

COVER STORY

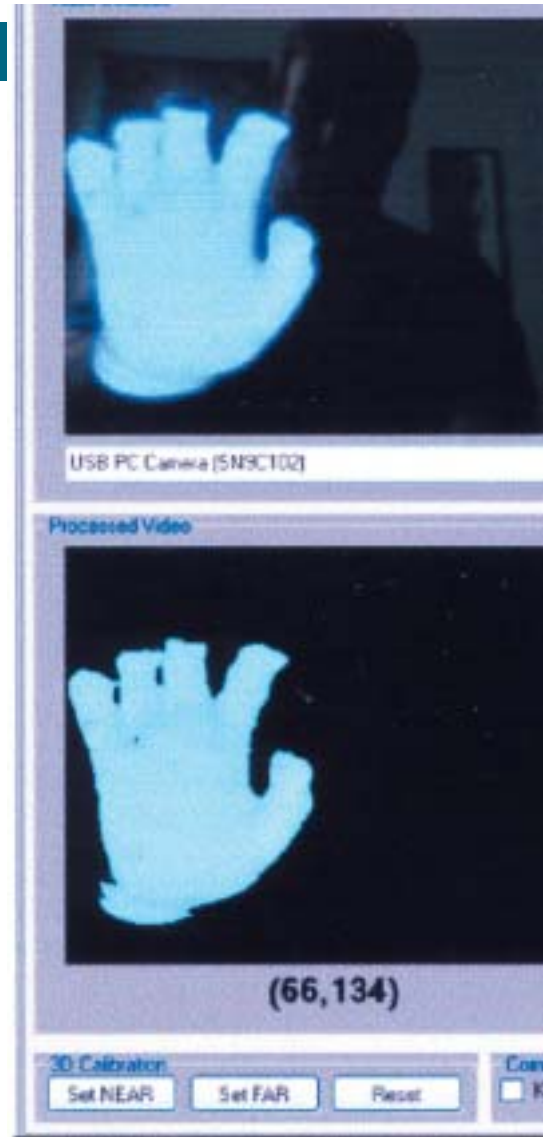
Ever since the introduction of television, there have been derogatory terms to typify the passive nature of TV viewing: 'Idiot's Lantern' and 'Couch Potato' spring to mind. On the same theme the first TV remote control was christened 'Lazy Bones' and was developed in 1950 by Zenith Electronics. It connected the TV set to the viewer with a long cable that controlled a motor that rotated the tuner clockwise or counter-clockwise, depending on whether they wanted to change the channel to a higher or lower number. Although customers liked having remote control of their television, the frequent injuries from tripping over the trailing wire doomed this particular innovation.

Still with Zenith, in a prescient nod to the effect that DVRs would later deliver, Commander Eugene F. McDonald Jr, the corporation's late founder, believed TV viewers would not tolerate commercials and was convinced that sooner or later commercial television would collapse. While waiting for the arrival of commercial-free subscription television, McDonald, meanwhile, envisaged a wireless remote control that would at least mute the sound of commercials.

WIRELESS REMOTE. Zenith engineer Eugene Polley duly invented the 'Flashmatic', which represented the industry's first wireless remote. Introduced in 1955, Flashmatic operated by means of four photocells, one in each corner of the TV screen. The viewer used a highly directional flashlight to activate the four control functions, which turned the picture and sound on and off and changed channels by turning the tuner dial clockwise and counter-clockwise.

Subsequent refinements incorporated 'ultrasonics', which led to the

A prototype hand controlled gaming device



Mastermind: How cl



A host of applications and innovations have emerged to make the television viewing experience more personal and responsive. Colin Mann reaches for the 'On' button and tunes into the latest developments in remote controls, electronic programme guides and digital video recorders.



“The EPG needs to be intuitive and easy to understand.”

- Graham North, Humax.

talks of developing 'human interfaces'. "Subscribers want to be in control of their variety of broadband, mobile and wireless services," he notes. "Putting the consumer in control means ensuring that the main 'control and input device' in the context of the home (especially in the living room) is designed and developed in a user centred way."

Maier says that ruwido follows this philosophy in putting the focus on design and usability of today's remote controls, but suggests there is more to come. "The pure study of usability of remote controls is not far reaching enough to face the challenges of today's networked society. We have to focus on the developments in the context of the home. Today's home areas, especially the living rooms are changing due to different forms of living styles. It is no longer a place for simply watching TV but becomes a place for new media usage and new forms of media integration."

