

VIDEOTEX IN THE MAKING OF AN INFORMATION SOCIETY *

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Videotex was a disarmingly simple idea: to use modified TV sets as terminals to a network of user-friendly computers for the purpose of information retrieval. With its attractive features and inexpensive terminals, easy communications and simple user protocols, it is now becoming well established. In the last few years, numerous systems have sprouted in many countries, including Malaysia.

Essentially, the concept of accessing a computer databank from a remote point using telephone lines is not new. The technique was demonstrated in the mid-60's by Dr. Sutherland of the MIT, and has been used increasingly ever since, but mainly by professional users. Indeed, networks of computers have been installed in many parts of the world for this purpose and for the purpose of computation, e.g., Arpanet in the USA and Euronet in Europe.

Many private computer networks have also been installed worldwide to provide business and scientific computer facilities on an in-house basis. Videotex, on the other hand, belongs to a family of computer-based information systems which are intended for the general public, i.e. users who have no computer training whatever and do not intend to undergo such training.

In fact, when Sam Fedida invented videotex in the early 70s, he made several assumptions. First, the database must be large in order to satisfy the information needs of a modern society and to ensure that the range was broad enough to attract a large body of users and thus establish a low-cost mass market. Second, the communications medium between users and databanks was to be the existing telephone network which is essentially narrow band but so well developed and established as to provide an ideal medium for this service. Third, the time taken for information retrieval has to be very short, typically two seconds, to ensure satisfactory quality. And fourth, the videotex system must be capable of supporting a host of communications and other facilities, such as person-to-person messages, educational services and simple computational work for the student and the businesses.

Adding "Value-added" functions

Videotex as an information-retrieval system only has turned out to be a failure: By now there seems to be a fairly universal consensus on that point, including the fact that the limited success cannot be attributed to an often quoted 'chicken-and-egg' problem alone. (After all, other services such as television which were confronted with much the same problem, did take off more vigorously). Indeed, there is a consensus that other features have to be added to the

text-retrieval-type videotex systems to obtain commercial success on either the business or the residential market. And the latter is viewed with growing scepticism concerning short term success.

"Value-added" functions, often hailed as supposedly necessary and sufficient for a breakthrough of videotex includes better graphics (vigorously advocated by Canada and the USA), message services (now standard in most videotex installations), improved search-strategies (implemented in a number of installations, such as in Canada, France and Denmark), computer networking (as first implemented on a large scale in France and Germany). I will mention briefly two of these functions.

Videotex Gateway

One of the most significant videotex developments since the concept was evolved is the introduction of videotex "gateway", which enable users to gain access to a variety of external databases (in jargon - third-party databases) and information services, all obeying the same user-friendly protocol, which is now the well established and well understood hallmark of videotex.

Two main advantages are obvious:

One, the videotex centres (the telecoms computers), are relieved of providing their own databases by shifting the responsibility of storing and retrieving data to the information providers (IPs). The other is that this extended arrangement enables the

user to have an individual and interactive communication with the IP.

So, incorporating external computers into the videotex service, an immense increase in 'value' is shown. (This is evident from the number of 'transaction-type' applications that have been exploited using videotex in a number of countries). Hence a first step to an 'open' computer communication is given to virtually everyone, for user terminals are adapted TV sets and therefore are relatively cheaper.

Telesoftware

Telesoftware is the technique of automatic transmission of software from one computer to another through a videotex system. As always, the provision of suitable software lags behind the hardware. The specific area where telesoftware can help to redress the balance in software distribution.

Typically, a library of programmes, stored on the videotex computer, can be obtained by any microcomputer which has been equipped with suitable modem to link it to the telephone network, and software to make it emulate a videotex terminal to decode telesoftware. Videotex can manage to provide a good telesoftware medium capable of providing a wide range of softwares. It does this by way of software within the micro terminals.

