

This edition is circulated to readers in Europe, the Middle East, Africa and Canada

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# A Break From Commercial Breaks?

by Tony Newton

CAMBRIDGE, Massachusetts

Viewers reaching for the remote control every time an ad appears on taped programmes may cause advertisers and commercial stations a headache, but it is one which is about to become a severe migraine with the advent of Commercial Advance—a technology that allows a VCR to skip the commercials automatically.

Previous attempts have largely foundered through being prone to error. Systems which merely wait for a dark frame can be fooled by a scene change for example, while others such as AutoCut from Mitsubishi which monitors the absence of bilingual programming are too market-specific.

The new Commercial Advance system from US company ADLE (Arthur D. Little Enterprises) is claimed to offer more reliable results, using a non-destructive patented technology for the 'post processing' of video and audio events incorporated into the VCR's central processor unit (CPU).

During recording, the system looks for the presence of a variety of cues in the broadcast that occur at the beginning and end of each commercial break, such as black frames and low sound energy. The location of these events as measured by the VCR's tape time counter are then temporarily stored in memory.

After the recording is completed, events are analysed with a proprietary software algorithm to identify which mark the beginning or end of commercial breaks. The tape is then rewound, and each of these points is marked with a non-visible code on the control track. Finally the tape is rewound ready for viewing.

## SHADES OF BLUE

When Commercial Advance detects an ad during playback, it winds on to the out point while muting the audio and displaying a blue screen. If the idea of a blue screen itself sounds intrusive, it is worth bearing in mind that the current generation of video machines can fast forward three minutes of recorded material in less than five seconds.

Tape processing takes approximately five minutes per hour of

TV programming, so if programmes are scheduled back-to-back with no gaps, the VCR is instructed to wait until all recording is completed and all programmes are processed together.

A VCR using this technology was launched by RCA in the USA this summer, and ADLE recently licensed Commercial Advance to Japanese VCR manufacturers including Panasonic for incorporation into the next generation of VCRs expected to go on sale in Japan late in 1996.

"Commercial Advance has already proved very popular with consumers in the US", says Bernard Lacomis, President of ADLE. "For instance Thomson Consumer Products—our first licensee—has been phenomenally successful with the feature and has already implemented it in ten of its RCA, GE and ProScan models".

And in the UK? "ADLE has licensees who are committed to European implementation", says Commercial Advance inventor Jerry Iggulden. "As you can imagine, there are certain complexities involved in adapting a technology like this for numerous countries with different broadcasting standards, and ADLE has worked to develop a solution that will work whether the VCR is being used in England or Germany. That solution has recently been completed and we expect European manufacturers to implement it as early as next year".

The European solution is said to employ a set of algorithms which can differentiate between a host of different commercial separators and commercial timing standards. Having a single solution for this complex market certainly makes the technology more attractive to VCR manufacturers.

The idea may be a boon to couch potatoes, but will the

advertisers and TV stations really lie down without a fight? David Jeffers of the Moving Picture Company suggests that its most likely impact will be to accelerate a change in emphasis that is already happening.

"We've already seen a tremendous increase in product placement in feature films—some blatant, some rather more subtle—and a trend towards sponsorship of things like soap operas. But I don't think the advertisers will be too worried. After all, most of us fast-forward through the ads anyway, so it's not as if they're losing an existing audience."

In an extension of the Commercial Advance technology, ADLE has also announced the launch of Movie Advance, which will allow viewers to skip through the previews and commercials which commonly precede rented and retail videos at the touch of a button. But they're often the best bit... ■

Tony Newton (tony@byline.demon.co.uk) is a freelance science writer and broadcaster.



Photo credit: Mark Hallinger

You never get a second chance to make a first

# Compression

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- Powerful compression pre-processing

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test and measurement



# It's all to do with perception...

## Those killjoys at DPS have taken all the mystery out of non-linear editing.

Despite popular folklore, there's no great mystery to creating a cost-efficient, broadcast quality non-linear system.

With the addition of audio recorder and F/X acceleration cards, the DPS Perception range now has every element you need.

### DPS **PERCEPTION** PVR VIDEO RECORDER

No strings and wires, just an open system solution that makes some of the competition look positively prehistoric.

The system operates on any 80486, DX2-66 or faster CPU with 48 MB of RAM and integrates seamlessly with popular animation and graphics packages such as Speed Razor.

Optimum levels of recording compression can be automatically set or manually controlled, with real time, time lapse and stop motion recording modes all being supported.

Together, the following elements make a system to watch out for:-

#### Perception Video Recorder (PVR)

The heart of the system, the recorder provides 10 Bit, 2 x Oversampled Video Encoding; an integrated FAST SCSI-2 Hard Drive Controller, PCI Bus Card,

Software for both Windows® and Windows' NT™, Component, Composite and S-Video outputs.

#### Live Video Capture Daughter Card

This adds Composite, Component and Y/C inputs to the PVR, with a serial D1 I/O card also available.

#### Digital Audio for Video Recorder

The Perception A4V board provides comprehensive audio post-production capabilities.

#### Effects Accelerator

The Perception F/X board significantly reduces the time required to render the most used non-linear editing transitions.

#### Serial Protocol Adaptor

Professional video decks with RS-422 ports can be directly controlled during batch digitisation using the optional PVR-422 SPA. This device can also facilitate PVR VCR emulation.

#### Compatible Software

**Non-linear editing software:**  
Speed Razor MACH III,  
Adobe Premier, and others.

**3D Graphics software (Animation):**  
3D Studio Max, Softimage, Lightwave & others.

**Paint software:**  
TV Paint and others.



**DIGITAL**  
PROCESSING SYSTEMS LTD.

# SGI Unveils New Products

by Walter Schoenknecht

## MOUNTAIN VIEW, Calif.

In a sweeping move with implications across multiple markets, Silicon Graphics Inc. announced several new product initiatives designed to secure the company's dominant position in graphically oriented computing through the current millennium.

The new hardware offerings, including the O2 desktop workstation, the Origin server platform and a supercharged Onyx2 family, utilise some of SGI's newest and most robust technologies while addressing a wide range of digital video applications and users.

SGI has already begun shipments of O2, and expects to deliver Origin and Onyx2 systems almost immediately.

## READY TO HIT THE MARKET

For years, rumours have circulated concerning SGI's eventual response to the rising popularity of Windows NT-based hardware and software packages.

If a system were to be designed to meet this perceived "threat," it would be the company's newest entry-level workstation, dubbed O2. Replacing the Indy line, O2 easily fits the bill as a do-everything box that, at under US\$6,000, should be affordable for most serious computer video professionals.

Much of O2's punch comes from a somewhat radical memory architecture. Instead of using a traditional approach to memory management (in which blocks and caches are reserved for dedicated use by specific systems), SGI opted for a high-performance "unified memory architecture."

This means I/O, graphics, the CPU and video capabilities utilise variable portions of a single, high-bandwidth memory subsystem that the company claims will run as fast as 2.1 GB per second. As a result, memory allocations are optimised according to the needs of specific applications, boosting overall performance.

At US\$5,995, the base model O2 is equipped with a substantial MIPS R5000 RISC processor, in addition to a 2.0 GB hard drive, one PCI expansion slot, two Ultra Fast and Wide SCSI buses, two serial and one parallel I/O ports, and 100Base-TX Fast Ethernet networking.

The system also features SGI's standard 1,280 x 1,024 17-inch monitor, as well as a 4x CD-ROM, and PS-2 compatible mouse and keyboard. And, O2's imaging engine supports hardware-based texture mapping, an advanced design implemented in SGI's line of high-end workstations and supercomputers.

In addition, the imaging engine manages real-time encoding/decoding of multiple Motion JPEG streams, or it can decode multiple MPEG-1 streams. The unit ships with 32 MB of RAM — expandable to 256 MB — and uses conventional SDRAM modules (a real plus in today's cut-throat RAM market). And when newer, high-capacity SDRAM becomes available next year, O2 can be expanded to an outrageous 1 GB of memory.

## AUTOMATING SOFTWARE

On the software side, O2 ships with a new, user-friendly version of the SGI OpenGL-based graphical operating system, reportedly designed to automate many of the more complex UNIX commands.

It makes extensive use of drag-and-drop

Web tools, allowing quick Intranet connections (a feature that SGI claims can boost productivity by allowing instant in-house publishing of images, clips and documents under development).

Other standard software includes SoftWindows 2.0, said to offer a high level of compatibility with Windows 3.1 and



SGI's newest contender: the O2

Windows 95 applications. In addition, several major software developers, including Fractal Design, Adobe and Alias|Wavefront, have optimised products specifically for O2.

Perhaps the hottest news relating to the O2 launch is the high-end option package. For US\$13,995, SGI has supercharged the basic package with RAM and hard drive upgrades, plus the O2's own digital video card that includes support for ITU-R601 digital video signals, as well as analogue video and stereo audio. Several intermediate models combine some or all of these features with a variety of RAM and storage options.

Most important, though, is SGI's inclusion of the top-of-the-line MIPS R10000 processor, the same engine that drives much of SGI's current product line. In addition to increased speed for running local applications, a fully networked R10000 can lend significant muscle to distributed processing tasks — a feature that existing owners of SGI systems will no doubt be quick to note.

"The O2 workstation provides unparalleled price performance in its class," commented Sanford Russell, O2 product line manager. "Creative professionals now have access to advanced graphics, video, image processing and texture mapping capabilities that were previously only available on high-end workstations."

## SERVERS AND PROCESSORS

SGI's other new product announcement should open some eyes at the opposite end of the computational spectrum, specifically for those who work with high-performance server-based products.

Drawn from a new scalable, shared-processor technology, Origin servers and the Onyx2 visual processor series are powerful systems that bring higher speeds and lower costs to the company's previous Challenge and Onyx offerings.

Most importantly, these new products add a level of scalability — up to 128 processors — previously unavailable to server users, while retaining compatibility with

existing SGI applications and systems. An accelerated I/O system, dubbed XIO, allows peripherals and graphics subsystems to take advantage of the improvements in processor speed and bandwidth.

At the heart of this enhanced scalability, Origin and Onyx2 share an innovative new processing architecture, S2MP, which extends and enhances SGI's established SNMP scheme. The systems' massive scalability is enabled in no small part by a proprietary interconnection scheme called CrayLink (one of the first visible benefits of SGI's acquisition of Cray Computers earlier this year).

Onyx2 servers, utilising S2MP, form the core of three new graphics processors that deliver striking levels of performance. Onyx2 is offered in three configurations — Reality, InfiniteReality and RealityMonster — designed for real-time manipulation of massive streams of audio and video data with extensive on-the-fly processing; such as digital image compositing and high-performance graphics production.

At the first level, Onyx2 Reality offers from one to four R10000 processors running graphics pipeline speeds of 5 million polygons per second. At a starting price of US\$80,000, this workstation is positioned neatly between SGI's top-of-the-line workstation, Indigo2 Maximum IMPACT, and its current Onyx Infinite Reality product.

The second tier of the family, Onyx2 InfiniteReality, includes two models: a deskside package, which can be loaded

with two to four processors, and an expandable rack configuration, which can house up to eight processors and two graphics pipelines. Each boasts a 4MB CPU cache — up from Onyx2 Reality's 1 MB configuration — and a pipeline speed of 11 million polygons per second.

At the top of the Onyx2 line, SGI has raised the bar once more for massive computing muscle. The Onyx2 RealityMonster transforms the server into a graphics behemoth, topping 80 million polygons/sec for multiple graphics pipelines (rendered in parallel). SGI's new high-bandwidth, low-latency S2MP architecture enables fill rates as high as 5.4 gigapixels, which allows real-time manipulation of large images and multiple uncompressed video streams.

## PRODUCTIVITY VS. PRICE

Users often carefully balance such improvements in productivity against cost concerns. With this in mind, SGI's preliminary pricing reveals 20 to 30 percent reductions for entry-level Onyx2 systems, while for high-end packages, dramatically increased horsepower is delivered at the previous price levels. Preliminary figures range from US\$15,000 for a single-processor Origin 200 server to around US\$965,000 for 16 processors and four video streams in an Onyx2 RealityMonster.

Greg Estes, Silicon Graphics' director of entertainment markets, notes that the scalable processor technology in Origin and Onyx2 allows facilities to easily add horsepower on an as-needed basis.

"The important point here is that we've created incredible investment protection," Estes said. "We've been able to implement pay-as-you-go computing. You can buy a four-CPU system now, with some amount of I/O; you can buy a second four-CPU system, with more I/O, later; and the system will see itself as an eight-CPU system with this huge amount of I/O. No one has been able to do that before effectively." ■

## NEWS WATCH

### MULTIMEDIA

## MICROSOFT INTRODUCES NEW MULTIMEDIA PLATFORM

REDMOND, WASH.

Microsoft has announced the development of a software platform for multicasting audio and video on the Internet and on corporate networks. Called NetShow, this program provides the software developers and network users will need to create and broadcast programs that use audio and video elements. The software (which will permit "multicasting," the broadcasting of either stored or live multimedia, will be available on Microsoft's Web site by the end of this year.

"Our long term goal is to enable multimedia over networks, both private corporate ones and the public Internet," said Craig Mundie, senior vice president of the Consumer Platforms Division at Microsoft.

Microsoft initially plans to market NetShow to corporations that want to use local area networks (LAN) and

intranets for computer-based training and other video-based applications.

### BUSINESS

## JVC, MATROX, PINNACLE TO DEVELOP NON-LINEAR EDITOR

ELMWOOD PARK, N.J.

JVC Professional Products Co. has partnered with image processing manufacturers Matrox Electronic Systems and Pinnacle Systems to further develop JVC's non-linear editing system. The product line will be centred on the Digital-S video format.

Dorval Quebec-based Matrox will develop its high-speed "Movie-2" image transfer bus for the system, while Pinnacle Systems, based in Sunnyvale Calif., will provide an optional digital video effects board for 3D effects, according to JVC.

The new product line, which has not yet been named, will be released in January 1997.

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## D I G I T A L T R A N S M I S S I O N

N T L D E M O N S T R A T E S  
D T T B L U E P R I N T

## C R O Y D O N , S U R R E Y

The introduction of Digital Terrestrial Television (DTT) in the UK moved a step closer in early October when NTL demonstrated a complete end-to-end digital TV system broadcasting over the whole of Greater London from its transmission site near Croydon.

Multichannel broadcasts carried by the broadcast transmission and telecommunications company included widescreen pictures, data services, a conditional access system for pay-TV, and an on-screen Electronic Programme Guide (EPG). All were used in conjunction with small integrated receiver-decoders conforming to the 2k FFT DVB-T standard (2,000 carriers), connected to domestic TV sets.

A pioneer of digital terrestrial television technology, NTL re-iterated its belief that British terrestrial television can guarantee its future in a fast-changing multichannel world and compete on equal terms with cable and satellite rivals. The demonstration was mounted in conjunction with DMV, NTL's former Advanced Products Division which became a separate company last October.

According to NTL, the benefits of DTT include reception on existing antennae, greater choice and flexibility in programming as viewers would be able to receive up to six 'multiplexes' each containing at least four services, ample capacity for pay-TV services, and generally excellent reception on portable TVs with set-top antennas. In addition, DTT signals can be as little as one hundredth of the power of conventional analogue transmissions.

DTT could provide a transparent digital 'pipeline' to the home delivering any combination of TV and data services, with no degradation caused by the transmission path. In other words, the viewer would receive exactly what the broadcaster sends (see also 'From the Editor').

"It is inevitable that all forms of broadcasting migrate to digital, but the competition is going to be immense," says NTL's director for digital and interactive services, Jeremy Thorp. "In our fully operational installation at Croydon we have a blueprint for a network of similar transmitters all over the country."

## I N T E R N E T

S E C U R E P A Y M E N T  
O N T H E N E T

## M E N L O P A R K , C A L I F O R N I A

The ImagineCard Alliance of Informix Software, smartcard manufacturer Gemplus and Hewlett-Packard formed last year is expected to unveil the first phase of a secure transaction system for the Internet next month (December).

The system, which includes a digital 'signature' stored in a smartcard, aims to protect personal information on transactions worldwide and open up the Internet for secure trading. As well as keeping fraudsters at bay, the group believes such a system will only gain favour if repudiation of genuine electronic transactions if reduced to an absolute minimum.

Alongside worldwide electronic commerce and home banking, the group is targeting corporate Intranet—Internet-style pages exchanged within a company—to allow companies to deliver new applications and functionality to staff to improve

convenience, security and service. The card could also be used to provide physical access to buildings, secure areas and other corporate facilities.

ImagineCard Alliance claims its framework offers a flexible, scalable range of cryptographic features which can be fully integrated into a variety of system solutions, and promises to announce further developments early next year.

## E Q U I P M E N T

F O X S P O R T S N E T  
S E L E C T S J V C ' S  
D I G I T A L - S

## L O S A N G E L E S

Fox SportsNet, a joint venture between Fox Sports and TCI/Prime Sports, has selected JVC Digital-S as its house videotape format.

Digital-S was recently tapped Fox Television for all recording and editing projects at the Fox News Channel studios in Manhattan. Digital-S will now find another home at the Fox SportsNet facility in Los Angeles.

Under terms of the agreement between JVC and Fox, Digital-S will be installed as the primary recording and editing format for regional cable and satellite sports production and distribution services.

"We selected Digital-S as our primary studio format for Fox SportsNet because of its outstanding picture quality," said Andrew Setos, executive vice president of the News Technology Group at News Corp., parent company of Fox Television. "We decided early on that our number one criteria in selecting a digital format would be image quality."

## A U T O M A T I O N

L O U T H P R O V I D E S  
A U T O M A T I O N T O  
I T A L I A N C A B L E

## R O M E , I T A L Y

Louth Automation has provided an 80 Channel Media Management and Automation System to Stream, Italy's first cable television installation.

Stream features some 80 channels including NVOD (Near Video On Demand), IPPV (Impulse Pay Per View), Pass-through Channels, Pay Channels and Promo Channels.

All 80 channels of the new Servizio Via Cavo (service by cable) venture have been automated by US-based Louth with a package including the creation of a system database, and Turbomedia systems for managing all dubbing in tape or video file server format. The Stream system also uses Louth's Traffic Interface Manager to handle all outgoing and incoming schedule and playlist transfers from the Enterprise traffic system.

Louth systems control a wide range of devices including tape machines, cart machines, video file servers, and secondary devices such as character generators. The Windows client workstation introduced this year at NAB is also being used, and extensive as-run logging is included.

The Louth system also interfaces with the Irdeto system controlling conditional access and generating the Electronic Program Guide, updating its database with the actual on-air delivery.

For further information contact Louth Automation at 1731 Embarcadero Road, Palo Alto, CA 94303. Tel: +1 (415) 843 3665. Fax: +1 (415) 843 3666.

## R E F E R E N C E

T A P E L E S S A U D I O  
D I R E C T O R Y  
O F F E R E D B Y S Y P H A

## L O N D O N

The 5th edition of The Tapeless Audio Directory from Sypha covers over 300 professional digital audio workstations and broadcast systems, from cards and software packages to comprehensive turnkey systems.

Applications include stereo and multichannel audio post production for video or film (including ADR), commercials, news, speech, pop and classical music editing, CD mastering, multimedia, multitrack/mixer replacement and digital audio dubbers, as well as simple cart replacement, live assist, full broadcast automation and news distribution.

Listings include target markets, hardware and software specifications, operational features, networking and file transfer, archiving and backup, future development plans, training and customer support, typical configurations, costs and suppliers details for USA, Europe and the Far East. In addition, a comprehensive explanation of the terminology is provided, with useful tips for potential purchasers.

Price £14.95 plus £2.50 postage and packing. Contact Sypha on +44 (0) 181 761 1042 (tel), +44 (0) 181 244 8758 (fax), via e-mail at 100256.377 @compuserve.com, or on the web at <http://www.mandy.com/2/syha.html>.

## E Q U I P M E N T

A T I I N T R O D U C E S  
I M P A C T V C H I P F O R  
H O M E C O M P U T E R S

## T O R O N T O , C A N A D A

ATI Technologies has released the ImpactTV, a video-out chip that allows users to connect home computers to conventional large-screen televisions. ImpactTV is a companion chip for an ATI 3D accelerator that displays scaled, flicker-removed and artefact-free graphics on a PAL or NTSC television using composite, S-Video or SCART formats. Images are capable of being displayed simultaneously on a TV and PC monitor, the company said.

"The key benefit of convergence to the PC user is the ability to use the intelligent capabilities of the computer and enjoy the results on a conventional or big-screen TV," said Henry Quan, ATI vice president of marketing. The ImpactTV chip is compatible with PCs and Macintosh computers and allows users to play 3D games as well as display full-motion video on conventional television sets.



Vol 14, No 22  
NOVEMBER 1996

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TV Technology (ISSN: 0887-1701) is published monthly by IMAS Publishing (USA), Inc., 5827 Columbia Pike, Third Floor, Falls Church VA 22041 USA. Phone: +1-703-998-7600; FAX: +1-703-998-2966. Send address changes to: TV Technology, P.O. Box 1214, Falls Church VA 22041. Copyright 1996 by IMAS Publishing (USA), Inc. All rights reserved. Printed in Hong Kong by Times Ringier (HK) Co. Ltd. Postal permit #632. Published in cooperation with IMAS Publishing (HK) Ltd., P.O. Box 459, Tai Po Post Office, Hong Kong. For reprints contact the author and TV Technology.

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PRINTED IN HONG KONG

# Why Interactive TV is not Dead

by Ken Freed

TV did not arrive in US homes in 1995 as its advocates had predicted, cynics declared that "Interactive TV is dead." They said people just want to sit back and be entertained, and that all interactivity would stay on the computer.

But today as we approach 1997, I believe the sceptical attitude toward interactive TV is being replaced by optimism. The shift in attitude can be traced to a convergence of circumstances:

- Passage of the 1996 Telecommunications Act in the US. The Telecom Act opened the door to open competition among every segment of the electronic mass media industry—including broadcasting, cable, satellite, microwave (wireless cable), cellular, telephony, and computer

**As we approach 1997, I believe the sceptical attitude toward interactive TV is being replaced by optimism.**



companies. In this free-market experiment, as the same digital technology becomes available to each industry and the lines between them blur, winning customers will depend upon offering interactive content and services that people value more than what's offered by competitors.

- The emergence of the Internet and the World Wide Web. The number of users remains a fraction of the population, but the act of interacting over the PC screen is constantly deepening the public appetite for interactivity on the TV screen.

- Commercial distribution starting in late 1996 of the cable modem, a device that lets a computer (or a digital television) send and receive signals at a thousand times the speed of a telephone modem sending signals over

pairs of twisted copper wires. Cable modems can support two-way transmission of full-motion video with data alongside, which means the cable modem could make the PC and the TV become interchangeable.

- The arrival in the marketplace this year of new set-top terminals, analogue and digital, which support interactive TV. Built into the box from General Instrument for instance are the different yet complementary interactive TV technologies from ACTV Inc of New York City and Wink Communications of Alameda, California. Both function at very low cost on the existing 'plant' of most cable and broadcast systems, which means people won't need to buy a new TV to go interactive.

- The readiness of the largest cable system operator in the world—Tele-Communications Inc—to finally commence digital compression this year. Compressing ten channels into the same space of the signal previously used by only one channel (a 10:1 compression ratio) instantly permits any cable system with 50 channels to offer 500 channels of content. Feeding the voracious demand for content is a major industry challenge.

- The launch this year of commercial 'broadband' cable networks, the so-called HFC hybrid systems combining optical fibres and coaxial cables. For example Time Warner Cable has the Full Service Network in Orlando, Florida, and Jones Intercable has an HFC system in Alexandria, Virginia.

Yet despite this evidence, some are still saying interactive TV will never happen. A reply to the cynics comes from Peter Waldheim, co-founder and chief operating officer of the Interactive Television Association based in Washington, DC. Moderating a panel at the April meeting in Las Vegas of the National Association of Broadcasters, Waldheim recalled a 1933 RCA magazine ad for the World's Fair that announced the invention of television.

"When TV development was delayed by the onslaught of WWII, the critics from radio, afraid of the competition from television, said that television was dead. After the war ended and the TV networks were launched in the late Forties, the TV very quickly became the dominant medium. We're at a similar critical juncture with interactive TV," he said, explaining that there was too much hype at the beginning, and that delays while technical difficulties were resolved had duly added to public scepticism. "But now the delays are ending at last. Interactive TV is inevitable."

Waldheim also dismissed the notion of a death struggle between the TV and PC. "People care about the content, not the delivery method," he said. "Once both the TV and the PC are fully functional gateways to helpful and interesting interactive services, consumers themselves will decide which screen is used for which functions, like home banking or seeing a movie."

"People in the media today seem divided between those responding to the advent of interactive TV with abject fear and those responding with foresight. Let me suggest that the main issue in the evolution of interactive TV will be whether or not it truly improves our lives, whether it helps us solve our everyday problems." ■

Ken Freed is a Denver-based writer and

## TAPE FORMATS – ENOUGH ALREADY

Panasonic's announcement at IBC that it intended to introduce a 4:2:2 version of its 1/4-inch DVCPPro format in the latter part of next year has been seen by some as a move likely to add yet more confusion to an already crowded tape formats market.

In fact the reverse could be the case. For a start it will play recordings from existing members of the DV family. But there's another, less obvious benefit.

### From the Editor ...

As the rehabilitation of compression from pariah to preferred feature continues relentlessly across virtually all walks of video life, we now know that rec 601 performance will be regarded as more than adequate well into the next century. Indeed some believe that the reduced losses of digital rather than analogue transmis-

sion chains—not to mention the Video-On-Demand (VOD), Near VOD and variable bit-rate terrestrial multiplex modes embraced by tomorrow's TV services—will make the current studio standard appear positively over-specified.

Panasonic itself is suggesting that a compressed routing standard such as its Compressed Serial Data Interface (CSDI) would be "adequate for most purposes", while pledging continuing support for the de facto SDI standard. It's all a far cry from the anti-compression jibes levelled at Sony's then-new Digital Betacam just a few NAB shows ago.

In any event, DVCPPro 4:2:2—or whatever it will be called—finally ushers this extraordinarily versatile format family into the hallowed rec 601 domain. The acquisition version may only have a recording time of about 16 minutes, as Panasonic has once again pulled the simple trick of doubling tape speed which gave birth to DVCPPro from consumer DV in the first place. But top-end producers working on film one day and video the next would not expect any more time for rushes—and studio versions will store up to one hour, half the capacity of a standard DVCPPro large cassette. Apart from movie playout, which in any case seems likely to be sourced increasingly from disk, it's hard to think of a tape duty the DV family won't be able to tackle.

So while we may be destined for another round of competing standards if and when high definition video eventually finds a significant market, in standard resolution at least the new DVCPPro variant could be the next best thing to a signed document from Panasonic promising not to introduce any more tape formats. And any new format that does that can't be all bad.



*P. Waldheim*

consultant specialising in interactive media. He writes news for TV Technology's U.S. edition and the monthly "TV Visions" column for the Interactive Television Association. His current emphasis is advancing a proposal for

Deep Media Literacy ([www.ijumpstart.com/crysbull](http://www.ijumpstart.com/crysbull)) to raise cultural consciousness about interactivity. He can be reached at telephone +1-303-830-2144, Fax +1-303-830-2145, or via e-mail at [kenfreed@kfcom](mailto:kenfreed@kfcom)



Coming in the December issue ...

- Italy Country Report
- Buyers Guide on Graphics and Animation
- Video Servers

... and lots more!

OPINION

Dear TVTI:

Jeremy Hoare's "Curse of the Twitchcam" (September 1996, page 34) hits right home. What he omitted, possibly due to excessive vertiginous nausea, was to observe the latest cinematic schlock of "going Dutch" as in tilting the camera thisaway and thataway and never actually shooting straightupaway.

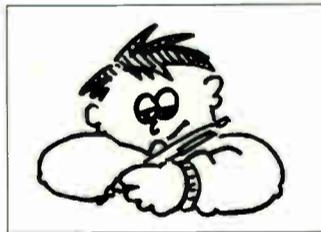
Principal offenders in the United States seem to be MTV, VH1 and of course, MSNBC ... for those of you whose stomachs are sufficiently intact after lurchingly surfing across cable's broad spectrum to read the incipient channel number.

"Going Dutch" has even taken the lowly industrial market by storm, for scarcely a Fortune 500 CEO is seen in composed equilibrium as they recite some somnolent corporate blither. Soon, the levelling bubble on our tripods will be extinct, replaced with an inclinometer.

Horse Ball, I say.

Sincerely,  
John Anthony

### LETTERS TO THE EDITOR



### Questions...? Comments...?

Have something to say about TV Technology International?

Send your letters to:  
Readers Forum,  
TV Technology,  
P.O. Box 1214,  
Falls Church, Va  
22041 USA  
or fax +1-703-998-2966

# First-TV Launches on Net

## Web Site Aims to Showcase Video from New Media Producers, Animators and Videographers

by Frank Beacham

### MANHASSET, N.Y.

Billing itself as "the first 24-hour, global, Internet-only TV/video network," CMP Media's First-TV has launched with an original programming slate that focuses on technology and life on the Internet.

In the future, First-TV hopes to offer sports, comedy and music video programming as well.

Founded by Internet pioneer Scott Bourne and backed by CMP's Long Island-based high-tech publishing organisation, the First-TV Web site hopes to turn itself into a showcase for video programming created by new media producers, digital animators and desktop videographers.

Bourne, a veteran in the use of streaming technology on the Internet, earlier co-founded, built and designed NetRadio Network, one of the first Internet sites to broadcast original audio programming in real time.

### TESTING AND TWEAKING TV

Until Nov. 1, First-TV will operate in the beta mode, testing and tweaking its images, which are best viewed by those with ISDN or faster connections, Bourne said.

"If you are on ISDN or better, then I think the pictures are very watchable," he said. "On 28.8, watchability depends on traffic and how robust your ISP's connection is to the Internet." For those who do establish a good 28.8 connection, the video frame rate for First-TV is 7.5 fps. For ISDN, it's 10 fps.

First-TV's streaming "engine" is VivoActive, a proprietary Codec technology created by Vivo Software Inc. of Waltham, Mass. It can transfer video images over the Internet at a rate as low as 2,000 bytes per second. Vivo's technology is said to eliminate the need for dedicated

video servers, thus conserving bandwidth and utilising industry standards that present no security issues. It also uses industry-standard hypertext protocols that allow access via standard modem connections and through firewalls.

Viewers of First-TV must have a VivoActive Player, which works with both Netscape Navigator 2.0 or later and Microsoft Internet Explorer 3.0. The Player can be downloaded free from the Vivo Software home page at <http://www.vivo.com>. It runs on any Power Mac or 486/66 or faster PC with at least 8 MB of memory.

At its production facility in Minneapolis, First-TV is producing original programming using Panasonic's DVCPRO digital tape format. Finished programs are played into a computer equipped with a video capture card. VivoActive Producer encoding software is then used to convert the video into a low-bandwidth, streaming format. The Vivo file is then placed via HTML into the First-TV Web pages, just as with a standard graphics file.

### LAN FUTURE

Beyond an ad-supported video service available to the public free over the Internet, Bourne said First-TV hopes to duplicate its technology and programming for corporate Intranets where LAN systems have significantly greater bandwidth. He said the com-

pany is also in discussion with cable modem providers who can deliver 10 Mbps datagrams to the home.

Bourne said First-TV differs from any previous Internet video site because it was created and built exclusively for the Net. "Everybody else doing Internet TV is using existing programs as a display medium," he said. "We are building a television network from the ground up, a studio from the ground up and original content for Internet display only."

Why jump into Internet telecasting before adequate bandwidth is available for most users? Bourne is quick to respond. "I want to be first," he said. "I want to start building mindshare, customer allegiance and I want to see what will work. I want to make the Internet its own medium. This is an experiment to see how the market reacts."

First-TV's Web site is at <http://www.first-tv.com>. Contact Scott Bourne at +1-612-686-7660. ■

## Sony Intros 1/2 Kilo Camcorder

by Frank Beacham

### NEW YORK

Sony has shrunk the digital camcorder. Using a new miniaturisation technology, the manufacturer has introduced a 1/2 kilo, passport-size Digital Handycam small enough to fit into a shirt pocket.

The technology in Sony's new DCR-PC7 is similar to that introduced late last year in the company's hot-selling DCR-VX1000 (consumer DV-format) Digital Handycam. Using a new manufacturing process called Transform Grid Array, Sony said it was able to shrink the main circuit board in the VX-1000 by 37 percent without giving up any functionality.

Though introduced as a consumer product, Sony executives said they expect the new camcorder — just like the VX1000 — to become popular with broadcast television news organisations, documentary makers and multimedia producers

### POCKET TECHNOLOGY

"You can go places with the PC7 that you can't go with the 1000 ... and a lot of broadcasters now use the 1000 in places like Bosnia and China," said Jay Sato, Sony vice president of personal video products. "Since the PC7 is smaller and has comparable quality, we imagine that it can open up whole new ways for people to gather and disseminate information."

The tiny new camcorder is expected to sell to the same markets targeted for Sony's new professional DVcam system, which is scheduled to begin delivery by November.

That's just fine with Bob Ott, Sony's director of video communications in the Business & Professional Group.

"Digital Handycams sold into those professional markets as acquisition pieces only," Ott said. "It was not sold as an editable format. DVcam differs because it is an editable format. We see the equipment working together. Why do you think Sony made it compatible?"

The PC7 camcorder, which could easily be mistaken for a small Walkman music player, includes both a flip-out 2.5-inch LCD colour screen and a 113,000-pixel colour viewfinder. The LCD screen can be rotated a full 270 degrees for multi-angle viewing. This would allow a news reporter, working alone, to do a stand-up

in front of the camera while having a full view of the TV image.

A key difference between the DCR-PC7 and DCR-VX1000 is in the imaging system. The PC7 uses a single 680,000-pixel CCD imager while the VX1000 uses three 410,000-pixel CCDs. This results in

Sports, Sunset & Moon and Landscape.

As with all Sony Digital Handycam models, the PC7 has an IEEE 1394 "FireWire" interface. This enables the user to digitally dub and edit video and audio to other IEEE 1394-compatible devices with virtually no loss of quality. It also



The Sony DCR-PC7 has a 2.5 inch LCD screen and color viewfinder that would allow a news reporter to shoot a stand-up solo.

slightly better colour saturation for the VX1000, said Dan Nicholson, merchandising and training manager for Sony personal video products.

### STEADYING THE LIGHTWEIGHT

Due to its extreme light weight, Sony included a new generation "Super SteadyShot" image stabilisation system on the PC7 that compensates for high-frequency handshaking while developing more than 400 horizontal lines of resolution.

"We use motion sensors for both horizontal and vertical movement of your hand to compensate for movement in the image," Nicholson said. "We do not compromise picture quality by cropping, blowing up or digitising the image in order to stabilise it. The motion sensors actually move the image so it floats around on the 680,000 pixels. Image quality never changes."

Other key features include a 10x optical and 120x digital zoom lens with 10x optical and 12x digital adapters for extreme close-ups. There's a photo mode with adaptive frame interpolation for still images and four exposure choices: Auto,

allows the transmission of still images directly to personal computers via Sony's DVBK-1000 Still-Image Capture Board for Windows-compatible PCs.

Other editing features include dropframe time code, extended data code for storing date, time, shutter speed, gain and iris, Control L (LANC with the option VMC-M7 adapter) and five-second snap recording. There's also a digital A/V fade to black feature, manual focus/white balance, PCM digital audio with on-board stereo mic and external mic input and a built-in speaker with volume control.

The PC7 also includes an LP mode, a feature that provides a maximum recording time of 90 minutes on a 60-minute Mini-DV cassette. In addition, Sony's Accu Power system, using a matchbook-size Info Lithium battery, displays the time remaining on the LCD screen with an accuracy of within one minute. Maximum continuous recording time using an optional NP-F200 high-capacity lithium-ion battery pack is 100 minutes when using the colour viewfinder and 75 minutes when using the LCD monitor. The DCR-PC7 will be available in November at a list price of US\$3,199. ■

## NEWS WATCH

EQUIPMENT

### FUJIFILM DEBUTS NEW DVCPRO DIGITAL CASSETTE

#### NEW YORK

Fujifilm USA has introduced a Fuji DP121 DVCPRO digital metal videocassette that incorporates Fujifilm's second generation ATOMM (Advanced Super Thin Layer and High Output Metal Media) technology.

This allows for increased output, reduced noise and higher dB output, according to the company. The tape measures 6.35mm wide and 8.5µ thick and combines 5:1 compression ratio DVCPRO digital component recording and metal-coated media, the company said. These DP121 videocassettes are compatible with the DVCPRO broadcast digital video system from Panasonic.

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**THOMCAST**

# Traditional Manufacturer's Last Stand?

by Chris Dickinson

## AMSTERDAM, The Netherlands

The International Broadcasting Convention held at the Amsterdam RAI in September may be remembered as the last stand of the traditional broadcast manufacturers against the computer giants.

