MULTIMEDIA - EVOLUTION OR REVOLUTION?

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Rapporteurs: Ann Petrie, Alcides Calsavara and Michael Elphick

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John V Panter

ICL Fellow
ICL Client-Server Systems
Bracknell RG12 1BD
UK

"Multimedia" has been a much hyped topic in recent years, and many still consider it a solution in search of a problem. There is still misunderstanding and uncertainty as to what "multimedia" really is, and confusion about whether multimedia is the basis of a market in its own right or merely a natural extension of the data types in a system.

In fact, both are true. Much of the confusion is because of the broad spectrum of technologies associated with multimedia, and the diverse range of applications possible. It is also intimately connected to the "digital revolution" and the convergence occuring between a number of diverse industries. So whilst "multimedia" is slowly gaining hold in niche markets, inherently it is capable of totally changing the way we interact with machines and the way we perceive technology in our domestic, social and work environments. Some industries have recognised this potential and are now investing heavily both in the technologies and in establishing new market opportunities.

The lectures will review the current state of the technologies, and how they are being exploited. The first will concentrate on how this will affect the individual. and the second on how it will be adopted within enterprise systems. They will also look at the special needs of systems architectures and the relationships developing between the converging industries to deliver multimedia services. Apart from the positive developments, we will also look at some of the issues, particularly those standing in the way of adoption of "multimedia".

There are still many challenges, but there is no doubt that "multimedia" will soon become an intimate part of our lives. It is more a question of how far and how fast. But one thing is certain, it will require a new breed of IT professional; one with a wide multi-disciplinary education, and broad-based experience.

DISCUSSION

Rapporteurs: Ann Petrie and Alcides Calsavara

In the course of the talk Professor Randell asked for clarification as to what a TV top set was. Mr Panter replied that it covered a whole range of things, not so sophisticated as a PC, but based on PC technology. A useful analogy was an interactive CD player.

Professor van Rijsbergen commented that, in Mr Panter's description of the electronic equipment in the children's room, one of the things that he had not mentioned was the toys. Mr Panter agreed and said that toys were a strong market item.

Professor Kopetz asked about the place of multi-media systems in cars. Mr Panter said that the automobile market was an important market, but it was a different environment from the static environments that he was talking about this week.

Professor van Rijsbergen asked whether there would soon be some sort of standardisation of multimedia systems. When, in reply, Mr Panter was describing some of the surfeit of standards, Dr Larcombe asked for clarification of the term CD-ROM-XA. Mr Panter said that the "XA" stands for extended architecture. Whereas a CD-ROM has a single stream of data, XA allows you to interlace streams of data so that you can keep both sound and video going. This creates a greater illusion of interactivity.

Professor Randell asked whether, when Mr Panter said that people were talking to each other about HDTV standards, he meant that Europe, Japan and the United States were talking to each other. Mr Panter said that he had been referring only to Europe and that, in Europe, people were tending to hang on to MPEG standards for digital TV.

Professor Joseph said that Mr Panter had talked about data going into the house but he hadn't said much about data going out of the house. Mr Panter replied that this was mainly because he had been going through things too rapidly. A lot of the services will be interactive so that with broadband cable you will get back channels going out to the supplier. With satellite digital TV, when we get it, there will be many hundreds and thousands of channels available to us, but with this technology, unlike broadband cable, back channels will be a real problem.

People have tried all sorts of different techniques using the telephone to provide back channels. He could also remember, when he lived in the States a few years back, an experiment in interactive TV where, if you wanted to make a particular response, you were invited to go and flush the toilet and they measured the water pressure. This was a very low bandwidth back channel. Back channels are being developed and, in cable systems and in telephony switched network broadband systems, the back channels will be there.

Professor Joseph said that the presence of back channels would change the costs of running your house dramatically. If you no longer had just a simple playing device, but a special device which could feed information back, this would make the equipment more expensive. Mr Panter replied that the back channel would be very low bandwidth and would be there for selection. In the family room, where you are not in a full PC environment, you would get menus coming up on the TV, and you would be asked, through your infra-red remote controller, to send some sort of response back. That would be relatively low cost.

Mr Panter said that he thought that the ability to send pictures back, for instance for video phone and video conferencing, was further down the line. He would talk about that on Thursday. It is the sort of thing that will appear in the enterprise field before it appears in the home.

Professor Kopetz said that, in the past, the inertia of operating systems had been much larger than that of hardware systems. He asked whether Mr Panter thought that the operating systems that are around nowadays could support video and multi-media in an optimum manner or would there be completely new operating systems.

