INNOVATIONS

A SERIES OF ARTICLES WHICH EXPLORES SOME OF THE COMPLEXITIES OF EMERGING TECHNOLOGIES

INTERACTIVE TELEVISION

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WHAT IS INTERACTIVE TELEVISION?

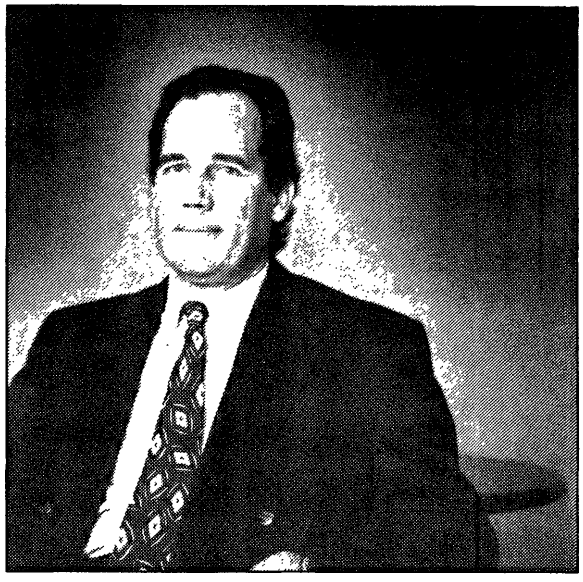
In June this year, at the national cable industry convention an overflow crowd of US cable industry executives listened to a presentation on the future of television by Showtime cable network. Earlier they had heard cable industry luminaries James Malone and Frank Biondi enthuse about the information super highway. The Showtime presentation was a humorous view of the future in which the viewer talked to the television and it answered back. In the conversation the viewer ordered a menu of entertainment, information and home shopping as easily as picking up the telephone or walking into a video shop.

There was a lot of laughter during the presentation, but nobody was laughing at the concept of interactive television. Everyone in the room knew that if only they could make interaction as simple as speaking to the television then television would be changed forever.

Forty years ago, the computing pioneer Alan Turing, had a similar vision of the future. He posited that artificial intelligence would truly exist when a human was unable to discern the difference between a conversation with a machine and another human. We are still a long way from both visions, but there is already an amazing capacity to communicate with intelligent machines.

People do not usually talk to their television set and only some people are able to use it as a means of communication with other people. As a form of electronic communication, television has been characterised by the viewer being a passive receiver of messages. They may take their own meanings from what is communicated, but are unable to change the form or substance of the communication or to use the television to respond directly to the communication.

At the same time the communicator, who may be the broadcaster, program maker or advertiser, is unable to know at any one time exactly who is receiving the communicated message and how they are responding to what is being communicated. Market research and audience ratings give some insight into this, but are far from perfect. Thus the idea of interactive television should have the potential to appeal to both the providers of video communication and viewers. But, to deliver truly interactive television what is needed are intelligent machines.



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To be truly interactive the television set should be able to connect with other machines so as to provide a path for two way communication, it should also be able to access and process data, and it should be able to store data itself or to access data stored elsewhere.

Computers are able to do all these things, but until comparatively recently they haven't been able to do what television sets do, display full screen, full motion video. Digital compression of the data in television images has given computers the power to do this. In computing, what is now termed multi-media has applications which allow for the mixing of text, graphics and full or partial screen full motion video. The ability of computers to integrate full screen full motion video into software applications moves them firmly into the realm of entertainment delivery.

However, the vision of an interactive television system that includes multiple, parallel two way communication of text, graphics and full motion, full screen video also depends on the existence of a transmission medium with the broadband capacity to carry all the data those applications will require, even in a digitally compressed form. It also requires the switching capacity of an advanced telephone network to direct the traffic in communication. Until there is a complete roll out of optical fibre, which has the broadband capacity to achieve all this in the one transmission medium, and advanced switching technologies are introduced, interactive television will need a mixture of transmission media to get to the consumer.

Assuming this occurs, the problem of the interface with the television still

remains. The television set is easy to use, one simply turns it on and selects the channel. Remote controls assist the ease of use. The VCR is more complex to use in that to use it to full capacity it needs to be programmed. Many consumers find even this simple level of interaction difficult or impossible. Therefore interactive television that wishes to use the power of computing has to have a relatively simple interface, like a mouse or ultimately voice or handwriting recognition.

Current Developments

There are three kinds of interactive television technology currently being developed and marketed:

1. Broadcast Interactive

These are technologies that deal with transmission problems by using a combination of broadcast signals and the telephone network. There are two systems developed by US companies, Interactive Systems and Interactive Network.

In Australia broadcast interactive television is being promoted by the Melbourne company Interactive Television Ltd. The company is a joint venture between sports marketeer Active Marketing and Grundy Television and is the Australian licensee of a system called VEIL (Video Encoded Invisible Light), developed in the USA by Interactive Systems. The technology has been in operation in Spain since January this year.

The VEIL system works by embedding the interactive signal in the broadcast signal itself. The interactive signal is received and decoded by set top converters connected to the television. The converters have a small visual display for text only and a printer attached. The visual display is used to give instructions to the viewer in the home. The viewer responds to these instructions or prompts by means of buttons on a remote control. The return loop for these responses is by means of the telephone line, either to a centralised data bank or to the station itself. The decoder is also able to store information for later printing.

This system can be used so that home viewers can play quiz shows, respond to marketing offers, do home shopping or banking and engage in open learning. It is intended that the first units will become available at the end of 1994.

This system is easy to use but the ability of the viewer to interact with the television is limited to their response to prompts and questions sent by the broadcaster. They are not able to devise questions of their own or change the nature of the message received.