While one of IBC's principal backers, the International Association of Broadcast Manufacturers — or IABM, which Sony's Willie Scullion quipped at its 20-year anniversary dinner did not after all stand for 'It's A British Mafia' — prevaricated over whether now was the time to admit the main computer companies into its membership, computer manufacturers were

ing slice of the market for itself, announced another new business unit at the show devoted to building systems for the broadcast industry. The company said the unit would be responsible for incorporating Silicon Graphics products with third party software, and that key alliances would be formed with established broadcast systems integrators to give customers more confidence that it knows what it is doing. Silicon Graphics promptly announced just such an alliance with Philips BTS.

As if to underline the changes

its own Compressed Serial Digital Interface (CSDI) version at IBC, which is claimed to enable DVCPro compressed data to be distributed in an existing SDI infrastructure. Panasonic also unveiled DVCS (DVC Serial) which allows the distribution of compressed signals up to 200 metres at a 36Mbit/s transfer rate and which the company said offered "greater flexibility" than the FireWire compression interface developed for consumer DV-based systems.

Tektronix has thrown its weight behind Fibre Channel, the computer world's answer to transporting compressed data. Tektronix also trumpeted its work on incorporating MPEG-2 4:2:2 Profile @ ML/MP into the Fibre Channel system, and said it wanted to work with Sony.

Meanwhile Quantel claimed it had its own Open Platform Exchange Network, allowing computer-platform users to interface with Quantel equipment through a TCP/IP connection.

Just in case you were wondering what's left of traditional broadcast shows, Sony and Panasonic continue to slug it out with new tape formats. Panasonic was showing three new low-cost DVCPro VTRs plus an entry level ENG camcorder and the AJ-LT75 laptop editor, and revealed it was developing a four-times real time recorder for digitising material into servers and non-linear systems to match the system from Sony. Panasonic also announced contracts for DVCPro with Granada Sky Broadcasting and Yorkshire TV in the UK and NTV in Russia.

While Digital Betacam and DI continue to occupy the top-end production and graphics end of the market, Sony is pitching its new Betacam SX range firmly at news and current affairs broadcasters and

announced sales to NOB in The Netherlands, APTV and Prime Television International in the UK, and Wim Robberechts & Co and Way Press International in Belgium. A further boost to Betacam SX came from Thomson, which unveiled its own version of Betacam SX VTRs, camcorders and editing systems. Sony also claimed it had sold a total of some 700 systems using its

new DVcam format, the variant of consumer DV aimed ostensibly at the corporate video market.

JVC's Digital-S format offering was also at IBC, with JVC announcing sales to Brazil Television Systems and Fox News Channel. As an alternative to tape, Ikegami proudly showed off its removeable disk-based Editcam camcorder and CamCutter dockable recorder/editor developed in conjunction with Avid.

## TODAY'S TECHNOLOGY

Judging from the talks in conference halls, digital television is the technology of the moment, with papers from all round the world on the latest happenings with digital TV for cable, satellite and terrestrial delivery.

As George Walters of the EBU gratefully received the main IBC award — the John Tucker Award — his organisation sat at the centre of most of the key debates about digital TV, most forcibly as one of the main partners in the new DigiTAG (Digital Terrestrial Action Group) set up to promote digital terrestrial transmission. At the same time, a report from independent consultants CDG released at IBC predicted that 8 million households in Europe will be receiving digital TV transmissions of one sort or another by year 2000 (see also 'Terrestrial digital is cheapest option', page 14).

As to the rivalry of IBC and the Montreux ITS, it looks set to be another battle of wills as both shows are scheduled for 1997. For an indication of how the land lies, Quantel — one of the promoters of Montreux in the past — announced that it would be attending both, with Montreux as its 'broadcast' show and IBC as its 'post production' show. Maybe it is significant that the IBC now likes to be known by its initials ... ■



Another Amsterdam tradition — transportation by tram.

at last showing products sculptured for the broadcast market. Apple Computers for one pulled out all the stops to be at IBC.

## SERVER FUTURE?

In the conference halls, Hewlett Packard was busy spelling out how media servers will change the face of broadcasting: "In the future, the broadcast industry will be able to leverage from the computer industry with regard to processing, disk, compression and networking components. Media servers that utilise these technologies will be the core of the broadcast studio ... As a result, there will be fundamental changes in the nature of how things are done. Disk-based systems will be the predominant storage medium, leaving tape to be used as a low-cost archive alternative."

As to what was on the stands, IBM is at last reaping the benefits of setting up a business unit dedicated to media and telecoms solutions, with new MPEG-2 encoder and decoder chips, and deals with the likes of Alcatel, Leitch Technology, RE Technology and 3DO. Apple announced plans to implement the QuickTime feature set for Microsoft Windows 95 in collaboration with Macromedia, Data Translation and Truevision. And Digital Equipment added MPEG-2 compression and DVB transmission capabilities to its AlphaStudio broadcasting system.

Microsoft has also been busy, signing up an ever larger number of manufacturers to Windows 95 and Windows NT, thereby speeding the integration of lower-cost computers into the industry.

Silicon Graphics, which came early to the broadcast world and has carved out a grow-

about to be wrought, one of the main talking points at IBC was which of the new digital networking systems would become the standard bridge between the computer systems of the future.

ATM (Asynchronous Transfer Mode) technology, already making in-roads into the market in the UK and Germany, looks set to become widely used for transporting broadband data files between broadcasters and facilities in different locations, cities or even countries.

Deutsche Telekom for one demonstrated its ATM capabilities at IBC and showed what it has been working on in Germany. General Instrument launched its SURFboard ATM architecture to work on a hybrid fibre and coaxial cable network, supporting 27Mbit/s data rates on a single channel. In the conference programme, COMSAT revealed its work on sending MPEG-2 compressed signals over ATM via satellite, while Robert Gordon University in the UK spoke about how to do the same over landlines.

Various new systems were touted for routing around a facility. Serial Digital Interface (SDI) is already the standard system for routing for uncompressed digital signals. Sony, which first developed it, was pushing Serial Digital Data Interface (SDDI) for routing MPEG-2 compressed signals. Its advantages are compatibility with both SDI and Betacam SX, Sony's news and current affairs implementation of the MPEG-2 4:2:2 Profile @ ML/MP (Main Level, Main Profile) compression scheme.

Not to be outdone, Panasonic announced

Photo credit: Mark Hallinger

## IBC NEWS WATCH

BUSINESS

### ADAPTEC, DPS ANNOUNCE FIREWIRE AGREEMENT

AMSTERDAM

Adaptec and Digital Processing Systems (DPS) announced an agreement to bring IEEE-1394 "FireWire"-based digital video editing products to market by the end of this year. FireWire technology uses thin cables to provide digital connections between peripherals and computer systems.

The products will incorporate Adaptec's recently announced FireWire hardware and software with video editing software from DPS. These products will allow users to transfer DV format video and audio data from a digital VTR or DV camcorder over the FireWire bus and onto a computer's hard drive. After editing, the finished video can be transferred back over the FireWire bus and re-recorded to a DV device.

"Adaptec was the first to deliver a FireWire-to-PCI adapter and we want to be the first to bring FireWire to the video editing world," said Rui Luis, president of DPS.

# Basic In-Sync.

VIDEOTEK  
VSG-201D

POWER



601 DIGITAL  
SYNC GENERATOR

VIDEOTEK  
VSG-202D

POWER



601 DIGITAL  
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## COMPRESSION

## SNELL & WILCOX OFFERS RANGE OF COMPRESSION GEAR

## AMSTERDAM

Snell & Wilcox launched a range of products at the IBC for real-time MPEG-2 test and measurement, MPEG-2 analysis and compression pre-processing.

The MSA100 MPEG-2 transport stream analyser tests the performance of MPEG-2 encoders. The MSP100 MPEG-2 transport stream player is a reference test pattern player of MPEG-2 bitstreams and is designed to test MPEG-2 decoders. The PREFIX compression pre-processing system applies com-

prehensive signal analysis and artefact removal techniques to signals prior to compression in order to optimise the compression performance of the encoder.

"These products enable broadcasters, post-production houses, program makers, teleport operators and compression equipment manufacturers to guarantee the integrity of the signal path in real time," said S&W research director Roderick Snell.

S&W representatives were also talking about the company's role in developing SATCHMO (Source of ATSC-compatible Compressed High Definition MOVing pictures). This was developed for the world's first national satellite transmission of digital high definition pictures by the Public Broadcasting Service in the United States. S&W was invited to develop the reference layout system tailored to the requirements

of this project following a demonstration of its conversion technology last June.

SATCHMO fed the Washington, D.C.-based PBS transmission system with digitised high definition pictures in a form compatible with proposed U.S. digital broadcasting standards. "We are delighted to have provided a technology solution for this milestone in television history," Snell said.

## AUTOMATION

## HP, ODETICS SHOW CACHING SOLUTIONS

## AMSTERDAM

Hewlett-Packard Co. and Odetics Broadcast plan to combine the HP



MediaStream Server and Odetics CacheMachine and SpotBand Systems to provide caching and spot-playback for broadcasters.

The joint HP and Odetics systems will allow broadcasters to extend the capabilities of their Odetics automated video library by using the HP broadcast server as a caching device for spot and short-segment material, according to HP. Shipments of the integrated solutions will begin spring 1997.

## COMPUTERS

## AVID INTRODUCES AVIDNEWS

## AMSTERDAM

Avid Technology has introduced the first release of AvidNews, a newsroom computer system designed to streamline news production with a new user interface and tools that allow for text, video and audio management at a computer.

The AvidNews release will enable broadcasters to optimise new acquisition, story development and assignment operations, the company said. Users will be able to view and process low-resolution video feeds from their desktop, create and manage stories to air and publish finished stories to the Web.

"By putting advanced tools in the hands of the storytellers, and bridging the gap between news journalists and news editors, broadcasters will be equipped to reach new productivity and quality heights," said Robert Sullivan, Avid vice president of broadcast marketing.

AvidNews is expected to be available for field testing in the first quarter of 1997.

## COMPRESSION

## SYMBIONICS DEMOS MPEG-2 STREAM STATION

## AMSTERDAM

Symbionics made a splash into the broadcast industry at the IBC, showing its Stream Station set of MPEG test tools for all stages in the production of digital television, including development, manufacturing, systems integration and operational monitoring.

Company representatives said one market for the gear was manufacturers of digital video decoding equipment, such as digital televisions or set-top boxes. These customers could use Stream Station to record and play out repeatable test signals at up to 60 Mb/s.

Stream Station also includes conformance checks for MPEG and DVB standards and provides a suite of test tools for set-top manufacturers, multiplex designers and digital broadcasters. The Stream Station also allows systems integrators to monitor multiple program MPEG transport streams in real time to detect errors.

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## Optional Features Include

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# SATELLITE NEWS GATHERING SYSTEMS



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set up on the run, so you can be on the air moments after arrival, and long before your competition.

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and videotape units. The lightweight, high-performance, 1.2 meter antenna folds behind an aerodynamic cowling for high-speed highway travel, and raises automatically on command.

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experience in design and integration, with unrestricted customizing as the rule, means that your S-15 DSNG system can be anything you want it to be, as it takes you anywhere you want to go.

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Systems: Electronic News Gathering – Flyaway Satellite – Mobile Production – Radio Studio – Satellite News Gathering – Satellite Uplink  
Television Production – Television Transmission

# Virtual Studios Hit Europe

by Chris Dickinson

## AMSTERDAM

The first sales of virtual studio systems to European broadcasters were announced at IBC, as the technology continues its steady transition from novelty sideshow to serious production tool. Inevitably alliances have been forged, with the news that four companies have agreed to share key technology, and a series of impressive upgrades unveiled at IBC.

Here's a progress report on the main players in this fast-expanding sector.

## ACCUM

Accom demonstrated how its ELSET (ELECTRONIC SET) virtual studio creates 3-D studios on an Onyx while seamlessly integrating the Accom Axess still and clips store system, which the company says gives users the ability to recall stills and real time video clips within the virtual set. Enhanced defocus effects were also shown, with multiple focus planes that allow a rack-focus from one plane to another, simulating depth of field.

An Ultimatte System 8 chromakeyer was also shown under the direct control of ELSET to provide lighting effects on the foreground, mimicking lighting changes in the virtual set. Environment mapping was made part of the virtual set, thereby adding to heightened realism. A low-cost previewing system including chromakeying within the Silicon Graphics Indigo Impact was also demonstrated.

## DIGIMEDIA

Spanish group Digimedia showed the virtual studio software system designed by Brainstorm ESTudio (B.EST) at IBC, and announced that the B.EST system is already being used by Antenna 3 TV in Spain and NTV in Japan.

The software running the B.EST simulation is based on the Silicon Graphics IRIS Performer Library. Objects and textures can be rendered by numerous software packages that generate a file format recognised by the system.

Discreet Logic's virtual set system, Vapour, combines an intuitive 3D scene builder with tools to optimise scenes for real time rendering for NTSC or PAL frame rates. With the addition of a precision camera head called Glass, a virtual scene viewpoint can accurately track the pan, tilt, zoom and focus parameters of the real camera. Discreet says the system supports a wide variety of camera systems and can handle over 1,500 hours of on-air broadcast time.

Vapour was used by French broadcaster Canal+ to create a virtual studio in Atlanta in the Summer as part of its coverage of the Olympics. Two virtual studios were built, one with a green screen onto which a rooftop scene was projected behind the presenters, while the other used three camera positions. One of these was fixed, and the other two had Glass systems attached to enable pan, tilt, zoom and focus movements.

Daniel Thomas, director of engineering and maintenance for Canal+, says the Vapour system was the "obvious choice" for the project. "The virtual set broadcast was intense, with no room for error. Now looking back after the three weeks of broadcasting — and numerous cups of coffee — we'd do it again in a second."

Besides Canal+, Discreet announced Vapour was being used by Kabel-1 and Sat-1 in Germany, Nickelodeon in the UK and GTE Mainstreet in the US.

Discreet also demonstrated Frost at IBC, a complete 3D graphics system for broadcast graphics creation and layout. Frost supports the assignment of sophisticated texture maps such as image stills, sequences or live video on 3D objects.

## GMD/DEUTSCHE TELEKOM

Deutsche Telekom showed a virtual studio system developed by GMD (the German

attached to the camera and its mounting.

Orad's technology analyses the shape and relative size of a coded grid pattern projected onto the background, enabling the camera's position and zoom setting to be deduced by its output image alone. The fact that projected light does not interfere with virtual background keying has given rise to a useful by-product — a unique guide light steered by the background software which allows performers to accurately step around a momentary 'footprint' of virtual objects that have been added to the scene.

Orad announced that it was actively pursuing the Holy Grail of virtual sets — difference keying. Instead of the coloured background of today's chroma-key sets, a difference-key system would first store a static scene, and then derive a key by comparing this with the same scene containing a presenter. Producers could then add a virtual background without using a chroma-key studio at all. But the company admitted that it may be two years away or more, and will not operate in real time initially.

The separate agreements allow the three manufacturers to interface their



(Above) Using RT-SET's virtual set in the making of the CBS series "Secrets of the Cryptkeeper's Haunted House." (Right) Digimedia Brainstorm ESTudio on display at the IBC.



Photo credit: Mark Hallinger

National Research Centre for Information technology) as part of an ATM technology demonstration which formed part of wider ATM trials in Germany this year.

Called 3DK, the system runs on a Silicon Graphics Onyx workstation and allows full 3-D rendering in real time. GMD says 3DK uses the Thoma system and an experimental image processing system known as CATS for tracking.

The video output from the Onyx was composited with the live video using an Ultimatte System 7, while models were created on Wavefront and Softimage software and passed through a Lightscape radiosity program before being loaded into the virtual studio system. The GMD system enabled Deutsche Telekom to connect virtual sets from SWF with live presenters in different locations using an ATM network.

## ORAD

Orad Hi-Tech Systems, which makes the CyberSet product, has licensed a key pattern-recognition technology to Accom, Digimedia and Discreet Logic which allows users of all three virtual studio systems to use hand-held cameras to record actors against a blue-screen. This was previously impossible, as all movements were relayed by optical or magnetic sensors

tion. Guests on TV shows would no longer have to travel to the 'local' studio to be on the programme, as long as they can get to a blue screen studio instead.

## RADAMEC/BBC

ITN and the BBC in the UK have both bought the Virtual Scenario studio system from Radamec. The system purchased by ITN will be used for an unspecified project at its headquarters in London.

A three-channel version of the Virtual Scenario system has also been delivered to Studio 5 at BBC Television Centre, London. The system has already been used to create the virtual set for BBC TV's Football Focus, where the presenter appears to be sitting inside a giant football.

Virtual Scenario, shown in Europe for the first time at IBC, was developed jointly by Radamec and the BBC as a low cost system that works on a PC. Radamec says very high quality backgrounds can be manipulated in real time because it requires no super-computer and employs conventional video technology.

New at IBC were two Virtual Scenario units controlled from a single camera channel, which enables both inlays and animated graphics to interact with the presenter. Also shown was the 2-D set design running on a low-cost PC platform and working with the Lightwave 3-D graphics design and rendering package.

The BBC was also promoting its version of the system at IBC, claiming that until it unveiled its 2-D virtual set the only options were either expensive 3-D systems or conventional chromakey techniques, where the background was moved to match the foreground during post production.

"In order for the virtual set illusion to work, any camera movement must affect both foreground actors and the background image," said a BBC spokesman. "In practice, much of this movement is pan, tilt and zoom, and does not therefore affect the perspective of the background. In this case a special type of image manipulator, in effect a high quality DVE, can be used to provide the necessary background picture movement rather than a very expensive real time computer."

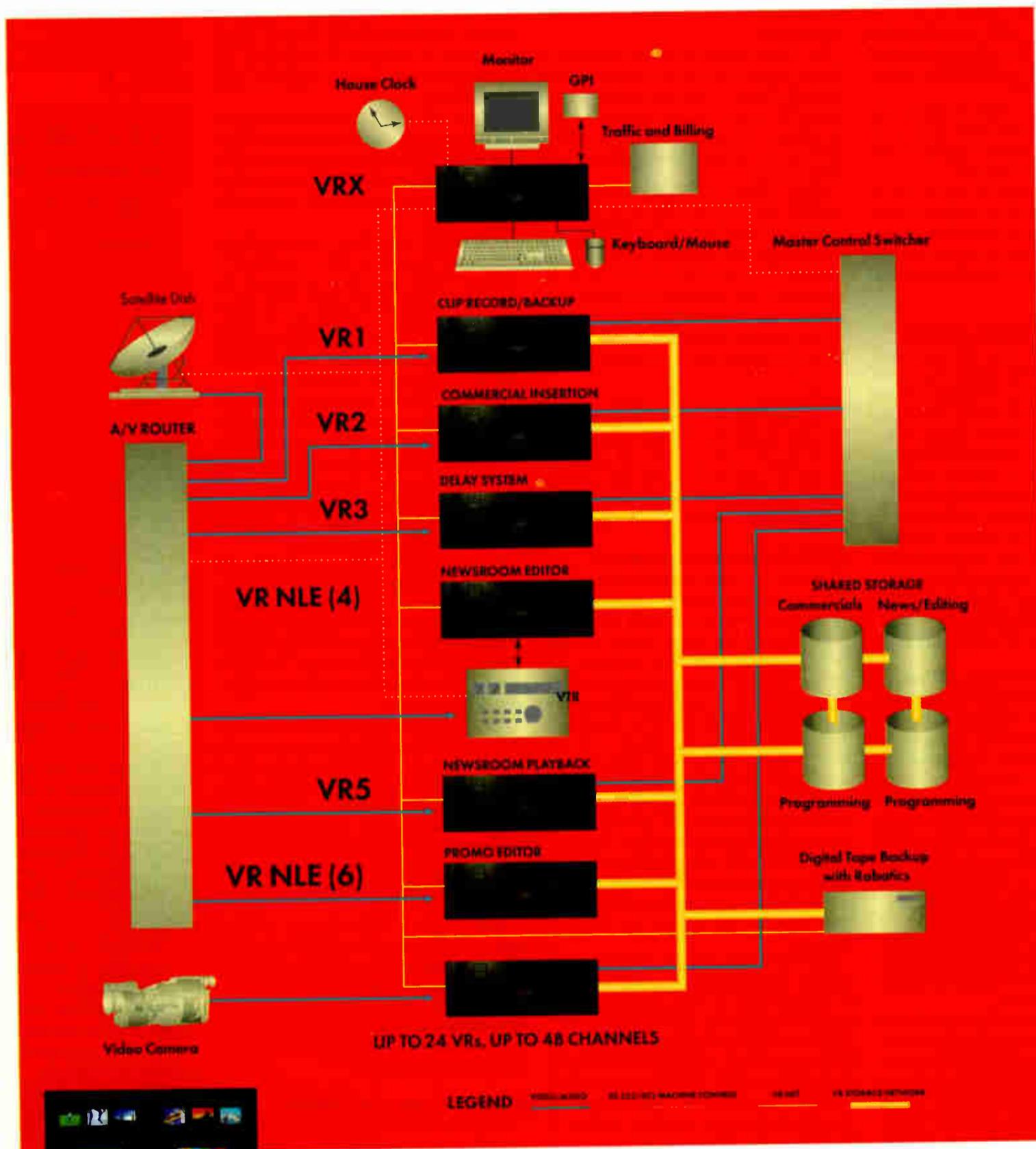
A 3-D package is required for full camera movement, although the 2-D system can provide some perspective by layering images, rather like in a cartoon.

## RT-SET

Finally, Sendezentrum Munchen (SZM) in Germany has ordered three Larus virtual studio systems from RT-SET, a sister company of Chyron. RT-SET said SZM, a facility owned by German broadcaster Pro7, ordered Larus after a series of tests and capability evaluations.

The Larus system enables real time integration of live actors with 3-D virtual sets during live-to-air shooting. New features demonstrated at IBC include the ability to manipulate the on-screen appearance of actors with various effects in real time. Otus, another new system from RT-SET shown at IBC, enables users to integrate actors with 3-D virtual sets for live to tape programme shooting. Both Larus and Otus can work with off-the-shelf modelling systems. ■

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# Terrestrial Digital is Cheapest Option

by Chris Dickinson

## AMSTERDAM

The prospect of digital terrestrial television starting across Europe in 1997 moved a step closer during IBC. Three of the main players agreed to join together to promote new digital services, while an independent consultancy published a report proclaiming terrestrial as the most cost-efficient method of delivering digital TV.

At the same time a host of potentially exciting new services were discussed, including mobile reception, interactive TV and local and regional channels.

Digital TV has already taken off in Europe, with the launch in April of Canal+ services on satellite. The French broadcaster is also being joined by digital satellite offerings emanating from Germany and The Netherlands.

## TERRESTRIAL DIGITAL BOOST

The boost for terrestrial delivery came first from DigiTAG, the Digital Terrestrial Television Action Group, made up from the Digital Television Group (DTG) in the UK, the EBU and the 8k Interest Group. Other interested parties have been invited to join.

Herman van Wijk of NOS in Holland, who has been appointed president of DigiTAG's steering board, said the main objective of the group is to create "an operational framework for the harmonious and market-driven introduction of digital terrestrial television services" using the DVB-T standard. "We will look for business opportunities ... they must be viable and profitable," he said.

To help the group on its way, UK consultancy CDG published a report which claims that terrestrial is the cheapest method of delivering digital services. "In a broad range of market situations, total system cost per TV household — including all costs associated with broadcasting and reception — is expected to be significantly lower for digital terrestrial TV than for either digital satellite or cable. This cost advantage springs from re-use of existing analogue terrestrial infrastructure, including transmission sites and masts and reception antennae in the home. Digital terrestrial TV is also the only means of providing reception to portable TV sets via set-top antennae," the report concludes.

CDG estimates that 8 million households across Europe will be receiving digital television services by the year 2000, predominantly by terrestrial transmission. It also says terrestrial delivery is the only way of ensuring universal access to digital broadcasting, and will be an important platform for the widespread introduction of the "Information Society".

The BBC claimed the first digital terrestrial widescreen transmissions in Europe, with trial services broadcast since June. Three services, BBC1, BBC2 and BBC World (the 24-hour international news and information channel) have been broadcast in a digital terrestrial TV multiplex from two transmitters, one in London and one in Newcastle in the north of England. The multiplex also includes data to drive an electronic programme guide.

The trial transmission started with special widescreen coverage of the Queen's Trooping, the Colour birthday parade in London. The BBC also transmitted digital TV pictures locally around the IBC exhibition to demonstrate how the system worked.

At IBC there was also much discussion between advocates of a terrestrial system based on an 8k DVB-T system and those backing a 2k system. The figures relate to the number of Fast-Fourier Transform carriers used within each Coded Orthogonal Frequency Division Multiplex (COFDM) transmission.

The UK has chosen a 2k system because it allows regional services that mimic the ITV network. Most of the rest of Europe will use an 8k system, because it is more suited to a Single Frequency Network (SFN), allowing one service to be broadcast over a whole country.

Debate centred on whether a SFN would interfere with neighbouring countries' services, and what cost and delay premium would be paid by equipping both the transmission chain and set-top boxes with 8k capability. UK broadcasters claimed 2k systems were relatively cheap to make and set-top decoders would be available now, so services could launch as soon as the end of 1997.

However Ulrich Reimers of the Technische Universität Braunschweig in Germany warned that it would not be possible to upgrade a TV set with a 2k chip to an 8k chip at a later date. "If the UK converts to 8k, you'll have to throw away the 2k receivers, they'll never convert," he said.

## MOBILE SERVICES DEBATE

The UK has been further mixing it up with a private debate about what to do with a part of its spectrum — Channel 35 — currently reserved for future digital TV services. During IBC the new analogue TV service Channel 5 successfully lobbied the UK government to hand over Channel 35 so it could extend its reach by roughly 10 per cent of the UK population, with the proviso that it would hand it back when new digital services are developed.

The UK has allocated spectrum for a number of digital terrestrial TV services alongside the four existing analogue services: BBC1, BBC2, ITV and Channel 4. Channel 35 was originally earmarked for digital mobile services — something that has not been catered for within the DVB-T standard.

The UK's Department of Trade and Industry (DTI) insisted Channel 35 could be handed back in five years time and would be targeted for use with mobile TV. "Mobile reception was discussed within the DVB committee," said Charles Sandbank of the DTI at IBC. "The clear consensus was that it would not be a requirement for the initial standard, but may well be a requirement for different services and will be addressed at a different time."

As to what he meant by different services, he said it was not the intention to use Channel 35 for mobile-compatible versions of existing BBC1 or ITV services for example, but to reserve it for other broadcasts.

Ed Wilson from the EBU said that all European governments were looking at the possibility of digital mobile TV services. According to Wilson, manufacturers were already developing portable TV sets — a sort of Sony Watchman for digital TV — for the youth market. However this is not strictly a mobile application, but rather something for people who want to stand in the street or sit in the park watching TV. It becomes much harder to guarantee reasonable reception if the person is moving.

For true mobile reception in cars — presumably for passengers only — or trains and buses on the move, there is also apparently some work going on to develop tracking antenna, which would sit on top of a vehicle, lock on the digital signal from the nearest TV mast and follow it whichever way the vehicle went. This is not an option for cars as it would be too expensive and cumbersome, but could be fitted to a train or even a bus.

All this talk of mobile reception using the DVB-T standard contradicts previous statements that DVB would be unable to handle mobile reception. But Wilson emphasised that the ideas were still very much at the concept stage.

Wilson also talked about using the digital radio DAB standard to deliver mobile TV, an idea enthusiastically promoted on the stand of French manufacturer ITIS. Work has been done in Germany, France, Switzerland and Austria, transmitting between one and four low quality digital TV channels using the DAB standard.

But Ruud Vader, managing director of Dutch transmission company Nozema, said that though it is feasible to send TV pictures using the DAB standard, it was commercially "unviable". He said it was basically a waste of precious spectrum because the DAB standard, though it can transmit TV channels, does so inefficiently.

Wilson also talked about multimedia TV services, including two-way services, data, and still pictures as well as TV programmes. Multimedia TV could be a sort of Internet on the airwaves. This could be possible using the DVB standard, though it may be more feasible for satellite transmission than terrestrial.

French telecoms group TDF and North West Labs of Ireland have been testing an interactive digital TV system which sends a limited signal back to the transmitter using MMDS (Multichannel Multipoint Distribution System). Spanish satellite operator HISPASAT has also been working on a two-way VSAT network that would link SMATV installations on blocks of flats.

Alternatively, it is now possible to have interactive multimedia using a telephone line as the return link, requesting films, or whatever. However that would not mean an individual service but a strange kind of entertainment democracy, where if enough people requested a certain movie for example it would be broadcast.

## DIGITAL SATELLITE THREAT

If the various terrestrial broadcasters needed a reminder of the threat posed by satellite, Canal+ has been broadcasting a digital service since April on the Astra satellite. There are currently well over two dozen digital channels available on the Canal Satellite Numerique service. Ten are theme channels, four are the Canal+ Numerique, there's CNN, ARD and ZDF, a raft of pay-per-view channels under the Kiosque banner, and the rest carry various supplementary services and games.

The Canal+ Numerique package is perhaps one of the most innovative parts of service, comprising a collection of four channels delivering the basic Canal+ programmes in four different ways. Canal+ Numerique is made up of the digital Canal+ over-the-air channel, two multi-view channels, Canal+ Jaune [Yellow] and Canal+

Bleu [Blue], and Canal+ in the 16:9 widescreen format.

The content of all four channels is the same, but the different strands — movies, sports, news, documentaries, cartoons and light entertainment — are scheduled to appear in such a way that the viewer can choose to watch one of three different sorts of programme at any particular time. Viewers can also choose whether to watch a dubbed version of a foreign language programme or movie, or to have the original soundtrack with French subtitles. ■

## Chyron Intros Windows-based iNFiniT!

### AMSTERDAM

Chyron Corp. has released WiNFiniT!, a graphic creation interface that runs off a Microsoft Windows NT-based system.

The WiNFiniT! system will allow users to use Windows NT or Windows 95 to import graphics and create text, which can then be imported directly into one of Chyron's character generators, including iNFiniT!, MAX! and MAXINE!

"iNFiniT!, MAX! and MAXINE! are fine-tuned dedicated hardware designed to provide real-time graphics," said David Frasco, director of marketing for Chyron. "But before WiNFiniT!, they also had a dedicated user interface ... which didn't easily allow users to add an extra keyboard or switch monitors or cut and paste."

"Users can now type up data on Windows NT or 95 and cut and paste directly into the Chyron system," he said.

Images that are created in design programs such as PhotoShop, can also be pasted into the Windows clipboard and imported into the Chyron system, Frasco said.

In addition, Chyron will offer a new keyboard, called keyPC, with WiNFiniT! that incorporates a Pentium-based CPU.

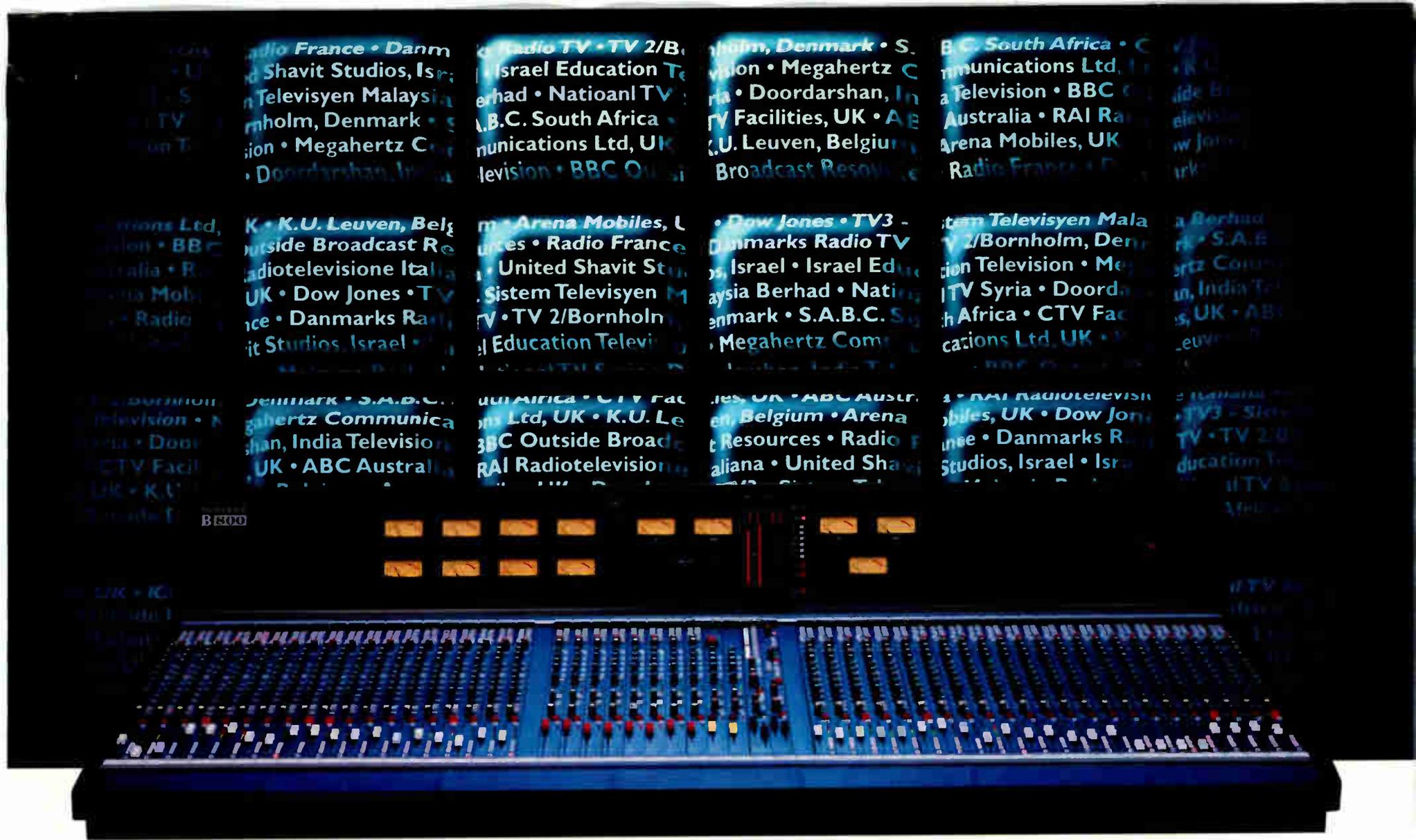
"We chose Windows NT because it is supported by a broad range of processing platforms," said Roi Agneta, Chyron executive vice president. "It has all of the key features necessary to operate in a demanding, professional environment."

The system is also upgradable, according to Chyron — existing users of the iNFiniT!, MAX! and MAXINE! graphics systems can add WiNFiniT! capabilities via the keyPC keyboard, 486 PC or Microsoft Windows NT system.

The WiNFiniT! system is a separate, rack-mounted system that can utilise any of the current Chyron platforms. The system uses standard Ethernet protocol for local or remote communication between the keyPC keyboard and the iNFiniT! line.

"WiNFiniT! is the first step Chyron took to embrace an open-architecture platform," Frasco said. "It allowed us to offer more interfaces ... without changing radically how (users) work."

WiNFiniT! will be shipping by the end of this year. ■



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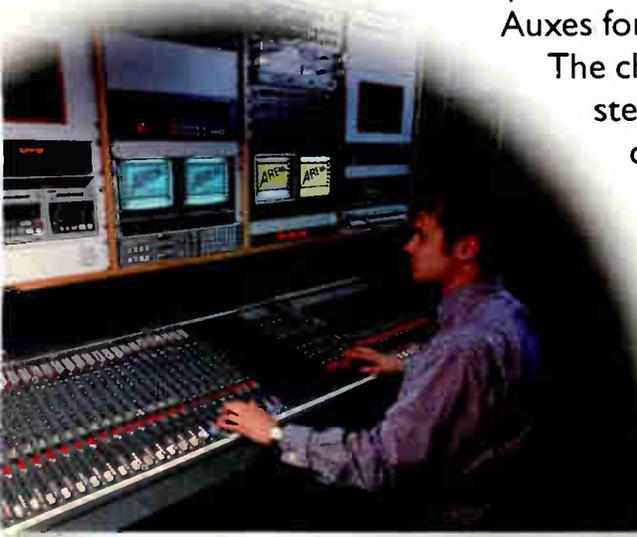
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Circle 99 On Reader Service Card



# Transmitter Manufacturers Back DTT

by Mark Hallinger

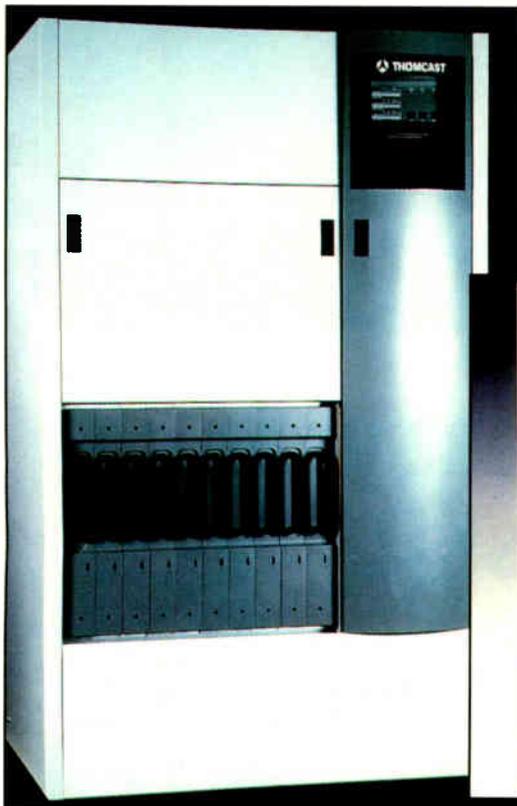
## AMSTERDAM

It has become almost redundant to chirp on about digital terrestrial transmission (DTT), but significant steps towards this elusive goal were definitely in evidence at IBC 96.

