in which the book defines the various aspects of viewdata in comparison with on-line systems, batch systems, hardcopy publications and dedicated networks between organizations. Practical details abound -- costs, detailed problems of the Information Provider, conversion of existing databases and how to set up a viewdata system. The book also examines the implications of viewdata for the future -- its links to other devices from word processors to Telex and its effect on data processing concepts."

VIEWDATA '80 (1980) Viewdata and Videotext, 1980-81: a Worldwide Report. White Plains, N.Y.: Knowledge Industry Publications, Inc. 1980 623 p. (FLS)

This publication is a basic resource. Many of the articles are annotated individually in various sections of the bibliography. The book contains status reports on videotex/viewdata developments in Canada, France, U.K., U.S.A., Japan, European and Nordic countries. Also included are sections on the following topics: viewdata and electronic administration, design and evaluation of videotex/viewdata services, marketing projections, advertising, standards, electronic publishing and private viewdata systems.

WOOLFE, Roger (1980) Videotex: the new Television-Telephone Information Services. London: Heyden and Son Ltd. 1980 170 p. (FLS)

The book...is divided into three main sections. Part I consists of a brief description of what videotex is all about, how it works and the likely response in the marketplace to this new technology. Part II provides a complete description of Britain's Prestel system, the world's first large scale, publicly available videotex service. Part III focuses more broadly on worldwide videotex developments and summarizes various trials and services planned or presently underway in various countries around the world. The book concludes with a brief assessment of what the future holds for videotex." (taken from a Review by Gerry Meek in Canadian Library Journal February 1982 39(2): 45-46.)

### III.1T GENERAL - TELIDON

BOWN, H.G. et. al. (1980) "Telidon technology development in Canada." In: Viewdata '80. Viewdata and Videotext, 1980-

81: a Worldwide Report. White Plains, N.Y.: Knowledge Industry Publications, Inc. 1980 p. 547-558. (FLS)

Summarizes current developments in display technologies and coding schemes and notes limitations. Table 3 lists Telidon development activities and Table 4 lists some of the organizations involved in that development.

FORGIE, Donald (1981) "Videotex research and development: the Canadian context and contribution." Canadian Journal of Information Science June 1981 6: 25-34. (FLS)

The author clarifies the misconception of Telidon being a piece of hardware discussing the software nature of Telidon. From this base he outlines the major research and development questions to be addressed, and provides a diagrammatic model of General-Purpose Database Networks, Switching and Standards Research.

GORDON, Sheldon (1981) "The hyping of Telidon." Business Life November 1981 p. 28, 30-34. (FLS)

"Gordon examines whether this 'Canadian success story' is merely a public relations myth. 'Will consumers derive enough advantage from the system at costs they are willing to bear? Will businesses prefer videotext to other kinds of computerized data retrieval services already available? Even if videotext does achieve mass appeal within the next decade, Telidon and its backers seem more likely to capture the limited Canadian market rather than establish a dominant position in the big United States market.' Gordon takes a realistic look at the market, the cost to consumers, the actual demand and the competitors of Telidon." (Library Science UPDATE no. 71, February 1982, p. 10-11)

PARKHILL, Douglas F. (1980) "An overview of the Canadian scene." In: Viewdata '80. Viewdata and Videotext, 1980-81: a Worldwide Report. White Plains, N.Y.: Knowledge Industry Publications, Inc. 1980 p. 559-571. (FLS)

Gives the background of the Canadian setting and the development of Telidon and a summary of the field trials of February 1980 in Chart A. A lengthy section on Canadian policies in the institutional and regulatory areas is also included.

PHILLIPS, Dorothy (1980) "A review of Telidon development." Online Review June 1980 4(2): 169-171.

"Describes the technical characteristics of Telidon, a second-generation videotex system developed in Canada and announced in August 1978, and discusses what has occurred since that time in planning field trials, developing information services, and in planning a coordinated development for Canada of this new technology." (p. 169)

Telidon and its Applications: Proceedings of a Seminar. (1981) Edited by Fernande Faulkner and Michael Gurnstein. Ottawa: Socioscope Publications 1981 150 p. (Not Seen)

The Telidon Book. (1981) Edited by David Godfrey and Ernest Chang. Toronto: Press Porcepic Ltd. 1981 300 p. (FLS)

This item concentrates on market place level of activity of Telidon. The articles demonstrate how small entrepreneurs and public-sector groups can take advantage of the technology. Each chapter focuses on specific aspects of Telidon such as: hardware, graphics, making, sending and storing pages, linking databases, implementing the terminal and buying hardware and software. Practical approach. Up to date information on field trials. Individual articles are annotated elsewhere in this bibliography.

### III.2 EVALUATION - GENERAL

AHLHAUSER, John William (1978) Teletext -- the Electronic Newspaper: Four British Systems and U.S. Editor's Assessment of Implications. Ph.D. Thesis, Indiana University 1978 232 p. (Not Seen)

BIRD, Emma (1981) The Future of PRESTEL - Through the Gateway. Slough, Berkshire: Urwick Nexos Limited 1981 23 p. (FLS)

"This paper examines the achievements of Prestel and argues that there is an urgent need for British Telecom to reappraise Prestel in order to identify its most profitable markets and to develop a product and service strategy to keep ahead of the competitors. Business interests are more in videotex as a storage facility rather than a disseminating one." (p. 1) The author examines Prestel's strengths and weaknesses in terms of information provided, the basis of assessment, colour and graphics, two-way communications, cost, power, frequency of update, size of information base, search method, database preparation, standardization, and ease of use. She outlines new marketing strategies using

Prestel as an in-house videotext system and providing 3rd party database access.

BOLTON, William Theodore Jr. (1981) The Perception and Potential Adoption of Channel 2000: Implications for Diffusion Theory and Videotex Technology. Ph.D. Thesis, Ohio State University 1981 293 p. (Not Seen)

CAREY, John (1981) "Selling teletext to Archie Bunker." In: Telecommunications and Productivity. Based on the International Conference Sponsored by the Center for Science and Technology Policy, New York University, January 29-30, 1980. Edited by Mitchell L. Moss. Reading, Mass.: Addison-Wesley Publishing Company, Advanced Book Program 1981 p. 245-254. (Robarts)

The author discusses some of the barriers to use of teletex services. He compares teletex to the established mass media and explores how some of the barriers might be overcome.

CURRY, J.P. (1981) "Financial realities for videotex publishers." In: Videotex '81. Northwood Hills, Middlesex: Online Conferences Inc. 1981 p. 443-448. (FLS)

Although the author is operating on the assumption of making a profit, his costing methodology shows categories for fixed and variable costs which are useful for analysis.

GATES, M.Y.; HASLIN, J.M. (1979) "Evaluating reactions to the use of Prestel viewdata for information dissemination and programmed learning." In: 3rd International Online Information Meeting, London, 4-6 December 1979. Oxford: Learned Information 1979 p. 317-327. (FLS)

"Two studies are described. The first is an evaluation of managers' reactions to the use of Prestel for disseminating information from research and technical reports. The second is an evaluation of students' reactions to programmed learning by means of Prestel. In both cases favourable reactions were obtained." (p. 317) A special feature of the evaluation was that, before being asked to assess the system, each manager interviewed was given 1 1/2 to 2 hours practical experience with Prestel, using information likely to be relevant to his job.

HEYS, Fred (1981) "Private videotex systems and access via public services." In: 5th International Online Information Meeting, London, December 8-10, 1981. Oxford: Learned Information 1981 p. 199-210. (FLS)



"While the initial concept of videotex was that of a home information retrieval service, in practice videotex services are of much interest to business users. Private videotex systems are being introduced to complement public services. They may be implemented in several different ways - on dedicated computers accessed via the public telephone or data networks, or via a gateway facility on a public service. The paper examines the pros and cons of these approaches, and in particular their relative costs." (p. 199)

HUGHES, W.J. (1981) "Database planning for videotex." In: Videotex '81. Northwood Hills, Middlesex: Online Conference Ltd. 1981 p. 417-425. (FLS)

"The basic principles of planning a public database for an international videotex service are discussed, and the advantages and disadvantages proposed. Additionally, the basic planning of the Prestel International database is outlined, and the rationale of its development explained." (p. 417)

JOHANSEN, Robert (1980) "The common sense of trying out videotex." In: Viewdata '80. Viewdata and Videotext, 1980-81: a Worldwide Report. White Plains, N.Y.: Knowledge Industry Publications, Inc. 1980 p. 461-466. (FLS)

The author's approach to evaluating videotext is to try it out to get practical results to help in deciding on future use. He discusses the following aspects of trials of videotext: 1. be specific about what you are testing; 2. make sure when the test is over, you will know what happened - collect data by usage statistics on the system, user reactions through questionnaires, interviews or other social science methods, observation and interpretation; 3. distinguish between first use and future uses; 4. put a premium on exploring styles of information presentation and interaction; 5. make the incentives during the test as similar as possible to a real-world, full-scale service; 6. consider pricing options and policies very carefully; 7. be wary of field testing in a vacuum; 8. do not assume that technology will be available at the price you expect; 9. keep your promises realistic, and keep your promises.