He suggests that today's users are no longer focused on using any single medium, but they wish to change media as they like. "We focus on the home as the main concentration point for several networked



How far can your TV get?

introduction in 1956 of the 'Zenith Space Command', an expensive device, because an elaborate receiver in the TV set, using six additional vacuum tubes, was needed to pick up and process the signals. Adding the remote control system increased the price of the TV set by about 30%.

In the early 1960s, solid-state circuitry (i.e., transistors) began to replace vacuum tubes. Hand-held, battery-powered control units could now be designed to generate the inaudible sound electronically. By the early 1980s, the industry moved to infrared, or IR, remote technology. Today, the remote control is a standard feature on other consumer electronics products, including VCRs, cable and satellite boxes, DVD players and HiFis.

HUMAN INTERFACE. Ferdinand Maier, MD of ruwido, confirms that his company's mission is to focus on infrared technology. He feels the term 'remote control' is too limiting to cover ruwido's scope, and

services like IPTV, Triple Play." The main question is how services and networks within the home have to be designed and integrated to get along with the special characteristics of the home environments and living behaviour of families.

AMBIENT HOME. Maier outlines the concept of the Intelligent (or Ambient) Home. "Starting with intelligent remote controls that play an important role in tomorrow's interactive applications and services, we have to investigate several aspects, such as next generation services and interaction techniques." He also asks what kind of enterprises, and partners have to work together to achieve these goals. "Do we need new forms of co-operation to realise new forms of interactivity in the living





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Pace**

room? Do we need new technical solutions, new interaction techniques, or new users in the end, because solutions and interfaces are too complex?”

For Maier, it is important to establish how much interactivity the user wants and how much interactivity is needed. “Today it is obvious that the myth of the purely passive user - the couch potato - is not true. Users engage in several kinds of interactivity. Successful developments in the area of entertainment and games can be seen as promising examples of new ways of developing interactivity in the living room.”

He suggests that nowadays, interactivity has to be addressed on several levels. “We use the interac-

tivity index set out by (German academic) Lutz Goertz. The ideal level of interactivity can be defined as a personal communication. The level of interactivity depends on the following factors: A user going to the cinema, simply deciding when to start the film and to see the film (or leave the cinema) would be a selection possibility of 0, a video-game with several action levels would be the maximum level 4.”

LEVEL BEST. Maier suggests that another factor when defining



The Sony Eye Toy PlayStation allows users to interact with games using motion, colour detection and sound

interactivity is the level of modification.

0 would be no modification possibility, except saving and deleting, 3 would be modification in any way possible (such as text editing or using graphic programmes).

The quantity of modification that allows no selection (0) goes up with a small range of selection (two to 10 choices, such as choosing normal TV programmes) to (1), which goes up through things like selecting subtitles like in DVD menus, and eventually reaches the endless number of quantitative modifications as in PC usage.

In bringing new ways of interactivity to the living room and the intelligent home, Maier suggests that you have to address the question of how this interactivity will be supported. “Will this involve new forms of input devices? Are new concepts needed, involving input device, set-top box and middle ware? What kind of interaction techniques will be used in the near future to address the actions and tasks in the home?” Fundamentally, he wonders whether we will be still be using the ‘good old’ remote control, or use new interaction formats. He points out that the introduction of the Sony PSP Eye Toy showed that people

USER-FRIENDLY. According to Graham North, commercial director at Humax, most homes are peppered with remote controls, as in most cases each product carries its own unit. “One way to overcome this is to opt for a universal control that can manage all of your products. These are becoming more popular and more sophisticated. However,





“You will be able to set up the DVR to record all recommendations by a trusted source.”

– Elad Manishviz, NDS

with regard to how far you want to carry the user and how many functions you can incorporate, it is worth bearing in mind that, as with the EPG, usability is critical. A remote control has to be easy to understand and responsive if it is going to be useful.”

Humax addresses this problem by having two remote controls with its large screen LCD TVs; one that covers all of the functions and another, more simple, remote for basic functionality. “This has proven to be a key selling point because as much as people want the latest features, they still like things to be simple,” he notes.