In what remains a generally conservative sector of the industry, these steps can now be measured even in the short span between the major shows. For example at April's NAB, the DVB world was abuzz about the first transmission of terrestrial digital television using the finalised DVB-T standard.

Similarly impressive announcements were made at IBC. DigiTAG—the Digital Terrestrial Television Action Group—comprising the UK Digital TV Group, EBU representatives and other broadcasters and man-

ufacturers—was formed to assist DVB implementation. Coupled with the DVB demos on the show floor, and the findings highlighting DVB-T's economy as a delivery method (see Terrestrial digital is cheapest option, page 14), few would deny that progress towards digital broadcasting is gathering pace.



(Above) Thomcast's new Optimum VHF unit  
(Right) An offering from Teko Telecom

and PCU-1100 UHF solid state transmitters on hand. The UHF units feature a FET device for PA, something previously reserved only for VHF units.

In what is heralded as 'future safe' technology, the Rohde & Schwarz line of NH 500 ecoTv solid state UHF transmitters is upgradeable to DVB simply by exchanging

also operate in a dual-drive configuration by doubling the exciter units and controlling their operation through an automatic changeover unit. TEM showed its range of 2-10 W and 100-200 W solid state transmitters and related gear. The transmitters are available in UHF or VHF bands, and can operate with any TV

Harris Broadcast was rightfully crowing about its recent (July) role in supplying the transmitter for a digital broadcast in the United States. Here, the company supplied its Sigma CD transmitter to CBS affiliate WRAL-TV for the broadcast of a collection of short subjects with movie-type images and CD sound. WRAL plans to begin broadcasting more CBS and US Public Broadcasting high-definition programming soon.

Harris was also stressing its role in supplying and installing a digital television transmitter for the BBC's Pontop Pike location, where DVB-T trials are underway. The transmitter is a specially adapted Sceptre solid-state unit with a feed-forward correction system. Celebrating its 35th year in broadcasting, Itelco showed new solid-state medium and high power water cooled transmitting systems in VHF band III and UHF band IV-V versions. The cooling technique employs a liquid cooled thermal transfer plate designed to support external temperatures down to minus 30 degrees

C and up to 50 degrees C. Itelco made a point of stressing that the new lines were upgradeable to digital broadcasting.

DVB was very much in the air at the ITIS stand. The French company—which designed the boards for the RACE DTTB project—showed an array of DVB-T facilitating equipment including a COFDM modulator, a test receiver and an SFN adapter for synchronising DVB transmitters organised as a single frequency network. The modulator and receiver support 2K or 8K FFT operation.

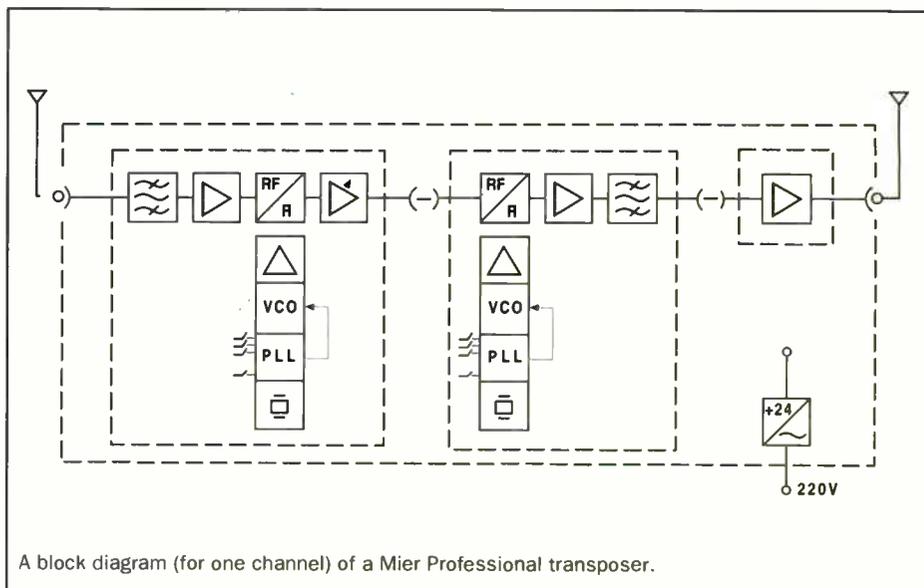
Mier Comunicaciones of Barcelona showed its series of Micro-Transposers for regions with a reduced coverage area and topographically unfavorable regions. The units use the double conversion principle with intermediate frequency stage and SAW filter, and meet CCIR standards. The modular units can retransmit a channel in TV band I, III, IV/V or satellite signals into VHF band III or UHF band IV/V. Other features include optional telemeasurements, synthesizer oscillator (PLL) with low phase noise and full transistorised and broadband amplification.

Mier also showed its Integrated series, a modular system configurable as a transmitter for local TV or as a transposer for multiple TV channels (up to nine in terrestrial reception or up to four in satellite reception). IDC power is optional on this equipment.

NEC Corporation had its PCN-1600 VHF

and PCU-1100 UHF solid state transmitters on hand. The UHF units feature a FET device for PA, something previously reserved only for VHF units.

In what is heralded as 'future safe' technology, the Rohde & Schwarz line of NH 500 ecoTv solid state UHF transmitters is upgradeable to DVB simply by exchanging



A block diagram (for one channel) of a Mier Professional transposer.

modules in the exciter. A 10 kW version is standard, with other power classes determined by the number of amplifiers used. PAL, PALplus, NTSC or SECAM colour system units are available.

Teko Telecom of Bologna in Italy displayed its new compact series of 2, 5 and 10 W VHF and UHF transmitters. All feature low power consumption suitable for use with solar cells, according to the company. The units are modular, with the input and output filters mounted on the front panel plug-in.

Technosystem showed its recently released 10 kW VHF transmitter, the STV 41. This solid state transmitter amplifies the video and audio carriers separately in the VHF band, from 174 MHz to 230 MHz. The STV 41 can

standard or as transposers.

Thomcast's new Optimum line of VHF transmitters made their debut at IBC. The family of products comprises 500 W, 1 kW and 2 kW models configurable as transmitters or transposers, and 5 kW to 60 kW transmitters with single or dual configurations capability in vision and sound with separate amplification. Features include class AB broadband Mosfet amplification, EMC regulations compliance, and digital transmission readiness.

Thomcast also showed the (IOT tube) Comark IOX Compact transmitter systems for the first time in Europe. The 20 kW and up transmitters all feature Thomcast's DISC technology—an acronym for distributed intelligent system control. ■

## Digital MMDS on the Air and in the Stands

by Mark Hallinger

### AMSTERDAM

A few companies displayed MMDS (Multichannel-Multipoint Distribution System) transmitters at IBC, in both analogue and digital varieties.

Often called wireless cable in the US, MMDS is undergoing a digital transition similar to that of terrestrial broadcasting. Many MMDS proponents consider the imminent use of compression—essentially increasing a system's channel capacity from about 30 to 100 or more—as the saviour of the industry. The digital signal also has better coverage characteristics than its analogue brother.

Limited digital broadcasts have already begun at a few sites in the US, where many telephone companies are buying up wireless cable operators in a bid to enter the video market on the cheap.

MMDS infrastructure is basically just a series of transmitters sending line-of-sight microwave to consumer's antennae. The consequently low up-front costs for operators make it an attractive multichannel option for regions without

enough capital for a wired cable system, although such installations are still usually analogue.

ADC Telecommunications, a US company with an extensive broadband background, showed a digital MMDS transmitter from its recently acquired subsidiary, ITS Corporation. The ITS-5520 is compatible with modulation levels up to 256 QAM or 16 VSB, and has a power range of 1 to 100 W average digital power and 15 to 230 W analogue peak sync power.

Acrodyne showed its analogue (though digital ready!) ATM series of MMDS transmitters. These units, with peak power outputs between 10 and 100 W, operate in SECAM, PAL or NTSC. This was the first launch of the ATM series in Europe.

Thomcast also had an MMDS presence at the show, with transmitters, amplifiers, signal boosters and repeaters on hand.

The Andrew Corporation showed a variety of MMDS antennae for broadcast transmission at its stand, along with a wide range of cables and other associated wireless cable support products. ■

# Tentative Convergence in Platform Debate

by Gideon Summerfield

**AMSTERDAM**

This year's IBC felt more like NAB than ever before. This was partly because of the show's immense size, although it is still only a fraction of the Las Vegas show. But the greatest similarity was the imposing presence of many computer companies (see also Chris Dickinson's 'Traditional manufacturer's Last Stand?', page 8). For the first time ever at a European show they seemed to have an equal footing with the traditional manufacturers.

The story has been very different for NAB, where the new upstarts have played a major part for several years. Most of the newcomers building systems around computers are American. And while many have been growing at breakneck speeds, most have been too small to make it to Europe. Even this year a few important players dropped out, notably Play Inc and Macromedia.

IBC's organisers may try to take credit for enticing more of the computer people than ever before, but in reality their time had come. They weren't just demonstrating new technology, either. Their stands were crammed with real shoppers.

Strangely, even with the amassed presence of the computer army, the show had far less of a them-and-us feel. And it's not simply a growing tolerance — many of the video hardware manufactures are actually making overtures to the computer camp. For example in its latest assault on Sony, Panasonic is recruiting many from the other side. Truevision was demonstrating a pro-

totype of its Targa 2000 video capture PC card with DVCPPro input on Panasonic's stand, and both Matrox and Fast Electronic announced at the show that they too would support Panasonic DVCPPro and DV formats with PC cards of their own.

More proof of this tentative approach towards convergence by the old school came from Philips BTS. Its new Spirit Datacine is a top-end telecine which doubles as a film scanner for delivering raw image data to computer workstations. Also for telecine, DaVinci, a leading supplier of colour grading equipment, unveiled a software version of its system for video and film-resolution work called Resolve, running on a Silicon Graphics (SGI) workstation.

Even Quantel seems to be shifting. OPEN (the Open Platform Exchange Network), unveiled in its new technology exhibit at NAB, was actually on the show floor at IBC passing images between Quantel kit and a Windows NT workstation.

**WATCH YOUR STEP**

However Quantel has yet to dive headlong into the computer networking business. As managing director Jeff Meadows explained, OPEN wouldn't be particularly fast as a standalone network connecting other vendors' machines. It is designed to work best at passing video data between Quantel kit, but also allows files from other systems — especially 3-D graphics

— to be imported to Quantel. It's currently based on a 100Mbit/s Ethernet network, but given that it uses standard TCP/IP protocols, there's no reason much faster networks such as ATM or Fibre-channel couldn't be adopted in future.

The network's name alone is a clear indicator that Quantel wants to be seen to be progressive. It's still unlikely that Quantel will

(See Platform Convergence?, page 19)

For information on some of the products shown at the IBC, see the Marketplace section on page 48.

## IBC NEWS WATCH

BUSINESS

### STRATEGIC ALLIANCE FOR AAVS AND MIRANDA

**AMSTERDAM**

AAVS of Paris, France and Miranda Technologies of Montréal, Canada announced at IBC an agreement to co-develop and distribute their digital video and audio product lines worldwide. Miranda will handle product distribution in the Americas, the United Kingdom and Australia, while AAVS holds distribution rights for all international markets.

"We are very excited to be partnering with Miranda in an alliance which has great implications for our marketplace", says Jean-Jacques Gentic, Chairman and Managing Director of AAVS. "Miranda shares our vision for technological excellence, and are well-established as a world leader in digital video imaging and VDSP".

The agreement also covers the development of digital audio products by AAVS and the transfer of AAVS' products to Miranda's Imaging family format. This will allow Miranda to add digital audio and other digital video production tools to its product repertoire.

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## EQUIPMENT

DIGITAL GRAPHIX  
LAUNCHES  
WRITEDEKO

## AMSTERDAM

Digital Graphix launched the WriteDeko broadcast-quality character generator at the IBC show. The product is aimed at applications where high quality graphics are required, with less emphasis on complex effects.

WriteDeko, based on a subset of the features found in the company's established TypeDeko product, sells for US\$16,000-\$20,000 and is upgradeable to work with serial D-1 input and output. Like established Deko products, WriteDeko runs on a

Pentium computer and uses Windows NT.

## COMPRESSION

INTELSAT  
ANNOUNCES  
PRELIMINARY  
RESULTS ON  
INTEROPERABILITY

## AMSTERDAM

INTELSAT and the Inter-Union Satellite Operations Group (ISOG) announced results from another round of occasional use/SNG satellite encoder/decoder interoperability testing.

The new test results show "successful interoperation of encoders and decoders

from all participating manufacturers under INTELSAT's laboratory conditions," according to a statement. Indeed, the results chart was a veritable wash as far as interoperability was concerned, with almost every encoder working with every decoder.

Vince Walisko, INTELSAT's Group Director for Global Broadcast and Special Services, was quick to point out that the results were baselines that were obtained in laboratory conditions. Units were plugged in and often adjusted to some extent before successful operation.

"The next round of testing (February) will address true plug and play," Walisko said. This will assume minimal adjustments of the units.

Wegener, TV/COM, Tiernan, Tandberg, S-A, Philips, DMV, Divicom and California Microwave took part in the tests.



"We're pleased with the INTELSAT testing because it stresses the need for standards compliance and complete interoperability, which are areas Tiernan has been stressing for years," said Luann Beckett, director of sales for Tiernan Communications, one of the participants in the testing.

## VIRTUAL SETS

AWARD FOR  
VIRTUAL SCENARIO

## AMSTERDAM

The BBC's Research & Development department picked up the International Broadcasting award for Video R & D at IBC for its work on Virtual Scenario, the lower-cost 2-D virtual set marketed by Radamec Broadcast Systems of Chertsey, England.

The jointly-developed system can use sets designed on low cost platforms and does not require a super-computer. Because it employs conventional video technology, the system can manipulate very high quality backgrounds in real time, claims Radamec.

Virtual Scenario has been purchased by BBC Resources for live broadcast of the BBC's Football Focus from Studio 5 in Television Centre, West London. ITN has also invested in a system for what it will only describe as a 'special project'.

## DESKTOP VIDEO

HIGH-POWER  
JALEO

## AMSTERDAM

Comunicación Integral from Spain and US-based Ciprico Systems announced at IBC that the first desktop video production system to use the new R10000-powered Impact machines from Silicon Graphics will begin shipping to customers in the fourth quarter of 1996.

The Jaleo system is specifically designed to integrate video and audio editing with special effects and compositing, combining the simplicity and elegance of a time-line based non-linear editing system with the ability to produce complex compositing with an unlimited number of layers.

Jaleo for Impact offers real-time D1 uncompressed capture and playback on a low cost desktop system. Like all Jaleo systems, it incorporates a full range of professional editing and compositing tools including sophisticated keying, 3-D DVE with displacement mapping, vector-based paint, warping, morphing and many other graphic effects. Other versions are Jaleo PLUS, which makes use of the power of multiprocessor SGI Onyx machines, and Jaleo Composite running on a wide variety of SGI systems.

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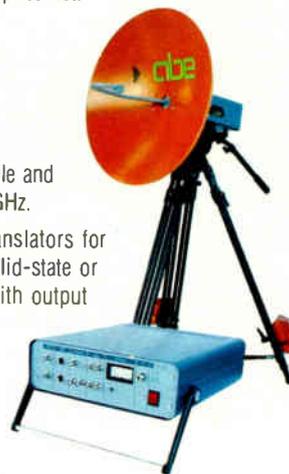
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CONTINUED FROM PAGE 17

## Platform Convergence?

ever veer from the dedicated-hardware approach for its own solutions, but relations are warming.

"The debate between standard platforms and application-specific hardware goes on and on, but I think it's getting a little tiresome now," says Meadows. "I feel sorry for companies that are neither fish nor fowl. It's one thing to write software for a genuine standard platform, as do companies like Microsoft [represented at IBC by Softimage]. It's quite another to take responsibility for the hardware on which it runs. Because, like it or not, your hardware supplier will surprise you occasionally and that affects your business plan. We control both software and hardware, so there are no surprises."

The comment is clearly a swipe at arch-rival Discreet Logic, which last year set up a hardware department (headed by MC Patel of Alpha Image) to develop equipment to facilitate its software running on SGI equipment. Discreet's fingers were burned on its Flame product early on, when delays hit SGI's real-time video hardware for the Onyx.

### FRESH FRUIT

The first fruit of Discreet's hardware lab appeared at IBC in the form of Flint RT. Flint software is functionally almost identical to Flame, but because it is designed to run on single-processor desk-top workstations and only records video frame-by-frame it is slower. In the past year SGI desk-top workstations have been able to record and play a few seconds of uncompressed video in real time, using memory rather than disk. But Pebbles, the powerful new video input/output hardware from Discreet, lets the workstation record a full 25 minutes of uncompressed video on a disk array of 43GB.

Recording and playing uncompressed digital video in real time on a desktop platform may have come too late for SGI hardware, as the humble PC also achieved that goal at IBC. Intergraph's lively stand included a demonstration of StudioZ RAX, which records up to 90 minutes of uncompressed video on a disk array. Another past the line was the new Hollywood Video Recorder from Digital Processing Systems (DPS). The three-board set (a fourth is needed to support alpha channel keying data) records five or ten minutes of video, storing chrominance and luminance separately on two pairs of 4GB drives.

Singling out Discreet in the great

debate isn't exactly fair, because all digital systems are a combination of hardware and software. They range from something like Photoshop (image retouching software for PC, Mac and SGI) to Henry. The former needs no special hardware beyond perhaps a scanner or a Syquest disk to bring in digital images, whereas in the latter case almost every function is supported by code carried in silicon chips.

**The tide is turning, and the ties between specific software and hardware are breaking up.**



Few off-the-shelf computers come with professional video capabilities built-in. And for those that do, notably some desk-top SGI workstations, capabilities don't match everyone's needs. So anyone building a system has to add hardware. Initially companies had no option but to build it or at least specify it themselves. Avid had Truevision make video input/output and compression hardware specifically for its Mac-based systems, and there are plenty of firms which have built both software and extra hardware to support it, such as Fast Electronic, Matrox, ImMix and Media100.

But the tide is turning, and the ties between specific software and hardware are breaking up. At IBC Avid was showing its first software-only product, MCXpress for Windows NT and the Mac. Seitex/ImMix also launched SphereOus, software for the Mac. On the other side Matrox has dropped software, and is only developing video hardware for software written by other companies. Several companies showed editing software at IBC working with hardware not only from Matrox but also other manufacturers such as DPS and Truevision. D/Vision, which has quit designing hardware, showed its long-overdue software while in:sync showed a new version of its Razor Pro package. Softimage also announced that its Digital Studio sfx/editing software would work with Matrox's hardware. This follows a similar announcement with Play Inc at NAB.

### IN THE BOX

There is also a move to build greater video-handling capabilities directly into computer operating systems, which promises to let any piece of software work with any piece of hardware. This

works by having the operating system provide a common API (Application Program Interface) to which both software and hardware can conform.

Apple Computers leads the way with QuickTime, which has been able to support broadcast-quality video on its Macintosh platform for several years. Numerous productions have been made using off-the-shelf QuickTime-based editing tools such as Adobe

Premiere using QuickTime hardware, such as the Video Vision Studio from Radius or Media 100's Vincent. The new QT2.5 version includes more professional features.

But the real surprise to emerge from Apple's suite at the Hilton during IBC was that QuickTime's full capabilities for media production would soon be available on Windows platforms too. Until now Windows PCs could only play back QuickTime content created on Macs.

The move to bring this established system to Windows could scupper the plans of the OpenDML (Open Digital Media Language) group. These developers of PC-based hardware and software have successfully pushed Microsoft into incorporating many professional features into its own video API, and the first version of ActiveMovie (the successor to Video for Windows) has just launched with an enhanced version 2 due sometime next year. Despite the QuickTime announcement, OpenDML members at IBC said they were still committed to ActiveMovie.

### FASTER RENDERING

Hardware isn't added to general-purpose computers just to allow them to handle video. Increasingly, it is used to boost the speed at which effects are rendered, with even extremely low-cost desktop video systems now capable of the same tricks as some of the most powerful edit suites. Software on its own takes a little time, although early adopters believe desktop video's advantages make it worth the wait.

But for 20 years producers have been spoiled with the ability to do jazzy tricks in editing suites in real time. It's something they have become used to having available, but generally use little.

The problem — if it is one — is being tackled on two fronts. First, the power of desk-top computers is escalating phenomenally, and a faster computer means less waiting. Secondly, add-on hardware can specifically speed-up effects.

There was plenty of action on that first front at IBC. Intergraph in particular was sporting some ultra-fast Windows NT workstations boasting two and even four 200MHz Pentium Pro processors, and DPS demonstrated the Raptor multi-processor Windows NT systems from DeskStation Technology incorporating powerful Alpha processors now cranked up as fast as 500MHz. Apple too has launched its first dual-processor Mac. In stark contrast, SGI doesn't yet offer multi-processing on the desk-top — and it was not letting anything slip about its rumoured new range of systems, Moosehead and Top Cat.

### PLUM EXAMPLE

Streamlining the way video data is managed and transported within a computer can also reduce processing time, and improvements in video hardware design are helping to speed-up rendering. One example is the new Plum board, which appeared on Adobe's stand.

But increasingly manufacturers are turning to extra hardware to go faster. There are two approaches. One essentially puts a real-time DVE into the computer. The other provides programmable DSP chips to perform specialised functions extremely quickly. These accelerate the rendering of selected effects, with simple ones operating in real-time.

The first approach requires two streams of video to be decom-

pressed simultaneously, usually outside the computer's own hardware, as with Truevision's Targa2000RTX and Matrox's Digimotion new dual-channel video boards. The Aladdin 3D DVE hardware from Pinnacle has been incorporated by many manufacturers including Avid and Fast, and Media100 became first to add Pinnacle's new low-cost Genie-Plus card at IBC in a new Gaudi option.

The second approach has been adopted by DPS, which has launched an accelerator board to work alongside its PVR video hardware, while a similar board called Genesis is available to developers from Matrox. Avid also supplies the TimeDriver accelerator board from AtLightSpeed to boost rendering with Matador, Illusion and Fusion on SGI platforms.

Both DVE and accelerator solutions hold serious drawbacks for software developers. Integrating the rich features of real-time DVE boards into an editing system is a major programming job, as code must be written to download into DSP chips for each accelerated effect. Consequently only often-used effects tend to get boosted. But rendering speed is becoming such a major sales hook that the use of extra hardware can only increase. In any event, the appeal of this hardware-booster approach is strong enough for low-cost desk-top computer systems to start taking a sizeable chunk of the market — and the traditional hardware manufacturers are taking notice.

Even Sony let slip that it too will enter the software market. Computer workstations for HDTV will be unveiled at NAB, to be ready in time for the next Winter Olympics. Perhaps at last the war is over. ■

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# Back to Reality at IBC

*For all the hype, MPEG is a modern digital equivalent of PAL or NTSC*

by John Watkinson

September is the rainy season in Amsterdam, and those who visit IBC without an umbrella are often astonished at the amount of water that can fall on one individual. Still, it keeps the canals full. This was a 'real' IBC, not being in the same year as Montreux—so all of the big boys were in town, and hotel rooms were scarce.

Once in the RAI centre, things improve as it's really not necessary to go outdoors until closing time. There is plenty of room for everyone, and the air conditioning works. This has to be better than the old days in Brighton where the show was split over dozens of buildings, none of any great merit. This year's show was well attended, but because of the sheer volume of the RAI centre, it didn't have a well-attended feel, although in my view that's better than feeling like a sardine.

In many ways the show was one of incremental progress as there were no earth-shattering developments or product releases. While it was useful for those who don't make the trek to NAB, for those of us who did there was little news.

The takeover of broadcast and production processes by computer continues apace with more and more stands devoted to displaying more and more indistinguishable boxes surrounded by the usual panoply of keyboards, mice and screens. While all of this stuff may be cheap, a mouse and a keyboard cannot possibly be the best way to control every process. If this is what television is turning into, then perhaps it's time to start looking for something else to do.

Another takeover which is well under way is the use of compression. At least the picture quality is starting to improve compared to previous shows, where artefact collecting became quite a hobby. The impression I formed at IBC is that most people don't have a clue how compression works or what the implications are, but are handling it using lemming technology, rushing along with the herd without much regard to the direction or to the presence of steep geographical features.

Basically MPEG is a modern digital equivalent of PAL or NTSC, which were analogue compression systems designed to get colour in monochrome bandwidth. PAL and NTSC were designed for transmission to the end user, in which they work well. For production, composite video is bad news because the four- and eight-field sequences cause editing problems, and the decoding and encoding needed for effects causes generation loss.

Well folks, MPEG is just the same. The eight-field sequence is now called a Group of Pictures (GOP) which makes editing difficult, and there is generation loss if it is decoded and re-encoded. When we have spent the last decade getting out of composite production into analogue and digital component, what sense does it make to go rushing back in the opposite direction?

Another concern is that most MPEG codecs are assessed on conventional TV screens using signals from conventional cameras. In the meantime oversampling cameras having better resolution, and line-doubling displays are becoming increasingly common. These show up MPEG artifacts far better. Why should the punter buy a

better TV set when it only reveals defects in the picture?

If compression is going to be with us, then at least we should have decent test equipment so that we know what's going on. Once compressed video gets multiplexed into a transport stream, it's just data relying on time stamps to get it back to real time on receipt.

When a failure could be due to a compressor, a multiplexer, a remultiplexer, a demultiplexer or a decoder, without test equipment a fix could be prolonged and

painful. MPEG testers were much in evidence at IBC, not just from the usual test equipment manufacturers like Tektronix and Hewlett-Packard, but also from Snell & Wilcox.

Another slow learning process is that MPEG only works on squeaky-clean input signals. Noise, dropouts, timebase error, residual subcarrier and film dirt drive it nuts, bringing a requirement for better decoding, timebase correction and noise reduction generally referred to as pre-processing.

The reported death of videotape seems increasingly premature with the recent introduction of several new digital tape formats which, by long-standing tradition, are

incompatible. We now have DV, DVCam, DVCPro, Digital S and SX formats to ponder.

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initially known as DVC—which uses 1/4-inch tape with very narrow tape tracks to keep running costs down and extend playing time. It uses 4:2:0 or 4:1:1 sampling depending on whether the prevailing standard is PAL or NTSC respectively. DVCam is Sony's professional version using slightly wider tracks for increased robustness. DVCPro is Panasonic's professional version using even wider tracks but sticking to 4:1:1 in both standards. Panasonic claims that DVCPro decks will be able to play DVCam tapes.

These 1/4-inch formats use intra-frame coding and are ideal for ENG and field acquisition and for budget production purposes, especially when supported by laptop editors containing two tape decks. With equipment like this, the future for the disk-based camera with its mega-expensive disk

pack doesn't look very bright.

JVC's Digital-S and Sony's SX formats use 4:2:2 sampling and 1/2-inch tape, moving at just under 60mm/s. Both formats can play tapes from their predecessors—SX can play Betacam and Betacam SP tapes.

micrometre tracks and runs at 50 Mbit/s, a compression factor of 3.3:1, whereas SX uses 32 micrometre tracks which only permit 18 Mbits/s, a compression factor of 9:1.

The compression factor on JVC's Digital-S format is quite mild, and not much higher

**Virtual sets have novelty value and I expect they will go the same way as the DVE.**



Digital-S can play S-VHS tapes. From then on these formats differ considerably. Recording 4:2:2 requires 33 per cent more data than 4:2:0 or 4:1:1. Digital-S uses 20

than Digital Betacam's 2.5:1 at 10-bit resolution, 2:1 at 8-bit—and there is no doubt that this format is aimed at serious production tasks, as it has intra-frame compression

allowing cut editing without further processing.

In SX, the high compression factor has been achieved by using inter-frame coding based on MPEG tools. The SX recording consists of alternate 'I' or intra-coded pictures and 'B' or bi-directionally coded pictures. Decoding a B picture requires data from the picture before AND the picture following. Consequently the SX bitstream itself cannot be edited.

To give the effect of a conventional VTR edit, the picture processor must read the subsequent picture from the source tape to obtain all of the B picture data, then manipulate the B picture data so that it can still be decoded when it is followed by a new I-picture after the edit.

One bright point in the SX system is the availability of a hybrid recorder containing both an SX tape deck and a hard disk drive. I have argued that a combination of disk and tape is a logical way forward and it's good to see the approach in hardware.

Another technology which seems to be on the ascendent is the virtual set. With enough processing power and a camera fitted with motion sensors, a computer can render a set which retains correct perspective as the camera moves. Add some chroma-key, and actors on blue sets can be keyed into the virtual set. A bit of software to add the actor's shadow and off you go. The secret is processing power. The number of instructions per second needed to render in real time is truly awesome and the technology has been waiting for processing power to get cheap enough. Clearly this has now nearly happened.

Virtual sets have novelty value and I expect they will go the same way as the DVE. When the DVE was introduced, everyone had to buy one because to be without was to be left out. For a while television was almost unwatchable as effect mania flipped and tumbled everything in sight. Fortunately it has settled down now that DVEs are cheap enough for everybody to have one.

While the technology is interesting, the virtual set concept puts television even further away from reality and blurs the distinction between television and video games. Undoubtedly virtual sets will eventually be cheaper than real ones. This is one way of filling the void between the number of channels we are to be offered and the paucity of available programmes.

A virtual game show should be possible fairly soon, with an entirely rendered set complete with audience and synthesised applause. Before much longer it should be possible to map the features of a person on to a rendered virtual body allowing virtual presenters and competitors.

I suspect that we could be in for a long spell of virtual set mania—until the poor viewer takes to looking out of the window for novelty value. ■

*John Watkinson is an independent consultant in digital audio, video and data technology and is the author of numerous books on the subject, including The Art of Digital Audio and The Art of Digital Video, acclaimed as definitive works. He is a Fellow of the Audio Engineering Society and is listed in Who's Who in the World. Based in England, he regularly presents papers at conventions of learned societies and has presented training courses for studios, broadcasters and facilities around the world. He launched a new video fundamentals book at NAB '96. John can be reached on +44 (0)1734 834285, or read his web pages at <http://www.pro-bel.com/guests/john/>.*

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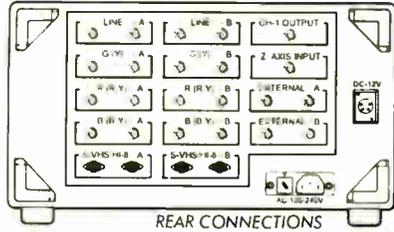
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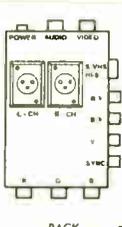
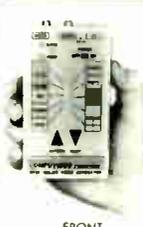
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# Digital-S: Tape Strikes Back!

by John Watkinson

## VIDEO WATCH

I've said it before and am in great danger of saying it again, but the fundamental laws of physics are a great ally when trying to assess any technology. When comparing any recording or storage formats, the fundamentals always explain the differences.

Tape and disk are often compared, but in fact they are both magnetic recordings, and nowadays they are both digital. As is now well-known, the use of error correction means that, effectively, replayed and recorded data are identical; consequently, neither disks nor digital tape have a picture quality as such.

So what does determine picture quality? Take a look at Figure 1, which shows the signal flow through a digital video storage device. Quality is limited by the converter design and by the sampling rates and word length used for luminance and colour difference. Quality is further limited by the use of a compression stage prior to recording.

Beyond the conversion and compression stage, neither the recording medium nor a well-engineered decoder causes any further quality loss. DACs may introduce a slight loss, which is again negligible in a well-engineered unit. Consequently, if everything else is kept the same, the disk can be interchanged and tape stored without any change in picture quality.

### DISK VS. TAPE

If the picture quality is independent of the medium, we must compare media in other ways. All important in this case is economics. The cost-per-bit is a key factor because it determines how much it costs to record a given length of material. The access time is another key factor because in some applications time is money.

Unfortunately, disk and tape live at opposite ends of this spectrum. Tape is cheap and slow, while disks are expensive but fast. In both cases the differences are extreme. Disks cost about 100 times as much as tape to store the same data, but access time is also about 100 times faster.

It is well-known that disk performance keeps increasing, but then so does that of tape, maintaining the relative position. Any technique or material that can be used to increase the performance of magnetic recording can equally be applied to disk and tape. As disks are irremovable, their format is academic and consequently frequent small upgrades in performance are the norm. With tape the use of an exchangeable medium means that format changes are less frequent but more significant.

In the editing and commercial break compilation arenas, access time is paramount and thus non-linear disks are the obvious solution. However, there are plenty of applications that are linear and in which the slow access of tape is irrelevant. Disk-based

recording acquisition has been notably unsuccessful.

The first digital VTR format, D-1, was only economically viable in high-end production because its recording density was so low. Developments in tape and head technology and in advanced coding techniques have driven the performance of tape a long way since then and new tape formats continue to be announced.

The development of compression chips apparently allows the performance of all storage media to be extended in proportion to the compression factor used. Compression is a

useful tool but a dangerous master, and the use of excessive compression causes visible picture defects. The low cost-per-bit of tape means that there is less pressure to use high compression

factors, whereas most disk-based storage depends on heavy compression.

In the same way that digital Betacam can play analogue Betacam tapes, Digital-S can play S-VHS tapes. Digital Betacam uses 2:1 compression whereas DVC uses 4:1. Digital-S weighs in at 3.3:1. DVC and its DVCPRO and DVcam relatives are based on the requirements of consumer technology, which

demands minimal tape consumption and cassette size. Consequently, DVC uses sub-sampling of the colour difference signals to reduce the data rate further. The result is a very small cassette and some incredibly compact hardware, which is ideal for ENG and budget production. (Editor's note: Panasonic has since announced that it will introduce a range of 4:2:2 DVCPRO products available in 1997.)

However, Digital-S uses 4:2:2 sampling, which is now the norm for digital post-production and is based on the much larger VHS cassette shell. Thus, I don't foresee it being a competitor with DVC or its variants.

In post production the high-end hardware is all 10-bit. There are many more installations

(See *Digital-S Strikes Back*, page 24)

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# Maintaining an Audiovisual Perspective

by Terry Nelson

## SOUND IDEAS

For this month's column, I thought that I would take a fresh look at the time-honoured phrase 'audio-for-video'. For some reason this term always appeared slightly toffee-nosed to me, suggesting that possibly in some way that this kind of audio was second rate—a thought which seems to be confirmed by some attitudes.

As all we audio people know, this is most certainly not the case—we all know where video would be without it. However, before quickly descending into a battle of words, let us take a look at one of today's most fashionable buzzwords, 'multimedia'.

Again, as we all know, this has been around since the beginning of virtually any type of show or presentation, it just needed someone to come up with the right word. Let us take multimedia at its face value, and agree that it is a mixture of various techniques or media.

To touch lightly on the old chestnut of vision versus sound, the problem is very much like that facing concert production—you can see the lighting, whereas sound is subjective. As long as something can be heard, it does not really matter all that much, does it? Well yes it does, a point accentuated by the fact that the average home now has audio reproduction equipment capable of results that were previously the domain of hi-fi not so long ago.

Without falling into the other buzzword trap—'CD quality'—it is undeniable that the general level of audio quality is much higher now than it was, say, fifteen years ago. And this quality has been extended to television and video. Many people have abandoned the poor quality audio of their TV set and plugged into their music system, all in the quest of better sound.

Anyone who thought that audio could be a poor relation now had to do some serious rethinking, and it's little wonder that the advertising world quickly grasped the fact that commercial spots with stereo audio—and now in surround—would stand out even more.

However, high quality audio is not the sole requirement for sound-with-picture. Records are mixed solely on their audio content, and the listener is free to have his or her own images in mind. But with television, if any part does not seem to fit with the rest, we get that strange feeling of two things happening separately without being linked together. The classic case is loss of lip-sync.

Some people are upset by a 2-frame lag between sound and vision, and most notice 3 frames. The viewer gets the feeling that there is a commentary or dialogue going on somewhere, but not by the person shown on the screen.

This is can be easily remedied by various cost-effective solutions on the market today, yet we seem to be witnessing it more and more. Although we are told that we live in an age of communication, I often have serious doubts—how many audio engineers try to

steer clear of video engineering and vice versa? It is probably not necessary to be fully versed in both, but a mutual understanding of the basics could often be helpful.

