TELIDON, THE CANADIAN VIDEOTEX SYSTEM, AND ITS IMPLICATIONS FOR INFORMATION SCIENCE

Dorothy A. Phillips
Behavioural Research Group
Technology and Systems Branch
Department of Communications
Ottawa, Ontario
K1A OC8

ABSTRACT

Telidon is the name of the Canadian Videotex
System, a public-accessed interactive information
retrieval service now being developed in Ottawa.
Several other Videotex and teletext (broadcast)
developments are taking place internationally
with graphic and alphanumeric information
available to homes and businesses on visual
displays (TV sets). Technical characteristics
of Telidon for visual display and search
structure influence the presentation of
information on Telidon. Questions remain about
the information content that can best be provided
on Telidon, about indexing or classification
schemes and about how the user will pay for
information. The Information Science Community
could make a contribution to these questions.

TELIDON' UN SYSTEME VIDEOTEX CANADIAN SES IMPLICATIONS POUR LA SCIENCE DE L'INFORMATION

RESUME

Telidon est un Système Videotex Canadien, un service
inter-dépendant de relevés d'information disponible
au public qui est sous stage de développement à
Ottawa. Plusieurs autres développement en fait de
systèmes Videotex et Teletext offrant de l'information
graphique et alphanumérique sont présentement disponible
au public sous forme visuel (télévision). Les carac-
téritiques techniques de Telidon pour sa présentation
visuel influence la structure et le contenu de l'infor-
mation Telidon. Nous étudions les méthodes d'indexation,
et de classement de plus il existe la question; est-ce
que l'individu devrait payer pour un tel service? La
communauté de la science d'information pourrait con-
tribuer ses idées.

INTRODUCTION

Members of the information science community will be aware that technological developments are creating an "information revolution". New technology in the computer and telecommunications fields are coming together to bring about a profound change in the way we access and store information in our society. Within a few years we can look forward to having access in our homes to computer stored data bases by using telephone and TV equipment. We will be able to interact with the data base to look up the latest hockey scores or stock market prices, and to shop for a house by looking at plans and pictures, find out how to adopt a baby or where to go for counselling. These are the information retrieval activities now in the process of development. Later, the same equipment will serve a messaging function. We will be able to send letters to friends, make theatre or airline reservations, order and pay for groceries and perhaps even be interviewed by the computer about our medical complaints before going to the doctor.

Telidon is one of the technological developments which are destined to have a major impact on our lives in the near future. Telidon is the name given to the Canadian Videotex system and Videotex is a term adopted internationally as a temporary generic term for public-accessed interactive information retrieval services. Telidon was developed at the Communications Research Centre in Ottawa.

This paper describes some of the characteristics of Telidon and places it in the context of other developments internationally in this field. It then poses a challenge to the information science community to be influential in the development of information to be provided on Telidon.

VIDEOTEX AND TELETEXT

Before describing Telidon in detail, it is useful to distinguish two-way videotex services from one-way teletext services. Videotex systems allow the user to access computer stored information using a key pad or more complex key board, a modified TV set or other electronical visual display, and a telephone or other transmission line. In contrast, one-way teletext services are broadcast and the user with a decoder and TV set may "grab" a frame as it goes by in the broadcast signal and display it on his TV screen. Access time for teletext depends on how long it takes for the page to go by and could be up to a minute or longer depending on the size of the data base.

Both videotex and teletext systems display alphanumerics and graphics with colors. From the users point of view, videotex systems can offer access to much larger data bases and will have a more rapid response time on the average.

Teletext services are now being offered in Britain by the BBC (Ceefax) and the Independent Television companies (Oracle).

The broadcasting authorities for Ceefax and Oracle provide the editorial
or information gathering services as well as broadcast channel, a major
difference from Videotex systems where information and carrier services
are provided by different groups so far. (Pye, 1978)

Videotex Developments Internationally

In addition to the Canadian development, Telidon, there are
similar developments in two-way information retrieval internationally.
The British Post Office developed Prestel (originally called Viewdata)
and is currently undergoing a market trial planned to a total of
1600 users. Public service is due to start in the spring of 1979.
They hope to have 250,000 pages of information available by that time
with almost 200 independent companies providing the information.

The French Titan system, a telephone videotex service, uses a
display system called Antiope developed in French laboratories. Still
largely at the laboratory experimental stage, field trials of Titan are
planned for 1980.