The most obvious advantages of telesoftware over conventional method of software distribution are speed

and convenience. In the space of a few minutes, micro-computer professionals and hobbyists can browse through details of a library of programmes, decide to obtain one and bring it down onto disc, ready to run on their own micros. They are also significant advantages for the programme supplier, who no longer needs to supply a new diskette or cassette for every programme, saves on postage and packing and instead of invoicing each customer directly, can recover the charge for the programme through the videotex billing mechanism.

The videotex market

Public videotex service offers an interactive facility, but who need it? Technology push could not create a business. It needs market pull. The videotex has market two categories: residential and business. As originally anticipated, the service was targetted at the system operators has led them to take on a more pragmatic view: "Business first, residential later". Hence, the marketing emphasis has shifted noticeably from the residential trail to the business domain.

The original plan that the database should cover as wide a range of information as possible has changed, at least in the short term, and the IPs are concentrating more and more on fulfilling specific user needs. As a corollary to this development, the business user is assuming a greater significance. This makes sound economic sense.

To illustrate this trend, I would like to describe

a few of the more significant developments on Prestel, the UK's public videotex service. I chose Prestel, justifiably because Prestel has been in business longer than anyone else and as it is of today, the most successful (in terms of the number of users connected to the service - some 60,000, with more than 350,000 frames on the database). After nearly a decade of development, the Prestel industry IPs, manufacturers, the computing fraternity, advertising and promotion agencies, etc; have managed to gather a tremendous reservoir of expertise in the operational, marketing, development and techniques.

The following examples shown of a discernable change in the nature of the total Prestel database from the original idea of an agglomeration of generally useful information to classes of information services, each of great value to a tightly defined market sector.

Home banking

Targetted at the residential market, this first fully fledged telebanking service was developed using the "gateway" concept, whereby the customers can securely carry out an impressive range of banking transactions around the clock. The customer can make balance enquiries, view statements, effect money transfers and pay bills. Deposits and cash withdrawals are effected nationwide, through the participating banks, building societies and a national travel agent.

The service also offers its customers exclusive

discount teleshopping offers, auctions, competitions and an attractive electronic magazine. The service has a strong appeal to the customer in that he gets the convenience of 'armchair' banking plus all other services while the banking opportunities are those of attracting new accounts, increasing deposits and realising cost savings, brought about by economies of automation and the absence of a need to extend branch network operations to cater for an expanded business.

Micronet 800

This service, already attracting thousands of new customer to Prestel which are drawn mainly but not exclusively from home users, aims its services at the rapidly expanding UK pc market, the highest per capita in the world. The distribution of software, called telesoftware - carries both convenience and price advantages over conventional retail shop cassette methods.

Teleshopping

There are several social factors which are moving in the favour of this service in the UK:

- * pressure on time
- * more and more married women are working and there are more single person households
- * spread of credit card possession and use
- * growing dissatisfaction with the conventional

shopping process

- * shopping trends becoming polarised between strategically planned large scale shopping of commodities and tactical single purchases of durables.

A viable videotex-based teleshopping service carries with it the potential of providing an additional revenue source for the system operators, as well as serving as a catalyst for further sympathetic examination of videotex by non-users.

Education

Education is an area which research shows has considerable appeal, with the motive for possible purchase being altruistic and compelling - parents helping their children. The service was developed to cater for the rapid changes occurring in education and attempt to close the generation gap so that parent and child will both be able to derive benefit and pleasure in the teaching and learning processes.

An educational videotex service is also being constructed for teachers in schools, incorporating educational telesoftware to take advantage of the number of schools already equipped with microcomputers but poorly supplied with suitable teaching programs.

The third market

The history of videotex has shown to date two

consistent markets - residential and business. It is possible that a third market is actually available and that market, if properly indentified and strategised, could grow rapidly over the next decade. That market can be termed the "knowledge worker".

A knowledge worker is, in the terminology of the information society phenomenon, a manager, professional or skilled technical worker. A knowledge worker uses computer terminals at work and is receptive to the idea of computer power at home. The knowledge worker has up-scale income, a good education and intelligent children. For this person, computer power could bring convenience, interest, fun and a life-style change. (teleshopping would hold fewer apprehensions than colour supplement mail-order. Telebanking would not concern someone who has come to regard cash as a nuisance, plastic money as an everyday necessity, and reconciling the bank statement as a grinding bore).