As we enter deeper into the digital age, new problems arise—I have yet to meet anyone who thinks that digital actually solved more problems than it has created! One of the traps for the unwary is processing time. In good old analogue we expected instant reaction, whereby we turned a knob or opened a fader and sound happened instantaneously. Not necessarily so in digital—I remember one of the first digital mixers where you could turn up a knob and literally wait for something to happen—although things have improved a lot.

Going back to our lip-sync problem, this could be down to a lack of communication between the video and audio team. A typical situation would be where everything is fine concerning audio/video sync until someone decides that the vision should have another digital effect or two put onto it (you have to justify the expense of new toys somehow). "No problem" is the abiding thought, it will make the producer happy.

Unfortunately there will be a problem, as the amount of number-crunching required will introduce a certain time delay, and this will throw the audio out of sync. If only someone had told audio that an effect had been added causing a specified delay, they might have had time to dial in the requisite audio delay and all would be back to normal. Moral: always have a digital delay unit patched into the programme feed, just in case!

The other big advance has been stereo audio for video, and many people would no doubt be surprised by the number of programmes that were recorded in stereo, even though broadcasting was in mono. Recorded, I emphasise, by forward-looking audio people.

This said, we still have to think carefully about the fact that the audio is meant to tie in with the picture and not detract from it. This now puts us in the delicate realm of psycho-acoustics, sensory perception, call it what you will—basically, the sound and image have to work together convincingly. You wouldn't add the sound of a Ferrari to a beaten-up Volkswagen, it just would not correlate!

Much of my on-air audio experience has

been with live concerts, and here you are always torn between getting a good sound balance and complementing the camera work on-screen (can anyone tell me why camera directors always put the one musician on-screen who is NOT soloing?).

I always look at the picture as if I was a spectator wandering around the hall, able to go up to the individual musicians. Long shots are no problem as the overall balance tends to remain the same. However, walking from side to side will change your perspective, and while you can leave most of the band 'in place', you might want to follow a prominent musician who is noticeably left or right with some panning movements. Solo vocals can always be left on centre, unless the singer persists in running from one side to the other.

The sound mixer for the hall will almost certainly be leaving the vocal alone, but then the audience knows it is hearing the sound through a PA system—the viewer has a different sensation.

Oops! I'm running out of space, so see you next month. Keep those perspectives audiovisual. ■

CONTINUED FROM PAGE 23

## Digital-S Strikes Back

where users have taken advantage of component digital to cut maintenance costs, but have stayed with premium grade 8-bit hardware. I see Digital-S as a lower-cost 8-bit alternative to digital Betacam that will have wide appeal in mainstream production.

The features of Digital-S make comparisons with digital Betacam even more fitting. The now obligatory four 48 kHz digital audio channels are provided, with 16-bit resolution allowing performance for most TV audio purposes. There's full VITC and LTC support and RS-422 interfacing so that any editing task can be handled. Audio channels and video can be edited independent of one another. Visual picture search works up to 32 times normal speed in either direction.

Digital-S hardware also offers pre-read, which puts it firmly in the post-production market. Compatibility with analogue S-VHS means that linear track heads are fitted, giving Digital-S a pair of analogue audio cue tracks that work at all speeds.

Although it has the same external dimensions as a VHS cassette, the Digital-S cassette has improved dust exclusion and subtle detail differences that will make analogue VHS decks reject it. The high-coercivity half-inch metal particle tape is similar to that used in other contemporary formats.

The adoption of a VHS-based cassette shell means that a modified S-VHS deck can be used, keeping Digital-S cost-effective. One obvious advantage to this is that existing cart machines based on S-VHS can be upgraded to component digital just by replacing the transports. The fairly large cassette means that a 104-minute playing time is obtained without recourse to high compression factors or very narrow tracks. A thinner tape variant, offering two-hour playing time, is under development. Essentially, Digital-S is a conservative format designed for everyday production use without constant adjustment.

Digital-S has standard CCIR-601 component 8-bit digital inputs, and maintains 4:2:2 sampling throughout. DCT-based intraframe compression is used so that there is complete editing freedom. Audio and video give a combined data rate of 50 MB/second on tape.

Digital recording requires higher head-to-tape speed but lower S/N than analogue recording. The remedy for the latter deficiency

is to speed up the head drum to 4,500 rpm so that the recording becomes segmented. This segmentation approach means that 625/50 recordings use 12 tracks per frame, whereas

525/60 recordings use 10 tracks per frame. Linear tape speed is raised to 57.8 mm/second to give tracks that are 20 μmeters wide. Data that are distributed over two channels and recorded simultaneously by one head of each azimuth type use +/- 15-degree azimuth recording. A flying erase system is fitted for accurate editing. A rotating centre scanner is used in which the head disc rotates between stationary upper and lower drums. The scanner design has been optimised for low wear and accurate interchange. The 180-degree wrap transport requires two pairs of record heads that work alternately. Two pairs of playback heads are fitted orthogonally. The rotary transformers are designed for low crosstalk so that confidence replay and read before write can be performed.

Channel coding is a group code that employs partial response detection first developed on disk drives. The error correction system

uses the now standard Reed Solomon product codes. Distribution between four heads allows effective concealment in case of a head clog. Concealment in compressed data is difficult because there is by definition less redundancy. The solution adopted in Digital-S is to use data from previous and subsequent frames for concealment, which is only used in the case of uncorrectable errors.

The variable speed playback required for jog/shuttle is obtained without head deflection, thereby reducing

the cost and complexity of the transport. The data structure on tape is composed of short sync blocks that form inner codes from compression macroblocks. At incorrect speeds, tracking breaks down but short lengths of track can be read, allowing up to 40 percent data recovery. Blocks that are successfully read are decoded and used to update the picture frame store.

In summary, it appears that JVC has succeeded in positioning Digital-S just right. Clearly aimed at production—using 4:2:2 sampling and having full editing, time code and search facilities—Digital-S offers better performance than digital ENG budget formats yet promises to be significantly cheaper than earlier component digital formats. I can see a lot of mainstream users doing off-line non-linear editing on PC-based machines, and conforming to Digital-S. ■

John Watkinson is an independent consultant in digital audio, video and data technology based in England.

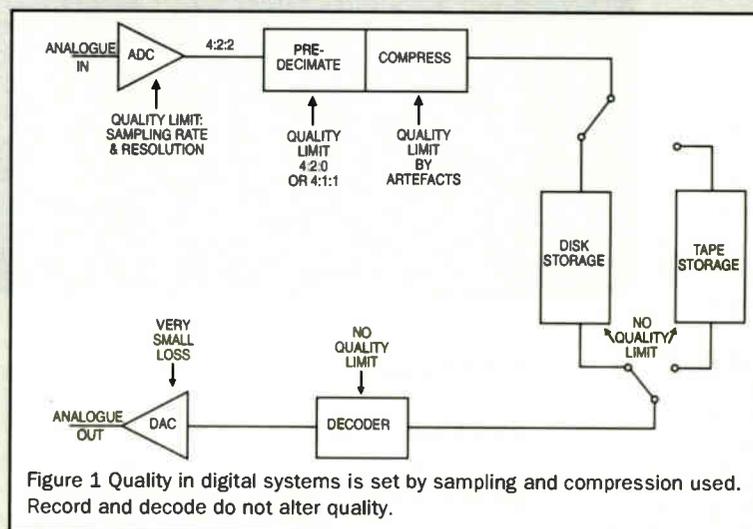
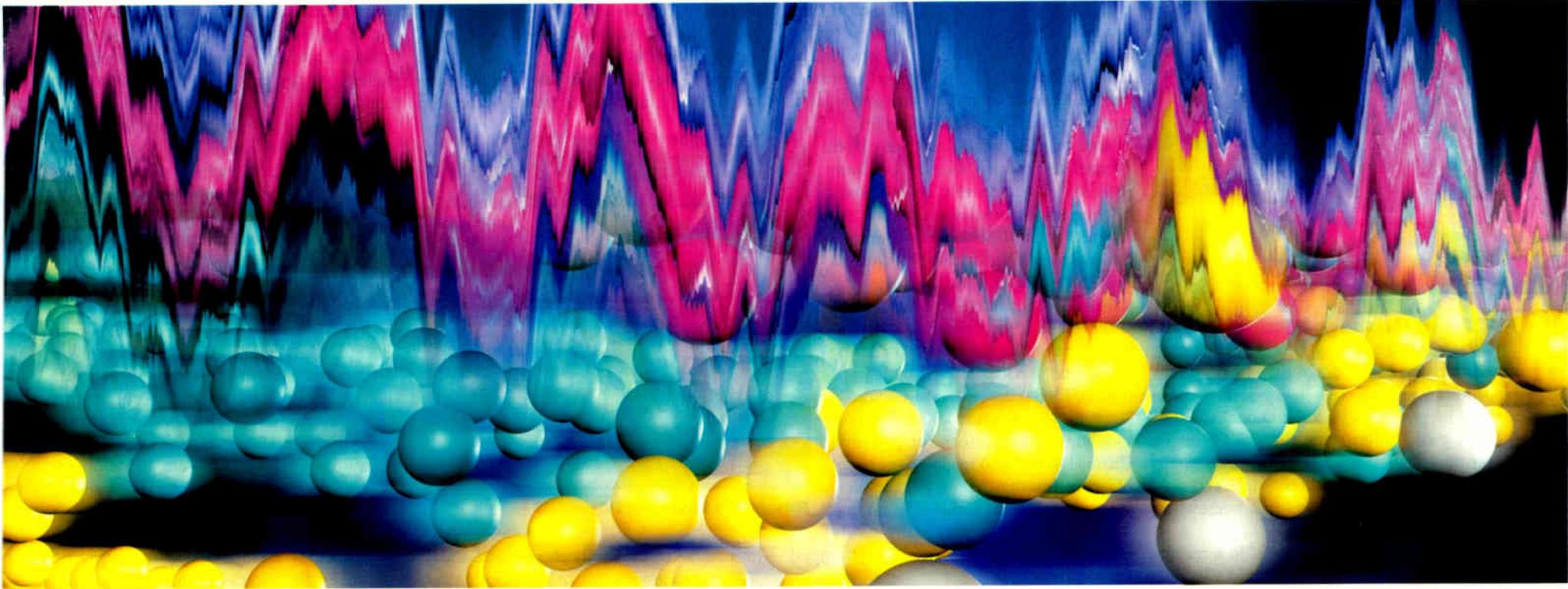


Figure 1 Quality in digital systems is set by sampling and compression used. Record and decode do not alter quality.



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# Why Channel 5 Launch Delay was Inevitable

by George Cole

## CONSUMER TECHNOLOGY

Those who attended Channel 5's presentation of its re-tuning programme hugely enjoyed a short video which purported to show how the system would work in practice. In a throwback to the 1950s public information films, a C5 engineer turned up at a home and quickly went through the re-tuning routine while explaining how 'simple' it all was to a housewife, wide-eyed with wonderment.

But now we know the reality. In a recent interview with *The Times*, David Elstein, C5's chief executive, mentioned how one re-tuning operation took three days rather than the expected 20 minutes. An exception to the rule, you might think, but there have been many reports about people forgetting appointments, lost or damaged remote control handsets that have prevented re-tuning from taking place, and otherwise inaccessible equipment. Little wonder that C5's original budget of £65 million for the re-tuning operation has now grown to around £120 million—almost half of C5's launch budget.

Now that C5 has managed to grab the Channel 35 frequency—previously earmarked for digital TV—to extend its coverage to about 80 per cent of the population, it's little wonder that C5's January 1st launch has been put back to February or even March.

Some cynics are even suggesting that the Channel 35 decision was a great relief to C5, not because it gave the company greater coverage, but because it provided a good excuse for delaying the launch as the company struggles to re-tune all those millions of VCRs, games consoles, satellite receivers and cable boxes in time.

### INTERNETUS INTERRUPTUS

Broadcasters and consumer electronics companies are getting very excited about the 'I' word—the Internet. This worldwide network of computers has around 50 million users, a number that is forecast to grow to over 200 million over the next few years. Little wonder that some broadcasters are salivating over the prospect of using this medium to promote their programmes and services.

There are already many programme sites on the Internet, from soaps to science programmes. The BBC alone offers around 8,500 pages of information, and claims that these are accessed up to one million times a week.

Now BBC Worldwide and ICL have joined forces and are planning to launch BBC Online next Spring. This will be based around popular BBC radio and TV programmes, and its coverage will include sport, information and entertainment.

At present, there is a gap between the broadcasting world and the Internet, but it's closing. In the US, chip giant Intel and NBC have developed InterCast, a system that combines TV pictures with the World Wide Web. The idea is that while watching the news for

example, viewers can download Web pages related to the subject they are watching.

InterCast is essentially a PC-based system, but many companies are keen to offer the Internet on the TV set. The first was Philips' CD Online system, which allowed viewers to surf the Internet via a CD-i interactive player connected to a TV and the phone line.

More recently Philips and Sony have licensed technology from the US company WebTV to develop set-top boxes offering television viewers access to the Internet, while Mitsubishi has developed the Intelligent TV, a set which includes a built-in modem for netsurfing.

Other broadcasters are starting to wake up to the Internet's potential. BSkyB says that the Internet could be one of the services offered by its new digital TV bouquet due to launch in autumn 1997. Teletext UK, which provides teletext services for ITV and Channel 4, has also made noises about offering Internet pages with its services. Meanwhile Cable TV companies (still) talk about using cable modems to offer customers high-speed Internet access.

Internet enthusiasts believe that smart TVs and Internet access will be a natural part of tomorrow's TVs, in the same way that teletext is today within Europe. But it's hard to see families allowing one of their members to go netsurfing in the middle of a programme

on the main set. Instead of putting modems into top-line sets, perhaps electronics companies should be thinking about building them into portables that can be used in separate rooms around the home.

Then all they'll have to worry about is the cost of it all, and the fact that surfing the



Mitsubishi's Intelligent TV

Internet ties up the family phone line. Sorted!

There is a golden rule in broadcasting that viewers are interested in programmes and not the technology. Who can forget executives of the ill-fated BSB telling us that their service was bound to win the satellite TV wars because it used the superior D-MAC system while Sky used boring old PAL? As

BSkyB has shown, people will pay good money if the programming is right, but it's a mistake to think that viewers are not interested in technology.

Some cable TV companies are in danger of falling into the trap when it comes to stereo sound. Editors of home cinema magazines regularly receive an avalanche of letters from cable subscribers complaining about the lack of stereo sound. Apparently some cable networks relay programmes in mono which were originally broadcast with stereo or even Dolby Surround soundtracks.

Predictably, some cable viewers are beginning to feel like second-class citizens. They already grumble that while many VCRs now offer satellite control, where the recorder operates the satellite receiver during timer recordings, few offer cable box control. There were also complaints that during the Bruno/Tyson fight on BSkyB, some cable companies didn't offer a pay-per-view service—one cable operator said its telephone system wasn't geared up for it.

Cable companies rightly talk about the billions they have invested in setting up networks, the increased choice they offer, and the fact that viewers don't need a dish to receive their programmes. But there is a danger that as satellite TV brings stereo sound, innovations like PPV, and soon digital TV with interactive services, cable could get left behind. ■

## Pass the Cookies

by Roger Frost

### INFORMATION TECHNOLOGY

Coming away from the shopping centre with credit card slips, loyalty cards and itemised receipts makes one think about all the data retailers like to store about their shoppers. Maybe it's vain to think that anyone is interested. But if anyone should care, there are lots of very useful facts to be dissected and cross-referenced.

Hailed as tomorrow's shopping centre, the Internet is a place where people can look at what amounts to a series of shop fronts currently being set up by businesses everywhere. Here too is another great place to find out what interests a group of mainly professional people. The Internet is fast becoming a vast storehouse of market data that businesses will not want to ignore.

While television advertisers do their research and make a rough guess about who is watching, when people click their way around the Internet they are expressing real interests in real time. If the system knew their entire sequence of moves—and fortunately it doesn't—businesses could deliver a seriously well-targeted sales message.

There are a few ways that the system might do this, some obvious but some clandestine. The most obvious is through 'search engine' pages where typing a word like 'football' produces a list of places to visit as well as a mix of unconnected advertisements. It's a logical next step that one day, a sports retailer will want to pop up on the page—not just as one of thousands of entries about football, but way up front in a blazing banner across the screen.

Many sites on the Internet offer a logon screen and ask for the user to identify themselves. As many information services are free, it seems reasonable to say thank you and provide them with some details in return. In fact it provides slightly more than this. Because with that ID, system operators can track users' movements within the site to see where they go next. On the other hand, the service may simply be testing how easily or otherwise users are able to navigate their products or services.

In the past few months, something rather more sophisticated has emerged. Despite the cosy-sounding name of 'cookies', this is a powerful tool which transparently tracks who is who. It works like this. When anyone visits a site on the Internet, the site may send the browser software a cookie—a small string of coded characters. The browser stores this on the disk, and because the cookie is unintelligible, it's never really clear what is being stored.

Most usefully, the cookie might just be a user's logon identification to grant automatic access the next time they visit the site. In several reported cases, the cookie stored a code which told the site which adverts the user had already seen—so that quite reasonably, the site could throw them a different advert the next time they visited.

And of course, if the site was smart enough to discover that they liked football, it might do the decent thing and perhaps offer them a tempting set of football attire.

The exciting thing about this cookie technology is that people logging onto the Internet can expect to automatically receive information related to interests they expressed in the past. Ask about shares today, and tomorrow shares come along on their own. Ask about American football today, and tomorrow the system will know that when the user says football, they don't mean soccer.

But the way this operates does tend to hit the paranoia centre. Although today's browser software can alert the user if a site wants to store a cookie, what is spooky is that the browser will happily supply its cookie information to the site without asking anyone.

More worrying is that if the browser is configured to send electronic mail, it will just as happily deliver the electronic mail address, which as we know, identifies a user precisely. Today's tip is that if people want to stay anonymous, or look after what might be called their 'digital health', they should check that the browser doesn't know their email address.

Time will tell whether that worry is exaggerated. At worst, most users will probably just get more junk email. Meanwhile the positive side is already taking shape, as users of Microsoft's MSN service can logon to find a home page which can be personalised and customised to their interests. Maybe one year it will be smart enough to choose, gift wrap and deliver all those Christmas presents automatically...

For details about privacy and democracy issues visit <http://www.cdt.org>. ■

Roger Frost (100111.2653@compuserve.com) is a freelance writer and IT consultant in the UK.

# Taking Distribution into the 21st Century

by Andrew Emmerson

## DISTRIBUTION

**B**ack in 1936, when the British Post Office laid the world's first long-distance coaxial cable from London to Birmingham, a precedent was set. The cable was conceived as a multi-purpose broadband resource, with tubes provided both for telephone calls and for the infant television service. In the event, television was not ready for the cable and the cable was always used commercially for phone calls—in fact it was not until after the war that the cable was even tested with a television signal (and yes, it worked fine).

With the near-universal predominance of digital transmission today, broadband links form part of an integrated all-purpose bearer network which is entirely transparent to the nature of the bits it carries. Voice, data, fax, broadcasts and all other categories of traffic are handled alike, with nothing to distinguish them as they traverse the network. It is only the terminal equipment which agglomerates the various signals into the 'multiplex mountain', and sorts them out again at the far end.

So it's easy to see why carriers dealing with broadcast signal distribution treat these no differently from any other traffic they are called upon to handle. As broadcasters we may like to think our signals take a uniquely special path through the network—as once they did on the microwave links radiating from the Telecom Tower—but the reality is otherwise. The carriers' sole concern is that new technologies can handle all traffic modes without difficulty.

### WHY SDH AND WHY NOW?

In recent years several well-known telecoms carriers have introduced SDH transmission technology into their networks. A number of them carry video over these new networks, and for this reason SDH is something broadcasters need to know about. SDH is certainly a hot topic in telecoms networks currently—indeed you could call it the flavour of the month, judging by the number of mentions in the specialist press. But why?

The answer is simply because SDH is a significant improvement. It is more versatile than any other digital network architecture, and meets the demands of network operators better than any other system. Ten or fifteen years ago, the vision of an all-digital network was the dream of every telecoms operator, but the technology they started installing was not the ultimate in efficiency and flexibility. Today, planners expect all this plus an inherent and straightforward management capability. In short, their demands have increased and only SDH can satisfy them effectively.

SDH stands for Synchronous Digital Hierarchy. It is a purely digital transmis-

## Another helping of alphabet soup as we examine SDH, a cost-effective network technology with unmatched flexibility

sion system, used in integrated voice/data/video/and everything-else networks. The term synchronous implies that the data characters and bits are sent at a fixed rate with all transmitters and receivers across the whole network synchronised to a common 'clock'. Characters are spaced by time, not by start and stop bits. So by eliminating the need to signal the start and end of each character, the network has fewer bits to send, thus allowing a greater throughput of traffic.

Hierarchy refers to the fact that the network is designed in stages or levels of traffic-handling capacity. Low-rate streams of data are combined with others to create higher-rate streams, which can be transmitted across the network faster and more efficiently. At the far end these streams are demultiplexed or sorted out back into their constituent lower-rate data flows.

Another feature which distinguishes SDH from digital transmission architectures in general is its added advantage of a built-in management system. This is disarmingly simple, yet versatile. A two-stage multiplexing system provides an effective and economic method of routing traffic, while the provision of ample overhead capacity in the system enables the creation of a completely managed transport network.

What's more, SDH is a fully standardised system. Interfaces conform to open-systems norms, allowing the inter-working of different manufacturers' equipment. This allows operators to design multi-vendor networks without special considerations or the need to build-in individual interfaces, allowing (in today's jargon) an unhindered mid-span meet.

### HOW IT WORKS

For non-engineers a detailed explanation is probably superfluous, but the basic principle is both elegant and simple to grasp.

The word hierarchy implies a state of orderliness, and this is indeed a fundamental point of SDH. Telecoms traffic streams are quite similar to road traffic, and SDH can be likened to a highway system with minor roads feeding a motorway. The motorway is the core of the trunk network, capable of handling all the vehicles feeding onto it so long as they approach it in an orderly fashion.

This implies that cars on the down ramp will spot a gap in the motorway traffic in good time and then slot in neatly at exactly the right moment. A good traffic management system will ensure that the traffic on the main route leaves a number of gaps for vehicles joining, and by keeping all the traffic flows in sync, both gaps and cars ready to join will always coincide at the right time.

For this reason SDH systems are called synchronous—all traffic flows are controlled by a single clock or timing mechanism. Older systems did not keep perfect synchronism and traffic clashes occurred from time to time, reducing their throughput or capacity. Incidentally SDH is equally applicable to optical fibre, microwave radio, and other bearer mediums.

### UNIQUE ADVANTAGES

The total bearer capacity of SDH systems is pretty impressive. The highest data rate is currently 2.5Gbit/s (STM16), with 10Gbit/s

(STM64) expected in a year's time. Even that is not the limit, and the trend is towards 40Gbit/s (STM256). SDH eliminates all the drawbacks of older technologies, and also offers improved network performance, greater flexibility and reduced operating costs. It also allows faster provision of new services, simpler maintenance, and lower manpower requirements.

The network management aspects are particularly important to the network operators, who—under pressure to reduce costs and increase management efficiency—are seeking to interlink and integrate different layers of their management structure. This means the day-to-day operations of managing the business must be integrated with service management, and this in turn must interact with network management and the element layers which underlie this. SDH makes such integration possible.

### WHO IS USING SDH?

Virtually all network operators recognise that SDH is the next stage in the evolution of intelligent broadband networks, and telecoms operators worldwide are either implementing or examining SDH techniques. Even some countries with underdeveloped telecommunications infrastruc-

In November 1994 Energis announced it had won a 5 year contract with Reuters Ltd to operate a managed vision network between four major London studio locations for the distribution of their television services. Energis has always argued that service offering—rather than technology for providing it—is what interests most of its targeted customers and in this it is quite right. The other chief strength of Energis is its pricing. The network itself employs SDH transmission technology and runs on optical fibre lines, chiefly alongside high-tension electricity power lines. Some circuits are laid under roads or in the tunnels of the London underground railway.

NTL has also launched a national transmission network using SDH—it provides national connectivity for both the Vodafone and Orange mobile radio networks, but does not carry broadcast traffic. COLT is also using SDH to leapfrog BT and Mercury, but for business telecommunications, not broadcast customers.

### MISSION-CRITICAL

Leapfrogging tried and tested techniques with new technologies for mission-critical operations such as the BBC's distribution requirements inevitably involves a degree

**SDH systems are called synchronous -  
all traffic flows are controlled by a single clock.**



tures see SDH as a means of catching up rapidly.

Cost grounds alone rule out an immediate transition to SDH networks. Different operators will have different timetables, and not all of them will select SDH for the same reasons. The most enthusiastic take-up is in markets with new entrants, including cable television companies and alternative long-distance providers, on account of their need to be more competitive. It is this competitive nature of the overall business that is also driving the established PTTs and phone companies towards the early deployment of SDH.

Several British carriers are using SDH, most notably Energis which has two flagship broadcast customers, the BBC and Reuters. Transmission of BBC1 and BBC2 television and BBC Radios 1-5 has been delivered via the Energis national fibre optic network to the majority of UK homes since the end of 1994.

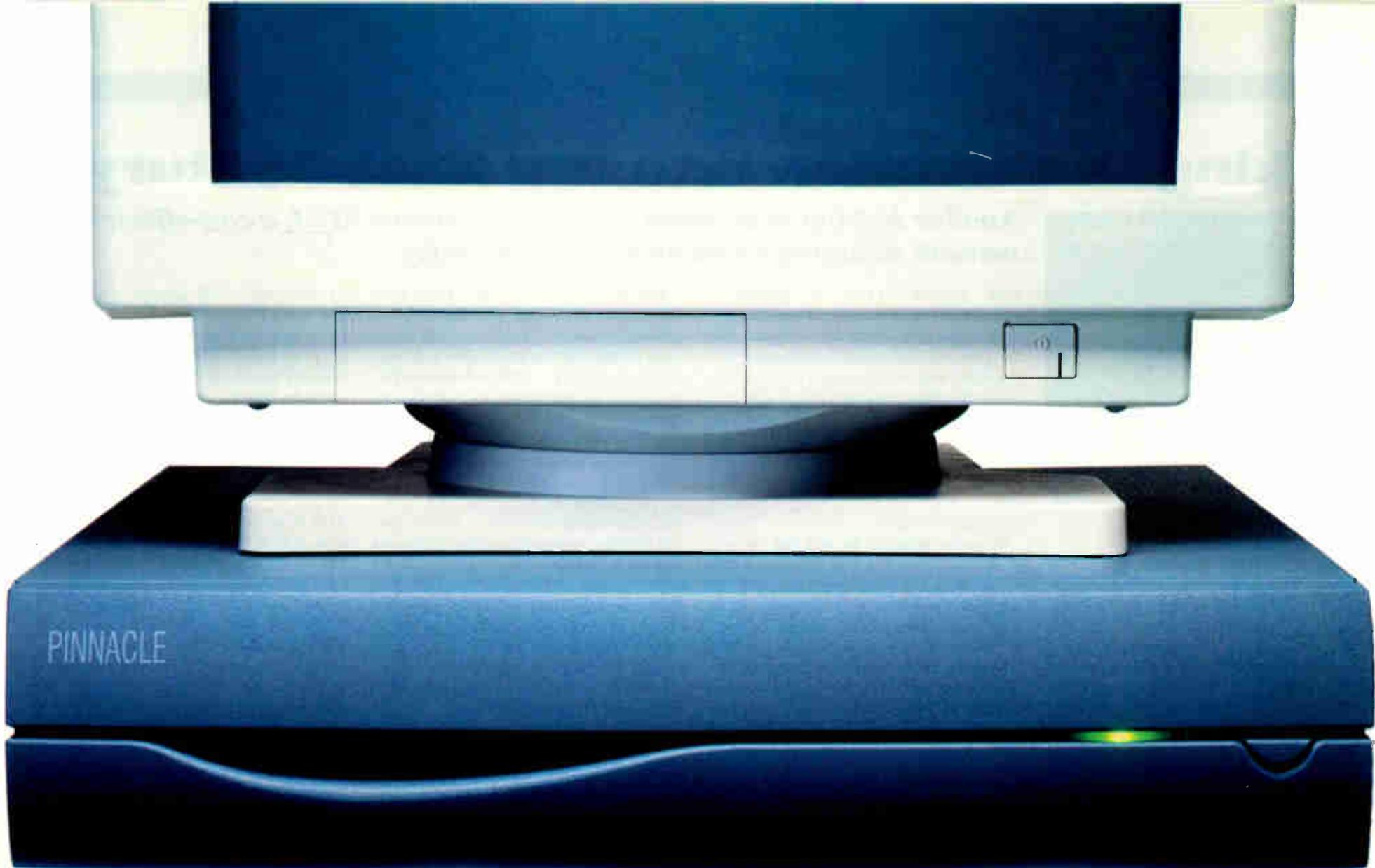
Some 67 paths were installed, and now carry BBC television programmes from its studios to its transmitters in London, Birmingham, Manchester and Leeds, and BBC radio programmes in South Wales and the Midlands. Incidentally, it is worth noting that BT still provides the BBC directly with more than 2,500 broadcast circuits for contribution and SB (simultaneous broadcast) purposes. Temporary circuits and feeds to local radio transmitters also remain in the hands of BT.

of risk. Critics argued that Energis had displayed considerable faith in adopting SDH at a time when much of the network management software was not even written. They also disputed whether SDH was the most appropriate or economic technology bearer for the kind of traffic that Energis was seeking to win, suggesting that it was more suitable for a private service where bandwidth is allocated dynamically on demand than for a permanent digital private circuit capacity.

For all that, the Energis network has performed very well, making it a model for other operators to examine. The last word goes to Alistair M Henderson of Energis. He declares: "It now seems inconceivable that anything other than SDH could be used to provide a service platform. The most particular of customers seem to notice the improvement.

"Broadcast video engineers are not easily satisfied, and the rising tide of Internet service providers are aware of every bit-error. As customer awareness of the advantages of SDH becomes more universal—and the volume of special and directly connected services increases—it might become increasingly difficult for operators to provide service on any medium other than SDH." ■

Andrew Emmerson ([midshires@cix.com-pulink.co.uk](mailto:midshires@cix.com-pulink.co.uk)) is a technology writer and consultant in the UK.



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**PINNACLE**  
S Y S T E M S

# Flextech to host BBC DTT?

by Chris Forrester

## SATELLITE BUSINESS

**F**lextech, controlled by TCI, has reportedly beaten off tough competition from BSkyB to win the BBC contract for at least six subscription channels. The new channels will launch early next year on satellite and cable, and be available as part of the BBC's new digital terrestrial multiplex in 1998.

At press time Flextech was still officially saying that no deal had been signed, but industry observers are confident the deal will go ahead.

Details are also emerging of how Flextech might launch the channels in analogue form early next year. Flextech controls more than a dozen channels, with some such as TCC, Bravo and The Family Channel distributed widely.

The company is examining how it could use one or more of the channels as either a re-launch vehicle, or to establish multiple channel day-parts with extended coverage once digital capacity becomes available. Flextech was seen as being the most advantageous partner for the BBC, with the possibility of some of the channels finding favour on TCI's own cable systems.

The new channels being discussed are Showcase (drama and entertainment), Horizon (documentaries), Arena (arts and education), Sportview, Life (Lifestyle), Weather, and BBC Catch-Up (early repeats).

### WHAT'S LIVE TV WORTH!

Mirror Group, publishers of London's Daily Mirror and Independent newspapers, is apparently sitting on a goldmine with its L!VE TV cable TV channel—despite the channel's difficulty in attracting viewers.

Speaking at Mirror's interim results presentation, Mirror Group CEO David Montgomery said the cable-exclusive channel's annual income of £5 million (\$7.75 million) was ahead of plan, while costs of £12 million were below budget. The station lost £4.1 million (\$6.3 million) in its first six months operation. Montgomery said he expected the channel to be profitable by 1998-99.

This forecast, plus an independent valuation and increase in potential viewer homes from 1.5 million to 1.7 million by year-end resulted in a balance sheet valuation of "between £50 million and £90 million", according to finance director John Allwood.

L!VE TV is the station famous for topless darts, and the 'News Bunny' rabbit that sits alongside the news reader giving a 'thumbs-up' to a good news story. In addition the channel has a statuesque blond from Bergen reading the weather forecast in Norwegian (she gives the forecast for Norway in English). It's dramatic high-spot is a steamy daily soap opera named after

L!VE's high-rise home—Canary Wharf. The plot line? Life at a cable news TV station where love affairs seem more commonplace than ad-breaks. Viewing figures, by any calculation, are modest with most data suggesting a 0.01 average rating, at best.

L!VE's latest wheeze has seen the station drop its 'Lunchbox Volleyball' show, which featured hunky men stripped to figure-hugging swimwear, replacing it with Handy Hunks, more stripped-to-the-waist muscle-ripping fellows demonstrating how to change a light-bulb or fix a picture. Time will tell if the show is successful.

Thanks to stunts like these, L!VE TV is never out of the news pages. Meanwhile viewers seem rather more difficult to come by.

### CANAL+ AND NETHOLD MERGE

Canal+ and NetHold have agreed to merge, creating Europe's largest television group with over 8.5 million subscribers. The group will have a significant position in France, Italy, Spain, Scandinavia,

around the world for Australia (Foxtel), Holland (NetHold), South Africa (M-Net), Thailand (Shinawatra), Italy (Telepiu) and with recent deals signed for deliveries for TV Globo and Netsat in Brazil, Mexico's Televisa and News Corp. Pace is also behind the supply of boxes for Viacom's Showtime and NetHold's 1st Net all-digital operation in the Middle East.

September saw the initial 12,000 box delivery of decoders specifically developed for Stream, the Telecom Italia cable subsidiary. Joint CEO Barry Rubery says Pace's business plan did not depend on UK developments—although it is understood that Pace is a likely supplier for BSkyB's digital introduction later next year—and that he expects output to top 1.6 million units this financial year.

The Stream box is fully MPEG-2 DVB compliant and has an internal modem, phono and Scart (the Euro-specified connector) sockets, computer connections, high-speed data port and Pace's Electronic Programme Guide.

**In the past year Pace has floated on the UK stock market and made the transition from analogue box maker to digital.**



Benelux and Germany as well as an established presence in several growing markets in Central Europe, especially Poland.

Trading as Canal+, the new group will dominate European pay broadcasting with BSkyB (5.5 million subscribers) as Number 2, and Kirch/BSkyB battling for the German market with the recently merged Bertelsmann/CLT. Plans by Hughes-backed DirecTV to acquire 30 per cent of NetHold's reputed \$1.8 billion assets have been abandoned.

Pierre Lescure, Chairman and CEO of CANAL+, said: "The growth potential of our new group is phenomenal. The combination of relatively immature pay-TV markets where NetHold is present and the introduction of digital offers superb opportunities both to increase our subscriber base, and to distribute our programming software across a wider territory. I cannot think of a better strategic fit for CANAL+ and I look forward to the challenge of leading our new Group into the era of digital television."

Prior to the completion of the merger, NetHold will transfer its operations in Africa, the Middle East, and the Eastern Mediterranean (Greece and Cyprus) to MIH, the South African group which currently owns 50 per cent of NetHold. These operations will continue to cooperate with the new merged entity in the fields of technology and rights acquisitions.

### RECORD PROFITS FOR PACE

British set-top box-maker Pace has reported record sales, with pre-tax profits up 442 per cent to £18.2 million (\$28.21 million) on revenue of £196 million (\$303 million), itself up 96 per cent on last year.

In the past year Pace has floated on the UK stock market and made the transition from analogue box maker to digital. It has secured extensive digital decoder contracts

But the units have a significance for Pace greater than the value of the contract. The specification seems to perfectly match what British cable companies need, and in a hurry. According to one Pace insider, British CATV is in a "desperate" state over the threat of domination by Sky, and is "fairly confused" as to what it should be doing.

Last year Rubery (and joint CEO David Hood) came close to selling out to General Instrument. Those negotiations came to nothing but both parties are again talking, this time discussing a strategic partnership to satisfy the British market, at least. Pace is already heavily involved in technical trials with TeleWest, Yorkshire and Bell Cable Media and expect to start shipping digital set-top decoders "to a major MSO in the 4th quarter".

### NEW UK CABSAT VIEWING RECORD

Satellite and cable viewing won its highest ever share of the total UK audience, according to BARB official data, week ending August 18. Non-terrestrial channels attracted 11.7 per cent of total UK viewing in all TV homes, pushing public broadcaster BBC2 into 4th place.

The figures ranked ITV at 34.9 per cent, BBC1 at 30 per cent, Channel 4 12.2 per cent, satellite & cable 11.7 per cent, and BBC2 11.2 per cent.

Channel 5, the UK's fifth and final analogue network, is preparing to serve non-terrestrial markets. Transponder capacity reserved on Orion 1 (37.5 deg W) and Intelsat 705 (342 deg E) will feed not only regional transmitters but also cable head-ends.

It is also reported that BSkyB will carry the channel on DTH with co-operation extending to joint programme acquisition and cross-promotion, although re-tuning

difficulties now puts the original January 1 terrestrial launch date very much in doubt.

