TELIDON AND ITS POTENTIAL IMPACT ON LIBRARY SERVICES

TELIDON ET SON IMPACT POTENTIEL SUR LES SERVICES DES BIBLIOTHEQUES

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ABSTRACT

Telidon, the Canadian videotex System its database and access methods and its current status and development efforts are discussed as they relate to library service. Libraries can utilize Telidon at three levels: to provide information about the library, to provide information and services about the library's collections, and to provide information directly. A projection is made as to how the technology could be implemented at each of these three levels and the inherent technical social and economic issues that must be resolved.

RESUME

L'auteur présente Télidon, le système de vidéotexte canadien, ses bases de données, ses modes d'accès et son statut actuel, en relation avec les services des bibliothèques. Les bibliothèques peuvent exploiter Télidon à trois niveaux: fournir de l'information sur la bibliothèque, fournir de l'information et des services sur les collections de la bibliothèque et fournir directement de l'information. Un scénario est élabore pour expliquer comment la technologie pourrait être appliquèe à chacum de ces niveaux et les différents problèmes techniques, sociaux et économiques qu'il faudra résoudre.

TELIDON'S IMPACT ON LIBRARY SERVICES

INTRODUCTION

UTLAS has been closely watching developments regarding the Telidon technology for a couple of years. As the custodian of data bases for over 500 libraries and as both an information provider and information service provider, UTLAS has considered these technological advances to be within its purview of interests. With the wide coverage of Telidon news by the press, UTLAS clients have read with great interest how their communities may use this technology to access a wide range of information services, including of course library services. The obvious reaction of these clients has been to contact UTLAS and ask, with some urgency, as to what they should be doing to make their data bases available for Telidon Systems.

In exploring the developments as reported in the press and the literature it has been difficult to grasp the concept of what a Telidon system really is. Telidon is a videotex development of the Canadian Department of Communications. But then what is videotex? At a videotex conference held just last week it was described in many ways. Here were experts from around the world saying "What really is videotex"? The answers ranged from "It is an attitude" to "it being a combination of existing technologies packaged in a way to open the door in providing computerized data to a broader user base". I think, however, with the understanding of the basic components of a videotex system and their related issues one can fit this technology into a future scenario that results in the home delivery of library services. I would like to draw that scenario, define the components and summarize the impact of current and future developments on UTLAS involvement with this technology.

THE COMPONENTS

A videotext system consists of five functional units. On all discussions of field trials and in-house configurations each component is vital to the system. However, from the first prototype developed in the mid 1970's to the technology as it exists today, there is a wide range of choices in the specification of each component and the number of possible permutations of these choices are as large.

The five basic components are:

1. Data creation facilities
2. A data base
3. A central computer
4. Communications facilities
5. PDI decoders and user data entry units

Taking these five components into account one can define them in two basic configurations.

1. The centralized videotex data base
2. A distributed data base with a centralized videotex communication system.

I will discuss the five basic components in each of these two configurations and some of the issues relating to each.

DATA CREATION FACILITIES

In the first simple configuration a data creation facility allows for the creation of new "pages" of information, either textural or graphic. These are often referred to as information provider stations or page creation facilities and are generally stand alone mini-computer systems that have been designed with the ability to locally create, edit, store and recall PDI encoded files. The first information provider system, development by Norpak, consists of a Dec PDP11/03 computer with a dual drive floppy disk system, two display monitors and a keyboard and software including a graphics and text editor and a utility package. Since then systems have been developed with sophisticated graphics and sketching tablets, cameras which can digitize photographs and systems with RS232 interfaces to accept machine readable data. Manufacturers of data creation stations include Textel V, by Unitel, France, VIPS, Northern Telecom, Telemart Series 50 Editing system, Canada, Advanced Graphic System, AGS, Aregon and others.

A previous limitation to information provider or page creation stations has been the inability to accept incoming data in machine readable form. In fact in Canada most field trials are operating under the conditions of providing the data pages on diskette and physically transporting the diskette to the videotex host data base for update. This limitation has resulted in most page creation being labor intensive, thus costly and unfortunately not timely.

There are now, however, systems which will take straight alphanumeric data and do formating in pages, but these support only minimal graphics.