Like ruwido's Maier, Elad Manishviz, product marketing manager, personal TV and EPG at NDS, is fascinated by the potential for future devices. “We’re investigating developments with third parties and customers: the requirements come from customers – sometimes there’s a relationship with a particular supplier,” he reveals. One area of research and development is for a remote with voice recognition for advanced search. “What is required is something that will work easily and nicely with the set-top-box. It’s a question of making it work for you rather than sweat trying to find content. Such developments require a move towards personalisation and identification of user in the home.” He admits that it will require “a lot of change” and has an open mind as to whether it will work in the TV environment.

EYE LEVEL. Another area is what he describes as a movement-sensitive remote and draws attention to the Sony Eye Toy PlayStation add-on alluded to by Maier. The EyeToy is a colour digital camera device for the PlayStation 2 similar to a



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Set-top box middleware will play an important role in developing viewer-friendly applications.



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webcam. The technology uses computer vision to process images taken by the camera. This allows players to interact with games using motion, colour detection and also, through the in-built microphone, sound.

“With the Eye Toy webcam, you can navigate within menus. A similar device could help toddlers and small kids. They could control the TV without using a remote control. There would be no need for a physical touch.” According to Manishviz, you could end up in a situation like in futuristic Spielberg blockbuster *Minority Report*, where Tom Cruise plucks content and information from a maelstrom of data with a blink of the eye. The future viewing technology in the film enabled control just by body movements. Although set in the 2050s, are we that far away from

such developments becoming a reality? “At the last IBC, NDS showed a games concept that was controlled by hand movements,” he notes.

Maier admits that the pure study of usability of remote controls is not far reaching enough to face the challenges of today’s society. “We have to guarantee that the consumer can select what he wants whenever he wants. The amount of functions/actions addressed with a remote control can be variable.”

Voice control is one area that ruwido is already actively involved in. “We’ve developed VOCO, a new technology platform to give the user the freedom to define the number of functions, activities and or interactions. VOCO enables the consumer not only to address several devices at the same time, but also to personalise different functionalities of different products as well as voice and video communication through the platform. It enables the control of all devices in the living room with one remote control.

FLEXI-TIME. For Maier, giving the user more flexibility in the combination of devices and functions is one of the main goals. “Functionality and the number of devices on one remote control can only be extended to a certain limit. From a technical viewpoint the possibilities are endless. From the user’s perspective, simplicity is the key element.”

According to Maier, the VOCO interaction technique is quite simple, using a turning wheel with an integrated, five-button-control element. Like NDS’s Manishviz, Maier questions the role for voice. “Will users use speech? We believe yes, but only for communication within the platform. Will users control all entertainment devices of the living room with their eyes? We believe no. The trends in home entertainment especially for gaming applications have to be followed closely.”

As far as interactivity is concerned, Maier does not see a radical new trend changing the traditional behaviour to control a TV set with a remote control - even with more technology and voice, video communication integration. Safe personalisation with fingerprints can be integrated in an ambient way in any input device, be it remote control

or keyboard, to make new content and services accessible for the subscriber. “Ruvido follows the philosophy - the higher the level of interactivity, the more focus on simplicity,” he states. “This can only be achieved when partners from several areas of the industry work together to set up graphical user interfaces, remote control, middleware of the set-top box and even interactive services as one team with one branding.”

GUIDE BOOKS. Whereas the early remote controls merely dealt with limited channel selection and volume control, digital TV users will often nowadays select via the electronic programme guide (EPG). Given that EPGs are the gateway to multimedia, they must pull off being functional, user-friendly and stylish. What’s been learned from long standing deployments and what constitutes the killer EPG?

According to Humax’s North, ease of use is a critical element for an EPG. “It is a must that the consumer feels comfortable with the navigation through what can be, in many cases, just a mass of instructions and functions. Therefore, the EPG needs to be intuitive and easy to understand, and feature familiar icons and easy to follow instructions that mirror the logic of daily use.”

NDS considers that the EPG is no longer a simple guide to TV programming - it is a portal to compelling interactive and on-demand entertainment services. The NDS Guide has been designed to encourage viewers to book and view more content, strengthen operator branding, and help reduce churn and increase ARPU.

Manishviz says that NDS is, “very much active in the area of personalisation and search,” suggesting that PVR and EPG issues are often inter-twined. “We’re looking at enhancing performance in the box. We’re working massively in order to improve search capability across media and platforms. You gain a lot by having a unified search engine allowing access any place, any time.” He points out that personalisation enables advanced/extended advertising. “We take advantage of the fact that Conditional Access controls the content. It



offers the user targeted advertising, and can compensate for revenue loss."