Meanwhile the proposed BSkyB purchase of 25 per cent of German pay-TV channel Premiere is under threat from Germany's competition regulator. Premiere is currently owned by Canal Plus, Bertelsmann and Kirch, and the regulator is worried that if BSkyB buys into Premiere the group would have an effective monopoly over movies and sports rights.

### WEATHER COMPETITORS GET TOGETHER

Atlanta-based Weather Channel has soaked-up its fierce rival, Ontario-based Weather Network in a deal rumoured to be worth some \$30 million. Weather Channel's owners, Landmark Communications (who also own the Travel Channel) bought out the Pelmorex-owned Weather Network, but not without causing considerable anxieties for management and staff at W-Network.

W-Network had been rapidly expanding out of its Canada base with operations (and contractual commitments) from Bell Cable Media in Britain, France (where it operates as La Chaine Meteo) and Italy, where it was due to launch a weather service for the Telepiu DTH operation. Pierre Morrisette said both organisations would now examine the industry but meantime it was "business as usual".

Weather Channel, ubiquitous across the United States, is contracted to supply a five hours-a-day service on BSkyB due to commence on November 1 and a DTH/cable service over Latin America early in October. Weather Channel has acquired 50 per cent of Pelmorex equity (but only 29.9 per cent voting rights because of Canadian corporate regulations). W-Network chairman Pierre Morrisette remains as chairman of the new group. ■

*Chris Forrester (100334.2056@compuserve.com) is a freelance writer on broadcast business developments based in the UK.*

NEWS WATCH

BUSINESS

DIGITAL VISION OPENS U.S. OFFICE

STOCKHOLM, SWEDEN

Digital Vision, a company that specialises in real-time image processing, DVD compression and telecom codecs, has opened a national office in the U.S. The new Digital Vision facility — located at 11835 W. Olympic Blvd., Suite 1275, Los Angeles, CA 90064 — will focus on sales support and special product development.

"We feel that to better support our existing and future customer base, a strong corporate presence is need in the U.S.; one of our strongest markets," said Peter Weiss, managing director.

# The Changing Face of Audio Consoles

by Keith Spencer-Allen

**AUDIO  
PRODUCTION**

There was once a time when it was possible to count the variety of inputs that an audio mixing console in TV production would receive on the fingers of one hand. As the proliferation of recording formats and live input sources finding a home in TV production continues apace, those days have long gone.

But the principal role of the console still remains the same—to take a diverse range of input signals, combine them in the required manner, and package them for output. Just as the variety of inputs has grown, so has the total number expected to be handled.

This creates a considerable challenge to not only the console designer, but also the customer or specifier attempting to predict

what may be the requirement in 12 months time, and how that need should be addressed economically. It is worth taking an overview of how mixer inputs are changing, and considering what impact this may have on console specifications.

## MICROPHONE ADVANCES

In most production situations the microphone will be the predominant audio source. There has been a vast increase in the choice of microphones available for different creative requirements. Digital recording media have stimulated an awareness of microphone characteristics and, particularly in music, this can mean anything from a low output ribbon-type mic to a

very high output condenser model.

Advances in condenser capsule design have overcome the previous sound pressure limitations that made the mics unable to handle high sound levels. Most recent models now have maximum sound pressure level (SPL) ratings of around 140dB, with some exceeding 154dB.

Such mics can handle a sound source ranging from very low level signals to several times the threshold of pain—which clearly presents the mic inputs of the mixing console with a challenge! While such a dynamic range is not an everyday occurrence, the use of such mics in an outside broadcast context could have its benefits. They would be unlikely to overload, yet still provide a fidelity beyond a non-condenser microphone.

The difficulty is that providing mic amps capable of handling such input signals on a standard console is prohibitively expensive. Most broadcast consoles and particularly those used in outside broadcast applications use transformer-based mic amps. These have the ability to isolate downstream electronics from any spurious problems in the input signal such as stray voltages.

However there is a likelihood that high input levels will lead to transformer saturation and harmonic distortion, even though the mic amp output level may appear at a normal level. The easiest solution is the application of an attenuator pad prior to the transformer, although in some cases this is not the best solution.

Given that the cost of handling high output, highly dynamic signals with the highest of fidelity across every mic input cannot be justified, there is considerable advantage in the use of external specialist mic amplifiers. These may either take the form of a rack, positioned closer to the studio floor or broadcast situation, or as compact stereo units positioned close to the mics themselves. The feed from these wide dynamic range mic amps then pass back to the console at line level, causing far fewer problems at the mixer end and less chance of signal losses on longer runs.

There is the problem of taking mains powering to the remote mic amps, although this may be offset by the possibility that with multiple mics, the feed from the mic amp rack to the mixer may be a single multi-way connector, or even better a single, compact fibre-optic link.

Whether such problems trouble the majority of TV productions yet is uncertain. What is more definite is that few current TV production consoles have the mic amp gain structure on board for handling a variety of microphones picked for sound characteristics rather than level compatibility with the mixing console.

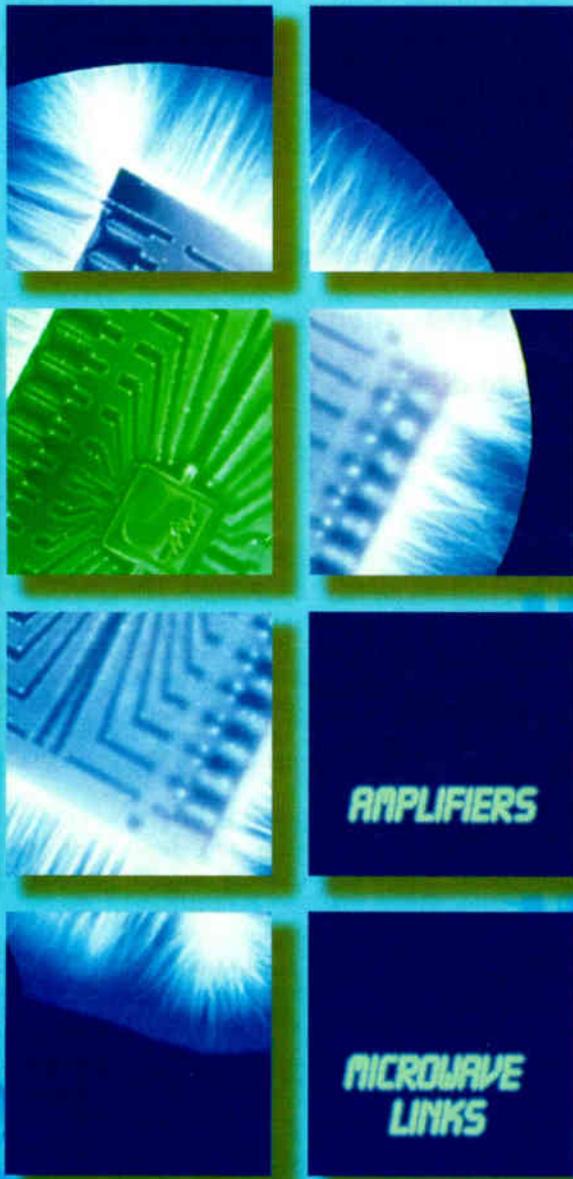
## STEREO AND ISDN

The need for stereo inputs has arisen with the greater interest in broadcasting stereo TV. If there is going to be a regular requirement for stereo mics, then there would be some value in having some stereo mic input channels which are also equipped with MS stereo decoders and width controls. As stereo inputs only use about the same module space as a single mono channel, they can offer a saving in console space requirements.

However if the use of stereo mics is going to be infrequent, it is preferable to employ a pair of mono channels for stereo—a stereo channel cannot satisfactorily be used for

(See *Consoles Changing Face*, page 33)

FEATURES



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# The EBU VSAT Voice-Conference

by Brian Flowers

## ENGINEERING CORNER

About four years ago I had an idea about how to create a voice conference system via satellite, using only three digital voice channels for 50 or more participants. Moreover, unlike existing satellite conference systems, it would give real-time unimpeded access to all participants by using DAMA (Demand Assignment Multiple Access) with decentralised access control.

Existing satellite conference systems require participants to signal their desire to intervene, then wait two or three seconds whilst the hub gives them access to a satellite channel. This is far too cumbersome for the EBU News Conference or the EBU Technical Co-ordination Conference, where instantaneous access is an essential requirement.

When I first discussed my idea with the

with the orderly procedure of the EBU News Conference, collisions would be very rare indeed. If they did occur, the offending participant would hear a one second beep of busy tone, prompting him or her to wait and then try again.

Initially NEC proposed a system with only two voice channels—one reserved for the hub and one for the VSATs to share. I insisted that the VSATs needed two channels, so a second VSAT could intervene while the first VSAT was speaking. This was finally accepted and a special 'EBU voice card' was developed to meet the requirement of access control by each individual VSAT, as opposed to the normal system of centralised access control by the hub.

All voice communication VSAT systems utilise voice-activated carriers, but most existing systems, apart from the NEC system, initially require up to one second for the demodulators to synchronise to a given source. Thereafter short bursts of carrier are sent during pauses in the speech signal to keep the demodulators synchronised.

The new VSAT system is able to dispense with this requirement by having demodulators which synchronise within 30 ms. A special 30 ms preamble (training bit sequence) is inserted by the modulator to facilitate quick acquisition. Since a single-hop satellite system delays the signal by about 270 ms anyway, this additional 30 ms is not significant.

A CSC signal (Common Signalling Channel) is sent continuously from the hub via a separate data-channel, to provide

to be established when required.

It will also provide a safety net if a VSAT is having problems operating in mesh connection, due to bad weather conditions. By selecting the VSAT in question to a separate group and then conferencing that group with the main group at the hub, a double-hop star connection can be established for the VSAT concerned. This has the advantage of communicating via the large (6 m) dish at the hub, thereby improving the go and return link margins for that VSAT by several dB.

By using the same procedure with yet another conference group, the current 'news

**The system probably also has a future in distance learning projects.**



chairman' and 'sports chairman' can be given priority access to the news conference via the hub. They can then always intervene, even if two other VSATs are simultaneously utilising the 'main' and 'interrupt' VSAT channels of the news conference group.

Similarly two 90 cm flyaway earth stations can be used to provide communications for news events in difficult locations. These flyaways are also be connected via a separate conference group, and since only

two earth-stations will be using that group, they won't need the special access control system of the fixed VSATs.

In fact they can operate with normal fixed transmit and receive frequencies, set to the two respective VSAT satellite channel upleg frequencies of the chosen conference group for transmission, and the hub satellite channel downleg frequency of the chosen group for reception. Provided no other VSAT is selected to this particular conference group, there is no risk of uncontrolled collisions.

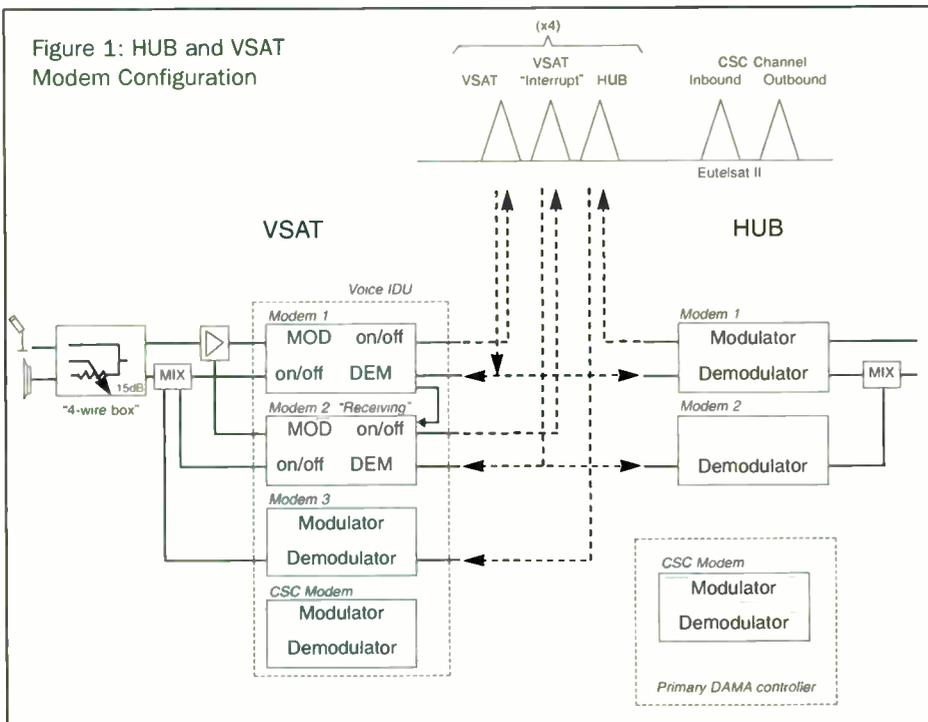
Fig.1 shows the basic configuration of the hub and one VSAT. When a VSAT transmits, it disconnects the corresponding receive signal from its audio listen mix, to prevent its own signal coming back as an unattenuated echo with a single-hop delay. If however the VSAT does not receive its own signal back from the satellite, it knows that it has collided, stops transmitting, and sends a "busy signal" beep to its listen mix.

Moreover a VSAT will not transmit to a satellite channel which it knows is already occupied. However due to the single-hop delay, collisions can occur if by chance VSATs start transmitting within 300 ms of each other. Dealing effectively with this collision scenario was the most difficult part of the system design, but I am confident that the problem has now been solved.

A sophisticated echo-canceller is installed at each VSAT, looking in the direction of the local connection. This ensures that even if two VSATs are speaking simultaneously (via the VSAT channel and the VSAT 'interrupt' channel respectively), acoustic loudspeaker to microphone feedback will not cause

(See A VSAT Conference, page 32)

Figure 1: HUB and VSAT Modem Configuration



manufacturers of VSAT (Very Small Aperture Terminal) systems, they were interested, but they all had reservations because the proposed system would break the first commandment for VSAT voice communication systems—"Thou shalt not collide".

Moreover my system requires the digital voice carrier demodulators to synchronise to any source within 30 milliseconds. It was difficult to find a digital voice carrier demodulator with this capability four years ago.

Then about two years ago, NEC of Japan said that its new BOD (Bandwidth On Demand) VSAT system could perhaps be modified to meet the EBU's requirement. The new NEC VSAT system's demodulators could synchronise in less than 30 ms, but the company's engineers were still doubtful about breaking the 'no collision' rule for voice channels.

However I was able to demonstrate that

housekeeping communications with the VSATs. It also provides a frequency reference, which helps the demodulators to synchronise quickly—despite frequency drift due to the Doppler effect, caused by satellite movement with respect to the earth.

In addition the CSC return channel keeps the hub informed about which VSATs are transmitting at any instant, so if somebody leaves a microphone open for example, the hub operator can see from his selection panel display who is the culprit. Moreover the upleg transmitter concerned can then be disabled by remote control from the hub if necessary.

For the EBU News Conference, we shall provide four separate conference groups by using four groups of three satellite voice channels. The hub will be able to select each VSAT to any one of the four groups. This will enable regional conference groups

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CONTINUED FROM PAGE 31

## A VSAT Conference

echoes to be heard by other participants.

This is important because although conference systems incorporate a 15 dB 'autodim' facility to reduce acoustic feedback, even low-level feedback may be unacceptable in a satellite system as it produces a disturbing echo.

A pilot project comprising four VSATs is due to be delivered to BBC London, TDF Paris, SVT Stockholm, and the hub at EBU Geneva in November 1996. This will enable us to make any adjustments and demonstrate the system to users. If all goes well, the full system of 48 VSATs and a 6

m hub at EBU Geneva will be ordered for delivery in 1997.

One of the adjustments we may need to make during the Pilot Project phase is the 'hangover time'. This has nothing to do with Japanese beer or sake. It refers to the length of time the voice-activated carrier stays on after speech modulation has finished. This is set to 200 ms for normal VSAT telephony connections, but a longer value may be preferable for the conference system. On the other hand it is desirable to minimise the changes to the standard BOD system, so we shall try operating with the

standard value first.

Both 32 kbit/s ADPCM (G.721) and 16 kbit/s CELP (G.728) are available for voice signal coding, and the chosen system can be downloaded to the VSATs from the hub. If the 16 kbit/s quality is judged to be satisfactory, we could obtain a 3dB improvement in the satellite link budget by using 16 kbit/s instead of 32 kbit/s.

Standard off-the-shelf datacom facilities can be added to the VSAT system for a relatively modest additional cost, thereby creating a WAN (Wide Area Network). The EBU has recently carried out successful tests with two VSAT datacom terminals, using TCP/IP routers to interface to the EBU Ethernet datacom system.

Anticipated advantages of the EBU satellite conference system compared with the existing (N-1) star configuration terrestrial

network conference system are significantly reduced costs, better voice quality, and higher reliability.

The EBU satellite conference system probably also has a future in distance learning projects, enabling students at various locations to put questions to a professor while students at all other locations hear the questions. The professor then answers in vision and sound to all locations from his university studio, and the 'Global College' becomes a cost-effective reality.

EBU and NEC have jointly applied for patent protection for this conference system, because we are confident that it has a bright future. ■

*Brian Flowers is senior engineer at the European Broadcasting Union technical department, and a member of the Royal Television Society, IEEE and the New York Academy of Science.*

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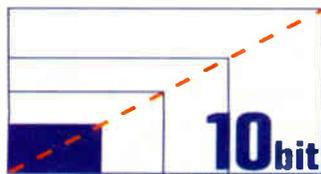
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## NEWS WATCH

BUSINESS

### GERMAN ISDN DEVELOPER ENTERS U.S. MARKET

NORNBERG, GERMANY

BinTec Communications GmbH announced that it is entering the U.S. market with its range of ISDN connectivity products. BinTec's ISDN products are used in Germany by companies such as McDonald's, BMW and Mercedes.

"We will also seek collaboration with the Regional Bell Operating Companies (RBOCs) and Internet Service Providers (ISPs)," said Gregor Krawczuk, CEO of BinTec, once the company has established a presence in the United States.

The company debuted its ISDN product line at the Network+Interop show in Atlanta last month.

SATELLITE

### ALPHASTAR CANADA APPLIES FOR DTH LICENSE

TORONTO, CANADA

AlphaStar Canada Inc., a subsidiary of Tee-Comm Electronics Inc., filed an application to provide digital direct-to-home satellite television service to Canada.

"With approval, AlphaStar Canada will be able to provide multichannel digital satellite television in Canada," said Al Bahnman, president and CEO of AlphaStar Canada and Tee-Comm. "This initiative represents an exciting new opportunity for Tee-Comm and is the final step toward our goal of launching a Canadian digital direct-to-home service."

Subject to regulatory approvals, the Canadian service will initially utilise transponder space on AT&T's Telstar 402R satellite. Canadian consumers will use a 75 cm dish antenna and digital set-top receiver for reception.

# Cameraman, Camerawoman, Cameraperson?

by Jeremy Hoare

## THROUGH THE VIEWFINDER

The role of women in television has been understated for a long time, except perhaps at the top. In the UK they seem to hold a lot of the top decision-making jobs, but there are probably still some countries where women are not able to work as camera operators.

In the past, the main objection was that women wouldn't have enough physical strength to swing the arm of a camera crane and other equipment. This was just bias and never really true in my opinion—and certainly is not now with our lightweight cameras, tripods, heads, grip equipment etc.

I remember when a 'girl' was about to join the ATV Elstree camera department and the outcry it produced from some individuals. I was all for it and proven right, as Helen Kingsbury was at least equal in many ways. She also brought the different and valuable perspective of feminine intuition to the department. And no, the conversations and language used didn't change a bit, she wouldn't have wanted them to!

So the 'cameraman' this month is Jill Ranford based in Bristol England. When I asked her what she should be called she wasn't sure, but she was very certain that she was a camera operator whether the title was cameraman, camerawoman or cameraperson. What I did find out was that she is just as dedicated to the work as any cameraman I've known in forty years. Jill really cares about using a camera as a story-telling device, and thinks today's cameras are wonderful.

### CAMERAMAN IN FOCUS

One of the number of female lighting camera operators in the UK, Jill Ranford has spent about half of her 15-year television life working for the BBC in mostly multi-camera work, and half as a freelance doing whatever comes. With her partner Nick Turner (also a cameraman), she specialises in documentaries and news features. They have shot these together in many countries, sometimes covering highly sensitive subjects and clandestinely posing as tourists with a domestic-type camera.

JH: How did you get into TV?

JR: After seven months of interviews and waiting, I was accepted by the BBC as a trainee camera operator.

JH: What's your favourite piece of kit?

JR: I have two—firstly a Sachtler Video 18+ carbon-fibre two-stage tripod which is nicely engineered with a useful off-ground spreader, and secondly a Lowel lighting system of Tota and Lowel-Lights which are small, efficient lamps with nifty brackets.

JH: What kit would you like to see improved?

JR: Steadicam. I don't have one, but they are still so cumbersome for us smaller camera people and enormously expensive. At the moment to use a Steadicam properly

you have to specialise.

JH: What do you most like about being a camera operator?

JR: The variety of programmes, locations and people. It's never routine, and every day poses its own challenges.

JH: What's your proudest programme achievement so far?

JR:

With my partner Nick, making our own 50-minute documentary 'Gompall', shot in a Tibetan monastery on a single-chip Panasonic S-VHS camera back in 1989. Just the two of us did everything on a near-zero budget, and the programme has since sold around the world.

JH: What else would you like to achieve?

JR: Plenty of network documentaries as a camera person, more editing work and some more of my or our own productions.

JH: What's your biggest mistake?

JR: Gaffes made on live programmes back in 1981 to 1982 during my first year in television!

JH: What's your tip for success?

JR: Three things—take risks to advance your career, put your heart into whatever it is you're working on, and be professional at all times.

JH: Any other comments or suggestions?

JR: Camera work is a job of extremes, of fulfilment and frustrations, of long exhausting days or days of no work and insecurity, of enormous creativity and hard physical

slog. While commissions continue to roll in it's all worth it, but one thing I'd like to say to any starry-eyed newcomer is that they should immediately dispel any notions of glamour. It's hard work and it's fascinating, but it is definitely not glamorous.

Being freelance, Jill and Nick need to have

### 'Cameraman' this month is

Jill Ranford based in

Bristol, England.



confidence in and be comfortable with what they use, so they have bought all their own lighting and sound equipment. But not a camera, saying that these change so fast and are updated so frequently that it would be a bad investment. Jill likes using the Sony 400, but has been warned off DV-family cameras by colleagues reporting difficulty of focusing with the colour viewfinder—to the extent that she was hired to re-shoot something on a Betacam that someone had screwed up on a DV machine where focus errors made it impossible to edit.

In the UK, freelances outnumber staff cameramen possibly by ten to one, largely

as a result of companies 'downsizing' for one reason or another, and maybe this has also occurred in your country. Consequently individual freelances around the world such as Jill Ranford have a considerable voice, and manufacturers would do well to listen.

In a previous issue I suggested that however good DV series cameras are now—and they certainly are—the 'Mark Two' versions will be much better thanks to the input from operators like Jill and countless others. I personally think a colour viewfinder is a great improvement for composition, but not focus as yet.

No doubt Panasonic, Sony and other DV makers will make improvements, but numerous camera operators like Jill are still waiting for the sharpness of image they need to evaluate and focus a scene. Watch this space.

Are you a female camera operator? What title do you like to be called by? What equipment do you like or dislike and why? What do you think of colour viewfinders? Put pen to paper (sorry, not on e-mail yet) and let me know. ■

*Jeremy Hoare is a freelance television lighting cameraman based in the UK. Why not drop him a line at TVTI Feedback, 15A Endlesham Road, London SW12 8JX. We will also make sure he sees any e-mails sent to our main editorial address at 100270.2756@compuserve.com.*

CONTINUED FROM PAGE 30

## Console's Changing Face

twin mono applications, and you could consequently lose input capability. Digital consoles or digitally-controlled consoles allow the creation of stereo pairs even out of independent channels spaced apart, so this specification problem will gradually disappear as technology changes.

With the advent of daytime TV, telephone signals have become a greater part of live television. Some observers believe that telephone balancing functions should be added to a mixing console. While this may be acceptable in simple situations, the handling of numbers of telephone lines is a specialist task, with the mixing console just handling the telephones as a line-level signal. Although a clean feed from the console to the phone system is needed, telephones in TV are rarely linked to a picture, and so can be handled as a totally standalone operation.

ISDN signals are another very convenient means of moving high quality audio around the world and incorporating into a live TV production. Again it is preferable that ISDN audio is decoded remotely from the console, and then fed into the mix as a standard line level signal. Not only does this ensure that more attention can be given to maintaining the ISDN link itself, but it also addresses the problems of compatibility.

There are several incompatible ISDN transmission standards, and unless the received connection is always going to be from the same source, it would be preferable to keep such equipment remote from the console. The same rules would also apply to radio and satellite links, although that fact has been accepted for

far longer.

In general, line level sources present few problems. Most analogue audio sources originate from tape, and there should be few surprises in terms of rogue input levels. But the situation with digital sources is not quite so settled.

Music or sound effects from CD can have a wide range of levels, depending on the attitude of the CD programme compiler. A similar state of affairs exists in recordable digital formats, where the recorded level depends on the amount of headroom the user of the digital recorder chose to leave below the '0' point.

### A REAL ZERO?

Although some productions specify the level expected from supplied digital material, there is no guarantee that it will be interpreted in the same way by the sound recordist. A further complication is that even the manufacturers of digital recording systems cannot agree on what represents a real zero level on their metering, as a simple comparison will reveal. While a reference tone at a predetermined level will give some guidance, there is still the variation possible in the user's headroom allowance.

So what does this mean? It may be that maintaining optimum levels over a wide range of material requires altering the line input gain trim and the main channel fader. Changes such as this can be difficult to repeat under pressure, unless the gain trim has detented gain values. Sometimes it may be simpler to adjust levels from the digital replay source, although certainly not easier.

So far I have assumed the use of an

analogue mixing console. A digital console connected to external digital sources totally in the digital domain would allow the use of digital metering—meters that counted the number of bits rather than an analogue approximation. This allows more accurate level setting, with the chance to silently preview the program material and set levels based upon true digital levels.

Whatever the level situation, digital sources allow far greater control from the mixing console. While traditionally most broadcast consoles have been equipped with a 'fader start' mode to trigger an audio source, some digital sources such as MiniDisc allow the user to manually trigger different audio items from the same disc.

This requires a dedicated cue pad, with commercially available systems allowing up to 10 items to be ready to roll at the touch of the right button. Such functions will become more common—several hard disk systems already offer a similar capability.

Easy instant availability of music beds or effects allows more of the finished production to be added in 'realtime', increasing the atmosphere during the show itself or reducing any time needed for post production. Accordingly there would seem to be a need to allow space for such source cueing systems within the mixing console ergonomics in future designs, and for this to be considered when specifying console audio inputs. ■

*Keith Spencer-Allen (106143.2465@compuserve.com) is a freelance sound engineer and consultant in the UK.*

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Multimedia PC Boom Keeps  
Growing  
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NOVEMBER 1996

## User Report

# Extreme 3D Offers High-End Animation

by R. Shamms Mortier

President  
Eyeful Tower Communications

BRISTOL, Vermont

Macromedia is decidedly determined to offer a complete suite of graphics and animation tools, from multimedia animations constructed in Director to the Web solutions contained in its Backstage product line. The Macromedia application marketed for 3D animation is Extreme 3D, available for both Mac/PowerMac and Windows platforms.

I prefer to use Extreme 3D on a PowerMac because of its seamless integration of the QuickDraw3D library. QuickDraw3D, for the uninitiated, allows you to see and manipulate fully textured graphics in real time.

Macromedia's Extreme 3D splits its interface between an extensive on-screen toolbox and a thick selection of menu options and dialogues. This is done so that the interface remains uncluttered and its controls are displayed as large as possible.

One of the best features of the Extreme 3D interface is a help line that appears to explain anything the mouse passes over in either the toolbox or menu selections. This is a great aid throughout the initial learning curve.

The toolbox itself separates the tools into three main groups — basic tools, object manipulation tools and object primitives — with a few noncategorizable tools thrown in for good measure. Many of the tools also feature pop-out options, allowing full customisation, and many, when double-clicked, show associated parameter dialogues (both numerical and slider).

The most helpful feature that Extreme 3D offers is step-by-step "help text" that is shown as a tool is chosen. As an added feature meant to walk the novice 3D sculptor through the creative process, the help text is also of benefit to seasoned 3D artists who work with a multitude of applications each day. The help text makes frequent perusal of the documentation unnecessary, saving a lot of time.

## MODELLING TOOLS

Extreme 3D contains a standard list of 3D modelling tools. For example, extrude pulls selected objects along a linear path. Bevels are an option that are automatically added

to any extruded object (front, back or both). Both the object depth and bevel depth can be configured by the user.

A tool named "cone build" does what it promises, creating simple 3D conical objects by setting the base dimensions and the altitude. Sweep pulls objects along a drawn path (sometimes called pipe extrude in other applications). Lathe rotates an outline on an axis to create a finished 3D form, while twist contorts objects on any axis making it one of the most useful of the

depth. After opening the older MacroModel file, it is possible to reset Windows to 32-bit colour depth (assuming your PC display adapter is capable) to take advantage of Extreme 3D's 32-bit rendering capabilities.

Lights brought in from MacroModel files lose their names and are named "default light." Their position and orientation information is also reset to default values. You should make note of the light position and orientation values in MacroModel in advance and then reset the lights once the

neous. When editing lights, controls are provided for finer points like turbulence and dust cone, as well as more-standard options like cone angle. An interactive directional control shows the effects of changing light direction in the scene preview.

## EXTREME RENDERING

Renderings can take place on the screen (my favorite) or to a file. Adaptive or uniform smoothing and other rendering parameters are set in the final render setup dialogue. Objects can be set to display double faces, so that rendering will occur no matter the angle of the objects involved (or if you fly through them). Rendering over networks is supported as well.

Extreme 3D is accompanied by a CD-ROM with loads of extra texture and object libraries. If you don't want to jump to the CD-ROM too often, just add the textures to your hard drive texture file.

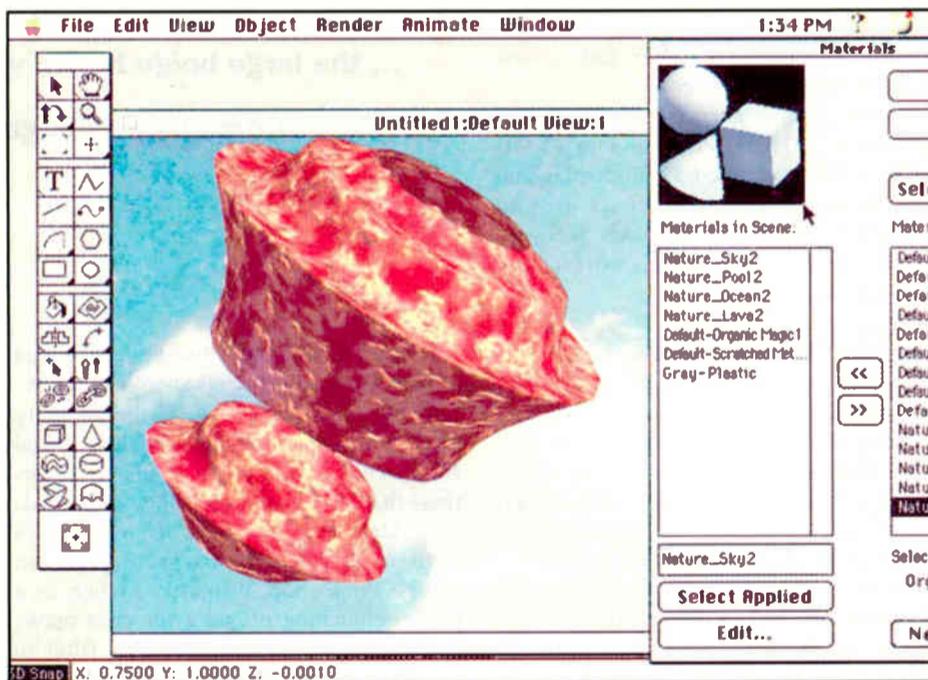
Extreme 3D's toolbox features child-parent linking options that the animator will find quite useful for accessibility and recording. Child objects can be set to move only when a parent object moves, or as constrained links. If your Extreme 3D animations feature things like orbiting elements around other elements, or humanoid figures whose parts are linked, object linking movement is extremely important.

The animation script is called a "score" and it determines when everything — from objects to textures to surfaces — moves and what that movement will contain. The scripting dialogue also sets the total length of the animation.

As the animation is constructed, wire-frame previews can be generated to check its design. Animations can be recorded to play start to finish, start to finish and then reversed (known as pingponging), or start to finish in a continuing loop. A VCR-like controller is available to check the settings at each step. ■

*Editor's note: R. Shamms Mortier is the president of Eyeful Tower Communications, an art and animation production facility located in Bristol, Vt. His studio utilizes Pentiums, PowerMacs and Amigas. He may be reached in care of TV Technology. Opinions expressed are the author's alone.*

*For further information contact Macromedia Inc. (Phone: +1-415-252-2000), or circle Reader Service 93.*



Extreme 3D offers many high end professional modelling features, including Bezier sculpting.

Extreme 3D editing tools.

The skin tool builds solids by creating volumes between and among selected planar polygons. This makes it possible to move Bezier curves in 3D space, and the "feel" is much like sculpting putty.

## IMPORT CONCERNS

Aside from saving and loading in its own Project File format, Extreme 3D can import Draw PICT, EPSF, DXF, 3DGF, 3D Script, Swivel 3D, Extreme 3D Tracks and Freehand 5.x. Export formats include Draw PICT, Paint PICT, DXF, Swivel 3D and Extreme 3D Tracks. (JPEG PICTs are not supported.)

Older MacroModel files will open if Windows is first set to 8-bit (256-color)

file is imported into Extreme 3D.

Extreme 3D comes with a selection of on-board texture libraries: chrome and glass, marble, metal, organic, plastic, solid and tiles. Given that each texture can be altered or customised infinitely, the basic sets open out to limitless choices. You may also write your own graphics to object textures by adding it to the texture list.

Once in the list, any texture may be edited as to its mapping (luminance, compositing, alpha) or its colour, ambience and opacity. The textures are written to the object by an "apply" command but are not drag-drop oriented.

Omni, spotlight and distant lights can be added for colour and shadow casting. Updating the associated graphic is instant-

## Production Values

# Computer Graphics for Cable Programming

## Material that is generated on a PC Can Help Improve the Look of Entry-Level Efforts

by Frank Kelly

One fact of life common to all cable operators is a requirement to make channels available for leased access. In a large metropolitan market with 120 channels, a few dozen of these channels will be home to special interest programming such as low-cost TV classifieds, foreign language, educational programs schools, and training for local emergency services such as Fire and Police departments.

Some of this leased access has caused a rush of entry-level insertion programming. In many instances these programs are pro-

duced off-site at facilities that may have only the basic mechanical requirements for video editing.

tems designed to act as dedicated video hardware rather than a computer. In many cable facilities it is still common to find at least one Video Toaster in use. The large beige box in which it is housed is in fact a Commodore Amiga personal computer. Although the computer has been out of production for a number of years, a lot of studios keep them running. The Video Toaster is a common example of a low-cost personal computer turned into an integrated video switcher and graphics creation device.

But back to this issue of entry-level video production: Today's consumer level

encoders begin to provide enough quality for broadcast applications.

The quality of this encoding is extremely important on either the Mac or PC. When RGB graphics are seen on the computer display, the colours are vibrant and the details are sharp. It is extremely frustrating to find that, even with the best NTSC encoders, the image does not look nearly as good when viewed on an NTSC monitor.

Design elements consisting of fine lines usually vibrate with severe intensity or disappear altogether due to the interlacing of the fields that make up each frame of video. The NTSC picture is also over-scanned beyond the edge of the monitor. This results in items close to the edges of the computer picture becoming distorted or being pushed off the screen.

This is why it is so important that graphics be composed while viewing an NTSC output. Once the RGB signal is displayed on the NTSC monitor, graphics can be composed to yield good results without disappearing out of the safe title area.

Another important factor is proper calibration of your video monitor. If you are planning on creating images that will be broadcast, it is worth the time and effort to have the monitor(s) calibrated by a technician. This is especially important as many encoders can adjust both the horizontal and vertical dimensions of its output. A

or video switcher that utilises luminance keying to superimpose graphics. The luminance intensity of other black areas of your image might look best in a dark gray colour as opposed to black.

Pure white is usually a bad choice and a good bet to be "illegal" due to its luminance content. Try a light gray instead. On your NTSC monitor it will still appear to be white. Generally speaking, softer hues of just about any colour will hold up better than those that are saturated, but if a colour is too subtle it may not be visible at all. When selecting colours for video, stay away from extremes and you'll see more of your original picture at the final output.

### SCAN OR GRAB

One of the most useful things a computer can do is scan or "grab" digital images. Due to the popularity of desktop publishing, flatbed scanners have become very affordable. The resolution requirements of video are far less than that of printing. Because of this, "older-generation" 300 dpi colour scanners, now available for around \$400, are perfect for the task of scanning video images.