Mr Panter said that we would see some new operating systems emerging, for instance, with the new architectures that are emerging out of the Apple and IBM Kaleida project. Kaleida is trying to create a new control environment and a new scripting language for multi-media systems. Microsoft are also busy doing things in the more traditional PC environment and there are initiatives to create variants of the operating system that will make it more attractive in the home. Indeed, one of the main issues for PCs in the home, generally, and not just multi-media, is the whole issue of ease of use.

There is the, now classic, story of people selecting TVs on the basis of the controller rather than the TV picture quality. PCs may well get to a similar point, and decisions will be made to fix things so that no one has to see boot up sequences, prompts and arcane window environments, even though it will still be the Windows API interface which allows the current application to run.

Professor Lincoln asked how far Windows NT would take us and had Mr Panter looked at the Beta releases. Mr Panter replied that he had been doing more than that and said that Windows NT was being released initially in two forms. One version is definitely a server environment for mission critical situations and the other, which is really a cut down version, is being released for the top end desk-tops. It will take a year or two before the cost will come down. In its current form it offers you compatibility with the Windows API system.

Mt Panter said that he thought that the really interesting thing that was being done in the Cairo project, which is concerned with the development of Windows NT, was the introduction of object oriented structures. He thought that ultimately object oriented programming systems would be required for multi-media work.

Professor Randell asked how the expansion in cable services would take place: would the infrastructure be provided by the state or by commercial organisations. Mr Panter said that there are already franchises with roughly 100,000 households per franchise. The liberalisation in the UK gives cable companies the ability to provide telephone services. In the US there is vicious competition between cable and telephony companies but, in the UK, these same US firms have bought franchises and are working hand in glove. Multi-media is growing very rapidly and it is all being funded by commercial money.

Dr Aalders asked whether or not Mr Panter thought that the power suppliers would get involved with multi-media to which he replied that all major utilities and companies would get involved.

Professor Lincoln asked about the expense. Mr Panter said that fibre was cheap but that decoders and the costs of laying the cables were not. In the UK fibre optic cables were being "brought to the kerb side" and the "last frame" was being taken into the buildings using copper. Both of these operations are expensive since they involve digging holes. Mr Panter said that, with suitable technology, it is possible to run at up to 2 Mbits per second over copper.

Time ran out and the discussion was brought to a close after Professor Capriz suggested that people might get sick of being in front of their TV screens all the time.

DISCUSSION

Rapporteur: Michael J Elphick

Professor Tedd expressed some puzzlement over the data rates quoted in one of the slides: they seemed rather high for systems using ISDN lines. Mr Panter pointed out that in fact they had to make tradeoffs in the implementation between such parameters as screen size, resolution and frame rates. The quality over ISDN at 128 Kb/s had initially been somewhat "stilted", but had been improved by allowing more bandwidth for the audio channel (and less for video). Performance was still very near the margin of what was acceptable, and for the high end applications in a studio environment, one needed at least 2 Mb/s.

Professor Larcombe was surprised by the low compression ratios quoted; one should be able to get something of the order of 1000:1 for simple animations (ideal for multimedia). The speaker agreed, and observed that as well as using existing compression techniques new languages were being developed for animations (in games, for example).

Mr Ainsworth asked why the speaker had not said more about the lack of widely available and accepted standards. This would worry MIS managers, who would find it difficult to see what choices might lead to sensible future progress. Mr Panter agreed that there was a real danger that multiple standards would lead to conflict (as in the CD-ROM arena). He could not (in the time available) illustrate all the wealth of proposed standards for a host of topics, but observed that there were a few areas (within Fujitsu and ICL, for example) where one could pick some probable winners.

Dr Erkiö asked whether financial institutions had yet considered uses for multimedia, for example as a means of advertising their services. The speaker replied that advertising agencies were beginning to see the kiosk concept as another outlet for more interactive advertising. The approach in "directed marketing" was to use knowledge of the user's characteristics (obtained via interaction) in selecting the material to be displayed.

As to finance, the banks now realised that they needed to be able to do business in many different ways, and within any branch. This might require access to an entire customer file (possibly including digitised records of correspondence). Automatic teller machines (ATMs) could easily be extended to become "banking kiosks", with the use of video-cameras (now being introduced for security reasons) being extended to allow interaction, perhaps to the extent of setting up a video conference with a remote expert in the area of interest to the customer.