The knowledge worker will probably be attracted in due course to teleworking. If most of the facilities available in the office desk-top terminal can be provided on the home terminal, why go to work so often? The knowledge worker is the target market for enhanced consumer telecommunications.

Computers + Communications + People = ?

We practice an ancillary art: no one computes or communicates for its own sake, but only to improve the performance of some more important task. Information

technology, therefore, is not itself a primary cause of social change, although it undoubtedly brings forward and develops changes which were already latent, and may well do so before we are willing or able to adapt to them.

I am opposed to discussing the social and other extra-technical consequences of using information technology without being clear why we are doing so. If it is just an exercise in amateur sociology, then let us recognize and evaluate it as such. If however, we want to shape the future use of information technology - and I can think of a few important objectives - then we must take Kiplings's questions very seriously.

Any attempt to assess the economic, social and personal consequences of using information technology faces an inconvenient prior question: whether it is possible what these consequences will be?

We labour under four handicaps. First, economics and sociology are fearsomely difficult subjects, and my personal understanding of them is rudimentary. Second, the technology itself will change substantially within the forecast period. Third, its very use will alter the circumstances to which the prediction must respond. Finally, the consequences we seek to predict are side-effects - unexpected and uncontrolled, unintended and unwanted - for no one has yet admitted planning to use information technology deliberately as a tool of social engineering.

Hence when evaluating social consequences, neither precision nor certainty is to be expected, and any

policies we formulate must necessarily be tentative, subject to continual monitoring, and open to review.

Information technology will affect differently nations that differ in social tradition, economic development and political regime. Thus, in an underdeveloped country, its use could perhaps enable the rate of economic advance to be accelerated, and bring material benefits to the entire population. In an industrialised nation, however, it can displace and devalue traditional skills, and create obstinate social problems.

Conclusion

These developments and countless others raise important questions: in the wake of the changes we have seen thus far and the changes we anticipate in the months to come, how does one define the information industry?

One definition in terms of telecommunication - not the dated interpretation of that term which limited its focus to the telephone world, but a term that applies in the broadest sense to the movement of information from one point to another - fittingly called 'information industry'. Such a description is indeed broad enough to accommodate the variety of technologies and media that are now available to move information. It can be pointed out that such a description should also fit those who have until now had only a peripheral relationship with the marketplace - publishers, for

example, who are now becoming involved in the marketing of software, electronic databases, or videotex services.

Videotex is an exciting development in which the separate industries of information technology, telecommunication and computers have been drawn together to create a new mass market in both the domestic and commercial environment. It is not a single product, but a vehicle for which many applications have already been developed and for which many more are envisaged.

The potential of videotex results from the ideas of the early pioneers in the field. The most important of these ideas were aimed at making systems available at low cost, with single user protocols and with universal communications standard, so that applications could reach wide marketplaces.

What of the future?

Until the last few years, the emphasis in providing an information source was based on rapid availability of information - its presentation and dissemination were rather secondary issues. Wire services broadcast continual text to recipients on a small variety of topics, leaving problems of filing and distribution to the recipient.

Currently, however, technology has cracked most major obstacles in speed and flexibility of distribution until now only the weakest link remains -

we humans. Consider, for Malaysia:

- * public telephone access is available to probably every business in the country in just a few years off
- * An A4 page can be transmitted over the telephone network in under 1 or 2 seconds
- * databases can generate in a few seconds, hundred of responses to a simple query for information.

The major point about these is that, by virtue of technical advances, we can generate, manipulate and retrieve vast quantities of information faster than we are able to read and understand it. Until now, we could always blame poor decision making on a 'lack of information', delays in finding out relevant facts' or 'poor communications'. One aspect of the information society is that these excuses will no longer be valid than claiming that a journey was too arduous or far, after adequate means of transport has been developed. Soon, we will suffer from a dearth of information, far too many relevant facts and over elaborate communications!

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