An even less expensive option is the products that allow for video "grabs" from your video camera or from videotape. The Snappy Video Snapshot from Play Inc. is one of the least expensive video grabbers

In many cable facilities it is still common to find at least one Video Toaster in use ...



duced off-site at facilities that may have only the basic mechanical requirements for video editing.

The local cable operator is able to set technical standards for these submissions, but cannot control content or overall production values. I am certainly not alone in noticing that many of these programs are sometimes lacking in visual content or the type of production design we are normally accustomed to seeing on broadcast TV.

Computer graphics generated on a personal computer can help to improve the look of entry-level efforts. Whether it's a chart to illustrate a financial trend, or a "bumper" title slide to introduce a specialty segment, there's no mistaking the usefulness or merit of a computer-generated graphic to take on these tasks.

### DEDICATED EXAMPLES

A fully equipped video production facility is home to equipment designed specifically for the task at hand. This includes cameras, VTRs, switchers and effect boxes, and some sort of graphics system. As time goes on, many of the above functions are being handled in one way or another by personal computer-based systems. Most high-end PC or Mac-based desktop video products are integrated sys-

computers are more than capable of producing video graphics, almost without modification. The Apple Macintosh, today supplemented by numerous Mac OS-compatible clones, has always been a good graphics-oriented computer and is now more affordable than ever.

The PC is also surprisingly graphics-capable. A 200 MHz Pentium with 32 MB RAM, a 3D-accelerated 32-bit display and a 3 GB-plus hard drive costs around US\$2,500. Add a few graphics software titles and you have a graphics workstation. Well, almost.

### FROM HERE TO THERE

The problem that occurs, no matter what computer platform is chosen, is translating the computer's output by encoding its analogue RGB signals to (in my case) NTSC interlaced video. A few Macintosh models offer video output as a standard feature, which solves this problem nicely.

Numerous encoder options exist for the PC platform, and range in price from a couple hundred dollars (US) to tens of thousands of dollars for high-quality scan converters. This is a case where you get what you pay for. In general, you will want to pay at least US\$1,000 for a VGA to NTSC encoder. At that price the

... the large beige box in which it is housed is in fact a Commodore Amiga personal computer.



calibrated monitor will give you some idea of how those adjustments should be made.

NTSC specifications limit the intensity of certain colours. Using so-called illegal NTSC colours can result in image distortions that aren't seen until they are broadcast. Graphics software often provides tools to help avoid this problem. Even Adobe Photoshop, primarily known as a photo-retouching program for print applications, now provides an NTSC filter to modify oversaturated images.

You should also be aware that the colour black is sometimes "keyed out" when graphics are displayed over other video sources when using a genlocked encoder

for the PC, but it is also one of the best. Ignore its consumer packaging: It is a professional tool that integrates quite well with most PC graphics software.

Optionally, there are also many digital stock images available on CD-ROM that are licensed for unlimited use and make excellent backgrounds or compositing elements. There are special considerations to keep in mind when using images that are not licensed for secondary use. (Just because you can grab it doesn't make it yours!)

Care should be taken to identify any sources used for the purposes of documenting events. Any image taken from a commercial source such as a book, magazine or broadcast is usually protected under copyright laws and cannot be used without permission. The same can be said of original images you create. Place a copyright notice somewhere on the image and you may prevent its misuse. ■

Frank Kelly has more than 25 years of experience in broadcasting, working at nearly every level of the production process. He currently owns and operates Spot Ad Productions in San Jose, Calif., where he produces commercials and industrial projects for local and regional clients. He may be reached via CompuServe at 76527,723.

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User Report

# NuGraf Renders High-Quality Stills

by R. Shamms Mortier  
President

Eyeful Tower Communications

BRISTOL, Vermont

Videographics professionals often use full-featured 3D animation software to create rendered still images, even when there is no need for multiple frame output. This can be both expensive, as high-end animation software is a high-end investment, and time consuming, because such software requires a steep learning curve.

For video producers who seldom require animation but do require high-quality 3D rendered output, Okino Computer Graphics suggests that you investigate its NuGraf Rendering System available for the Windows platform.

The NuGraf Rendering System has no capacity for animation, it is limited to rendering alone. It is able to import objects and scene files from many popular high-end animation programs.

File formats include: 3D Studio, Alias Triangle, DXF ASCII/Binary, Hanes NFF, IGES ASCII, Imagine, LightWave, ProEngineer, Stereo Lithography, trueSpace, Wavefront, and USGS and Vista Pro DEMs. LightWave files only load as objects (LWO), not as LightWave Scenes (LWS).

In short, NuGraf covers the professional bases when it comes to importing 3D file formats. It exports finished models to DXF, 3D Studio, OpenGL C Code, POV Ray Tracer, RIB (Pixar), Wavefront and the increasingly popular VRML for interactive Web play.

The NuGraf interface is easy to understand, whether you select "beginner" or the "expert" mode. As with all professional computer graphics software, this simplicity of design hides a very deep and full-featured collection of tools.

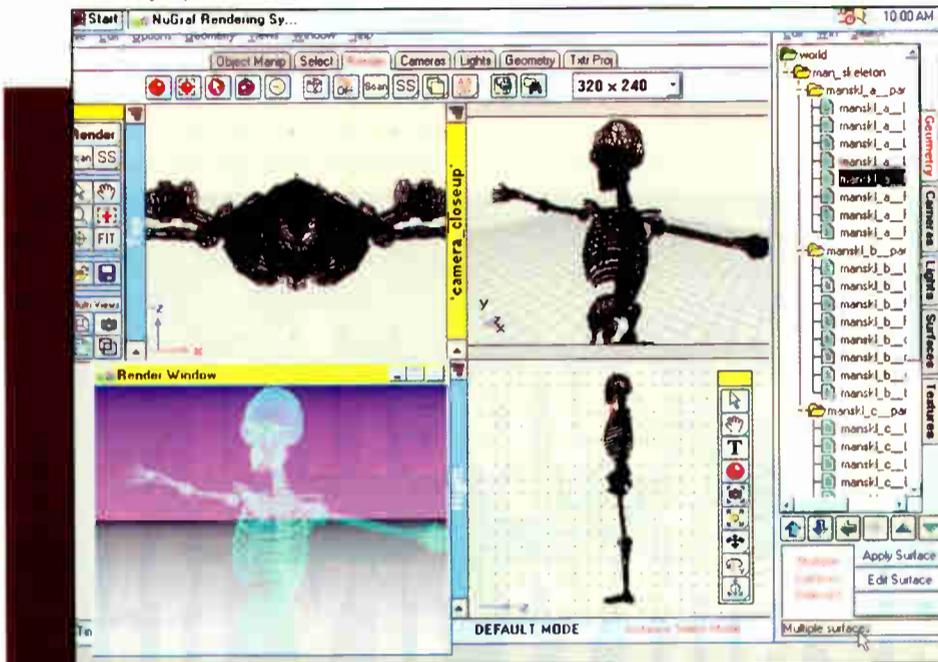
Do not expect to be able to resculpt models in NuGraf, or to build models from lathed shapes. NuGraf, to repeat, is only a renderer. The software does have a small set of 3D primitives (box, cone, cylinder, disk, prism, rectangle, sphere, ellipsoid and toroid) and a special text option that writes

extruded text objects to the 3D space.

The text option is excellent, drawing upon any TrueType or PostScript font in your PC library as its starting point. The text tool offers complete control over all parameters, including extrusion depth, character type and style, text attribute, justification, texture and reflectivity options — even the charac-

control over the composition of a 3D scene.

The texture controls are extensive enough to impress the most picky engineering types, offering manipulation of every texture parameter. The NuGraf system ships with its own texture library, and you can also add your own imagery. Textures can also be sandwiched one on another for multiple-layer effects.



NuGraf imports a vast array of 3D file formats.

ter set assigned to a selected font. These are far more options than provided by many 3D full-featured animation systems.

The toolbox allows you to move and rotate selections, and also gives you control over the camera view in all X, Y, Z-axis combinations. A "magnifying glass" works interactively via the mouse, allowing you to fine tune the distance of objects in any view.

In addition to selecting objects by the on-screen visual display, they may also be selected through hierarchical listings, so that any part of an object can be selected for manipulation or deletion. Objects can also be grouped and ungrouped, all with the express purpose of

Final rendering — the most important function of this software — offers the computer artist a wealth of options. NuGraf allows control over output sizes via an on-screen list of choices as a starter, and it is possible to customise to your needs from there. NuGraf is not a ray tracer, but it does allow full environmental mapping for reflective 3D scenes. Rendering options include no shading or flat, Gouraud or Phong shading. Image quality is determined by a range of choices, from no smoothing to variable anti-aliasing.

Full shadow mapping is can be toggled on or off. Objects may be displayed as wireframe, hidden wireframe, Z-scanline, OpenGL or Intel's 3DR. Back and front faces of objects can be culled, and a field-rendering option can be selected. Renders

can be written to the screen and/or to a file. NuGraf supplies every aspect of the rendering data at the click of a mouse.

NuGraf writes out finished graphics to TIFF, Targa, JPEG, GIF (JPEG and GIF are the Web's primary formats), FLIC, BMP and Amiga IFF.

NuGraf is a good standalone professional rendering system that might find its way into a number of computer graphics environments. Here are some possibilities:

1. Facilities that are looking to accomplish single-frame renderings without the hassle of tying up expensive and needed animation systems. NuGraf rendering is simple enough so that less-experienced users can easily learn how to use it well, so that more-experienced animators need not be tied up on projects that don't demand animated output.

2. Producers looking to test optional texture maps on an object without opening a larger 3D rendering/animation package. In this way NuGraf is used as a 3D utility program.

3. Producers needing single-frame over-the-shoulder graphics for news and information broadcasts. NuGraf is perfect for this situation, with both models and extruded text images.

4. Multimedia producers developing graphics for CD-ROMs and/or the World Wide Web. CD-ROM libraries of 3D object collections are numerous enough at this point to make the purchase of a full-blown 3D modelling system unnecessary for many folks that only need single-frame output.

5. Situations that demand that a scene be constructed from 3D objects of different types, or for those users who need to translate geometry from one 3D object file format to another (including batch translations). NuGraf is the perfect medium of exchange in these situations.

If you fall within these or other associated categories, it is a good idea to check out Okino Computer Graphics and its NuGraf Rendering System. It's an excellent utility to add to your creative kit. ■

*Editor's note: R. Shamms Mortier is the president of Eyeful Tower Communications, an art and animation production facility located in Bristol, Vt.*

*For further information about the NuGraf Rendering System contact Okino Computer Graphics Inc., (Phone: +1-905-672-9328), or circle Reader Service 56.*

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## Desktop Video

**Multimedia PC Boom Keeps Growing**

by Terence Dyke and Paul Smolen

Digital video and computers just go together. Creating and editing digital video takes a computer, of course, but the way things are going, more and more viewing of the end product will also be done on a computer.

This will likely be true for straight video, such as that which might be stored on the new DVD disks, and it will certainly be true for the video that shows up in interactive multimedia titles.

The interesting question for a digital

videomaker then is, how many computers are out there? Particularly, how many computers that can show moving digital images? The answer to this question represents the installed base of potential viewers and gives some indication of what the market opportunities are.

A recent study by Dataquest reports that by the end of this year, 33 percent of homes in the United States will have a personal computer. In a related study, the number of home desktop multimedia PCs shipped grew by 35 percent in 1995.

The industry has been selling about 7 mil-

lion new PCs every year for the last several years; during that period, some degree of multimedia capability has become pretty standard on new machines.

Multimedia capability is expected to take an upsurge when Intel starts shipping its MMX-enhanced processors, which are known as the P55C line (TV Technology May 10, 1996, p. 50). In a recent development, though, Intel has announced that it will postpone the rollout of its P55C chips from the fourth quarter of this year to January or February 1997.

At about the same time, the company will

also be shipping the MMX-capable Pentium Pro family, code-named Klamath, which had been scheduled for release during the second quarter of 1997. The story is that Intel wants to allow more time for MMX applications to become available, and to let manufacturers catch up with the large number of chipsets (for which they are designing and building systems).

Even so, an outfit called Micronics Computer has already started shipping a system board capable of supporting MMX multimedia extensions. The Micronics M55PBA motherboard will support Intel's existing Pentium and Pentium Pro processors, as well as the MMX-enhanced processors. The US\$299 M55PBA comes with 16-bit stereo sound and graphics functionality fully integrated onto the board.

For software to take advantage of MMX, there must be a Windows API (applications programming interface) that developers can use. Microsoft has been busy working on a set of APIs for graphics, multimedia and video called DirectX.

The first product to include support for MMX, Direct3D, is now available, according to a recent announcement by Microsoft. Direct3D is for creating and rendering 3D graphics, but APIs that support other capabilities of MMX, such as video compression

**Digital video and  
computers just go  
together.**



and decompression, shouldn't be far behind.

The recent Macworld Expo in Boston demonstrated that even if Apple is having a tough go of it, the Mac platform remains lively. Power Computing and the other clone makers are seeing to that.

**BE BOX A-LU-LA**

One interesting attraction at the show was Be Inc., the year-old start-up founded by Apple alumnus Jean-Louis Gassè. The Be Box computer is designed from the ground up as a high-performance audio-visual platform that as yet has no installed base of software (the bad news) and therefore can use all the latest technologies and design concepts (the good news).

According to a company spokesperson, though, Be and many third-party developers plan to introduce products for the BeOS operating system at the next Macworld Expo in January.

Be debuted Release 8 of the OS, which comes with a 3D object library, a game developer kit, integrated Internet mail, Web browser and telnet software. Be also announced that it will be working with Austin, Texas-based Metrowerks Inc. to integrate Java directly into BeOS, making it even more of a Web-ready system.

What really caused a stir, though, was Be's announcement that the company had ported BeOS to the PowerMac. There was even a running prototype.

A specialty platform with definite "outsider" status, the Be Box is sometimes compared to the Amiga, even by company officials. The successful port to the PowerMac can only help bring BeOS closer to the mainstream Mac market.

The Be Box is an interesting example of what can be done when designers start with a clean slate and no compromises in the

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technology they use.

The Be hardware is a multiprocessor architecture based on two 66 MHz PowerPC 603 CPUs and up to 256 MB of memory. The system takes advantage of industry standards, including support for PCI and ISA cards, as well as IDE and SCSI devices, making it easy and economical for customers to tailor systems to their needs using components from the "PC clone organ bank," including monitors, keyboards, memory, hard disks, CD-ROM drives, and other peripherals.

There are a lot of built-in amenities for providing high-level access to audio and video drivers, MIDI support, internal or external clock synchronisation and other facilities that are difficult to get in present architectures. And with a nod toward its intended audience, the Be Box also includes a "geek port" that allows experimenters an easy general-purpose I/O interface.

The BeOS operating system is a real-time, object-oriented system that supports multi-

ple PowerPC processors, features true pre-emptive multitasking, an integrated database and fast I/O. A suite of software development tools is also included.

Pre-emptive multitasking means that users can run multiple compute-intensive programs simultaneously, synchronise music and sound, view and edit videos and access the Web all at the same time, with no danger of different tasks interfering with each other (as they can in non-pre-emptive multitasking environments like Windows). In the Be demo at Macworld, the box was reportedly running four QuickTime movies at the same time, with no dropped frames.

The Dual603-66 (i.e., 66 MHz) Be Box has been shipping for several months, while the Dual603-133 should be shipping by the time you read this. The Be Box includes Release 8 of the operating system, a generous software-upgrade plan and development tools.

The Dual603-66 system is priced at US\$2,195, configured with 16 MB RAM, a 2 GB drive, a 32-bit 2 MB PCI graphics card, a

floppy drive, a 6x SCSI CD-ROM drive and an ISA Ethernet card. The Dual603-133 (configured the same) will run US\$2,995.

The PowerMac version of the BeOS operating system is not yet priced, but it is expected to be "competitive," and should be available first quarter of 1997.

**DIGITAL WEB**

We've observed here before that the future of "digital TV" may well be the World Wide Web, as opposed to a massive conversion to digital technology on the part of broadcasters and cable companies — not to mention millions of television owners (TV Technology February 9, 1996, p. 32).

Efforts like InterCast, WebTV and Xing StreamWorks are making the Web-based digital TV scenario increasingly plausible. To that list of efforts, now add Vosaic streaming video, a system that adaptively streams MPEG-1, MPEG-2 and H.263 compressed video over a wide range of transmission bandwidths.

"Streaming" refers to delivering video over the Net in real time, rather than having to download the whole video file before playing it.

A joint venture between the University of Illinois and Vosaic Corp., the Vosaic technology takes streaming a step further, allowing clips to be linked from a regular Web page, to be hierarchically organised, to be searchable and randomly accessed.

Vosaic will make on-line video behave a lot less like a linear tape and a lot more like computer data. For entertainment purposes, that characteristic may not be so important, but for training, reference and "video databases," it should be very interesting indeed. Stay tuned. ■

*Terence Dyke and Paul Smolen are the principals of Media Methods, a communications design and production firm in Austin, Texas. They may be reached at +1-512-476-0422 or by e-mail at: media-methods@point.com.*

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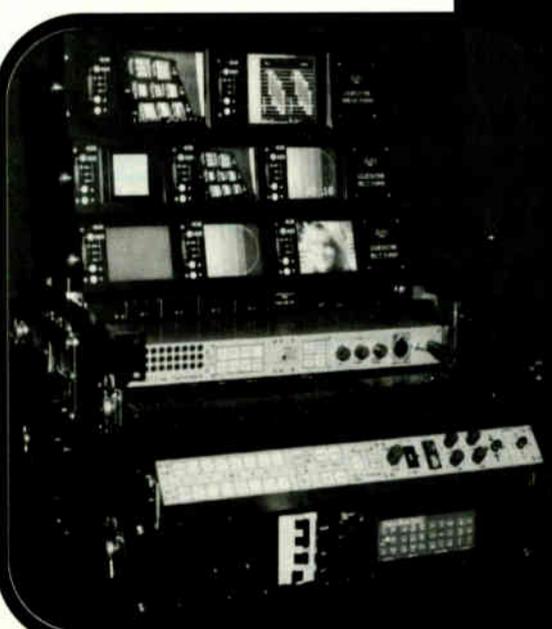
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COMPUTER VIDEO



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## USER REPORT

# Making Sense of Post Production SADiE

by Rod Wheeler  
Operations Director  
Mike Fraser Ltd

### LONDON

Mike Fraser Ltd is a post production facility offering telecine rushes (dailies) transfer, sound syncing, offline edit suites with Lightworks and Avid, film/video list management and a negative cutting service under one roof.

It was spawned six years ago from Mike Fraser Holdings and is situated at White City in London just off Wood Lane and within a stone's throw of the BBC Television Centre.

Our eponymous founder start-

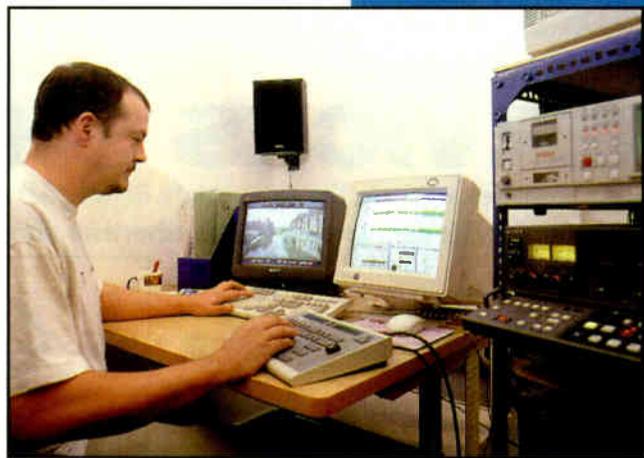
sync in a sound suite. We handle all the different syncing methods, clapperboards, timecode slates, Aaton and Arriflex timecodes — and sometimes no sync method at all. One strength of the system is that it was designed as an editor, enabling us to sort out those projects where sync has gone horribly wrong.

Whenever possible we try to get the sound rolls the night before, so that we can load the SADiE systems in readiness for

company with a good technical understanding of our business.

### INSYNC

For instance as the Aaton timecode system has become more popular, SAV has devised a function called 'TimeSync' which can record over discontinuous field



Mike Fraser Ltd uses the Studio Audio & Video Ltd SADiE hard disk system post sync in a sound suite without holding up the telecine.



timecodes.

The system is versatile enough that we have now found other uses outside telecine. Our nonlinear edit suites are situated adjacent

ed his career in film post production 25 years ago as a negative cutter and has been involved in the industry ever since. Six years ago he pioneered the OSC/R film-video list management system which enabled film editors to accurately trace back to the original film negative from timecode EDLs produced by nonlinear editing systems.

### SEEKING AN IDEAL

Telecine in the UK is a very competitive marketplace and any time our telecine is dormant represents lost revenue to us. Traditionally, until hard disk systems came along, facilities had relied on tape players and DATs to transfer the sound during telecine. But when we drew up the specification for the telecine operation, we soon realised that syncing during telecine was not the ideal solution.

The main problem we found with this work practice was that the general ballistics and wind times of linear machines made the process too slow to be commercially viable. To make matters worse, not all rushes sync perfectly first time and these errors can only be spotted once the transfer is in progress, further delaying the transfer process and causing another telecine pass of the client's precious negative.

Thus we were looking for a way to telecine without sound, and pass the mute betas over to a sound syncing suite where any problems could be sorted without holding up telecine. After spending some time looking for a reliable hard disk system which we could use for telecine sound transfer, we found SADiE. I was responsible for the purchase of our first SADiE system in early 1994, and we now have two.

### INTERESTING APPLICATION

Although I know of quite a few telecine facilities which use SADiE to sync during the telecine transfer, our application involves using the SADiE system to post

the morning telecine run. Regardless of the sync method employed, we will traditionally produce a clone DAT for the autoconform unless otherwise instructed by our client. Once our sound editors have synchronised the sound to the betas, they can lay it back to the beta and create the clone DAT all in one single pass with no loss of quality from the original field recording. This used to be a very time-consuming process before we bought SADiE.

SADiE manufacturer Studio Audio & Video Ltd has a policy of free software updates — which is just as well as we have seen quite a few changes since we bought the first system.

We've found that SAV also listens to suggestions for improvements. When nonlinear offline picture editing came along, some aspects of post production became quite complicated, so it is encouraging to find a

perform test autoconforms, transfer CDs to betas with accurate timecode references, and perform speed changes for sound FX.

However, I would not say that the system is perfect — there is always room for improvement and I know that a lot of telecine features are promised for the next version of software, such as a dedicated hardware controller surface and some background recording capability.

I also know that SAV is collaborating with the Aaton camera company and intends to propose a universal file format for the film industry. This will be a great step forward, because one of the drawbacks of all this high-tech gear is that it all uses proprietary file formats. ■

For further information contact Studio Audio & Video Ltd on +44 (0)1353 648888, fax +44 (0)1353 648867, or circle Reader Service 17.

## USER REPORT

# Solid State Logic A Hit in Space

by Robbie Weston  
Managing Director  
Space

### LONDON

The opening of Space Facilities Limited in late 1995 caused quite a stir in the London post production marketplace. The \$3 million investment in a totally SSL-equipped facility was the largest digital installation ever undertaken by SSL, and introduced many new developments for the first time.

Equipped with four OmniMixes, a Scenaria, seven VisionTracks and six ScreenSounds, the new facility has quite a pedigree. Space is part of the White

Lightning Group established in 1979, which also operates Silk Sound and The Bridge, two major audio facilities in London. All the facilities specialise in audio-only and audio-to-picture work for advertising agencies, broadcasters and corporate producers.

Historically, people have created new audio post production facilities by building a couple of rooms and then tacking on more as the market and finance allows. The major drawback with this form of extended installation technique is that rapid changes in technology prompt owners to cherry-pick equipment they consider appropriate during

(See *Solid State Logic*, page 44)

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## USER REPORT

**Studer at Televisione Svizzera Italiana**

**Snapshot automation, reliability, sound quality make  
The 990 mixing console TSI's choice**

by **Hans Berkes**  
Technical Director  
TSI

**LUGANO, SWITZERLAND**

Televisione Svizzera Italiana (TSI) is the Italian speaking TV network in Ticino and Grison, the south and south-east of Switzerland. It belongs to the Swiss National Broadcast Corporation SRG, but operates independently for the most part.

Besides the 300,000 potential viewers in Italian Switzerland, there are another half million potential Italian speaking viewers in the other parts of the country. Furthermore, the transmitters cover part of northern Italy with up to one million potential viewers, and the programme will be distributed via cable to the Milan and Novara region with more than five million people.

**The engineers like the  
clean and ergonomic  
layout of the Studer 990.**



TSI employs 700 people of which 400 work for the technical departments. About one third of the material broadcast is produced in-house. As part of the SRG, the TSI must broadcast a general interest programme, which has to be similar to the other two national channels of the SRG—the TSR French and DRS German language channels. Due to competition with a few major Italian stations which broadcast a variety of shows, the TSI concentrates on plays, plays in dialect, documentary films, interviews and talk shows with celebrities in politics — as well as the general programme. This partly niche market philosophy has resulted in increasing numbers of viewers and positive feedback from the advertisers.

**CONSOLE NEEDS**

In 1991, TSI was looking for a new console for its largest studio. The 600m<sup>2</sup> Studio 1 is equipped with five cameras and is normally used for any kind of large event and when many inputs are needed. The demands of TSI were straightforward — a high quality, easy to operate broadcast and production console with a snapshot store and recall function. The basic idea was to be able to use Studio 1 for more than one production at a time, and also to reduce preparation time between sets.

During the evaluation process, TSI discovered that the Studer 990 mixing console was the only one available with snapshot automation which met its requirements. The high quality, reliability and worldwide reputation of Studer products made the decision to purchase easy. In spring 1992, the console was delivered as a 38+8 frame, equipped with 28+8 channels and went into production and on-air without any major problems.

The Studer 990 is now in use for all kinds of dramas, elections and election shows — they happen frequently — talk shows, concerts and more. The concept of the audio control room is not as integrated with video as new systems, therefore the console is used more or less independently.

The console and its snap-shot facility changed the work of the engineers in many ways. Today TSI is able to run two produc-

tions in Studio 1 at the same time, usually a bigger one during the week and several small half-day productions alternating in the morning. The preparation time for any kind of production has been reduced remarkably and we have gained a lot of flexibility.

Furthermore, the engineers like the clean and ergonomic layout of the Studer 990. The operation is easy even if two engineers are running a two language live-feature. The reliability and the sound quality of the console is extremely good and we have never had to face any major problems.

Studio 1 with the Studer 990 console will not change in the near future, but is due to become digital after the year 2001. The new concept will be based on a big MAD1 network system with interconnections to all studios. ■

*Mr. Hans Berkes is the Technical Director of Televisione Svizzera Italiana (TSI) in Lugano. Previous positions at TSI include heading the project to completely reorganise and renew the news and news network and Head of Production and Technical Services, as well as Head of Production and Technical Services for Radio Svizzera Italiana.*

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## USER REPORT

# Digidesign at Cloud 9 Television

by **Graham Potter**  
Chief Audio Engineer  
Cloud 9 Television

### DORKING, UK

Founded in 1987 as a three machine Betacam SP Edit Suite, Cloud 9 has grown to be a complete one-stop television facility offering crewing, shooting studios, Beta SP and Digibeta online editing, D-Vision offline, graphics and last — but not least — audio post production.

Up until recently, audio has been considered by many to be a poor relation to video when it comes to programme-making. Thankfully, the advent of NICAM stereo, Dolby Pro Logic and even VHS Hi-Fi tracks has raised the status of audio considerably, and so I came to Cloud 9 to create an audio suite.

Although our client base is fairly varied, with work ranging from corporate videos right through to broadcast documentaries and commercials, we wanted to expand into wider areas such as radio, multimedia and music to picture. A tape-based studio would have been too inflexible for post work, but most digital audio workstations seemed unsuitable for serious music production.

### DIGI-DEMO

After a Digidesign demonstration at our facility, we opted for a Pro Tools system.

Along with having a simple visual interface with a multitrack display, timeline and virtual mixer, it addresses the needs of both a music engineer and a post production engineer without requiring any major reconfiguring. It is very simple to operate, with all but the most infrequently used functions being available as keyboard

**Pro Tools also has a pre-roll mode which enables 'rock and rolling' of voiceovers, wild or to picture.**



macros, thus eliminating the need for 'menu hopping'.

Other key features which attracted us include 'quick punch' which allows manual drop-ins on the fly, 'grid mode' which, using a bars and beats timeline, allows fast spotting of effects to music and quantising of live musicians, and 'strip silence' which breaks checkerboarded audio lay-ins into regions. Pro Tools also has a pre-roll mode which enables 'rock and rolling' of voiceovers, wild or to picture.

The TDM environment allows project mixing within Pro Tools in a similar man-

ner to conventional desks. Insert points and aux sends and returns can be used to patch-in signal processors either internally as TDM plug-ins — third party software-based units which control Pro Tools DSP 'farms' — or externally using spare inputs and outputs to communicate with outboard equipment. The range of third party sup-

port for the plug-ins system was seen as a huge plus point.

### THE CORE

After talking about our particular needs to Chas Smith, Managing Director at Digidesign, we decided upon a core Pro Tools system based on a Mac Quadra 650 platform, a video slave driver for genlock to house sync, and an Opcode Studio 3 for LTC sync. We also bought Digidesign Post View software for controlling video transports via Sony 9 pin protocol. Post View also allows fast spotting of sound effects to picture since it monitors VITC through the 9 pin cable. Simply park the VTR on the frame you want, select the effect from the region list and 'on it pops'. We also purchased Digidesign Sound Designer II software to handle destructive processing such as normalisation, sample rate conversion and glitch removal.

The sound suite has been built to integrate with all other suites within the facility via a central machine room. Machine control is switchable using a ProBel matrix. A Sony edit controller in the suite allows insert editing for laybacks.

The analogue inputs and outputs of Pro Tools are normalised via a balanced patchbay to the group outs and tape returns of an analogue mixer. This allows mic feeds from the studio and booth to be fed to Pro Tools and gives us the option of mixing within the system, on the desk, or a combination of both depending on the type of session.

### POST FOCUS

Generally I prefer mixing music on a conventional desk, and post-production mixing with Pro Tools. DAT and CD machines are hard-wired to Pro Tools digital inputs. We have a range of outboard signal processors accessed on the patchbay and a handful of Pro Tools TDM plug-ins including reverbs, dynamics processors and DINR noise reduction.

A later addition to the system was Post Conform software, which enables us to autoconform CMX edit decision lists from our D-Vision offline video editing system.

Before we had Post Conform, most sound tracks arrived as checkerboarded video tapes or timecoded DATs, but a huge advantage of Post Conform is that it calculates handles and generates checkerboards from the EDL to the user's specification. This means that the offline editor can make better use of available audio tracks, and

doesn't have to worry about how long the handles should be for a given edit. Re-conforming a programme once changes have been made is simple, so we can begin conforming sound before the offline edit is even finished.

We have just completed the post production of Fair Cops, a six part series for Anglia, Carlton and Meridian television, documenting the work of nine women police officers. Shot on Digital Betacam and offlined on D-Vision, all audio was conformed via AES/EBU and mixed entirely within Pro Tools before laying back to the Digital Betacam online. This kept the signal digital all the way from the mic through to transmission. The ability of Pro Tools to fine-tune fader automation helped enormously with transitions from quiet to loud segments, and Sound Designer proved superb in removing any radio mic pops and glitches which are inevitable with this style of 'on-the-hoof' filming.

Because many of our clients use us as a one-stop facility, it is essential that project transfer between suites is as smooth and fast as possible, and we have been looking at ways in which this can be improved. The ideal situation would be one whereby a project could move between suites with virtually no transfer time. We have been exploring the possibility of getting an Avid PCI offline system since this has a high degree of compatibility with Pro Tools via the OMF file exchange system.

We hope to be exchanging our current Pro Tools III for a Pro Tools IV system on a PCI Mac within the next month or so. This will enable us to run full-motion nonlinear picture on Post View, creating a system whereby QuickTime movies and audio files from the Avid offline could be opened on the Pro Tools system after simply plugging in the hard drive taken from the offline suite. The time saved by transferring projects in this manner would be enormous, and allow increased creativity in the offline and in the mix.

With current television budgets tighter than ever, it is vital that we provide quality results with a fast turnaround. Pro Tools has proved to be a reliable system and is popular with clients. Its versatility and speed of operation make it ideal for our way of working, and the Digidesign 'buy back' method of upgrading ensures that the system grows along with the facility.

Since we are about to upgrade to a PCI based system running version 4 software, the new enhancements such as automated plug-ins and Sound Designer-style destructive processing should facilitate faster and more creative mixing — as well as taking some of the pressure off the DSP farms.

The addition of nonlinear picture playback will, apart from saving on shuttling times, provide faster spotting to picture and dialogue replacement. We have now reached the halcyon years of digital audio with exciting products springing up left, right and centre. It is good to know that the best of these products will be on the TDM platform. ■

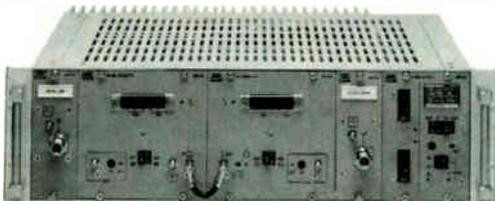
*Graham Potter joined Cloud 9 Television (Facilities) Ltd three years ago after working as a freelance music engineer and digital editor. He was previously Head of Sound Department at De Wolfe Music Ltd and spent two years at the School of Audio Engineering.*

*For further information contact Digidesign on +44 (0)1753 653322, fax +44 (0)1753 654999, or circle Reader Service 26.*



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## USER REPORT

# DAR at Finnish Broadcaster YLE

by Pauli Vellonen

Head of TV Sound Post Production  
YLE

### HELSINKI, Finland

Originally founded in 1926, the 99.9 per cent state-owned Yleisradio Oy (YLE) is responsible for providing radio and television services throughout Finland, operating two full service television channels and four national radio channels. YLE owns all the national broadcasting networks, as well as renting a third television channel to the commercial company, MTV Finland.

The company provides programmes for Finland's 5 million inhabitants in Finnish, Swedish, and in the Lappish language, with over 90 per cent of the population receiving YLE broadcasts daily. Some 60 per cent of all the programme material is produced locally by YLE in Finland, with the remaining 40 per cent imported.

The YLE television transmission centre in Helsinki is a local landmark, with its impressive 170 meter tower complete with seven antenna platforms, housing equipment for various auxiliary services. The centre itself houses the network switching facilities, audio and video post production suites, the PTT switching centre and other related services.

Careful attention was paid to the acoustic design elements of the building, with the studios typically benefiting from isolation in excess of 60dB. In the video post production and editing areas, the isolation is better than 50dB, and the noise from the ventilation is kept below 30dBA. All the studios, control rooms and post production suites have a special modular suspended ceiling which incorporates the acoustic, air-conditioning and electrotechnical requirements.

### GOING DIGITAL

This attention to detail is reflected in the choice of equipment, with YLE currently implementing a programme to digitalise the entire production chain from the initial planning right through to transmission. Post-production tasks focus increasingly around the use of workstations, with YLE employing ten Avids and two Lightworks for off-line video editing, among other systems.

In audio, the mainstream systems are DAR SoundStations, with a total of ten systems presently in use. Eight of these are located on the television side — six in Helsinki TV1 and two at the Tampere TV2 studios — and a further two systems for radio. Audio quality is a paramount consideration and all YLE programmes are transmitted digitally, using Nicam-728.

### THE POST

The main audio post-production facilities are housed on the top floor of the Helsinki television centre, comprising six suites, two pre-production units, a viewing theatre and a centralised machine room for all areas. YLE also has its own very large sound effects archive containing over 70,000 different effects built up over a 40-year period, complemented by BBC, DigiEffects and Sound Ideas commercial CD archives. The majority of programme material is on Beta SP or Digital Betacam, but YLE also has its own comprehensive film facilities producing around 15-20 films a year, and

works in close co-operation with outside companies. All the post-production elements are handled in-house by the YLE team.

Every suite has a dedicated studio with the basic equipment comprising a DAR workstation and Studer mixing console linked via the ES.Lock ES-Bus machine control system for remote operation of all equipment and machines. The main suite consists of the 70m2 main studio itself, a 30m2 separate acoustics studio, and a 65m2 multitrack control room with a 40-channel Studer 904 analogue multitrack mixing console. This is complemented by a Sony digital multitrack machine, a Studer 16/24 analogue multitrack and the DAR SoundStation Gold. The studio is fully capable of being switched over to the other suites, as required.

The DAR SoundStations are at the heart of the TV audio post-production department, comprising a combination of eight SoundStations and Sabres. YLE is currently the largest European user of DAR systems, ranging from the flagship 16-channel SoundStation Gold integrated audio production system with touchscreen and Mix Controller fader surface with dynamic automation, to the compact Sabre Plus system. In fact, YLE invested in its first DAR system back in 1989.