In the second configuration, there is no data base that exists in page format. Thus, as the host application computer designs a screen, the screen image is sent to the videotex host where it is converted to a protocol compatible with the page concept and sent out to the user. Thus in the second configuration the concept of page creation becomes a very small consideration in the total system context. Although this solves the issue of timeliness and cost of page creation, it limits the use of graphic capabilities.

In the first configuration, the data base residues in the videotext host and software is available to access, update and

maintain the pages. The pages are stored in a tree structure and accessed by primarily a menu approach. A page may consist of a screen or several screens and forms an addressible unit. Each page is accessed by an index page which lists major categories of selectable information items. This tree based structure is currently in use by Prestel, in software developed by DOC and Infomart. Its advantages are clear: use is simple to understand for the user, data base maintenance is simplified and retrieval and display of videotex pages is fast once one has identified the desired page. The disadvantages are as evident. When traversing a large data base, even when using balance tree algorithms, the user is required to go through several nodes to get to the desired page, browsing is not readily available and working one's way through the tree is cumbersome. In response to this, printed directories to data bases have been made available, which in some sense is ironic, the system that is to replace the printed information in fact creates the necessity for yet another printed tool. Various alternatives to the menu approach are being investigated, for example key words access but I strongly believe that definition and success of an access method is not only tied to the data base structure but tied to the users requirements in accessing that particular type of data and furthermore that different data lends itself to different data base structures and access methods and that there is no one universal access method.

Thus in the second configuration what would be made available is a data base and access method created for a specific videotex host serving as the "gateway". This is a term which is emerging loud and clear and what will probably serve to be the inherent feature of second generation videotex systems.

A second point of contention in this area is that of data base size. Under any conditions, storage of large amounts of data in the display format is self limiting. In the second configuration much larger amounts of data would be accessible.

To cite a specific example, in the Vista field trial, UTLAS submitted an application to provide index and data pages of current publications in a given subject area. Using an estimate of three citations displayed per page, a list of 100 citations and their indexes would have consumed about 250 pages. This is a large overhead for only 100 citations and makes unfeasibible the availability of a bibliographic data base with 1 million records.

THE CENTRAL COMPUTER

A central computer is required to act as a videotex host. In the first configuration the computer must have both sufficient mass storage for the page formatted data base in its tree structure and must have sufficient processing power to provide real time operation to support a maximum number of terminals. In Canada, the Telidon system has been implemented or replicated

using a Dec PDP11/34 or even a larger processor. Although a smaller processor may be used the exact configuration would depend both on the size of the data base and the number of access ports to be provided.

In the second configuration two computers would come into play. The first would hold the data base and interface with both the data creation facilities and the videotex host and the second would act as the videotex host with emphasis on communications handling and interfacing to the third party computer or data base. This technology has been developed by the Logica Company in Britain under contract for the Bildschirmtex trials run by Deutsche Bundespost in the Federal Republic of Germany. The concept of "gateway" is becoming widespread. In the U.S., although not a videotex application, a service called The Source, with a current group of about 10,000 subscribers all access a single computer which then routes them through regular time sharing networks to specific data processing utilities which are diverse in both function and location.

COMMUNICATIONS MEDIA

Videotex is a concept that allows the user to interact with the system. Information retrieval is basically a one way transaction and the key to videotex's use in library will be when the retrieval process can be carried one step further and result in some transaction processing. I will explore the concept of transaction processing a bit later. Thus a facility is required to support local or remote data interfacing.

The various trials are being carried out on a wide variety of transmission medium including telephone, TV broadcast channels, cable TV, fibre optics and satellites. This area is an interesting one indeed. The two likely candidates for contention are the cable companies and the phone companies. The phone companies traditionally have been the supplier of two-way communications to the home. Coverage is wide in numbers but limited in terms of data capacity. Fibre optics technolgy will change that drastically. Cable has been traditionally a one-way medium. But recently newly laid cable wire is two-way cable and some plans are underway for a gradual change over to two-way cable wire. Thus we will see a coming together of both the capabilities and capacities of the phone and cable companies. Because varying transmission modes are subject to varying degrees of federal regulation, especially with regards to the separation of carriage and content, the roles of both the phone and cable companies in videotex in Canada has yet to be resolved. Regardless of the regulation question, what is important is that the capabilities of the communications media are present and working.