In Europe, the West German and the Dutch telephone authorities
have purchased Prestel technology and other countries are showing an
interest. Several companies in the U.S. are also interested in Prestel
technology. Japan has been developing several videotex and teletext
experiments with their own technology.

The Canadian Videotex system, Telidon, is sparking interest
internationally as field trials are planned. As of mid-february, 1979,
Bell Canada, in cooperation with Torstar and Southam Press has launched a
field trial of their videotex system known as 'Vista' which will include
experiments with Telidon. Other trials are being planned, in cooperation
with the Department of Communications, by the Manitoba Telephone System,
Alberta Government Telephones, the Ontario Educational Communications
Authority, Telecable Videotron in Montreal, and Grand River Cable who
plan to launch a teletext trial.

TECHNICAL ASPECTS OF PROVIDING INFORMATION ON TELIDON

Visual Display Characteristics

The storage and communication of characters and graphics on Telidon,
which is different from the British and French systems, influences the
process of creating and displaying pages of information. The European
systems, both British and French, transmit images in mosaic picture elements.
A visual frame consists of 24 rows of 40 characters in the British 625-line
TV format and 25 rows of 40 characters in the French system. Graphic images
are made up of block graphic characters which become elements in a mosaic.
In contrast, Telidon was developed using a set of Picture Description Instructions
(PDI's) which describe the picture in terms of basic geometric elements: point,
line, circule, rectangle, polygon, arc, bit by bit facsimile-like pictures,
and text. This concept permits the growth of large information data bases
which would not have to change to accommodate improvements in terminals
or new communications media. (Bown et al. 1978)

Text on Telidon is, at present, limited by the North American 525 line TV standard to 20 rows of 40 characters but better resolution visual displays will make this limit unnecessary. Colors for the Telidon display are limited at present to 8, including black and white, with 6 grey levels in addition. Many more colors are possible as the technology develops.

Tree-structured Data Base

Access to information data bases, at present, restricted to tree-structure search techniques. Tree-structures have been developed first for Telidon, as for Prestel, because they are most economical of computer processing time. Telidon services are expected to he used by many more people simultaneously than even the most popular present data base, thus economy of computer resources is important to keep response time to a reasonable level.

The Telidon tree-structure has a general index page, page 0, followed by 9 more levels of pages. At each level there are 9 choices. There is also the possibility of a 1000-page sequential file at any point on the branch of a tree. The total capacity exceeds 10^{11} addressing possibilities, obviously an enormous quantity. Since the British, after more than a year, are just working up to 2×10^5 pages, we need not feel limited by space. There is also no reason for only one data base to exist.

Each page in the tree has a single address and can be reached in two ways, through the branches of the tree that lead to it, or by addressing it directly. An alphabetic index on a page of the tree-structure can be used to give page addresses. It is also possible to return to page 0 from any page and proceed again through the tree and to move backwards and forwards one or more pages at a time throughout the data base.

The Telidon technology provides potential for graphics and text display which will be limited mainly by the imagination of the page designer. The tree structure also provides facility for a very large data base but limits the search procedure, at present, to choice of one out of 9 options at each level.

QUESTIONS ABOUT INFORMATION PROVIDING

The capabilities and limitations imposed by the Telidon technology for the visual display and the access to information pose some questions which the information science community may help to answer. In fact, I wish to present them as a challenge to Canadian information scientists to provide the necessary technical developments and the rational basis for judgements that will affect how Telidon is presented to us in our homes.

You might consider the issues at two levels: "What can be done with the technology as it stands today? and from the user's point of view, how should we rank order the technical developments that remain to be completed? Which will be most important for the user?"

The issues for your consideration then are these:

1. What information will best be presented with Telidon technology?
2. What indexing system or systems should be used for the umbrella or routing pages of the tree-structure and can they be standardized?"
3. How should users pay for information received on Telidon?

Information Content

Information for Telidon services to businesses and homes will be provided by organizations or individuals called Information Providers (IPs). For Prestel, the British Post Office has taken the role of providing the channel for communication but not the content. IPs range from small to large companies and can be allocated up to 10,000 pages in the data base.