### THE WHY QUESTION

Selecting any equipment involves a continual process of assessing what is available and how it fits in with your operational

style and long term planning. Over the years, we have tested just about every system on the market, but still regard the DAR SoundStation approach as the best for our requirements. We are very satisfied with both DAR as a company, and the operation of the systems themselves — we have always received fast, responsive support and DAR has consistently listened to our ideas and incorporated them into future products.

The Gold system has given us even greater operational flexibility on a tried and tested platform. The SoundStation offers a highly user-friendly method of working, and the ergonomics of the system are excellent. We particularly like the Segment Based EQ, which is also a feature of the Sigma models, and the addition of the assignable Mix Controller on Gold is a real advantage. It gives us backwards compatibility between our existing systems, as well as a more advanced package to handle future demands.

In essence, we use the Sabre Plus to handle dubbing and pre-production tasks, keeping our SoundStations free for more complex audio work. The optical disk drives on Sabre are a real advantage, allowing us to work very fast. On a long-running series, for example, the actors often come in and record several episodes or parts on the same occasion. Simply by changing disks, we can switch between projects very quickly — making the most of everybody's time.

Media transfer and networking are key issues at YLE. All of the DAR systems

incorporate Open Media capabilities, which are designed to enable rapid, efficient audio auditioning and project transfers. For instance Audio Reels can be sourced from non-DAR machines such as the Lightworks and Avid video editors.

In addition, current-generation DAR products can be supplied with D-net networking capability built-in, supporting a range of industry standard networking carriers including FDDI/CDDI, 10Mbit/s Ethernet and 100Mbit/s Ethernet. D-Net can also be configured to include the DAR AXIS AudioServer, incorporating large hard disk stores for instant on-line access to all commonly-used sound effects and music. The DAR audio management system enables these effects to be rapidly edited, named and commented, and then grouped in a hierarchical structure for quick access and searching.

### COMING SOON

The next step for us will be to network all of our DAR workstations together, creating a shared audio server for programme material. This will allow us to interchange audio data and EDLs with other workstations and non-linear video editing machines. The upshot is that audio auditioning and project transfers can be speeded up significantly, enabling us to work more productively. We will also have a central CD effects jukebox, and plan to master our huge effects archive onto CD-ROMs. It will then be a question of seeing where we go from there. ■

For further information contact Mike Parker at Digital Audio Research Ltd on +44 (0)1372 742848, fax +44 (0)1372 743532, email dar@cityscape.co.uk, or circle Reader Service 46.

CONTINUED FROM PAGE 40

## Solid State Logic a Hit in Space

the months preceding completion of their latest creation. Inevitably, this can lead to internal incompatibility of formats, and a bookings and scheduling nightmare.

### ALL AT ONCE

At Space the idea was to design, build and install a complete audio facility in one go. It had to be totally digital throughout and equipped for surround sound — the format of the future. We wanted to re-evaluate every established working practice and build the perfect audio working environment.

The problem with this approach was the requirement to travel to a point several years in the future, and yet be retrospective about something that only existed in the imagination. We knew that we needed to create a fully integrated technical superstructure. There were to be no restrictions on the size of projects we could work on, nor the amount of additional equipment that could be called upon for any given job. The company that ultimately managed to devise a solution was Solid State Logic Ltd.

A project of this size and complexity requires a great deal of trust and communication between supplier and client. We are no strangers to digital working — we have nine Lexicon Opus systems in total — and our experience with SSL in the past, with two 6000 series consoles at The Bridge, convinced us that this was the supplier to choose. In total the project took over 18 months from conception to completion, with many hundreds of hours spent in consultation with SSL.

SSL produced plans for four OmniMixes, one Scenaria, seven VisionTracks, six ScreenSounds, and five banks of removable disk drives configured together in a total network. Each system has the ability to hold one track day on line, which means the OmniMixes and Scenaria with a ScreenSound can each hold a track working week of 48kHz digital audio on line. In addition, there is almost this amount again held in the background on

plug and play drives.

All audio from everywhere, and everything in whatever form, is connected directly to a giant digital routing matrix with 2,280 inputs and outputs. This was a development of the DiskTrack system used with the Axiom console, which has the added benefit of behaving as a distribution amp for multiple feeding. The routing of video signals and monitor feeds makes use of a ProBel switching matrix, with customised switching to control the status of monitors between composite video and RGB. It is this central DiskTrack matrix that makes Space unique among facilities, and yet it is effectively invisible to clients.

The benefits of this degree of integration have been remarkable. Any piece of equipment can be accessed from anywhere in the facility, audio and video can be selected at will, and serial control over video and audio machines is available everywhere. As there is no conventional patchbay — this is a facility without a single patchcord — the status of the entire facility can be seen at a glance on any of the computer screens.

From a scheduling point of view this has immense advantages. No longer do emergency re-mixes cause a problem as all rooms can be easily connected to outboard equipment such as ISDN, and there is really no restriction on the amount of audio available on-line. The audio engineers have found that this flexibility allows them to spend more time on the creative aspects of their sessions rather than worrying about technical limitations.

And why call it Space? If you are ever in London, call in and ask myself or Rick Dzendzera about our 'alien experience'. Ask us to show you the abandoned alien space craft that formed the basis of the new facility. And be prepared to be amazed. ■

For further information contact SSL on +44 (0)1865 842300, fax +44 (0)1865 842118, or circle Reader Service 32.



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- Frictionless leak proof fluid damping with three levels of drag
- Vibrationless vertical and horizontal brakes
- Built in bubble for horizontal leveling

### HOT POD TRIPOD SERIES

Especially developed for use in ENG, the Hot Pod tripod is the fastest in the world. The central locking system is activated on all three legs at the same time, while the pneumatic center column easily makes it possible to have the lens at a height of over 7 feet. The elevation force of the center column is factory set and doesn't require any setup. When moving to another location it can be carried by its handle located at the center of gravity.



### ENG TWO-STAGE TRIPOD SERIES

Sachtler two-stage tripods have an enlarged height range (lower bottom and higher top position) so they are more universal. Legs can be locked in seconds with Sachtler's quick clamping. There are also heavy duty versions for extra stability. The heavy duty aluminum has a 20mm diameter tube vs. 16mm and the heavy duty carbon fiber has a 24mm diameter tube vs. 22mm. All heavy duty two-stage tripods have a folding tripod handle.

### NEW! Sachtler CADDY Systems

Now Sachtler quality is available to low budget users. The price of a CADDY system includes the new 7-step dampened CADDY fluid head, ultra-light but rugged carbon fiber tripod, lightweight spreader and either a soft bag or cover. The CADDY fluid head features an adjustable pan arm, 7 step adjustment for quick counter balance and the self-locking Sachtler Touch and Go System.

**CAD 01**  
**Single-Stage ENG Carbon Fiber System:**

- CADDY Fluid Head
- ENG Single-Stage Carbon Fiber Tripod
- SP 100 Lightweight Spreader
- Transport Cover 100

**CAD 2A**  
**2-Stage ENG Carbon Fiber System:**

- CADDY Fluid Head
- ENG 2-Stage Carbon Fiber Tripod
- SP 100 Lightweight Spreader
- Soft padded ENG Bag

## MILLER

### Fluid Heads and Tripods

The silky, smooth action of each Miller Fluid Head is the product of the finest quality cast and machined parts functioning together in a fluid environment. They are engineering masterpieces, built to operate under extreme conditions. They're engineered to exceptionally fine tolerances and their mechanisms are protected effectively against ambient moisture and dust.

#### Miller 20-Series II Fluid Head

- Dynamic fluid drag control
- Sliding/quick release camera platform
- Weighs 4 lbs.—handles up to 22 lbs.
- Counterbalance system compensates for nose heavy or tail heavy camera configurations and permits fingertip control of the camera throughout the tilt range.
- Includes independent pan and tilt locks, bubble level, dual pan handle carriers and integrated 75mm ball levelling.



#### #601-Lightweight Tripod

- Weighs 4.5 lbs., supports up to 30 lbs.
- Minimum height down to 24", maximum height to 57"
- Extremely portable, folds down to 33"
- Engineered from thermoplastic moldings, diecast alloy and hard anodized tubular alloy.
- Fast, one turn, captive leg locks
- Includes 75mm (3") ball levelling bowl

#### #649-2-Stage Tripod

- Two extension sections on each leg. Operates at low levels as well as normal heights without the use of mini legs.
- High torsional rigidity, no pan backlash
- Weighs 6.6lbs., supports 50 lbs.
- Very portable, folds to 27"
- Includes 75mm (3") ball levelling bowl

#### Miller 25-Series II Fluid Head

- 100mm ball level fluid head
- Robust, lightweight, low profile design
- Quick release camera platform
- Weighs 7lbs.—handles up to 25 lbs.
- Multi-step fluid drag system and integrated counterbalance system provide ultra-smooth, repeatable pan-and-tilt fluid control and finger-tip camera balance for ENG camcorders, industrial CCD cameras or small studio cameras

**System 20 #338**—Miller 20 Head, 601 Lightweight Tripod, On Ground Spreader  
**System 20 ENG #339**—Miller 20 Head, 649 2-Stage Aluminum, On Ground Spreader  
**System 25 #500**—Miller 25 Head, 611 Lightweight Tripod, On Ground Spreader  
**System 25 ENG #502**—Miller 25 Head, 641 2-Stage Aluminum, On Ground Spreader

## Vinten

### Vision SD 12

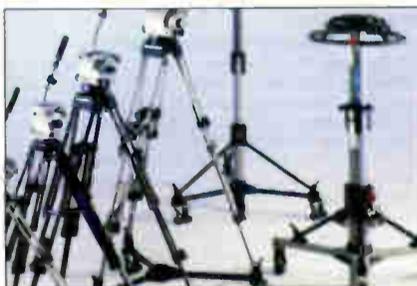
#### Pan and Tilt Head with Serial Drag

The Vision SD 12 head features "Serial Drag" pan and tilt system. System consists of a unique, permanently-sealed fluid drag and an advanced lubricated friction drag. You achieve the smoothest pans and tilts regardless of speed, drag setting and ambient temperature.

- Patented spring-assisted counter-balance system permits perfect "hands-off" camera balance over full 180° of tilt.
- Instant drag system breakaway and recovery overcome inertia and friction for excellent "whip pans".
- Consistent drag levels in both pan and tilt axis.
- Flick on, flick off pan and tilt caliper disc brakes.
- Greater control, precision, flexibility and "touch"
- Touch activated, time delayed illuminated level bubble.
- Working conditions from as low as -40° up to +60°C.
- SD 12 weighs 6.6 lbs and supports up to 35 lbs.

### Vision Two Stage ENG and LT Carbon Fibre ENG Tripods

- The ultimate in lightweight and innovative tripods, they are available with durable tubular alloy (Model #3513) or the stronger and lighter, axially and spirally wound carbon fiber construction (Model #3523). They incorporate torque safe clamps to provide fast, safe and self-adjusting leg clamps.
- "Torque Safe" requires no adjustment. Its unique design adjusts itself when required, eliminating manual adjustment and maintenance and making for a much more reliable clamping system.
- New hip joint eliminates play and adds rigidity.
- They both feature 100mm levelling bowl, fold down to a compact 28", and support 45 lbs.
- #3513 weighs 6.5 lbs - #3523 CF (Carbon Fibre) weighs 5.2 lbs.



### Vision 12 Systems

Vision 12 systems include #3364-3 SD 12 dual fluid and lubricated friction drag pan/tilt head, single telescoping pan bar and clamp with 100mm ball base.

#### SD-12A System

- SD-12 pan and tilt head
- 3518-3 Single stage ENG tripod with 100mm bowl
- 3363-3 Lightweight calibrated floor spreader.

#### SD-12D System

- SD-12 pan and tilt head
- 3513-3 Two-stage ENG tripod with 100mm bowl
- 3314-3 Heavy-duty calibrated floor spreader

### VIN-5ST and VIN-10ST

- Compact and lightweight, they maintain Vision performance and quality.
- Ideal for the latest generation of dockable and one-piece camcorders.
- Provide total stability and durability with payloads up to 33 pounds.
- Compatible with all Vision accessories.

**VIN-5ST** includes Vision 5LF head, single stage toggle clamp tripod, spreader and soft case.

**VIN-10ST** includes Vision 10LF head, single stage toggle clamp tripod, spreader and soft case.

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## Panasonic

### AG-EZ1 3-CCD Digital Videocassette Camcorder

Heralding a new era in video, the AG-EZ1 is the world's first camcorder to incorporate 6mm DVC (Digital Video Cassette) technology. The biggest leap in video since S-VHS and Hi8 were introduced six years ago, DVC is a revolutionary video format that delivers such high quality—it literally rivals broadcast cameras. Utilizing DVC the AG-EZ1 records an extraordinary 500 lines of horizontal resolution—nearly 25 percent more than S-VHS, Hi8 or laserdisk, and 50 percent better than a live television broadcast. And because it's digital, picture quality is not only sharper but unbelievably clean. Audio is also recorded digitally, resulting in quality equal to that of CDs. In addition to its digital capabilities, the AG-EZ1 also features a 3-CCD pickup system, 180,000 pixel color viewfinder, 10:1 power and 20:1 digital zoom, full automatic and manual controls and a large LCD panel.



### AG-DP800H SUPERCAM S-VHS 3-CCD Digital Signal Processing Camcorder



- Three high-density 380,000 pixel CCDs with half-pitch pixel offset achieves over 750 lines of horizontal resolution, a S/N ratio of 60dB and remarkable sensitivity of f8 at 2000 lux. Additionally the Frame Interline Transfer (FIT) CCDs minimize vertical smear, so you maintain impressive picture quality even in very bright illumination.
- Digital Signal Processing circuitry provides four valuable benefits:
  - 1) Consistently reliable up-to-spec performance.
  - 2) Fine adjustment of a wide range of parameters.
  - 3) Memory storage and instant recall of specific settings.
  - 4) More flexible and higher quality image processing, as well as easier maintenance.

- Some of the DSP circuits and their functions:
  - CHROMA DETAIL - This function compensates for poor resolution in the high chroma areas of the picture.
  - DARK DETAIL - Determines optimum degree of contour enhancement in dark areas to deliver crisp, natural-looking images
  - HIGHLIGHT COMPRESSION - Expands the dynamic range of the highlighted areas and prevents halation. The highlight compression circuit allows a wide dynamic range producing detailed images even against bright backlight or daylight.
  - FLARE CORRECTION CIRCUIT - Compensates for unsteady black caused by light or by a subject's movements.
- Six Scene File modes. There are two user modes for custom digital parameter settings including Horizontal Detail, Vertical Detail, Chroma and Dark Detail, and Color Correction. The four preset modes are normal, fluorescent, special and sparkling.
- In addition to regular AGC (Automatic Gain Control), Supercam has a Super High Gain mode. At F1.4 this enables shooting under illumination as low as 2 lux while retaining detail and color balance.
- Synchro Scan function allows flicker-free shooting of computer monitors. Electronic shutter increments can be set variably from 1/61 seconds to 1/253 of a second.
- Built-in internal time code generator lets you record with SMPTE LTC/VTC (Longitudinal/Vertical Interval) time code
- Two hi-fi stereo audio channels with a dynamic range of 80 dB, as well as two linear audio channels with Dolby NR. Normal/Hi-Fi recording is selectable. Uses XLR connectors to further ensure high-quality sound.
- Has a 26-pin connector on the back that outputs a composite or component video signal. This enables convenient backup recordings using an additional VCR equipped with a 26 or 14-pin connector
- Phantom power can be supplied to an optional microphone. Power can be switched off to prevent battery drain when not in use.

## JVC

### GY-X2B 3-CCD S-VHS CAMCORDER



- Newly designed three 1/2" CCD image sensors deliver 750 lines of horizontal resolution and superb signal-to-noise ratio of 62dB
- New micro-lens technology provides exceptional sensitivity of F8.0 at 2000 lux and L0LUX mode lets you shoot with almost no light! Shoot superb footage with excellent color balance at a mere 1.5 lux
- Variable Scan View allows flicker-free shooting of a computer monitor.
- Quick Record Mode - when turned on the camera is set to the auto iris even if lens is set at manual. Also activated is (ALC) Automatic Level Control and EEI Extended Electronic Iris

which provides both variable gain and variable shutter. Now you can shoot continuously from dark room to bright outdoors without having to adjust gain, iris or ND filter.

- Full Time Auto White circuit lets you move from incandescent to fluorescent to outdoor lighting without changing white balance or the filter wheel.
- Genlock input allow synchronization with other cameras.
- Dual output system allows camera output to be connected directly to an external recorder

### GY-X3 3-CCD S-VHS Camcorder

By employing professional camera technology in new economical ways, JVC has succeeded in bringing to market a professional 3-CCD camera that breaks all previous price barriers. The new GY-X3 delivers all the performance of a high end 3-CCD camera—high resolution, high sensitivity, low noise and natural color—at an incredible price.

- Features:
  - Three 1/3" CCDs provide a sensitivity of 2000 lux at F8.0, signal-to-noise ratio of 60dB and 650 lines of horizontal resolution.
  - Low light capability allows you to shoot in as little as 4 lux and still have bright pictures with good resolution and strong, vivid colors.
  - Full Auto Shooting (FAS) mode instantly adjusts to changes in shooting conditions. You can go from bright outdoors to indoor lighting and gain, iris, audio level and color balance will all be automatically adjusted.
  - Variable Scan View allows flicker-free shooting of a computer monitor.
- Has a built-in 14:1 (5.5-77mm) continuously variable speed zoom lens. The amount of pressure applied to the rocker determines the speed of the zoom. Both the iris and zoom can be controlled manually if desired.
- Built-in Control Track (CTL) time code generator as well as a time/date generator. The advanced CTL time code generator has a "scene finder" function that records an identification code each time you start taping. This lets you easily advance to the next or previous scene when using the JVC Edit Desk system.
- Large high resolution 1.5-inch viewfinder displays comprehensive status indicators.

### KY-27C 3-CCD Color Video Camera

- New 2/3-inch broadcast-quality 380,000 pixel CCDs with advanced electronics deliver resolution of 800 horizontal lines and reduced smear.
- High sensitivity of F9.0 at 2000 lux allows a truly usable minimum illumination of 1 lux with JVC's exclusive LoLux dual pixel readout sampling technique.
- LoLux mode allows shooting scenes that were previously impossible due to insufficient lighting. CCDs are maximized for low light sensitivity equivalent to an electronic gain of 2.4dB, then the dual pixel readout system is added which provides an additional 6dB. Together they provide +30dB without the noise and picture degradation normally associated with this much gain.
- Signal-to-Noise ratio of 63dB assures virtually "noise free" images.
- Auto knee circuitry extends a scene's light to dark dynamic range reproduction by up to five times without overexposure.
- Has large 1.5-inch viewfinder with 600 lines of resolution and SMPTE color bars. Status system provides audio levels, accumulated or remaining recording time, VTR operation, battery voltage and camera setup. Zebra pattern indication and safety zones with a center marker are also provided.
- Variable scan function enables a precise shutter speed from 1/60.2 to 1/196.7 of a second in 256 increments to be set, matching a computer's scan rate. Almost any computer display can be clearly recorded.
- Camera head allows direct input of genlock signal and timing adjustment. A wide range optional remote controls, RS-232 interface, multicore and triax CCU's are available.
- Docks directly to the JVC BR-S422U, BR-S411UB and BR-S420CU professional S-VHS recorders. Optional adapters for docking to Hi-8 and Betacam SP are also available.



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## NEW! JVC DIGITAL S

**BR-D40 Digital Dockable Recorder**

**BR-D50 Digital Player**

**BR-D80 Digital Editing Recorder**

**BR-D85 Digital Editing Recorder with Pre-Read**

### High Quality Digital Editing Is Here and It's Affordable!

An affordable, broadcast quality digital video recording and editing system, the Digital-S series reproduce images that not only are superior to any analog or digital 4:1:1 format but rival even the highest priced digital systems. It offers the robustness and reliability of a 1/2-inch format and combines 4:2:2 component processing with very mild compression to achieve and sustain excellent quality through multi-generation dubbing.

The quality of Digital-S applies equally to acquisition and editing, plus it has the flexibility to easily integrate into any digital or analog format—tape or disc. Purchase the entire system or one component at a time, its flexibility lets you to use existing equipment.

Digital-S starts with the versatile BR-D40 Dockable Recorder. Designed to produce the highest quality raw footage, the BR-D40 features automatic editing which utilizes a built-in time code reader/generator to ensure perfect, frame-accurate in-camera edits. Time code input and output slave-lock function facilitates editing the tapes from multi-camera or iso-cam shooting. Edit with a choice of two powerful editing recorders—top-of-the-line BR-D85 with pre-read and digital I/O or the economical BR-D80. Completing the line is the BR-D50 Player and the flexible BR-D51 Player with S-VHS playback (Available Oct.96). Both players accept the optional SA-D50U digital I/O interface card.

#### Broadcast Quality Digital Video

- Utilize 4:2:2 digital component processing to add a richness and warmth unobtainable with any lesser system. In addition, only 4:2:2 stands up to the rigors of sophisticated chroma-keying, multi-generational editing, special effects, blue-screen compositing, matting, ATV up/down conversion, and multiple transconversion between compression systems.
- Reproduces finest colored details and subtle contrasts while minimizing artifacts using extremely mild compression ratio. Set to 3.3:1 with DCT-based intra-frame coding, Digital S yields a data rate of 50 Mbps, plus it pumps out horizontal resolution of 720 pixels or 540 TV lines. S/N ratio is an incredible 55dB.
- Audio is recorded by 2-channel, 16-bit PCM signals with a sampling frequency of 48kHz. The audio is superior to CD and allows frame accurate editing. PCM audio channels can be edited independently.
- Standard analog inputs/outputs provide outstanding performance for most applications. When virtually perfect dubs are required, they use SMPTE 259M interface for digital video and AES/EBU for digital audio. The one true digital video standard today, SMPTE 259M permits long cable runs and is used for direct professional connection to digital switchers, disk-based recorders and digital tape recorders.

#### Robust 1/2-inch Format

- Achieves its super-high image quality using a robust, 1/2-inch metal particle cassette tape. The cassette housing has a dust-proof structure to increase tape life as well as your images. Tape speed is 57.8 mm/s for a recording time of 104 minutes.
- Digital S features an extra wide track-width of 20 microns for improved stability and reliability. One frame consists of 10 tracks with the video area on either side of the audio track.
- Equipped with powerful error correction circuitry that not only replaces data in the unlikely event of a tape dropout but continues to play back a picture even with a clogged head.

#### Digital Editing

- Digital-S VCRs are equipped with variable slow motion which can be accessed by standard editing commands. Smooth and noiseless, the image quality of slow motion is equal to regular playback and is available within a range of  $\pm 1/3X$ .
- Longitudinal tracks include two auxiliary audio (cue) tracks and a control track for tracking purposes. Cue tracks provide easy location of edit points which can be heard at any tape speed.
- Because of its linear control track, Digital-S has a short lock-up time which eliminates long pre-rolls. This feature achieves a stable picture faster, saving precious editing time.
- Auxiliary video (sub-code) area stores two selectable uncompressed lines of video. Suitable for recording closed caption or other information located in the vertical blanking interval.

#### PRE-READ EDITING (BR-D85 Only)

Previously an exclusive feature of very high-end digital systems, video pre-read enables the recorder to first play back the digital signal on the tape, before recording a new signal in its place. Operable with either digital or analog signals, pre-read lets you perform layering and A/B roll editing with only two VCRs, instead of three.

#### Operational Conveniences

- Comprehensive analog inputs/outputs (composite, S-video and component), video and audio monitor output, RS-422 interface and VITC/LTC time code.
- Jog/shuttle and system timing controls on the front panel. Footage can be searched in color at up to  $\pm 32X$  normal speed.
- They have a self diagnostic warning system, plus, an RS-232 diagnostic service port service port measures digital data performance during playback. There is also a standard hour meter.
- They also feature flying erase head, rack mount capability and built-in head cleaner.

## SONY DFS-300 DME Switcher



The DFS-300 features basic transitions such as wipes and mixes, as well as complex DMEs, or digital multi effects. It allows you to insert sophisticated patterns like picture-in-picture, mosaic, mirror, slide and matrix wipe designs. With the optional BKDF-301 3D Effects board installed, you can perform three dimensional rotations, page turns, image twists, multi-splits and 3D spherical effects—in real time. No sitting around waiting for loading or rendering. With its digital multi-effects, numerous keying options, 3D transitions and user-friendliness, the DFS-300 is in a league of its own.

### POWERFUL MULTIPLE EFFECTS

#### Up to 500 Effects

- 330 factory preset 2D effects and wipes stored for immediate use. They include wipe, compression, rotation, slide, split, mirror, stream, etc. as standard.
- With the optional BKDF-301 3D board installed, 130 additional preset effects such as twist, page turn, sphere, etc. can be memorized and recalled whenever required.

#### Powerful User Program

- Provides powerful, yet easy to operate effects programming to build your own effects. Cut, mix, wipe, slide, rotation and many other 2D effects and optional 3D linear and digital effects can be created with the unit's programming function. Up to 20 created effects can be stored for instant recall and that is doubled when the 3D board is installed.

### HIGH PERFORMANCE SWITCHER

#### Multi-Format Inputs/Outputs

- Three primary inputs accept composite, S-video and component signals. A fourth input accepts either component, R/G/B/Sync or a computer generated RGB signal. Color correction can be applied to any input. Two program outputs provide composite, S-video and component signals.

#### Luminance Keyer

- Foreground sources such as titles, captions or figures can be self-keyed over a background source and rotated, compressed and positioned optionally in 3D space.

#### Chroma Keyer

- Superimpose video from a foreground source onto a background source.
- Clip and Hue can be controlled for clear and sharp key edges.
- Any preset effect can be applied to the chroma keyed picture.

#### Snapshot Function

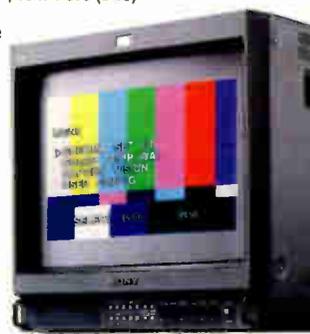
- Stores up to 99 control panel settings in "Snapshot" memory for instant recall. Every parameter such as background color hue, border width, shadow density, etc. can be stored and recalled.

Sony BPPG products are not available for sale outside continental USA

## SONY COLOR MONITORS

### PVM-1350 13" Presentation Monitor

- Employs a P-22 phosphor fine pitch CRT to deliver stunning horizontal resolution of 450 horizontal lines.
- Beam current feedback circuit eliminates white balance drift for long term stability of color balance.
- Has analog RGB, S-video and two composite video (BNC) inputs as well as 4 audio inputs.
- Automatic Chroma/Phase setup mode facilitates the complex, delicate procedure of monitor adjustment. Using broadcast standard color bars as a reference, this function automatically calibrates chroma and phase.
- Chroma/Phase adjustments can also be easily performed with the monochrome Blue Only display.
- Factory set to broadcast standard 6500K color temperature
- On power up, auto degaussing is performed. There is also a manual degauss to demagnetize the screen.
- On-screen menu facilitates adjustment/operation on the monitor. Menu display is in English, French, German, Spanish or Italian.
- Sub control mode allows fine adjustments to be made on the knob control for contrast, brightness, chroma and phase.



### PVM-1351Q 13" Production Monitor

- Has all the features of the PVM-1350 PLUS
- A multisystem monitor, it accepts NTSC, PAL and NTSC video signals. NTSC 4.43 can also be reproduced.
- Equipped with a SMPTE 259M Serial Digital Interface. With optional serial digital interface kit BKM-101C for video and the BKM-102 for audio the PVM-1351Q can accept SMPTE 259M component serial digital signals.
- Equipped with RS-422 serial interface. With optional BKM-103 serial remote control kit, all of the monitor's functions can be remotely controlled.
- Inputs include analog RGB, S-video, component, 2 composite video (BNC) and 4 audio for complete flexibility.
- Aspect ratio is switchable between 4:3 and 16:9 simply by pressing a button.
- Underscan function allows you to view entire image and check the picture edges. Also H/V delay to view the blanking area, sync/burst timing by displaying the horizontal and vertical intervals in the center of the screen.
- Color temperature switchable between 6500K/9300K/User preset. 6500K is factory preset. 9300K is for a more pleasing picture. User preset is 3200K to 10,000K.

### PVM-1354Q/PVM-1954Q 13" and 19" Production Monitors

All the features of the PVM-1351Q PLUS:

- SMPTE C standard phosphor CRT is incorporated in the PVM-1354Q/1954Q. SMPTE C phosphors permit the most critical evaluation of any color subject. Provides over 600 lines of horizontal resolution.
- The PVM-1354Q mounts into a 19-inch EIA standard rack with the optional MB-502B rack mount bracket and SLR-102 slide rail kit same as PVM-1351Q. The PVM-1954Q mounts into a 19-inch EIA rack with the optional SLR-103 slide rail kit.

**Why pay \$10,000 to \$15,000 for a BROADCAST QUALITY CHARACTER GENERATOR when you can get it for only \$2995?**

*Introducing the new.....*

## VIDEONICS POWERScript™

### Animated Postscript Character & Graphics Generator

A technological and engineering breakthrough, the PowerScript sets new price/performance standards for broadcast video production, multimedia and industrial applications. It delivers the huge range of titles and graphics supported by PostScript display technology, plus animation, effects, transparency and keying. It features anti-aliased, 17.5 ns (nanosecond) pixel resolution and 4:2:2 broadcast-quality video, plus high-speed RISC processing to provide real-time Level 2 PostScript imaging and fast rendering—even with the most complex images. The PowerScript works stand-alone or with a computer, has a built-in TBC, offers a powerful and intuitive interface, and is suitable for the desktop or can be rackmounted.

#### Powerful Character Generator

- Choose from 35 built-in fonts or download hundreds of PostScript fonts from your computer. It's high-speed RISC processor provides real-time PostScript Level 2 imaging.
- Characters can be rotated at any angle, scaled to any size, stretched horizontally or vertically.
- Styles include variable bold and italic, underline and shadow (drop shadow, variable displacement and opacity). Each character can be adjusted separately.
- Text can be positioned anywhere on the screen or automatically centered, vertically or horizontally.
- Left, right, top, bottom & center justification is provided as well.
- Characters are automatically kerned, using the font's standard kerning information.
- Spacing is highly flexible with variable word and letter spacing and line spacing (leading).

#### Intuitive User Interface

- Built-in real-time object-based drawing tool and text editor, no external computer or software required. Design can be done ahead of time and displayed later, or can be done on the fly. Display is real time.
- Supplied keyboard and mouse are used with easy on-screen menus to place and modify graphics and text.
- Customizable function keys let you change fonts, colors, and other characters instantly.
- Separate preview output allows you to create and edit titles while another set of titles is being displayed.

#### Roll, Crawl, Animation, Effects

- Variable speed roll, crawl and push (slide) in all directions
- Every text object, graphic, and logo can be separately animated. Complex animations include ability to have elements follow paths, bounce, etc.
- Elements can change outline and/or fill color, transparency, position as they move and results are displayed in real time.
- Move individual characters in different directions; make colors change; flash words; make letters and words bounce; spin a letter across the screen.
- Use effects like fades and wipes to transition between titles and video or between two pages of titles.

#### Keyer

- Internal linear keyer superimposes characters and graphics on S-video or composite sources.
- Also provides anti-aliased down-stream keying via a separate linear KEY output.

#### Backgrounds and Graphics

- Titles can be placed on solid color, patterned or graduated backgrounds, or they can be genlocked to incoming video.
- Lines, squares, rectangles, ovals and circles can be created and placed anywhere on the screen.
- Each graphic object can use a different color, transparency, rotation, size, fill and outline.

#### Transparency and Colors

- Characters can be made transparent (0-100%) over video, other characters and graphics with 64 levels of transparency.
- Opaque characters can use over 4,000,000 colors, transparent characters can use over 8,000.
- Different colors can be used for fill and outline (variable width) as well as each letter and graphic.

#### Imported Logos and Graphics

- Import and display complex graphics created with standard Mac, Windows, Amiga and UNIX-based programs, such as Photoshop, Corel Draw and Adobe Illustrator. Accepts most PostScript or EPS format graphics without modification.
- Imported images can be any size and can be scaled, skewed, and rotated when placed on screen.
- Transparency and anti-aliasing can be defined when graphic is generated.

#### Expansion Capabilities

PowerScript operates on its own but you can still add peripherals and connect to a computer or network. Two PCMCIA slots allow the addition of non-volatile flash-RAM and Ethernet cards, and an RS-232 serial port allows connection to computers.

#### Built-in Test Generator

The PowerScript can generate standard video test patterns including color bars, crosshatch, ramp, gray wedge, multi-burst and blackburst. Titles can be placed atop any of the patterns.



**Still not convinced, then call us for a free PowerScript demo tape and see for yourself.**



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## SPEED RAZOR MACH 3.5

### Digital Video Editor for Windows NT

The ultimate digital video editing software, Speed-Razor MACH 3.5 allows you to edit full screen, 60 fields per second, CCIR 601 broadcast-quality video. Designed for the DPS PVR-2500 Perception and Truevision's TARGA 1000/2000 video capture cards, Speed-Razor MACH 3.5 is the fastest and most powerful tool for editing and compositing video clips, animations, stills, music and sound effects. Experience straight cut editing in real time and effects which fly on the fastest machines out there: Alpha, Intel, MIPS-based and PowerPC-based workstations, making this the fastest, most flexible software you've ever seen. Running under Windows NT, it offers three times the speed of Windows 3.1 on the same machine and up to ten times speed when used on Alpha-based systems.

Speed-Razor features infinite video, audio, transition and effects tracks and comes with Razor Blades—transitions and effects to enhance your production. There are preset tumbles, fades and wipes which you can easily customize and save as new presets. In addition, there are special image effects which are unquestionably the highest quality of any system—analogue or digital. Speed-Razor sports anti-aliased 3D DVEs, an infinite channel chroma keyer and an excellent character generator. Use the included effects or transitions, layer them to create new ones, make your own grayscale bitmaps to use as transitions, or use 3rd party plug-in effects—the flexibility is yours.

There are two user definable resolution modes (thumbnail and final) to facilitate editing. The thumbnail mode allows you to use Speed Razor in the field on a laptop then transfer the project file back at the edit suite and automatically recapture and re-render the entire project at final resolution. RS-422 control and batch capture module allow you to automate video capture via SMPTE time code, so digitizing video and audio is simple and painless. In fact, with the innovative "Virtual Editing" function you can actually edit your project, complete with effects and transitions—before you've digitized a single frame of video.

## DIGITAL PROCESSING SYSTEMS INC.

### PVR-2500 'Perception' Digital Video Recorder

#### The Heart of an Advanced Digital Audio/Video Workstation

The PVR-2500 offers powerful features for awesome animation, morphing and rotoscoping capabilities. With features like 720 x 480 resolution, 10-bit 2x oversampled video encoding, better than D1 scaling, component and S-Video outputs, multi-processor support and integrated FAST SCSI-2 controller, it empowers your computer to rival the finest professional production studios.



- The PVR-2500 is a full-length PCI card with a FAST SCSI-2 controller which connects to one or up to seven dedicated hard drives. Because the SCSI controller is integrated with the PVR-2500, video data never has to go over the PCI bus during playback. This avoids the bottlenecks found in systems which use the computer's hard drive for video storage.
- Perception gets animations out of your computer fast and easy. Its exclusive multi-format virtual file system ensures complete integration with your Windows NT applications. Any acquired video or computer generated Perception video clips appear simultaneously in many different file formats including TARGA, SGI, BMP and IFF. Perception is compatible with Lightwave 3D, Autodesk 3D Studio Max, Crystal Graphics TOPAS 5.1 PRO, Microsoft SoftImage, Elastic Reality and others.
- Runs under Windows NT 3.5 on computers with Pentium, DEC Alpha or MIPS processors. Perception's software utilizes NT's native support for multitasking and multiple processors, allowing use with the most powerful computers.
- Perception performs real-time interpolation of 30 fps video to 24 fps film rates or vice versa. This means that it is also at home on the Hollywood movie set as well.

#### AD-2500 Component Video Capture Card

Coupled with the AD-2500 live video capture daughter card, the PVR-2500 becomes a broadcast-quality digital disk recorder. It delivers unsurpassed picture quality and storage capacity is limited only by the size/number of attached SCSI hard drives.

- Has component, composite and S-Video inputs for real-time recording. Captured video can also be exported as sequential RGB files for rotoscoping and other compositing applications
- Incorporates a sophisticated automatic entropy prediction circuit that analyzes the content of incoming video and dynamically calculates the optimum amount of compression on a field-by-field basis—even during real-time recording. You also have complete manual control over compression level/quality settings.

#### FX-2500 Perception Effects Accelerator

The FX-2500 significantly reduces the time required to render complex non-linear transitions. Although it doesn't deliver real-time transitions, it significantly improves the productivity of non-linear editing systems by dramatically speeding up the rendering time for many effects and transitions.