JONES, Mary Gardiner (1981) "Consumer information data bases: how can they best be developed?" In: Telecommunications and Productivity. Based on the International Conference sponsored by the Center for Science and Technology Policy, New York University, January 29-30, 1980. Edited by Mitchell L. Moss. Garden City, N.Y.: Addison-Wesley Publishing Company, Inc., Advanced Book Program 1981 p. 262-270. (Robarts)

"This paper looks at the new telecommunications technologies from the point of view of the various types of data bases available today, their applicability to consumers' needs, and the major public policy questions which need to be answered if we are to ensure the successful application of new communications technologies to those needs." (p. 263)

LANE, M.; WINSBURY, R. (1978) "Viewdata -- everyman's database?" In: 2nd International Online Information Meeting, London 5-7 December 1978. Oxford: Learned Information 1978 p. 211-218. (FLS)

"By virtue of being delivered over the public telephone network to the domestic T.V. receiver, viewdata (now renamed Prestel) is said to have a simplicity that will bring computer power to the millions. But its simplicity can be deceptive. Routing the user to the required information; presentation of the information in an intelligible fashion; and pricing of the information are all complex matters, in which simplicity is achieved if at all, after much effort and calculation. Routing structures; pricing policies; and information structures are therefore discussed. As part of this discussion, some of the particular characteristics of viewdata are reviewed, e.g. its use of 7 colours; its interactive features; creating a 'database of databases'; the 'common carrier' role of the Post Office; and viewdata as an advertising medium. Lastly, and as a context rather than as a full discussion, some thoughts are given about the likely audience for viewdata -- business or residential." (p. 211)

LOGUE, T.J. (1979) "Teletext: towards an information utility." Journal of Communication Autumn '79 29(4): 58-65. (Not Seen)

"Teletext systems are described and their potential for supplying information is discussed. Particular attention is paid to the CEEFAX and ORACLE systems in UK, showing how much information is available and how quickly. The concept of an information utility, which would be equally available to all areas of society, is explored. The costs to the user of teletext systems are shown. The effects of introducing both teletext and viewdata systems over the long term are considered." (LISA September/October 1981, p. 363)

STEWART, T. (1980) "Human factors in videotex." In: 4th International Online Information Meeting, London, December 1980. Oxford: Learned Information 1980 p. 87-95. (FLS)

Videotex systems must be easy to use if they are to appeal to the mass market necessary to make them economically viable.

The author reviews the research findings which are relevant to the design of videotex equipment and services. The main topic areas discussed are: keypad and keyboard design; TV as a data display with a chart of current page dimensions on a variety of systems; menu searching and alternative methods of searching the database (keywords, printed directory and alphabetical index); the design of page content and making the dialogue more friendly.

STEWART, T. (1980) "Prestel -- how usable is it?" In: Human Aspects of Telecommunications: Individual and Social Consequences. New York: Springer-Verlag 1980 p. 107-117. (Not Seen)

SUTHERLAND, Stuart (1980) Prestel and the User - a Survey of Psychological and Ergonomic Research. Brighton: University of Sussex, Centre for Research on Perception and Cognition 1980 134 p. (FLS)

A Report commissioned by the Central Office of Information, U.K., May 1980. "The report draws on many unpublished investigations most but not all of which have been undertaken or commissioned by the Post Office; it also makes use where appropriate, of the findings and principles established by more general research in experimental psychology and ergonomics. The report is not directly concerned with the hardware of the system" and is limited to possible improvement within the limits of existing hardware. The report focuses on what is currently wrong with the system. Areas discussed: clarity, and legibility of Prestel display, factors affecting convenience, comfort and health, page format, the routing structures, other methods of access information, problems raised by having many information providers, pricing policy and uses of Prestel. It concludes with a series of recommendations for 1. future research; 2. hardware; 3. software; 4. preparing material for Prestel and 5. advice to users.

THOMAS, Hilary B.; PYE, Roger (1980) "Methods of designing and evaluating videotex." In: Viewdata '80. Viewdata and Videotext, 1980-81: a Worldwide Report. White Plains, N.Y.: Knowledge Industry Publications, Inc. 1980 p. 203-216. (FLS)

Details the methodologies developed by Communications Study and Planning Group (UK) for assessing commercial viability of communications systems. The authors provide checklists for designing, administering, and assessing field trials of telecommunications systems under the following topics: goal & objectives, research techniques and analysis of findings using the LOGIT type of disaggregate choice model to determine market segments.



Videotex: Issues and Opportunities for the European Community.  
(1979) London: P.A. Computers and Telecommunications on  
behalf of the Commission of the European  
Communities 1979 47 p.

"Summaries of research reports on videotex sponsored by the  
Commission...are provided." (LISA Abstract)

Videotex in Europe: Conference Proceedings, Luxembourg 19-20 July  
1979. Edited by Carlo Vernim and William  
Skyvington. Oxford: Learned Information 1980 247 p. (Not  
Seen)

"Proceedings of the conference, organised by the Commission  
of the European Communities, and largely based on the work of  
a number of consulting firms asked by the Commission to carry  
out studies of various specific aspects of videotex. The  
consultants' 6 study reports are presented in combination  
with a transcript of all other proceedings." (LISA May/June  
1981, p. 207)

Viewdata in Action: a Comparative Study of Prestel. (1981)  
Edited by Rex Winsbury. London: McGraw-Hill Book Company  
(UK) Ltd. 1981 237 p. (FLS)

The editor claims that this book has been written about  
Prestel as a videotex case study of what happens when you  
decide to set up a viewdata system "...what problems you  
encounter, what questions you face, what skills you have to  
learn, what costs you have to incur, what failures you may  
anticipate, where lie the best chances of success, what  
effect it may have on existing business (e.g. publishing,  
postal services), what technical and political choices you  
face..." (p. 3) The author discusses Prestel in terms of 5  
themes, namely: coalition between telecommunications  
networks, television equipment manufacturers and suppliers  
and the publishing industry; the philosophy of the common  
carrier; the impact of videotex on the printed word and  
particularly the press; the material suitable for videotex;  
and fifthly, the commercial theme about costs, revenues and  
markets. Two items are of particular interest. Part 10:  
Prestel and the consumer by St. John Sandringham and part 11:  
GKN: an experiment that failed by Marvyn Grubb.

WOOLFE, Roger (1980) "The emerging markets for videotex." In:  
Viewdata '80. Viewdata and Videotext, 1980-81: a Worldwide  
Report. White Plains, N.Y.: Knowledge Industry Publications,  
Inc. 1980 p. 217-231. (FLS)

"Predicting the nature and size of the emerging videotex  
markets is of key importance, yet there is still little hard

evidence from real people spending real money over a period of time to go on. Despite the background of uncertainty, there is an obvious need to predict as clearly as possible by analysis the likely short and long term response to videotext of the marketplace. Initially the market will be supplier-led, so an examination of the factors motivating service suppliers is a useful start. And the results from a variety of tests with residential and business users are now sufficient to provide an early indication of the way the markets are likely to develop. Although predictions cannot be reliable at this relatively early stage, they can nonetheless form a useful guideline." (p. 217)

### III.2T EVALUATION - GENERAL - TELIDON

BOWERS, Peter G.; CIONI, Maria (1980) "Telidon and education in Canada." In: Viewdata '80. Viewdata and Videotext, 1980-81: a Worldwide Report. White Plains, N.Y.: Knowledge Industry Publications, Inc. 1980 p. 7-17. (FLS)

"As an educational broadcaster, The OECA is using its broadcast network (TV Ontario) to test different carriage modes of Telidon. OECA is the only agency to develop both interactive and broadcast modes in an integrated way. Participation in a variety of field trials is discussed and objectives described.... The potential of Telidon for educational uses is explored and examples of possible services discussed." (p. 7) Using questionnaires OECA hopes to evaluate the following: acceptable waiting time for various delivery modes; educational effectiveness of material offered; impact on television viewing and the educational experience; relevance of the content; organization of the content; types of information preferred on various delivery modes; technological efficiencies of various delivery modes; reliability of systems; impact on institutional processes; sociological impacts; and special applications such as captioning for the deaf.

BOWN, H.G. et. al. (1980) "Telidon videotex and user-related issues." In: Behavioral Research on Telidon I. Ottawa: Department of Communications 1980 p. 9-25. (FLS)

Discusses the problems of image descriptions in British and French systems and details Telidon's method. Reviews the user-related/human factors issues of requirements for visual display of information and the interaction protocol/software interface for retrieval.