DATA ENTRY UNITS, DISPLAY UNITS, DECODERS

This component has resulted in one of the more visible areas of videotex development. There are already on the market several terminals designed for home-use videotex. These include a terminal developed in France which is to serve as a phone directory and for which the French phone company has placed an order for 300,000 at a cost of approximately $200.00. It includes a terminal developed by Radio Shack which operates as a home-computer and videotex terminal at a projected minimal configuration cost of approximately $400.00 for a terminal to $1400.00 for a terminal and home computer. Other units include those developed by Norpak, Electrohome, Sony, Zenith and others. This area has been developing quickly within many segments of industry, and technically like communications, as long as the cost can be kept to a minimum this will not be the inhibiting component of a videotex system. Features such as resolution, memory, capabilities and so on are widely discussed but when operating in a mode when alphanumeric text is predominant, they diminish in value. How then do all these components and configurations relate to libraries, library objectives and most important the library user?

ROLE OF LIBRARIES AND UTLAS

Videotex offers potential changes in library service that have yet to be fully explored. The technology is currently being evaluated by libraries in three possible modes:

1. As a tool for providing information about the library (for example schedules, programs, announcements, hours) to the end user in his own environment,
2. As a tool for providing (home or business) information about the libraries' holdings to the end user in his own environment (home or business) and providing transactions against that information and,
3. As a tool for providing the factual information itself (for example, a part of the encyclopaedia) to the end user in his own environment (home or business).

The current field trials in Canada have served libraries in the first mode only and I might add, that at this time, with little success. For a library patron to go through a four or five stage retrieval process to determine library hours or branch programs does not seem reasonable when a one stage look-up in the phone book and a simple phone call can deliver the same and even more up-to-date information. This could change with the introduction of transaction processing. Library patrons could sign up for a library event or program, book a room or so on as a response to library service information.

The second phase would provide a wider range of utility and is one which as an organization UTLAS would like to focus on as a starting point. With the reality of a configuration similar

to the second one that I described, that is, using a videotex host as a gateway, a library patron could query the local data base on both holdings of material and availability of material and place transactions accordingly. Two features of the system are necessary: the query language must be simple to use and the library must be prepared to restructure its service units. In a small experiment in Columbus, Ohio, OCLC on its System 2000 allowed access to library holdings to 200 homes. If a patron wanted an item they could request it from their home and it would be mailed along with a return envelope. They found that even with only 200 homes there was a large increase in mail circulation. Because timeliness in serving transactions is paramount, UTLAS would interface its Local Collection Management System (LCMS) with this technology. The user interface has been designed to be user friendly and retrieval and transaction processing are featured. Our online CATSS network is not seen to be a likely candidate to integrate into a videotex system as it is primarily a technically oriented tool aimed at a trained user. In fact, the network serves the local videotex system as a form of an information provider system creating and managing data which will be accessible locally. The work that would be required here is primarily in the area of the gateway and providing the interface between the videotex host and the local library database.

What evolves next is the interesting area. With emphasis in electronic publishing it does not seem unreasonable to believe that many publishers will store the actual contents of publications in machine readable form. Thus the library data base itself could be a gateway to a further data base (say that of the publisher) where one retrieves not only citations but actual text. Inherent in this scenario is the capability at the user end to have terminal with memory or even a printer. Both these features exist today but it will take some time for the price to be attractive to the consumer.

So the library's role will change greatly to that of being and supplying physical material (i.e. in print or A/V format) to becoming a broker of information of all kinds. In fact, a likely scenario is that a library might in the second configuration hold the two systems and serve a dual function: as a gateway to material available in some other medium (i.e. an extension of their current function) and as a videotex host, providing the system to channel both information and service requests into the proper gateway.

The potential is there. By nature of their training, librarians in theory have many of the answers to questions that technologists or engineers dealing with videotex are now asking. In meeting this challenge of finding the right way to interact with a new technology there is one obstacle shared by non-commercial organizations. Experimentation in a rapidly changing

and expanding technology is both costly and risky. As pioneers in the field of library automation, UTLAS has learned that lesson well. We are hoping that experimentation with this technology in concert with our user community will provide Canadian libraries with direction in which to explore their changing roles.