2. Compact Disc Interactive (CD-I) and 3DO

CD-I and 3DO Interactive Multiplayer are two competing non-broadcast systems that represent advances in compact disc technology as an optical storage medium for the consumer market. The most familiar applications of compact discs in the market place are the CD audio, which has virtually replaced the vinyl record and the CD-ROM player used in computer applications.

However, digital compression technology has advanced so that it is now possible to put up to 75 minutes of full motion, full screen video onto a disc the size of a CD audio disc. Even greater amounts of half or quarter frame full motion video can be achieved and greater still storage of still pictures, graphics and text.

Philips are the pioneers of domestic CD-I. Their technology is a player, which looks like a CD audio player and can play both audio and video CDs, as well as CD photo storage. Therefore it is connected to both the television and the audio system in the home. The viewer can interface with the player by using a remote control unit, a mouse or a joystick. Using a remote control the choices are displayed on the screen and the viewer simply points and clicks.

CD-I titles include games, but with graphic quality greatly enhanced over the current Sega and Nintendo systems and the mixing of live action with the graphics, educational programs for children and adults, instructional programs (e.g. cooking, musical instruments) and the combination of music and video. .

Philips also have developed a portable CD-I player with LCD screen which has all the features of the larger machine.

Philips are supporting the development of CD-I software by constructing studios with the equipment necessary to produce CD-I programs. While the CD-I player will probably retail for about the same price as a mid-range CD audio player, the software will be considerably more expensive than CD audio software, around the same price as a Sega or Nintendo game.

The main competitor for the Philips is the 3DO Interactive Multiplayer, which is claimed to have superior levels of performance, but offers similar software applications to CD-I. A version of it is also designed to be the control box for the multi-channel cable video on demand 500 channel universe.

3DO is backed by some large corporations like Matsushita, Time Warner, MCA, AT&T and its hardware became available in the US in November under Matsushita's Panasonic brand name. There is however a degree of scepticism about the bold claims made by the 3DO company for its technology, compared with the more cautious approach to development and marketing being pursued by Philips.

3. Cable Interactive

The cable television industry in the USA provides some services that are sometimes promoted as interactive but don't really qualify, such as program guide channels with limited scroll through, pay per view movie channels, video jukebox and the home shopping networks. These services are either more like teletext or depend on the subscriber responding to the offer made on the service by using the telephone in the normal way to order goods or services. The subscriber does not use the cable as the return loop and is really not interacting with the information being communicated.

The reason for this is that most cable systems don't have the bandwidth or the switching systems and file servers to mount an interactive system. However, the industry is very excited about the prospect of a 500 channel universe and the potential that gives them to offer a range of services, including interactive entertainment and information services.

continued on p. 16

The 500 channel universe will only become a reality when cable systems are re-built to introduce fibre optics and digital compression. That will be a very expensive exercise and one which is only really being actively considered by the largest multiple system operators, TCI Viacom and Time Warner. These companies have started to build prototypes of what they call full-service systems, which incorporate multi channel interactivity and related data services.

Yet Time-Warner got as far as building a prototype interactive system in the late 70s called QUBE. This system allowed for two way communication so that subscribers could participate in game shows, call the plays in a football game and express their views on political issues. The experiment was abandoned for no clear reason.

A number of forces is driving the march towards interactive capacity today. The cable companies want to expand beyond the provision of entertainment services into some of the value added services that could also be offered by telecommunications networks (telcos). An optical fibre system, with increased channel capacity through digital compression and a more sophisticated network architecture that improved its switching capacity, has appeal as an alternative to the local exchange carriers. This is one reason why we are seeing the merger mania between US phone and cable companies.

At the same time the telcos are being allowed to use their networks for the delivery of video entertainment and information. Their capacity to do this depends either on the roll out of fibre optics or the perfection of asymmetrical digital subscriber line (ADSL) technology to allow the existing wires to deliver video.

Then there are the big computer companies like IBM, Apple and Microsoft who are pursuing multi-media and interactive options quite aggressively. The nature of the computer business has changed so that the margins are no longer in making machines, but in software and servicing. The prospect of a whole new range of computer like consumer electronics applications is very attractive. For example, IBM has proposed the upgrade of cable networks to high speed digital multi-media networks based on its packet data technology and it is in a joint venture with Apple to market multi-media software platforms that could be used in interactive applications.

But it all does come back to whether the consumer wants to interact with the television and is not daunted by the prospect of 500 channel television. As one cable executive has said of the cable test systems, 'This is not market research we are doing. It's like dog food, we are putting it out and seeing if anyone wants to eat it'.

ABA CHAIRMAN PROPOSES DEBATE

Mr Brian Johns, Chairman ABA, has suggested the International Institute of Communications (IIC) can play a pivotal role in leading debate on communications policy in the Pan Asian region.

Mr Johns was addressing the Christmas lunch of the Australian branch of the IIC in Sydney on 10 December.

'How nations see themselves through their media is a vital issue. While debate about local content and local identity is framed by global frameworks such as GATT and NAFTA, Australia Pacific Economic Co-operation Group is a natural dimension for the IIC to explore in terms of pan Asian audio visual agreements,' Mr Johns said.

'In addition to issues of culture, content and local identity, there is also the need to raise debate on the technological aspects of communications policy in the region,' he said.

Mr Johns proposed that the IIC hold a major conference about these issues: 'Our region is polyglot of cultures, religions and races, surrounded by the giants of GATT and NAFTA. We have to seek our own way forward.'

The IIC undertakes research, produces publications and encourages debate on international and national communications policy.