BOWN, H.G.; SAWCHUK, W. (1981) Telidon -- a Review. Ottawa: Department of Communications 1981. (Not Seen)

PHILLIPS, Dorothy A. (1981) "User response to Telidon." In: 5th International Online Information Meeting, London, December 8-10, 1981. Oxford: Learned Information 1981 p. 469-474. (FLS)

"Studies of user response to videotex may be aimed at two broad questions: 'How will the user respond to various design features of videotex?' and 'What will be the behavioural and social consequences of videotex?' Studies of the response to design of various aspects of Telidon have been conducted in the laboratories of the Department of Communications in Ottawa. A review is presented of experiments regarding user response to tree indexes on Telidon, to reading from a Telidon screen, and to graphics on Telidon. Studies of the second question, the consequences of videotex, will be conducted during the Telidon field trials now beginning in Canada. A discussion of some of the expected issues for study is presented." (p. 469)

MAUERHOFF, G. (1981) "Database applications for videotex." In: Videotex '81. Northwood Hills, Middlesex: Online Conferences Ltd. 1981 p. 411-416. (FLS)

"Alert publishers realize that their print products are databases to be exploited through videotex. They are in the best position to capitalize on this opportunity because of their understanding of the information market. In industries such as agribusiness, travel, tourism, oil and energy, conditions are ideal for videotex publishing to make available a variety of data and information types. Implementing and maintaining a videotex database for one of these industries, namely the oil sector, is considered on a step-by-step basis." (p. 411)

SERAFINI, Shirley; ANDRIEU, Michel (1980) The Information Revolution and its Implications for Canada. Ottawa: Department of Communications 1980. (FLS-Not Seen)

WILSON, Larry G. (1980) "Vista: Leading to the successful implementation of videotex in Canada." In: Viewdata '80. Viewdata and Videotext, 1980-81: a Worldwide Report. White Plains, N.Y.: Knowledge Industry Publications, Inc. 1980 p. 573-582. (FLS)

"The purpose of this paper is to describe some of the process involved in designing effective field trials for videotext services" based upon Bell Canada's experiences. Bell used Prestel-like system in 1979 field trials then Telidon for

1981 trials. Objectives of the trials are listed and discussed.

### III.3 EVALUATION - VISUAL DISPLAY

CARTIER, Michel (1981) "Information production." In: The Telidon Book. Edited by David Godfrey and Ernest Chang. Toronto: Press Porcepic Ltd. 1981 p. 131-141. (FLS)

Describes the process of "mediactics" an "electronic publishing technique involving preparation of information displays on a screen for subsequent transmission to one or more receivers." (p. 131) This process involves three stages: design, production, and management.

CIONI, Maria; PROSH, Linda; MCKAGUE, Anne; WILSON, Jo; SYRETT, John H. (1981) "Making pages at OECA." In: The Telidon Book. Edited by David Godfrey and Ernest Chang. Toronto: Press Porcepic Ltd. 1981 p. 142-150. (FLS)

This article describes the various factors of design, production and management and the method of page creation under real production conditions at OECA.

CLARKE, K.E. (1980) "What kind of picture for videotex? A discussion on the future of videotex terminals and display technology." In: Viewdata '80. Viewdata and Videotext, 1980-81: a Worldwide Report. White Plains, N.Y.: Knowledge Industry Publications, Inc. 1980 p. 83-92. (FLS)

"The paper discusses the enhancements to UK Prestel requested by information providers, and concludes that improvements in display technology, although important, are not those required most urgently. The major display facility unavailable at present is the ability to display coloured pictures of the photographic type. This would be valued by electronic publishers in general and by advertisers in particular. Work carried out at the Post Office Research Centre indicates that such facilities are likely to be economic in a few years time and should form the basis of 'second generation' Videotex." (p. 183)

EHLERS, H.J. (1981) "Legibility aspects of coded online information." In: 5th International Online Information Meeting, London, December 8-10, 1981. Oxford: Learned Information 1981 p. 455-467. long bibliography. (FLS)

"Online services provide highly structured material, like bibliographic information, but normally no specifications for



typographical layout. The increasing use of textual databases makes it necessary to include some generalized codes into the text. These flags are needed to assist the output device in presenting the material in the best possible way according to the accepted rules of legibility research. This coding should be suitable for different types of display equipment. Modern legibility research covering typography, layout, colour usage and better knowledge of reading is beginning to supply the tools which help to make it clear that text is more than strings of characters suitable for visual perception in a given sequence."

FOLEY, Bob (1979) "Teletext display design." Canadian Journal of Information Science. May 1979 4: 60-67. (FLS)

"Conventional typographic and display research cannot be applied to the unique problems of teletext systems. This paper outlines some of the shortcomings of present research and suggests directions for future research." (p. 60)

REYNOLDS, Linda (1979) "Typographical and design considerations with viewdata." In: 3rd International Online Information Meeting, London, 4-6 December 1979. Oxford: Learned Information 1979 p. 289-300. (FLS)

"The visual characteristics of viewdata systems are outlined and discussed in terms of their implications for the legibility and readability of displayed information. The restricted character set and fixed character positions impose severe constraints on the information designer, but these disadvantages are compensated for to some extent by the availability of seven colours. Ways of presenting different kinds of information are discussed, taking into account the limited possibilities for typographic variation and the need to rely heavily on the judicious use of space and colour to indicate the structure of the information." (p. 289)

### III.3T EVALUATION - VISUAL DISPLAY - TELIDON

MCLAREN, I. (1980) "A comparison of the graphic quality of Prestel, Antiope and Telidon." Information Design Journal 1(3): 154-158. (Not Seen)

"As viewdata systems expand rapidly to meet the estimated huge market demand coming into view, the graphics quality, legibility and display standards that they offer also come under increasingly critical scrutiny. The author reports on an important study carried out for the EEC Commission,

focusing on this aspect of the videotex story." (Ergonomics Abstracts 13(1) 1981, p. 49)

MILLS, MICHAEL I. (1981) A Study of the Human Response to Pictorial Representations on Telidon. (Telidon Behavioural Research 3) Ottawa: Department of Communications 1981 150 p. (FLS)

"The goals of this report are (1) to review current research in the areas of human cognition and perception on how people understand and use visual images; and (2) to examine the implications of this work for the role of pictures and graphics on Telidon." (p. ii) Chapter I deals with the relationship between text and pictures for conveying information. Chapter II looks at perception of line-drawings and caricatures and trade-offs which can exploit Telidon's graphic capabilities. "Chapter III examines the use of simple graphic imagery to communicate complex ideas" and suggests that dynamic graphic schema that show transformation may impart more information. (p. iii) Appendix A - An Introduction to the Psychology of Picture Perception by Adam Gopnik, pages 131-144.

TREURNIET, W.C. (1981) Display of Text on Television. CRC Technical Note; no. 705-E. Ottawa: Communications Research Centre, Department of Communications May 1981 43 p.

"A videotex service is a means whereby the general public will be able to access various kinds of information from central data bases. Textual and graphical information will be displayed on television receivers much like those currently used in people's homes. Technical and graphic design problems related to the display of such information on a colour television are addressed in this report. The results of several studies concerned with the display of text are described, and the relative merits of Red-Green-Blue versus composite video input are discussed." (p. 1)

#### III.4 EVALUATION - INDEXING

BALL, A.J.S. (1981) "Videotex: chimera or dream machine." Canadian Library Journal February 1981 38(1): 11-15. (FLS)

Provides a detailed discussion of the indexing used in the following 3 systems: Prestel, Telidon and Teletel/STAR. Points out that post-coordinate capabilities will necessitate the redesign of all 3 systems.

DRUMMOND, Pauline (1980) "Flaws in the indexing tree." Health and Social Services Journal November 14, 1980 90(4719): 1470-1471. (Not Seen)

"In late 1980, the UK Department of Health and Social Security (DHSS) obtained 1,000 frames on Prestel. Recent British Library projects on community and health information provision indicate that careful planning and coordination of information provision, updating terminals on the premises of information providers, and training of staff in writing and editing for Prestel are all essential. Indexing has been complicated -- 1 of the projects was hoping to tackle some of the problems of the indexing tree and routing of pages for cross references. Prestel is expensive and the majority of sets are on commercial premises; DHSS information would be aimed at the man in the street. The National Consumer Council urges the industry to make it 'as natural and cheap for consumers to use Prestel as to read a newspaper or use radio or TV'." (LISA May/June 1981, p. 208)

FRANKHUIZEN, J.L.; VRINS, T.G.M. (1980) "Human factors studies with viewdata." In: Proceedings of the Ninth International Symposium on Human Factors in Telecommunications, Red Bank, New Jersey, Sep. 29 - Oct. 3, 1980. p. 1-7.