In Canada, the carriers of communications will not be the government but it is not yet clear whether telephone or cable companies or both will be carriers. Nor is it clear who will take the role of IPs. One of the major issues of the next few years will be what information to present on Telidon. What will the user want to have access to on his Telidon screen? What kind of information would make the best use of graphics capability and the facility for having access instantly to rapidly changing information? What information will the user be willing to pay for? Should some information that he won't pay for be provided anyway? Will it replace or augment the newspaper and other publications? The only empirical information presently available comes from Britian where a magazine called the Prestel User's Guide is now being published. Far from replacing publishing, Prestel has stimulated another publication. Information provided on Prestel is a great variety: news, train schedules, information about restaurants, travel, theatre, insurance and many others.

There are no data available yet from the British market trials about what information is best liked by British users. When it becomes available, it will be perused with a great care, however, the desires of the Canadian public for information are not necessarily the same as those of the British, and the Telidon system with its technical differences may allow for different information.

I think the information science community, with its experience in providing for the information needs and desires of the public in libraries, could make a contribution to the information content of Telidon. The publishing industry has already shown an interest. The press (the Globe & Mail, Southam, Torstar, La Presse) are actively pursuing an interest in Telidon trials. Education groups are becoming interested. There are many more private and publically supported information creators who could contribute to Telidon content.

Indexing of Information

A second set of questions arises from the tree-structured search available on Telidon at present. Given its limits, how should information be indexed for easy access by users? If a variety of information data bases for Telidon are developed across the country, as seems likely, it would appear reasonable to have standard indexes so that a traveller may find what he is looking for in various parts of the country. Is it possible to develop an index or a set of indexes that would serve as a standard? Should there be such standards activity in progress now?

Indexing of information can become especially important if it serves as a filtering device for a user. By selecting certain branches of a tree, the Telidon user may be exposed only to certain information, a very different process from browsing through a magazine. Will people be inclined to such filtering as they approach information overload? (Science Council of Canada, October 1978) Can indexing or cross-reference systems be designed to avoid the potential negative effects of user selection? To my knowledge, none of the indexing questions has been addressed yet.

Looking farther to the future, if the technology were to develop so that we were no longer limited to the tree-structure, what search structures would best suit users? What information would users have access to with different structures and how important would that be for them?

Another set of future questions concerns query languages and their acceptability by the general public. User interaction with a tree-structured data base is very simple, requiring only a multiple-choice decision and the push of a few keys on a keypad. If more complex interaction is developed with full keyboards in every home, what query languages will be most suitable for the general public?

User Payment for Telidon Information

Information is not free. Even the information in the public library is paid for by our taxes. Nevertheless, there is a value in our society that information be available to individuals regardless of their ability to pay. Of course, that isn't all information, but at least most of the important archival information of our society is publically available. How, then, should a user pay for Telidon information?

In Britain, Prestel began with a pay-by the page system, however, that was recently modified so users do not pay for index pages but only for final pages containing the information sought. There is an additional time-on charge which is less after 6 p.m.

For Telidon, if the index pages are free, then should payment be by the page only or by the minute or some other scheme?

A related question has been posed by the Science Council of Canada (December, 1978) "Is information a commodity or is information a right?". If we pay by the page or minute, we treat information as a commodity? Perhaps that will also influence the type of information that we deem suitable for Telidon. If we pay with taxes and make the information free to the individual, we treat information as a right and uphold our value of free access to information by all the citizens. However, we may at the same time undermine a major sector of our economy, the information providers, who market information to individuals for profit.

None of these questions has been solved. Some require technical development; indexing schemes and perhaps natural language query modes can be developed. Some require reasoned analysis based on our previous experience with other media and market research; the kind of information that should be presented on Telidon can be guessed at and our concepts refined with market analysis and trials. Some require debate as well as reasoned analysis of the options; how the user should pay for Telidon information may be answered by debate or it may be left to the market place to decide. These are issues that will affect the quality of information to which we have access through Telidon in the near future.

REFERENCES

Bown, H., O'Brien, C.D., Sawchuk, W. and Storey, J.R.
A general description of Telidon: - A Canadian proposal for Videotex systems.
CRC Technical Note No. 697-E, Department of Communications, Ottawa, Ontario
December 1978.

Communications and Computer: Information and Canadian Society
A position paper . Science Council of Canada. October 1978.

Computer and Communications: Information and Canadian Society - A proposed
study program. Science Council of Canada, December 1978.

Pye, R. Focus on Europe: Information retrieval services
Telecommunications Policy, March 1978.