GRAPHIC CONTENT. With the advent of HDTV, he stresses the importance of developing a high quality EPG to match the broadcast content. "It's much sexier," he suggests. "It's something the chip vendors and middleware guys can do now to take advantage of chip capabilities. They can enhance the graphic presentation layer. It lets the viewer enjoy really good graphics. You couldn't do that with standard definition; it was too limited."

PVRs are meant to make personal TV easy. One-click record and play and plenty of capacity is essential, but what else will make a PVR stand out from the crowd? "It is a fact that once someone uses a PVR they will never go back to using any other form of recording," notes North. "Easy to program, no flashing clocks and the opportunity to catch all of your favourite programmes with series linking are some of the features that make the PVR a 'must have' digital TV product."

As far as network versus set-top, North suggests that this can be invisible as far as the consumer is concerned. "However, to enable the level of storage that will be available in local set-top boxes, the central network capacity will have to be massive and at the moment cost is a big factor for the operators."

CONVENIENCE STORE. For Ian Sharp, president Pace EMEA and APAC, the killer functions for any PVR are convenience and simplicity. "With a PVR, the user can adjust their TV viewing around their own time and lifestyle as they are no longer tied to the operator's schedule. 'Prime time' is any time with a PVR." He says that the PVR must also be intuitive to use. "Most people think that, because PVR is a relatively new technology, it must be more complicated to use than a VCR. However, once they get PVR they never look back, as it is so simple to use," he says, echoing North.

"The more intuitive a PVR is to use, the more it will stand out from the crowd. The best PVRs use innovative graphics techniques for user-friendly navigation and information, they provide a flexible and easy-to-navigate library area, and they offer an EPG that makes it easy to plan and organise programmes to record and watch. As operators launch further services, such as video on demand, this intuitiveness and simplicity will be harder to achieve, but all the more important at the same time," he suggests.

In terms of future trends, being able to access the content stored on the PVR from anywhere in the home will become more important over time, "especially as the technology becomes more mainstream, and as external factors, such as analogue switch-off, push the demand for digital throughout the home. A PVR that can be networked

around the home will be a big selling factor," he predicts.


GENERATION GAME. "In the future there will be no discernible difference between network PVR versus set-top box, but we are a long way off from that yet. Today's TV generation is still focused on owning content, whereas future generations will be more at ease with the concept of paying for the use of content, rather than owning it outright. This is the more likely model with network PVR," says Sharp.

"Apart from providing potentially unlimited 'storage' for users, network PVR will also have the advantage of allowing the user to access their content from anywhere in the world, giving the user ultimate control over their TV viewing," he concludes. Manishviz, not unnaturally, is a big fan of his company's XTV, the integrated digital video recorder, and like Maier, stresses the importance of branded EPGs and developing a common look and feel.

Although TiVo and ReplayTV digital video recorder products were first to market at the Consumer Electronics show in 1999, NDS has already achieved significant success and industry recognition in deploying XTV on Sky Digital's platform. XTV is also successfully deployed on the Sky Latin America platform in Brazil and Mexico, Australia's FOXTEL, and both HOT and YES in Israel. It also powers the DVR offerings of DirecTV, Sky New Zealand, and Scandinavia's VIASAT.

PUSH VOD. Other developments floated by Manishviz are push VOD. "The Hard drive in a PVR is partitioned seventy to eighty per cent for the user's own storage," he points out. "The remainder can be utilised by the operator. At night-time, there can be a push of premium movies and games for the subscriber to purchase."

In the UK on Sky Digital, it is already possible to make bookings from on-screen promos via the remote, and Manishviz welcomes the possibility of controlling recordings remotely. "There will also be the chance to have branded recommendations, by the *Radio Times* for example. You will be able to set up the DVR to record all recommendations by a trusted source."

This writer remembers a day when to change channel it was necessary to get up, walk over to the TV set in the corner of the room, and turn the dial. Channel 1 for BBC, round to 9 for ITV. Programme information was only available in the daily newspaper or listings magazines such as the *Radio Times* and *TV Times* controlled by the broadcasters. Now it is possible to plan and control viewing not just from that sofa, but elsewhere in the house, or even at another location. So is the TV the Idiot's Lantern and are we all at greater risk of becoming Couch Potatoes? For Maier, one thing is sure. "With the developments we have in hand such as VOCO, the remote control is no longer just an input device, it becomes a revenue generator in the future." 

User Interface

No matter the application, we offer one single user interface.

E A D E D

Your application



Your solution