"Two laboratory experiments were carried out to investigate a method for searching information systematically, using an information search tree. In the first experiment subjects had to answer questions using the British viewdata system. The main result was that information could not be found easily. Most errors were made in selecting the information provider out of the index page of information providers. The error correcting possibilities for the user were too limited. Some design principles for an information search tree are mentioned. In the second experiment a method has been studied for testing viewdata search trees. The subject's task was to find the right search path for many questions. The number of wrong decisions on each information category have led to recommendations for improving the Dutch search tree. In future studies in which a specially developed viewdata experimental system will be used, the investigation of man-machine dialogues and information structures will be emphasized." (Ergonomics Abstracts 13(1) 1981)

HARDY, C. Rowena (1978) A Study of the Feasibility of Accessing Information on Prestel by Numeric Representations of Keywords. Loughborough: Loughborough University of Technology 1978 84 p.

"(MSc thesis) Following a general description of viewdata and teletext systems, investigates the possibility of using



numeric representation of keywords to access information on Prestel. Discusses theoretical considerations and presents results of practical tests on the numerical keying of subject words. Test results are analysed." (LISA July/Aug '80, p. 241)

HITCHCOCK, Peter (1981) "Introduction to Chapter 8: Storing pages." In: The Telidon Book. Edited by David Godfrey and Earnest Chang. Toronto: Press Porcepic Ltd. 1981 p. 179-190. (FLS)

Reviews the basis of current database theory and compares the three major database systems now available in the marketplace.

INOUE, R. (1980) "The index system of the CAPTAIN system experimental service." In: Viewdata '80. Viewdata and Videotext, 1980-81: a Worldwide Report. White Plains, N.Y.: Knowledge Industry Publications, Inc. 1980 p. 113-122. (FLS)

"The Captain service was inaugurated on December 25, 1979 on a trial basis. This article summarizes the basic concepts of the index system for the experimental service, functions adopted in the system ideas used in construction of the information classification system of this new information medium, the Captain system, and the relation between the index system and information from information providers. Present results were obtained shortly after system inauguration and are, therefore, tentative. A final evaluation will be issued after completion of experimental service operations." p. 113)

MAUER, H.A.; RAUCH, W.; SEBESTYEN, I. (1981) "Alphabetic searching in videotex systems." Electronic Publishing Review September 1981 1(3): 217-223. (FLS)

Presents a hybrid method of alphabetical keyword search by maintaining the keypad and designing numeric codes to represent alphabetical characters. Author lists problems with this approach and sees it only as a temporary "solution" to the problem of access in tree-structured videotex databases.

POLLARD, D.; JAMES, P. (1980) "Aspects of indexing on Prestel." In: Proceedings of the Ninth International Symposium on Human Factors in Telecommunications, Red Bank, New Jersey, Sep. 29 - Oct. 3, 1980. p. 9-15.

"The recent introduction of Prestel, the British Post Office viewdata service, has posed the problem of how a database of such a potentially large size can be accessed efficiently by

inexperienced and experienced users alike. It is of the utmost importance both for initial user reaction and subsequent efficient system usage that error rates and access times be kept to a minimum. This can best be achieved by careful design of the indexing systems based on performance data obtained from a sample of users. The experiments described have investigated some of the fundamental parameters of interest to Prestel index designers. In particular alternative formats and coding methods have been compared. Indexing methods incorporating the findings of these experiments and others, should provide users with the basis of an efficient means of accessing the large databases associated with the system." (Ergonomics Abstracts 13(1) 1981, p. 18)

THOMAS, Hilary B. (1979) Tree Structures: the Root of Videotex?  
9 p. (Photocopy) (FLS)

The author notes problems of developing tree structure for PRESTEL as follows: 1. lack of operational experience with tree structures; 2. dynamics of changes in database content necessitating new index entries; 3. lack of control over content or structure of information provider's databases; 4. limited number of choices at any one level; 5. wide range of users and problems of providing access from a variety of points of view. The article also discusses guidelines for developing tree structures put forward by Dr. E. Williams and G. Bush for Prestel IP's regarding flexibility, simplicity, explicitness, external cross referencing and multitype access routes e.g. alphabetical, geographical, classified, paper-based directories for direct access.

WILLIAMSON, Nancy J. (1981) "Viewdata systems: designing a database for effective user access." Canadian Journal of Information Science. June 1981 6: 1-14. (FLS)

"This article examines user requirements in accessing viewdata systems, discusses the problems and principles involved in providing effective access to present systems, and considers future directions in their development and improvement." (p. 1)

#### III.4T EVALUATION - INDEXING - TELIDON

LATREMOUILLE, Susane; LEE, Eric (1981) "The design of videotex tree indexes: the use of descriptors and the enhancement of single index pages." In: Behavioural Research 2: The Design of Videotex Tree Indexes. Ottawa: Department of Communications May 1981 p. 63-112. (FLS)

"Reports on two experiments designed to evaluate the effect of adding descriptors (brief descriptions of each index term) to index items, to test the "first" or basic index page in a number of ways and to demonstrate methods for testing and modifying tree indexes." (p. iv)

LEE, Eric (1980) "Broadcast Telidon: the optimum number of alternatives per index page." In: Behavioural Research on Telidon I. Ottawa: Department of Communications 1980 p. 151-230. (FLS)

Details experiments on Telidon databases and draws conclusions on numbers of document pages and the number of alternatives per page with an eye to search times. The search time was seen as a marketing factor in Telidon's use. Provides an analysis of search time factors. The reader is directed to an earlier document (Tech. Memo BRG 79-4) analyzing interactive Telidon.

LEE, Eric (1980) "The optimum number of alternatives to display on an index page in an interactive Telidon data base." In: Behavioural Research on Telidon I. Ottawa: Department of Communications p. 128-149.

"The answer to the question of the optimum number of alternatives that should be displayed on a Telidon index page has several practical ramifications. The purpose of this memo is: a) to address this question from a behavioural perspective, b) to develop a model for predicting the effects of varying the number of alternatives per index page, and c) to describe the practical conclusions that can be drawn from this analysis." (p. 128)

LEE, Eric; LATREMOUILLE, Susane (1980) "Evaluation of tree structured organization of information on Telidon." In: Behavioural Research on Telidon I. Ottawa: Department of Communications 1980 p. 231-242. (FLS)

Provides a method to evaluate any tree or hierarchical organization of information based upon experiments with actual users of Telidon with 900 documents.

McEWAN, Scott A. (1981) "An investigation of user search performance on a Telidon information retrieval system." In: Behavioral Research 2: The Design of Videotex Tree Indexes. Ottawa: Department of Communications May 1981 p. 33-61. (FLS)

"Reports on an experiment for the first time using an actual Telidon data base (again the Telidon demonstration data base at the Department of Communications). People made many

errors in finding information; indeed, error rates were higher than in the previous experiments where simulations were used. As with previous experiments, many errors occurred in the first two levels of the tree." (p. iv)

SCHABAS, Ann H. (1981) "Optimizing Telidon tree structures." Paper given at the Canadian Association for Information Science Conference, Pointe-au-Pic, Quebec May 1981 (photocopy 9 p.) (Private Collection)

Author discusses the following aspects of Telidon information retrieval: a) database partitioning, b) categorization order of the tree, c) option wording, d) option sequencing, e) auxiliary access devices such as cross-referencing and online alphabetical directories, f) sense of location techniques and g) keyword and Boolean operator features under development.

Telidon Behavioural Research 2: the Design of Videotex Tree Indexes. (1981) Ottawa: Department of Communications May 1981 112 p.

Contains 4 papers which are noted elsewhere in this bibliography. Introduction by Dorothy Phillips contains "Guidelines for constructing tree indexes -- Summary of Conclusions..."

THOMAS, Keith; SCHABAS, Ann H. (1981) Telidon keyword indexes (Volume 2 of 11) Implications of Keyword Access for Telidon Software. Research Report under contract OER 80-00428 for Behavioral Research Group, Department of Communications, Ottawa March 1981 32 p. (Private Collection)

"The object of this paper is to identify, at least qualitatively, the requirements and limits that apply to keyword access computer software and further, to suggest design approaches that might be explored, both within the current RMS-11 environment, and in forming a 'purpose built' environment." (p. 1)

WHALEN, Thomas; LATREMOUILLE, Susane (1981) "The effectiveness of a tree-structured index when the existence of information is uncertain." In: Behavioral Research 2: The Design of Videotex Tree Indexes. Ottawa: Department of Communications May 1981 p. 1-12. (FLS)

"Explores the search process when the participants are uncertain that information exists in the database to answer their questions, a situation that would resemble normal home use. Results showed that people do make errors in their index choices (using a simulation of the Telidon demonstration data base index) and most errors occur on the



first two levels. People also stop searching before they find existing information." (p. iv)

WHALEN, Thomas; MASON, Candy (1981) "The use of tree-structured index which contains three types of design defects." In: Behavioural Research 2: The Design of Videotex Tree Indexes. Ottawa: Department of Communications May 1981 p. 13-32. (FLS)

"Reports an experiment in which design defects were purposely added to the database. Again, a simulation of the Telidon demonstration database index was used. Design defects were miscategorization of information, two synonymous labels on a page and vague category labels. Miscategorization was found to be the most serious defect leading to longer search times. The other defects also impaired performance." (p. iv)

### III.5 EVALUATION - SOCIAL & POLICY ISSUES

BELL, D. (1980) "Telex and technology. New networks of knowledge and information in post-industrial society." Encounter June 1980 p. 9-29. (Not Seen)

"The social implications of advances in technology, particularly as it influences communication are considered. The rapid increase in the generation of information and the effective reduction of distances and time as barriers to communications are discussed." (LISA Sept/Oct '81, p. 360)

KING, John Leslie; KRAEMER, Kenneth L. (1981) "Cost as a social impact of information technology." In: Telecommunications and Productivity. Based on the International Conference Sponsored by the Center for Science and Technology Policy, New York University, January 29-30, 1980. Edited by Mitchell L. Moss. Garden City, N.Y.: Addison-Wesley Publishing Company, Inc., Advanced Book Program 1981 p. 93-130. (Robarts)

"Information technologies generate both organizational and social costs far beyond what is commonly estimated and...the decentralizing influences of the new telecommunications technologies are likely to have on the world of information use and management will exacerbate what is already nearly uncontrolled growth in costs from these technologies." p. 94) The authors look at two issues: structural arrangements for computing and the economic and social value of the technology as it is used.

PEYTON, David (1981) "Videotex policy issues in the United States." Electronic Publishing Review December 1981 1(4): 251-262. (FLS)

"United States domestic policy problems in videotex divide neatly into the short term and the long term. The more immediate agenda is driven by the 1934 Communications Act and its pending revision, in particular the provisions relating to the corporate restructuring of AT&T which would in effect supersede the 1956 Consent Decree with the Antitrust Division of the Justice Department. Also, construction of the 1934 Act with respect to the duties of commercial teletext broadcasters is lacking. While these questions of policy result from technological and legal flux, there is another set of questions that will require answers largely independent of the development of videotex technology or the revision of the 1934 law. Perhaps best described as truth (user) or accuracy in videotex display, and unfair trade practices will arise regardless of whether videotex develops in the centralized European model or builds on the growing American home computer market. This discussion does not treat international problems such as technical compatibility or transborder data flow." (p. 251)

TYDENAN, John; ZWIMPFER, Laurence (1981) "Videotex in the United States -- Toward information diversity." In: Videotex '81. Northwood Hills, Middlesex: Online Conferences Ltd. p. 341-351.

Details are given on U.S. field trials and videotex applications and puts forth a series of questions concerning the implications of widespread use of videotex services. These questions are grouped under the following headings: information retrieval, games/entertainment, transactions/teleshopping, electronic messaging, data processing, and home management/security/telemonitoring. From this list of issues the authors develop a number of societal themes that "provide some insight into alternative feasible videotex futures."

WICKLEIN, John (1979, 1981) Electronic Nightmare: The New Communications and Freedom. New York: Viking Press 1979, 1981 282 p. (Robarts)

The author has described specific examples of the major developments in communication (videotext being one of these) and points out the potential threats involved. He concludes that the federal statutes now in effect on communications, fair credit reporting, and privacy are currently inadequate.



He asks how should the system be controlled and points out the dangers from authoritarian regimes.

WILLIAMS, E. (1978) "Viewdata: bicycle or Rolls Royce?" In: 2nd International Online Information Meeting, London, 5-7 December 1978. Oxford: Learned Information 1978 p. 205-210. (FLS)

"This paper considers the potential use and social impact of viewdata systems. The design philosophy of viewdata as a convivial tool is contrasted with the different approach adopted for on-line bibliographic systems. The implications of widespread adoption of viewdata are discussed: impacts considered are those on use of other media, cultural fragmentation, social equality, employment and the location of office work." (p. 205)

### III.5T EVALUATION - SOCIAL & POLICY ISSUES - TELIDON

CAMPBELL, J.L.; GURNSTEIN, M. (1981) "Social impact/social uses of videotex in the Canadian context." In: Videotex '81. Northwood Hills, Middlesex: Online Conferences Ltd. 1981 p. 325-330. (FLS)

"Public Sector initiatives include the formation of a subcommittee on the Individual and Society of the Canadian Videotex Consultative Committee to undertake research and make recommendations to the federal Minister of Communications on the development of videotex; the promotion of access to federal government services and information through the activities of the Task Force on Services to the Public; the use of Telidon for experiments in education by T.V. Ontario and the Universite du Quebec. Private Sector initiatives include the encouragement of umbrella groups to function as information brokers for the voluntary and non-commercial sector and an examination of the use of videotex by individuals or groups with special communications needs. Other initiatives include agenda-setting for policy matters and other social research." (p. 325)

GOTTLIEB, C.C. (1978) Computers in the Home: What they can do for us -- and to us. (Occasional Paper no. 4) Ottawa: Institute for Research on Public Policy May 1978 65 p. (FLS)

The author speculates on the new technologies made available by miniturization and radical changes in communication modes in terms of applications for shopping, electronic mail, working and learning games and entertainment and robots. He discusses policy options and the obligation to identify

"socially desirable needs" that can be satisfied by home computers.

SALZMAN, Lorne P. (1981) "Home videotext services: some legal issues." Canadian Journal of Information Science June 1981 6: 15-23. (FLS)

"The provision of videotex services raised interesting legal issues. The existing framework of regulations applicable to radio-television and telecommunications will likely apply to videotex, although different transmission mechanisms may well be regulated differently. It is uncertain if the law of copyright in Canada covers information stored in computers such as that which would be contained in a videotex system. Videotex services originating outside Canada would be able to sidestep Canadian priorities and the requirements of Canadian legislation. It has been suggested that one way of dealing with the problem is to regulate the flow of data across national borders." (Library Science UPDATE nos. 65-66 August/September 1981, p. 8)

FLOWRIGHT, Teresa (1980) Social Aspects of Videotex Services: Proposed Research Directions. Ottawa: Department of Communications, Social and New Services Policy Division, Broadcasting and Social Policy Branch November 1980 22 p. (FLS)

"A number of large issues regarding (videotex)...generally are delineated... For the purposes of analysis these can be grouped into two main types: I The Videotex system, and its operations -- a) access b) diversity c) privacy d) accountability e) vulnerability, II Secondary consequences -- a) employment impacts b) impacts on lifestyles c) equity of availability d) institutional impacts e) autonomy. Some comment on each of these broad issues and research addressed to them is given... It is argued here that 'access' and 'diversity' provide particularly good candidates for research at this point in videotex/teletext development." (p. 2) The CICMT project is mentioned on p. 10-11.

SCIENCE COUNCIL OF CANADA. COMMITTEE ON COMPUTERS AND COMMUNICATIONS. (1979) A Scenario for the Implementation of Interactive Computer-Communications Systems in the Home: a Position Paper. Ottawa: Science Council 1979 40 p.

"The purpose of this paper...is primarily to demonstrate that implementation (of an interactive computer-communications system) can and must take place in an orderly fashion. Steps are outlined which government agencies could take to implement a planned development."

TAGUE, Jean; DOLAN, Frank (1979) "Teletext: its development and social impact." In: 7th Annual Canadian Conference on Information Science. Proceedings. Quebec: Canadian Association for Information Science 1979 p. 278-289. (FLS)

"The development of teletext systems in several countries is briefly reviewed, with an emphasis on the Canadian scene. Some benefits and problems associated with the widespread availability of interactive television are suggested, and ways in which the information science profession can help deal with the problems are indicated." (p. 278)

### III.6 FIELD TRIALS

CARR, Reg (1980) "Prestel in the trial test -- an academic library user looks back." Journal of Librarianship July 1980 12(3): 147-158. (FLS)

"This article contains the substance of a paper delivered to the SCONUL Advisory Committee on Information Services Conference on 'Prestel in higher education' held at the Univeristy of Aston on 30 January 1980... The author discusses the philosophy and design criteria behind the system, reviews the test trial from a user's point of view, and highlights the principal advantages and disadvantages of Prestel as a source of information in an academic library context." (p. 147)

FLETT, Jan (1979) "Working with Prestel." State Librarian July 1979 27(2): 24-26. (FLS)

"The Library of the Departments of Industry, Trade and Prices and Consumer Protection became an Information Provider for the UK Post Office's Prestel viewdata system in 1978, taking up an option for 1,000 viewdata frames. A special unit was established to coordinate, structure and edit onto the Prestel computer the information provided by the individual departmental divisions. The unit's work is outlined very briefly and examples of finished frames are shown." (LISA March/April '80, p. 112)

OCLC (1981) Channel 2000: Description and Findings of a Viewdata Test. Dublin, Ohio: Online Computer Library Center. April 1981 23 p. (FLS)

A controlled user test was conducted in Columbus, Ohio to investigate technical, business, market, library, and social issues involved in videotex technology. The three part report reviews various facets of new consumer electronic

information services, gives details on the Channel 2000 project and its findings. Test planning and sampling methods, training of users, service descriptions and equipment used are detailed. Conclusions are concerned with future forms of videotex, its socio-economic influence and its impact on libraries.

PLAISTER, Jean (1981) "LASER and Prestel." : Aslib Proceedings September 1981 33(9): 345-350. (FLS)

"For the librarian and information officer two main aspects of Prestel need to be considered, firstly the exploitation and use for clients of the information on the Prestel database, and secondly the use of Prestel to promote his own organization's information i.e. the community information of a local authority. Each of these aspects requires a different approach and individual techniques, but both require an appreciation of the Prestel system--its aims, achievements and cliental [i.e. clientele] if they are to fully exploited. Plaister summarizes the developments leading to LASER's participation in Prestel, and comments on the LASER Prestel research project which placed Prestel sets in libraries to monitor their future potential. Details are given of the usage, equipment, public reaction, business demonstration and use, and the opinions of staff on Prestel as a library reference tool." (Library Science UPDATE no. 69 December 1981, p. 9-10)

SHRIMPTON, W. (1981) "The Prestel International Service." In: Videotex '81. Northwood Hills, Middlesex: Online Conferences Ltd. 1981 p. 209-219. (FLS)

"During 1980 a limited market trial was operated covering some 330 terminals installed by 150 business organizations in 7 countries." (p. 209) This paper discusses lessons from the market trial regarding users, public and private databases and usage.

SULLIVAN, Catherine; OLIVER, David (1981) The Impact of Prestel on Public Library Reference Activities. (British Library Research and Development Report No. 5654) London: Aslib Research & Consultancy Division February 1981 99 p. (FLS)

The study begins with an introductory look at public reference libraries: their staff, their users, the types of enquiries, the information sources used and the success of the service. Next the study looks at Prestel use in reference libraries. Details are given on methodology, installation of receivers, training of staff and library users, opinions and reactions to the Prestel service, who used the service along with the amount and type of use, how



Prestel and teletext use fit into the pattern of everyday reference library use and a list of enquiries by subject.

TAYLOR, K.H. (1979) "On-line business databases and viewdata."  
In: 3rd International Online Information Meeting, London, 4-6  
December 1979. Oxford: Learned Information 1979 p. 273-  
282. (FLS)

Discusses user reactions to business viewdata and compares the markets for viewdata and online services as well as structural and editorial comparisons. "In a pilot project...[Fintel is] exploring parallel production methods and facilities for transferring information between systems. This paper describes [their]...experience of Prestel, compares this with the development of [their]...on-line database and shows how viewdata systems may be used to present on-line search results to the end-user." (p. 273)

"Teletext and Prestel" (1979) Hearing March/April 1979 p. 73-  
88. (CICMT)

Outlines generally what teletext is then goes on to give deaf users' responses to Prestel. Offprints available from Hearing, Royal National Institute for the Deaf, 105 Gower Street, London WC1E 6AH.

The Prestel Market Research Executive Summary no.  
1. Introduction and Planning. (1979) n.p. Post Office  
Telecommunications 1979 unnumbered pages. (Not Seen)

"Report produced for the use of clients of the UK Post Office's Prestel Market Research Service. A broad introduction to the Post Office's 2-year market research programme during the Test Service and early Prestel Public service (established in 1978), the aim of which was to predict the size and nature of the UK Prestel market in 1980-85 and to identify likely practical problems in running the Prestel service. Describes the selection of the user sample to be surveyed and survey methodology. Appendices provide a background to viewdata, Prestel, and the Test Service, and a glossary of terms." (LISA September/October 1981, p. 361)

WILLIAMS, E.; DONNELLY, M. (1978) The Design of the PRESTEL  
Market Research. London: Post Office 1978. (Not Seen)

III.6T FIELD TRIALS - TELIDON

CANADA. STATISTICS CANADA. (1980) Telidon Field Trial Modules. Ottawa: Statistics Canada October 2, 1980. (Not Seen)

FRASER, Jack (1980) "From 'pots' to 'pans': videotex development in Canada." In: Viewdata '80. Viewdata and Videotext, 1980-81: a Worldwide Report. White Plains, N.Y.: Knowledge Industry Publications, Inc. 1980 p. 603-612. (FLS)

Gives details of Canadian field trials in terms of costs, services to be offered, and number of terminals distributed. Not much detail on results of field trials other than to say that... "public reaction was very favourable. From a marketing point of view, residential customers showed high interest in educational and consumer-oriented services. Business customers showed greatest interest in internal information and financial services." (p. 610)

GROSSMAN, Larry (1981) Text of Queen's Park Speech regarding the Visitor's Guide. Toronto: Queen's Park August 1981. (Not Seen)

PASKAL, Tom (1981) Videotex Field Trials. Research Study for the Royal Commission on Newspapers, 1981. (Public Archives, Ottawa)

Checklist progress report on 12 field trials as of April 1, 1981.

"Videotex: Canadian field trials." (1981) In: Desbarats, Peter. Newspapers and Computers: an Industry in Transition. Volume 8 Research Publications. Royal Commission on Newspapers. Ottawa: Ministry of Supply and Services 1981 p. 51-59. (FLS)

Some details are given on 12 Telidon field trials listed in Canada as of May 1981. Three were operational and six were scheduled to begin service before the end of 1981 and three were to begin in 1982.

### III.7 COMMUNITY INFORMATION

CAWKELL, A.E. (1980) "Will information flow to the citizen improve with videotex systems?" Aslib Proceedings June 1980 32(6): 264-269. (FLS)

A speculative look at the possible market for videotex based on income range and level of education and alternative methods of getting "information for living."



CHAMPNESS, Brian G. (1981) "Social uses of videotex and teletex in U.K." In: Videotex '81. Northwood Hills, Middlesex: Online Conferences Ltd. 1981 p. 331-339. (FLS)

Contains a section on "Community use of videotex." Also discusses Prestel and the disabled, Prestel and the visually handicapped and teletex, videotex and the deaf community.

GURSTEIN, Michael (1981) "Telidon/Videotex and special needs groups." Paper prepared for a workshop held March 14, 1981 for the Canadian Videotex Consultative Committee. February 1981 33 p. (CICMT)

Contains a brief overview of the technology, presents 3 scenarios concerning use of videotex by the disabled and lists several applications which would particularly benefit groups with special needs such as: teleshopping, telebanking, electronic messaging, information storage & retrieval, working at home and specialized terminals. In looking at how we get from here to there he discusses accessibility in terms of design, geography, information content and finance. The social implications discussed are privacy, security, vulnerability, alienation and cost.

HATTERY, Maxime (1979) "Prestel in the public library." Information Retrieval & Library Automation July 1979 15(2): 1-3. (FLS)

Outlines details of Prestel field trial in 6 British public libraries and the community information aspect of the trial.

MARTINEZ, Hector (1981) "The Orientation and Information System." In: Videotex '81. Northwood Hills, Middlesex: Online Conferences Ltd. 1981 p. 123-129. (FLS)

"The Venezuelan government has put into operation a group of Information Centers in the city of Caracas, equipped with Telidon terminals, ...[for] public consultations on the availability of services of diverse kinds, especially those provided by the State. The author outlines future plans for communities in which the centers operate to become local suppliers of information and adopting the service as a permanent medium of communication of information." (p. 123)

MARTYN, J. (1979) "Prestel and public libraries; a LA/Aslib experiment." Aslib Proceedings May 1979 31(5): 216-236. (FLS)

Briefly discusses the differences between teletext and viewdata focusing on Prestel. Outlines two research projects with Prestel, one on the effect of Prestel on reference

services in public libraries and the other on the potential of Prestel as a vehicle for the dissemination of community information. Research methodology is described and examples are given of community information pages used where content was suggested by public librarians. In looking to the future, the author points out the constraints of cost and effort involved in operating a community information database.

### III.8 BIBLIOGRAPHIES

COOPER, Harriet (1981) "Videotex and teletex: a selected bibliography." In: Videotex, Teletext & Telidon: Information and Resources. (AC Lab Report No. 2) Toronto: Faculty of Library Science, Advanced Communications Lab, University of Toronto 1981 p. 7-9. (FLS)

Prepared for the Telidonic Information Systems Conference held at the Faculty, October 16-17, 1981.

JOHNSON-HALL, Martha (1980) Home Information Systems: Viewdata and Teletex: Bibliography, Semi-annotated. Washington: Information Technology Program, National Telecommunications and Information Administration 1980 16p. (FLS)

NAFT, Neil (1981) Telidon Bibliography D6/4-32 10 p. (photocopy) (Private Collection)

Lists over 130 items about the technical aspects of Telidon, social implications, human factors and future developments.

ROBINSON, Douglas (1981) Videotex: a Selective Bibliography for Librarians. Ottawa: National Library of Canada, Library Documentation Centre 1981 12 p. (FLS)

Teletext and Videotex Publications. (1981) Menlo Park, California: Institute for the Future August 1981 3 p. (CICMT)

A list of 32 items published by the Institute.

"Telidon, teletext and libraries: a brief bibliography." (1980) Bulletin ABO/OLA Bulletin September/December 1980 21(3) Appendix 1: 49-51. (FLS)

"Viewdata: a review and bibliography." (1978) Online Review September 1978 2(3): 217-224. (FLS)

Historical perspective.

WRIGHT, William F.; HAWKINS, Donald T. (1981). "Information  
technology--a bibliography." Special Libraries April 1981.  
72(2): 163-174. (FLS)

Covers references appearing in the late 1970's through 1980.  
Has sections on viewdata and videodiscs, and  
Telecommunications.

## APPENDIX B

### STATISTICAL REPORTING SYSTEM -- CICMT

The statistical report system at CICMT was developed by a project committee of the Association of Information Centres in Ontario, beginning in 1977. The objectives of the system are to:

- provide improved accountability to funders and centre boards;
- monitor trends in service requirements;
- identify needed or redundant community services;
- improve liaison between centres;
- allow for greater efficiency of service;
- contribute to self evaluation;
- aid in targeting or marketing service;
- aid priority setting;
- supply data for special projects.

By the end of 1979 the system, named CIC-COCOM (Community Information Centres Common Coding Method) had finished a testing cycle and was adopted by more than thirty centres in the province under a contractual arrangement. The system is capable of both manual and EDP use. Several centres have made arrangements with nearby educational institutions for low cost data processing, but most use the system manually owing to the cost, the need to revise the computer program, and uncertainty about how the results can be used. The output side has not been fully

developed, although CICMT has done some special statistical reports both alone and in conjunction with members of the federation of centres in Metropolitan Toronto.

Data for CIC-COCOM are collected on a standardized form which contains locations for up to 20 major codes. (See Appendix B, Exhibit 1) Certain codes have been designated mandatory for user centres, and some are optional. The system requires user centres to use a basic set of fixed codes which conform to accepted definitions; additional codes in a series may be added at the discretion of the centres, either individually or collectively, for special surveys. In addition to identification of compiled data sheets, the codes provide for the following:

- Identification of both single and multiple problem calls, the latter concerning either related or unrelated matters. If unrelated, separate data are collected for every such query with respect to problem descriptions, disposition of query, etc., to be described below.
- Specification of time of day and duration of call. Time is a.m., p.m., evening, or after midnight; finer breakdowns can be done. Duration is a rough approximation; CICMT estimates the length of calls to the nearest minute.
- Mode of contact includes telephone, letter and visit.
- Record of caller characteristics, such as client, professional, employing six fixed codes altogether.
- Location of the client, with all codes assigned by the centre.

## DATA COLLECTION FORM

**CERTLINE (A)**

C.I.C.

WORKER (B)

DATE (C)

PAGE (D)

[illegible]



- Classification of enquiries in three codes; identical codes are used for classification of the services involved. The difference between the sets of data for enquiries and service involved can be accounted for by the counsellor's translation or reinterpretation of the presented problem generally, or by substitution of a service where the requested service is unavailable. Specifically, one code is designated for the type of agency which supplies the requested service, including five government categories and three non-governmental categories. The second code is for the classification of all queries and answers according to the general nature of question or answer. The nineteen classes are intended to be exhaustive. Examples are employment, personal and family adjustment, care and other services for children. The third code is for the specific identification of problem or resource. This level of data collection uses a data dictionary to a limit of 999 items or key terms.
- Action taken employing fourteen fixed codes ranging from simple (no action taken) to complex (intervention, mediation, advocacy).
- Assessment of service availability according to client refusal, difficult access, nonexistence of service, etc.
- Identification of particular needs of the information centre, such as language skills needed; special surveys can be handled here.

- Count of all calls within a day needed to deal with the original query.

## APPENDIX C

### TELIDON AGGREGATED STATISTICS PACKAGE

The Department of Communications undertook the exploration and design of software to aggregate raw statistical event records of a Telidon based retrieval system. The material here is provided from a draft of the initial package design and is included to provide an indication of the type of data that can be collected and how such data can be aggregated and analysed.

A basic design principle is the protection of the privacy of individual system users. The initial plan provided for the following:

- 1) Each user would be given an Account Identification Number or (AID) that would be different from the user's account number. The AID would be unknown to the user and would be used to process data collected. A single, limited access file would be used to link AID and account numbers. The AID also would be used to link other data collected through questionnaires or to identify geographic location.
- 2) Data published by researchers would only be published for aggregate data to prevent individual identification.
- 3) Field trial operators would make users aware that usage would be monitored for research purposes and permission would be requested as part of the field trial agreement.

A major assumption made here is that Telidon terminals are necessarily linked to individual or family usage under field trial or operational conditions. This is not necessarily or even usually true. It is certainly not the case for public terminals.

A second assumption is that individual accesses and searches can be identified as unique events capable of aggregation.

The program was designed to identify specific time periods from one hour to any extended period during which data collected could be identified, aggregated and analysed, and also the period over which data would be collected.

This feature permits direct linking of operational use with data collection and provides a useful and powerful research capability whereby random samples of users can be identified, searches undertaken by the individuals chosen and survey methods applied to a specific sample of users. A knowledge of the data collection methods of the software package would permit researchers with subjects at whatever terminal location at a chosen point in time to identify specific search sequences, eliminate search or keyed errors not significant to the data being collected and thus remove the basic limitations with respect to internal and external validity of data collected. The Telidon system, however, cannot link the event to an individual caller within the existing design context.

The basic unit of identification for research in the system is the user terminal, not the individual user and it is this difference that provides a basic difficulty in data collection.

A second difficulty is the identification of individual use or query sessions based upon identification of logon-logoff points.

#### Examples of Data Collection Reports

##### System Capacity

Data collected would identify the maximum and minimum number of terminals logged on in any designated time increment. This information could provide an accurate and continuous measure of system use and access capacity.

##### Terminal Response Time

Data can be collected concerning the time required to send and receive messages (that is between the time the user presses the enter or go button and the time the computer is able to respond with a return transmission), the time required to send the information contained in one Telidon page, and the time between the submission of one request for data and the next request.

The first of these accurately reflects the system response time. The second type of information is dependent upon the kind of page created. The third type of information relates to the time required by the user to read or assimilate the data. In the Telidon system this data can only be collected at the user's terminal, since it is impossible to identify the activities occurring during the time the information is displayed, and

whether one or more individuals are involved. Interpretation of the meaning of data collected concerning length of time between data requests is difficult to interpret or aggregate.

The system can provide data concerning the frequency with which a particular page is accessed, by page number per increment of time. Pages are identified as index or document pages but subclassifications can be added to identify the frequency with which classes of questions are being sought by users.

The purpose of the query in the Telidon system cannot be determined. Pages may be called frequently, not for purposes of information but because of page content or for demonstration purposes or because they are intermediate pages en route to one which is really wanted. A particularly interesting graphic design can be called up frequently because of aesthetic interest, particularly during field trial periods. To the extent that such data reflected user information needs, it could be useful in the development of statistics concerning areas of subject interest, and variations in this interest over time.

#### Activity Trace

The Telidon Information System can collect a record dump of every keyed action, and also of key sequences that lead to a particular function.

Thus records associated with any date or time period can be reproduced to identify the actual individual search pattern at an individual user terminal.



This information does not identify whether or not the search sequences are performed by one or several different users, or a group of users, nor does it permit identification of the purpose or intent of the search or how the information is being used. This type of data provides evidence of process patterns, and classes of patterns rather than aggregate data.

Research and design is required to effectively identify the type and form of data collected and how this data might be routinely provided for the continuous evaluation of the information providing systems.

In the case of community information centres considerable effort has been made in Ontario to collect statistical data on a consistent basis. The collection of consistent data from Videotex databases has not yet been fully researched and experience with commercial databases does not apply directly to the new medium serving the public sector.

Attention by Community Information Centres, Libraries and other institutions serving the general public should be given to the kinds of data required from both their existing systems as well as from public access computer based systems in order to provide useful information for decision purposes and at the same time safeguard individual privacy.

APPENDIX D

BELL/VISTA FIELD TRIAL  
TELIDON DISPLAY TERMINAL  
DEPLOYMENT (TORONTO)

	October 1981	January 5, 1982	March 1982
Residence Locations	12	99	142
Public Locations	18	18	10
Others*	<u>5</u>	<u>5</u>	n.a.**
Total	35	122	152

\* Bell Canada, Department of Communication,  
Information Service Providers (ISP)\*\*, Demonstration Units.

\*\* (Note: CICMT received their 1st display terminal on March 17/82.)

n.a. = not available

Total Bell/Vista Field Trial  
Pages Created and Available  
for Display

October 1981	20,910 pages (French & English)
January 1982	26,054 pages (French & English)
Rate of up-date	150 pages per week

Source: Bell/Vista Data provided to Information Service Providers.

## APPENDIX E

### CURRENT CICMT STATISTICAL DATA

In order to identify appropriate methods for collection and analysis of statistical data for use in comparing a Telidon-based information system with the CICMT counsellor-operated telephone system, some current data on the latter system was examined for exploratory purposes by Professors Forgie and Bellamy in consultation with Dr. A.E. Paull, Faculty of Management Studies, University of Toronto.

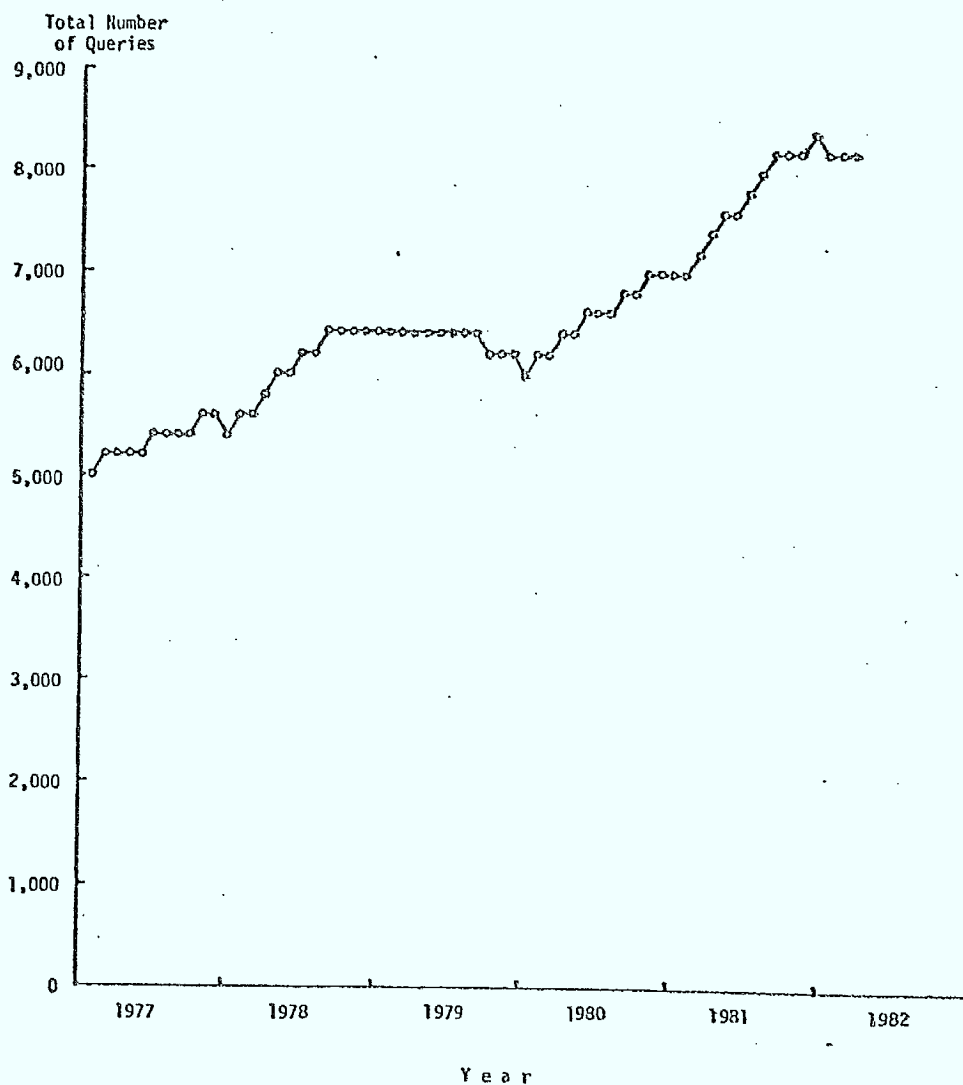
The basic statistical data collected by CICMT are the number and type of telephone queries received. Each time a client calls CICMT, the counsellor answering identifies that a call has been received, and enters specific information about the call on the standard work sheet provided. This data is summed to provide a monthly time-series for the total calls received. Calls are classified by 19 subject categories and statistics are cumulated on an annual basis. The data for total calls has been maintained on a monthly basis for the past five years. This raw data was made available by CICMT and was analysed to identify seasonal factors, and determine the seasonally adjusted and trend-cycle components in the series.

Based on Bell Canada tests and CICMT calculations the telephone answering system is frequently fully loaded. Thus the growth appears to be limited by capacity constraints.

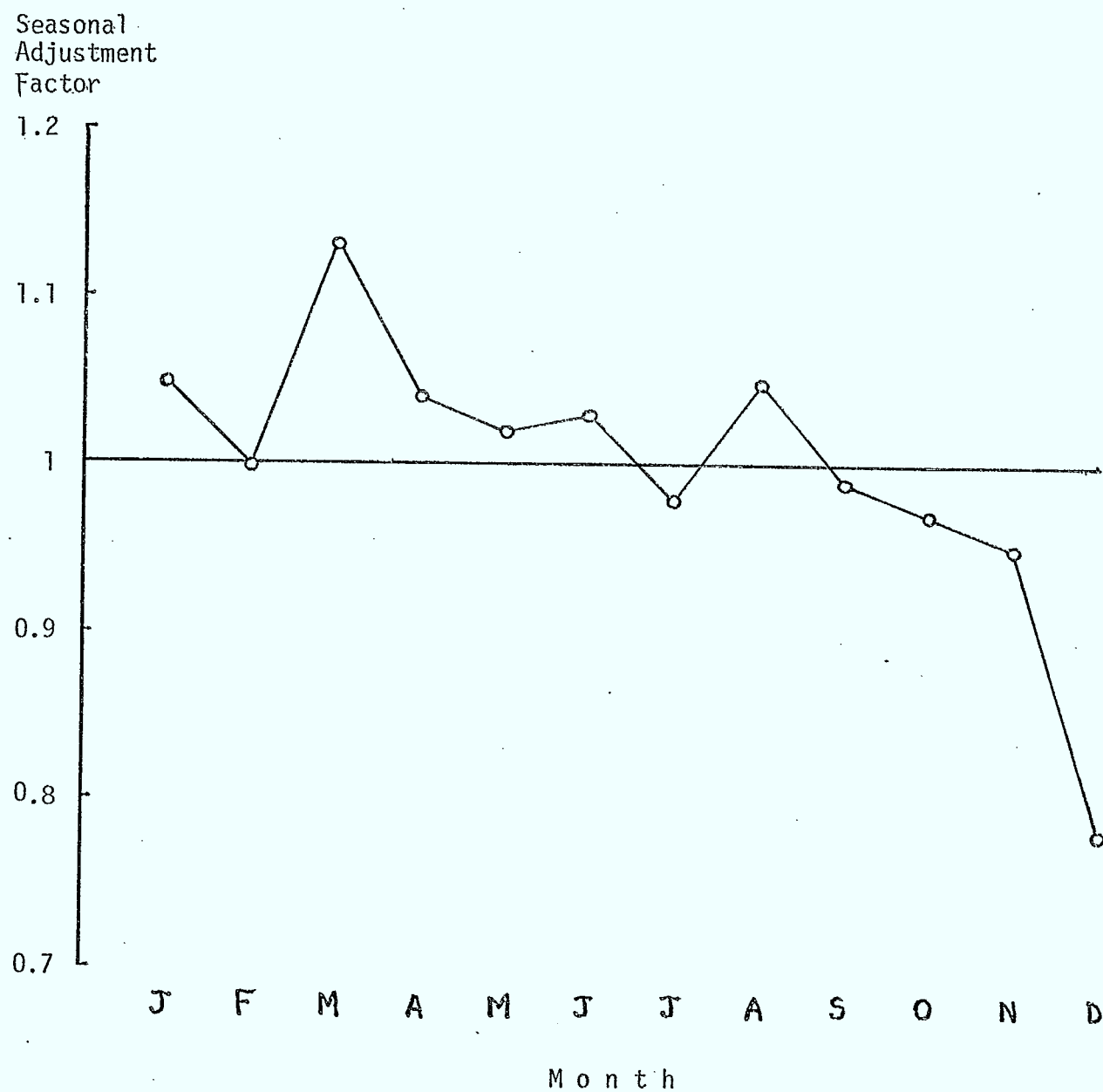
The smoothed seasonally adjusted CICMT counsellor queries (January 1977-February 1982) and the seasonal pattern of queries are shown graphically in Figures 1 and 2 of this Appendix. Additional data and time series analysis would likely be beneficial in comparing query growth patterns over time and in isolating the effect of specific operational or external changes on query volumes. effect of specific operational or external changes on query volumes.

APPENDIX E - Fig. 1 .

Smoothed Seasonally Adjusted CIGMT  
Counsellor Queries (Jan. 1977-Feb. 1982)



Seasonal Pattern of CICMT  
Counsellor Queries (Jan. 1977-Feb. 1982)





--Application of Telidon-based information services for community information: metropolitan Toronto.

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