- A stand-alone PVR-2500 provides real-time cuts between video clips, but other transitions, such as dissolves and wipes, substantial delay can occur. A 30 frame dissolve can take minutes to render, even with the fastest PC, because the host CPU processes source frames on a pixel-by-pixel basis. The Perception FX reduces the waiting time to under 10 seconds.

- Video output section utilizes 10-bit 2x oversampled encoding and provides broadcast quality CCIR-601 (720 x 480) resolution. Dynamic range is in excess of D1 scaling so images are brighter, have more color and greater spatial resolution than ever before. Component, composite and S-Video outputs are provided via the included breakout cables.
- Also control BVU protocol VCRs for video acquisition. VCR-like controls on the Perception's GUI simplifies the task of batch digitizing and recording. In this mode, the PVR-2500 can read SMPTE time code from the source deck.
- Can be used with any Windows NT compatible sound card while synchronization of audio and video is maintained by the PVR software. Captured audio is stored on the computer's system hard drive, not on the dedicated drives. This approach provides maximum flexibility for manipulating audio and video during editing.
- Can be used with third party editing software such as Adobe Premier or in:sync Speed Razor MACH III. In fact, a system equipped with the PVR-2500, AD-2500 capture card, a sound card, editing software & one or more SCSI drives becomes a non-linear editor of unparalleled performance—at an unbeatable price.

#### DAR-2500 Digital A4V Recorder

Featuring comprehensive audio post-production capabilities, the A4V (Audio for Video) board provides perfect video/audio synchronization when used with the PVR-2500. A full-length PCI card, the A4V's input and output connections are made via the supplied breakout cables while digital audio is stored on the system hard drive. And to ensure compatibility with third-party audio editing software, it plays and records standard uncompressed WAV files. It can also be controlled directly by video editing software like in:sync's Speed Razor Mach III.

- Non-linear, non-destructive audio editing. No waiting for edits to compile.
- True audio scrub.
- Simultaneous record/playback. Play up to three stereo tracks while recording one stereo track.
- Mix four stereo source tracks down to two output channels in real-time.
- Four-band Parametric EQ for each channel (assignable by stereo pair).
- Real-time reverb and compressor/limiter. Additional effects can be easily added via software upgrades.
- Built-in LTC/VITC time code generator/reader/inserters lets you create window dubs with time code information superimposed over composite or S-video signals.
- Unlimited audio editing capabilities with third party software.



### Uncompressed 10-Bit D1 Video Disk Recorder

Hollywood is a PCI and ISA-based three card set that provides a D1 video recording solution for high-end animation, rotoscoping, and video/graphics compositing. Because such operations can require many passes, Hollywood avoids the use of any video compression which can progressively deteriorate images.

- Hollywood dramatically reduces the cost per minute for uncompressed video recording. Equipped with 4GB hard drives, typical Hollywood recording times range from 7 to 10 minutes. Compare the cost of Hollywood against competitive products which provide mere seconds of capacity.
- Equipped with serial D1 and component analog video (Betacam/MII) inputs as well as composite and S-Video.
- Optional SD-2500 Serial D1 I/O option lets you interface the PVR-2500 directly to Hollywood. The SD-2500 provides one serial D1 input and two outputs plus a composite input.

- Can also function as a digital test signal generator, providing 20 different 10-bit digital test patterns.

PVR-2500 Digital Recorder .....	1599.00
AD-2500 Video Capture Card .....	849.00
FX-2500 Effects Accelerator .....	899.00
DAR-2500 Digital A4V Recorder .....	1295.00
Hollywood 10-bit Video Disk Recorder .....	CALL
SD-2500 Serial I/O Card .....	CALL

### A note about our turnkey systems:

In addition to the systems listed on this page, we can further customize any system to fit particular needs. You can choose faster display cards, bigger hard drives, more memory, larger monitors, better speakers, etc. Tell us what you need and our salespeople will custom-design a system for you.

And if you happen to be in New York, please come and . . .

**Visit our expanded Video Store and Digital Video Showroom**

### TARGA 1000/2000 and DPS PVR-2500 Windows NT 3.51 Turnkey Systems:

- Video capture board (specify) • 220-watt, 6-bay midtower case
- PCI motherboard with 512K pipelined burst cache
- Pentium 166 MHz processor
- 9FX Motion 771 2MB VRAM PCI display card (TARGA 2000 Systems only)
- 9FX Motion 771 4MB VRAM PCI display card (DPS and TARGA 1000 Systems only)
- 32MB of EDO (Extended Data Out) RAM (Premiere systems only)
- 64MB of EDO RAM (Real Impact and Speed Razor systems only)
- Quantum 1.28GB IDE system drive
- Seagate (Barracuda) 4.2GB SCSI-2 FAST/Wide hard drive
- Adaptec AHA-2940UW FAST/Wide SCSI-2 controller card
- MediaTRIX AudioTRIX Pro DSP-equipped 16-bit audio card (for DPS systems only)
- 3.5" floppy drive • Teac CD-58e 8X EIDE internal CD-ROM drive
- Altec-Lansing 300.1 three-piece deluxe speaker system
- Princeton Ultra 17-high resolution 17-inch multiscan monitor
- Focus 2001A keyboard • Microsoft MS mouse • Windows NT 3.51 operating system software.



TARGA 1000/Adobe Premiere 4.2 .....	\$7495	TARGA 1000 PRO/in:sync Speed-Razor MACH 3.5 .....	\$9295
TARGA 1000 PRO/Adobe Premiere 4.2 .....	\$7795	TARGA 2000/in:sync Speed-Razor .....	\$10,695
TARGA 1000/in:sync Speed-Razor MACH 3.5 .....	\$8995	TARGA 2000 PRD/in:sync Speed-Razor .....	\$11,395

*PVR-2500/AD-2500 w/Adobe Premiere 4.2 .....	\$7495	*PVR-2500/AD-2500 w/in:sync Speed-Razor .....	\$8695
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\*PVR-2500 System Notes: 1) Does not include Adaptec SCSI-2 controller card (has built-in SCSI-2 port)  
2) Includes Seagate Barracuda 4.2GB Narrow hard drive (doesn't accept Wide drives)

#### Expansions and Upgrades for all Systems:

Full Tower Case (10-bay) .....	add 100.00	Super Tower Case (12-bay) .....	add 200.00
Pentium Pro motherboard and Pentium Pro 200 MHz processor (256k cache) .....	add 800.00		
9FX Motion 771 4MB VRAM PCI Display Card (for TARGA 2000 systems only) .....	add 200.00		
Seagate Elite 9.1GB Narrow drive (for DPS) .....	add 1000.00	Seagate Elite 9.1GB Wide drive .....	add 1000.00
MAG Innovision MXP-17F 17" multiscan monitor .....	add 225.00	MAG MXP-21F 21-inch multiscan monitor .....	add 1100.00

### MEDIA DATA TRANSLATION Media 100 qx

Media 100 qx is a high-performance digital video system that lets users of QuickTime-based applications create professional broadcast-quality video programs. It combines industry-leading image and audio quality with the industry's most popular editing program—Adobe Premiere. The result is broadcast-quality programs indistinguishable from Betacam—at an affordable price. Media 100 qx lowers the cost traditionally associated with digital video systems. Plus it offers an easy, software-only upgrade path to the advanced features and real-time functionality of professional Media 100 systems.



#### BROADCAST-QUALITY VID:

Media 100 qx is based on Vincent, the same digital engine used in the professional Media 100. Vincent is a single-card designed specifically for Power Macintosh systems with PCI bus. In fact, by using Vincent, Media 100 qx delivers image and audio quality indistinguishable from what thousands of professional Media 100 users get everyday. True broadcast quality not available with any other QuickTime-based video editing product.

#### OPERATES IN YUV COLOR SPACE:

Vincent is a true video processing card that processes video signals in YUV color space avoiding the quality degradation inherent in RGB conversion. Media 100 qx also supports component video (Media 100 qx Component). This version brings broadcast-quality Y, R-Y, B-Y video input and output to Media 100 qx

#### FAST RENDERING:

Power of the Vincent board increases your productivity by accelerating the rendering of 20 of the most popular effects.

#### OPEN SYSTEM FOR UNLIMITED OPTIONS:

An open system Media 100 qx is fully compatible with Power Macintosh hardware and off-the-shelf software. Open system design also means that you have a common interface and transparent access to QuickTime applications.

#### SPECIFICATIONS:

- All digital, on-line video quality with data rates up to 200 KB/frame—equates to 6.0 MB per second
- Full-screen, full-motion video capture and playback at 30 fps (60 fields) NTSC and 25fps (50 fields) PAL
- Composite and S-video input and output. Also available with component input and output (Media 100 qx Component)
- Uses standard high-performance Mac SCSI drives

#### WORK WITH QUICK-TIME APPLICATIONS:

Media 100qx runs seamlessly under QuickTime, providing communication between Media 100 qx and hundreds of QT applications such as Adobe Premiere and After Effects 3.0, Specular Infini-D, Strata StudioPro and Macromedia Director. QT integration lets you "drag and drop" files between multiple applications with no loss in quality.

#### MEDIA 100 COMPATIBILITY:

Provides a software-only upgrade to the real-time editing functionality of the high-end Media 100. Clip media and programs authored on Media 100 qx can be used directly by any Media 100 system with no data loss. Drag and drop files from one system to another.

#### PLATINUM ONE-STOP SUPPORT SERVICE:

The most comprehensive service and support offerings in the industry. Choose from a full range of options including, unlimited toll-free telephone support, exchange loaner program, extended warranty and All-in-One Protection.

- Genlock output for integration with pro systems
- Clips compressed at different rates within a single program
- View or record 32-bit animation to tape in real time
- Playback of eight tracks of real-time audio
- 16-bit CD/DAT-quality audio input/output
- Balanced XLR connectors (with component version)
- Audio simultaneously captured and synced to video
- 20 accelerated wipes and dissolve effects

### Media 100qx and TARGA 2000 Power Mac Turnkey Systems

- Power Mac 8500 (256K cache) or 9500 (512K cache)
- 2MB of VRAM • 32 MB of RAM
- Apple 8X Internal CD-ROM Player
- 2GB FAST SCSI-2 System Hard Drive
- Optima Diskcovery 8200 8.2 GB Dual Channel Disk Array
- AppleVision 1710AV 17-inch monitor with built-in speakers
- Adobe Premiere 4.2 (Media 100 qx systems only)
- Scitex shareOUS Realtime Editing Software (TARGA 2000 RTX systems only)

Power Mac 8500/180 with Media 100qx .....	12,500.00*	Power Mac 8500/180 with TARGA 2000 RTX .....	19,750.00
Power Mac 9500/200 with Media 100qx .....	12,750.00*	Power Mac 9500/200 with TARGA 2000 RTX .....	19,995.00
Power Mac 9500/180 MP with Media 100qx .....	13,500.00*	Power Mac 9500/180 MP with TARGA 2000 RTX A .....	20,750.00
For systems with Media 100 qx Component .....			add \$1500

\*Purchase a Platinum One-Stop Technical Support contract for the Media 100 qx until 10/23/96 and receive a free software upgrade to the new Media 100 le. A feature set below the full-blown Pro Media 100, the new Media 100 le offers real-time non-linear editing, realtime editing of 4-track CD-quality audio, realtime audio node adjustment during playback and single-track audio cross dissolves, alpha channel support and FastFX: accelerated dissolves and wipes.....\$399.00



# IBC MARKETPLACE

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## TEST RECEIVERS

The TV test receivers and demodulators of Rohde & Schwarz' EFA family receive and demodulate common AM vestigial sideband signals and quadrature-amplitude modulated DVB signals.



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For more information, contact the company in Germany at telephone +49-89-41-29-0, Fax +49-89-41-29-35-67, or circle Reader Service 131.

## BATTERIES

PAG Limited's System RTI is a battery status recognition and run-time information system for all broadcast cameras.

The Paglock connector evaluates the charge status of the battery and the energy being consumed and displays the battery energy life — down to the second — in the viewfinder. Changes in load, such as the addition of a light, are instantly accommodated in the information displayed. An optional extra for the PAG System RTI is a battery reader key fob. This displays a battery's charge status in Ah on its tiny LCD screen.

For more information, contact the company in the U.K. at telephone +44-181-543-3131 and Fax +44-181-540-4797, or circle Reader Service 19.

## DUTCH HEADS

Cartoni showed both its C20 S and C40 S Dutch heads, certainly appropriate in Amsterdam. Both units can be easily mounted atop all supports featuring a similar quick-release camera plate (120mm x 80mm x 7mm), or anywhere else with a 3/8-inch screw.

Cartoni's fluid damping modules and spring type counterbalancing system are integral to both heads, providing respectively 7 steps of

drag plus zero and 7 progressive spring tension settings.

For more information contact Cartoni in Italy at phone +39-6-4382002-4396499, Fax +39-6-43588293, or circle Reader Service 6.

## VIDEO FILTER

The OVER 21 Pre/Post Thick Film Video Filter from C-MAC Microcircuits works in conjunction with the latest industry standard series of oversampling digital filters in multimedia and broadcast applications.

The filter is designed for 601 or NTSC 8xfsc prefilter and postfilter applications and the highest quality 10-bit applications. Working in conjunction with a 55-tap (or greater) oversampling digital filter, the OVER 21 can eliminate all visual artefacts inherent in video signal processing.



For more information, call telephone number +44-1202-842250 and Fax +44-1202-841894, or circle Reader Service 28.

## AUDIO DISK RECORDER

The DR-300A non-linear audio disk recorder from FOR-A can be used with the company's DR-300 noncompressed video disk recorder or as a standalone unit.

The product is capable of four record tracks and simultaneous playback of two channels (four tracks each), or simultaneously recording one channel (four tracks) and playing back one channel (four tracks). The unit's capacity can be expanded.

For more information, contact the company in Japan at Fax +81-3-3446-4454, or circle Reader Service 41.

## DOCKABLE RECORDERS

The BR-DV10E dockable videotape recorder from JVC is based on the standard DV format. Picture quality is 4:2:0 component digital, and the unit docks directly to the standard

50-pin JVC KY-27CE/19E camera mount.

The BR-DV10E has an LCD display representing VTR status, composite and Y/C video monitor outputs and two audio I/Os. XLR audio inputs are selectable between +4dB (line level) and -60dB (microphone level). JVC's NB-G1U batteries power the unit for about 75 minutes per battery, and NP-1 style batteries do not require an adapter.

For more information, contact JVC in the UK at +44-181-896-6000, Fax +44-181-896-6060, or circle Reader Service 65.

## FLUID HEADS

Sachtler's new series of fluid heads, the Video 60 Plus series, feature Sachtler Plus technology for today's OB and studio configurations — i.e. an ENG camera with a studio lens up to 60 kg.

The new heads feature the new 9+9 patented damping, a perfected counterbalance system, illuminated spirit bubble and 90 degrees forward tilt. The head can transform quickly from an EFP to an OB or studio head incorporating or accepting all different mounts and bases.

For more information, contact the company at telephone +49-893-215-8200, Fax +49-893-215-8227, or circle Reader Service 66.

## TRIPODS

The Pro-130/GP tripod system from Vinten is aimed at fast moving ENG cameramen, with a weight of 5.9 kg. Other features include a continuously variable fluid LF drag system combined with a factory set balance system, providing 85 degrees of balanced tilt range.

Versions are available for both one piece cameras and dockable camcorders. For more information, contact Vinten in the UK at telephone +44-1284-752-121, Fax +44-1284-750-560, or circle Reader Service 21.

## BATTERY CHARGERS

The Anton/Bauer InterActive 2000 system PowerCharger for the company's Logic and InterActive digital batteries is fully compatible with all current and future Anton/Bauer Gold Mount batteries. The slim unit fits easily in a notebook computer carrying case.

Features include a wide range mains input (90-260 V AC 50-60 Hz) that automatically adapts to any mains source worldwide, built-in regulated power supply output in each charger for camera operation from mains and expansion charge modules to increase charge capability to four, six or eight batteries.

For more information, contact the company in the U.S. at telephone +1-203-929-1100,

Fax +1-203-929-9935, or circle Reader Service 112.

## EDITORS

The EdiQit from Videomedia, developed by the Strassner Editing Systems Division, is a kit version of the popular SES line of CMX/GVG-style editing controllers. The EdiQit has many of the features of the larger Strassner systems plus the added multimedia power and flexibility of Windows.

EdiQit uses a V-LAN universal control and synchronisation network that allows the incorporation of third party hardware, like the Pinnacle Alladin and GeniPlus, for animation control and special effects.

Other features include multiple EDL bins, professional VVV, VBV and BVB editing previews, advanced variable speed editing control and import/export with all major EDL formats. EdiQit also provides extended pre-read capabilities for digital tape recorders and devices with pre-read functions.

For more information, contact the company at telephone +1-408-227-9977, Fax +1-408-227-6707, or circle Reader Service 89.

## MONITORS

BARCO's CBM 5051 computer monitor is designed for a variety of broadcast applications requiring the display of high resolution images from computer sources, and is particularly suited for use with BARCO's



"Vivaldi" 2 x 2 digital video display system.

The rackmountable unit is equipped with multi-sync circuits and accepts incoming signals from most computer platforms. With Vivaldi, extra features include real auto setup, pulse cross, blue-only, tally display and a programmable Under Monitor Display (UMD) of up to 10 characters for each of the four images shown.

Maximum resolution is 1600 x 1280 pixels, and frequencies can range between 30 and 85 kHz. For more information, contact BARCO in Belgium at telephone +32-56-233-4111, or circle Reader Service 91.

## LIGHTING

Frezzi's Mini-Arc HMI light is designed for professional videographers and cinematographers and is colour balanced at 5,500 degrees K. The Frezzi Mini-Arc delivers the equivalent light output of a 100 W tungsten halogen lamp, with no output loss due to filtering. Bulb life is 500 hours.

Other features include MADF (Mini-Arc Dicroic Filter) for conversion to a tungsten balanced light while still providing the HMI advantage of low power consumption and high light output.

For more information contact the company in the U.S. at telephone +1-201-427-1160 and Fax +1-201-427-0934, or circle Reader Service 18.

Send new product press releases along with photographs to: Marketplace Editor, P.O. Box 1214, Falls Church, VA 22041, USA

## USER REPORT

## Videasonics Picks AMS Neve

by Dennis Weinreich  
Managing Director  
Videasonics

## LONDON

At Videasonics we dub a wide variety of programmes from news and current affairs such as *The Money Programme* and *Panorama* for the BBC, through to comedy such as *Birds of a Feather*, *Mr Bean*, *The Thin Blue Line* and *Harry Enfield*, to drama such as *The Sculptress*, *The Hello Girls* and *Deacon Brodie*.

As our clients' programme base has grown, we too have needed to grow with them, and almost two years ago we decided to build a fifth dubbing suite at our facilities in Camden Town, London. Many of the production companies with which we have worked on comedy and drama television have moved into feature film, and we felt that we needed a room specifically designed to deal with complex television drama and feature films.

## FILM TILT

We decided that the new room should have an unmistakable film orientation, because while existing clients with a broadcast background would be happy with us looking after their TV drama and feature dubs, we needed to make an impact with new clients coming from the features world. The selection of equipment was critical, since we needed not only to be able to do the work, but to satisfy the historical expectations of two very different types of client.

We opted for a room with full THX certification to give us credibility with the features clients, and this is now the only certified THX dubbing theatre in the UK. Since we already had a number of prep rooms equipped with AMS Audiofiles, as well as having one in the four existing dubbing suites, it was natural that we should look to the AMS Logic range of mixing consoles for our new room. We chose an AMS Logic 2 with a 24-track Audiofile, topping things off with video and film projection, Digital Betacam and D-3 VTR, and a good complement of outboard digital effects and reverb.

Following the progress of a typical drama at Videasonics, we would normally start off with an autoconform or OMF transfer in a prep room. The material would then be passed to the dialogue editor where the rushes dialogue and ADR—recorded directly to the Audiofile—would be edited into as smooth a track as possible.

## SMOOTHING CUTS

The Trim Page of the Audiofile allows the editor to make precise mixes between cuts. Cuts that may have jarred and been unacceptable are smoothed, and in many cases make the normal practice of laying up atmos tracks to hide the cuts quite unnecessary. The complete edited tracks remain in the Audiofile but are sourced during the dub from removable hard disk into the 24-track Audiofile in the Logic 2. This allows the dubbing mixer to revisit any of the mixes or cuts that the dialogue editor has made without the need to go back into the prep room.

If this work took place in our Prep 3 room, where we have recently added an AMS Logic 3, the tracks would be smoothed not only in terms of editing, but EQ and dynamic fader moves as well. This mix data from

the Logic 3 translates directly to the Logic 2, allowing the dialogue editor to offer a mixed solution to the dubbing mixer as well as an edited one. The fader and EQ information can be used as a basis for the premix if the dubbing mixer so wishes.

For sound effects and music we would also prepare the tracks in a prep room and present the material to the dub on Audiofile. Wherever possible we try to avoid having to mix from a fixed source such as DA88 or other multitrack, because doing so reduces the flexibility available in the dub and increases the time required.

## OPEN ARCHITECTURE

The architecture of the Logic consoles is completely open. In the Logic 2 there is no dedicated bus structure or channel/output configuration. All must be user-defined. In our Logic Theatre, we work in mono, TV stereo, and 5.1- and 7.1-channel Dolby Stereo. A conventional mixing console would require a lot of landscape just to deal with the monitoring and output requirements of all that lot, but with the Logic we can store a number of 'house' desk configurations, leaving the mixer to choose what options he or she needs on the channels such as EQ type and dynamics.

This level of flexibility soon becomes apparent to the client as well. Premix and final mix configurations usually require different bus structures. So if the desk is set out for final mix but an alteration is needed to a premix section, it is just a case of loading the premix set-up, making the change and reloading the final mix set-up. This all takes minutes instead of hours, and clients notice.

I think that the easier a piece of gear is to use, the more creatively it is used. Traditional mixing consoles make you work to their structure. The Logic allows the mixer to design the desk he or she wants for each job, so rather than fight the console, he or she ends up with a more creative tool of choice.

We are currently working on a design for a new room and making plans to refit our two original rooms. This has given us the chance to look at what is being offered by some other manufactures, and there is a lot of good product out there. I cannot say for certain that AMS Logics will fill all of these rooms, but at this point it is hard to pinpoint a good reason why not. ■

*Dennis Weinreich has been working in professional audio for over 30 years.*

*Originally from Los Angeles, where he worked both in film and music, he has been based in the UK since 1972. He had a successful career as a studio music engineer and later as a producer working with artists such as Queen, Supertramp, Tom Robinson and Wham. He started Videasonics in 1984 with the aim of bridging the technical and creative gulf that existed at that time between film and video sound post production. For further information contact Videasonics on +44 (0)171 209 0209, fax +44 (0)171 419 4470, email 73500.460@compuserve.com or dennis@vidsonic.demon.co.uk.*

*Contact AMS Neve on +44 (0)1282 457011, fax +44 (0)1282 439542, or circle Reader Service 55.*

## USER REPORT

## Akai DD1500 at Stationhouse

by Chris Dale  
Head of Production  
Stationhouse

## LONDON

Stationhouse is a small London-based production company involved in a range of audio work, including radio and television advertising, children's audio tape production, and sound design/dubbing for film and television.

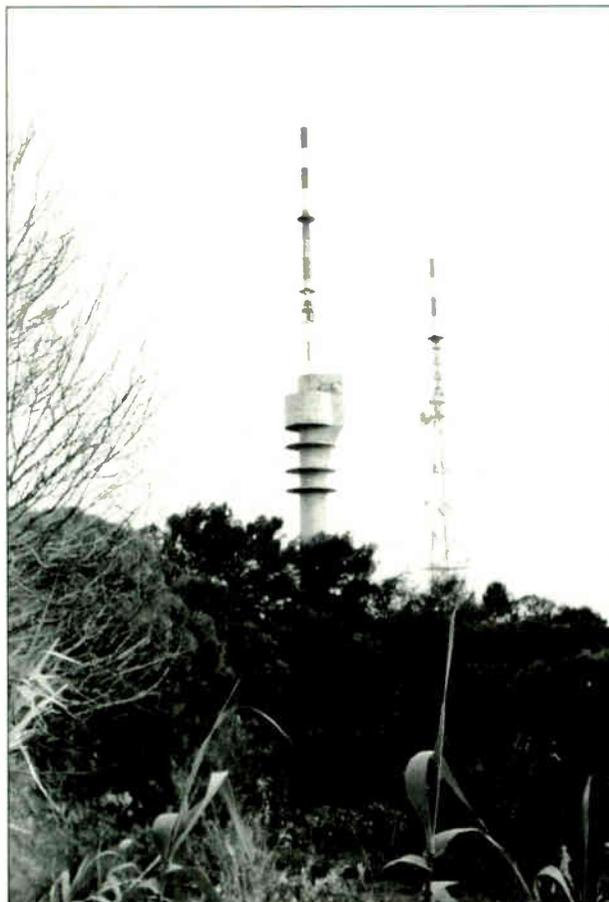
The Akai DD1500 is a 16-track hard disk recording system based on entirely proprietary hardware and software. The DL1500 controller and its associated SVGA colour monitor can be sited over 200m away from noisy, heat-generating processor and storage units. There are three of these: the DD1500m main processor unit, the DD1500a ADC/DAC unit and a DD1500x storage unit which can be loaded with various combinations of hard disk, optical disk and

archiving devices.

One of the main features of the DD1500 is the DL1500 control interface. Previous experience with 'affordable' hard disk systems had made it clear that non-linearity was in itself not a blessing unless the control interface was simple and intuitive enough to allow easy, fluid operation, and also that its processing power was sufficient to allow an immediate response. If you are under the eye of a time-conscious client, searching through drop-down menus, moving between a plethora of pages that have to re-draw, and fiddling about trying to trim and edit using a mouse is far from desirable.

The DL1500 controller has no mouse and the standard SVGA monitor to which it connects has one screen only—there are no menus and no waiting for screens to re-draw. All major editing

(See Akai DD1500, page 52)



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## USER REPORT

# The SoundScape Digital SSHDR-1

by Andrew Neve

Composer and arranger  
Neve Music

Oxford, UK

I formed Neve Music in 1988 to provide high quality original music for the broadcasting industry.

With experience in both orchestral music and technology as a brass player and session keyboard player respectively, I was keen to provide music tracks that sounded expensive and not overly electronic, so I used many other musicians alongside synthesisers and samplers. With my own studio and engineer, I was always on the lookout for equipment that would improve and speed up the recording process, whilst maintaining the highest quality in the composition and arrangement as well as the recording quality.

The musicians were recorded on traditional multitrack tape machines whilst the keyboards and samplers ran live on a sequencer synchronised to the multitrack, the result being mastered onto DAT. The whole system was synchronised to a Betacam, U-matic or VHS video machine when working to picture. Compared with using sequencing software, where notes can be moved and sounds changed without re-recording, working with a tape-based multitrack is a laborious affair. Apart from the fact that tape physically wears out, if the director decides to edit the video, things usually have to be re-recorded or sampled and spun-in.

It soon became apparent that some sort of digital non-linear, non-destructive, multitrack system would not only improve the speed of operation but also open up all kinds of creative possibilities. Chunks of audio could be moved about to fit exactly with the pictures, and adding sound effects and dialogue would become hassle-free. As a PC owner I was looking for a system that ran on this platform. As a composer, not a computer programmer, I wanted a system that was easy to learn but which offered me the quality and features that I needed to record and edit high quality sound. I also wanted a system that was expandable.

Enter the SoundScape SSHDR-1 from SoundScape Digital Technology. SoundScape is an 8-track digital recorder/editor which is expandable up to 64 tracks. It has one of the simplest, most straight forward user interfaces I have ever seen.

The SoundScape hardware is in a separate rack unit from the computer, and all the processing is done by this unit, not the computer. This means that SoundScape software only requires a modest PC, and can run with other software on the same platform without any problems. I have been using it for two years now and must say that it has revolutionised my work. It has never crashed, never let me down and is the most reliable piece of kit in my studio.

My two systems give me 16 tracks and about seven hours of recording time, which could be increased by fitting larger hard drives. Since I bought the system there have been no less than five major upgrades, adding such features as real-time fades, digital EQ, digital noise gates, reverb and timestretch. I am able to record 128 virtual tracks and choose which 16 to play back. The system has full chase-lock synchronisation to video tape and locks to VITC, allowing me to jog/shuttle the video and audio at the same time and easily place sound

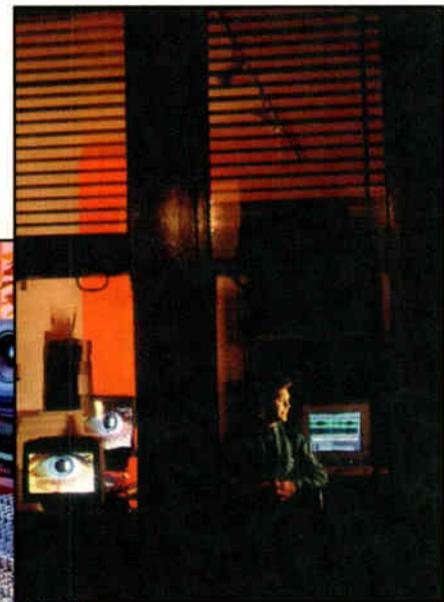
effects. In addition, if a new version of the film is sent, I am able to reposition audio clips with relative ease.

With voice-overs, I am able to cut and paste words and phrases, and with the powerful SoundScape noise gate I can digitally remove any noise between words or notes instantly. For me, one of the most powerful features of SoundScape is the timestretch section. This offers the ability to change the length of audio digitally without changing



Andrew Neve at the SoundScape board

the pitch, and is ideal when the length of the video material I am working to is later changed. When recording musicians I can



... a studio with a view

change the length of a performance without affecting the tuning, or with voiceovers reduce or lengthen the section without changing the pitch of

the artist — the possibilities are endless.

SoundScape Digital recently released powerful EDL software which has revolutionised my work even further, allowing me to read CMX, GVG and Sony EDLs, add handles, fades and SMPTE offsets and auto-conform from the source reels to produce a master audio track. Once autoconformed, all the audio takes from the source reels are placed at the correct SMPTE time position in the Arrange Window, allowing me to quickly edit the dialogue, place the sound effects and prepare the job for laying the music track. There is also an AVI file player which allows me to play back video material with random access while remaining fully locked to my SoundScape audio tracks on the same PC screen—so there is no waiting around for the video to rewind.

Further hardware upgrades to increase the number of tracks on each unit increase the processing power and many new real-time features are shortly to be released. I have to say I can hardly wait. ■

Andrew Neve is a freelance composer and arranger. He writes and records music for television, radio, video and multimedia. His clients include most of the British broadcasters and over 40 corporate companies. Contact Neve Music on +44 (0)1235 820333, fax +44 (0)1235 862333, Email [aneve@cix.compulink.co.uk](mailto:aneve@cix.compulink.co.uk).

For further information contact SoundScape Digital Technology on +44 1222 450120. FAX +44 1222 450130, or circle Reader Service 100.

## USER REPORT

# IDT Sound Design Processor at TF1

by Philippe Bouchon

Head of Audio Engineering  
TF1

PARIS, France

TF1 is the first private TV channel in France, and includes the TF1 National channel, the LCI news channel, TPS (DVB centre) and Eurosport. The main centre at Boulogne accommodates up to 1,200 staff, including some 450 technical people. This centre is made up of the main control room and two other control rooms, which drive up to three stages where news, magazines and sports programmes are made, mainly live, to feed TF1 National.

### DIGITAL MIGRATION

The communication centre routes all incoming signals through large matrixes to every end user — edit suites, control rooms, LCI, Eurosport etc. Today, all the audio at the centre is analogue, but migration to digital is being implemented.

Private FM radio stations first appeared in France in 1981. Initially they used cheap equipment, as the main aim was to transmit rather than to be concerned about the quality. A few years later it became clear that a good way to win the loyalty of listeners was to 'sign' the signal using multiband processors. Processing in this way also means a reduction in the dynamic range, which is more comfortable on the ear and enhances soundtrack intelligibility at low levels.

TV programme sound is usually less accurate than that of radio programmes, simply because of mic placement restrictions on a TV stage, which often leads to

excessive reverberation. At TF1, we also noticed that while the dynamic range differed, it was generally over 30 dB. We considered that a multiband processor could reduce these shortcomings and increase listening comfort.

For this purpose, we conducted several subjective tests on every device available in France. After a three month study, we chose the IDT Sound Design processor which was already established in FM/AM and TV audio processing on the European market.

The choice was made for several reasons. First, the IDT processor offers bypass on power failure. Such failsafe security is essential, as the processor has to be inserted in the main feed to the transmitters. This is driven by a PC computer, and protected against unwanted access to settings. Also, settings made for one processor can be downloaded to another spare, which is very helpful for maintenance.

The second reason is that the IDT processor offers a large panel of settings from bypass to exaggeration, so the 'signature' can be defined without the usual brightness found on other processors, and the settings can move smoothly to fit artistic purposes.

The third point is the pre-emphasis and de-emphasis mode, which allows optimisation of the use of digital optical links to the transmitters. Another considerable advantage of the IDT Sound Design is the use of a remote control, which enables optimisation of processing from anywhere.

### SHOWING SHORTCOMINGS

We inserted an IDT Sound Design on the main link to our transmitters in January

1996. This processor acted as a magnifying glass on our shortcomings. It showed us clearly how we had to improve the quality of the broadcast soundtracks, especially concerning the control of the maximum peak level and the balance between direct and reflected sound.

Only two people have access to the settings of the processor via the control PC. One person usually monitors at home in a domestic environment, while the other accesses the settings from the main control room. Using the telephone, it is possible to communicate and exchange opinions about real listening conditions.

After more than six months on air, the IDT Sound Design processor helped us to obtain an audio signal with a better quality and a lower dynamic range, but without any feeling of 'crushing' or 'pumping'. Today, this processor is only in use on the analogue UHF, but NICAM circuits will soon be equipped with IDT Sound Design as well.

The IDT Sound Design processor shields the transmission links from overshoots and gives more listening comfort to our audience. We still think it was a good choice for this purpose. ■

Philippe Bouchon is a member of the Audio Engineering Society and of the audio section of the CST (Higher French technical committee for Motion Pictures and Television), and frequently visits schools as a lecturer and trainer.

For more information contact Yves van den Bossche, International Sales Manager at IDT on +33 04 78 66 11 11, fax +33 04 78 66 00 99, or circle Reader Service 39.

## USER REPORT

# Wheatstone Fits KATU Needs

by Alan J. Batdorf and Wes Bakken  
KATU-TV

**PORTLAND, Oregon**

In late 1992 KATU-TV began a search for an audio board to replace its long-outlived ADM custom console built in 1976. The ADM board was located in our "live" booth, in which we produced at least four hours of news each day, a daily one-hour variety show with a live audience and occasional band, a one-hour "Town Hall" program (a topical news program with guests on both sides of an issue) and other miscellaneous taped programs from various parts of the studio.

We knew, through past experience, what the needs would be for our new audio board, both technically and operationally. Over the years we had to come up with a lot of "workarounds" to make our old board do new tricks, including outboard interfaces for muting multiple studios, using two high-level modules for one stereo source and creating multiple mix-minus IFB sends.

We considered a number of manufacturers' audio boards, both computer-assisted and non-assisted. All had their pluses and minuses, but none fit our needs perfectly. In early 1993, Wheatstone flew us to its plant in Syracuse, New York to take a look at the TV-600 console. After spending a day in the factory, talking to reps, getting a hands-on look at the company's equipment and seeing the technical specs, it was clear that Wheatstone could deliver the board we wanted.

Wheatstone made modifications to the TV-600 that fit our needs perfectly. (The stock TV-600 did not have the mix-minus IFB system that we wanted.) The company customised eight additional sends with metering and reversed the operation of "assign" switches to create a simple and direct method of

## We can route 60 microphones down to 18 microphone input modules.



sending mix-minuses. The meter bridge was also customised to include all the special metering we requested. Wheatstone provided a means of muting and unmuting our studios by configuring its mute link system to our specifications.

The company also reconfigured the four stereo sends on each input module into eight mono sends. These sends are used for studio foldbacks and other nonstereo feed requirements. We were also able to configure the TV-600 to any size we needed. We felt that 18 microphone input modules and 12 high-level stereo input modules would suit our needs. The board, once populated with the necessary modules, was custom-built for us.

With Wheatstone's "Smart Select" system, we can route 60 microphones down to 18 microphone input modules. Some of the other audio boards we looked at had a maximum of two or four mic inputs per module, thus limiting how many microphones we could use without patching and thereby limiting the means of configuring studio microphones to the appropriate input module.

Smart Select can communicate with the on-board event computer for recall of custom microphone configurations. The 12 line-level input modules also have Smart Select, but the operation of these buttons is slightly different. They are configured to talk to an external line level audio router. In our application, we are talking to a 32 x 24 Di-Tech router, presently configured to 14 outputs. This router contains all high-level sources, such as tape machines, CDs, cart machines and so forth. Our interface is now pretty seamless.

The event computer can recall a custom setup of microphone and high-level input configurations for each segment or show. The TV-600 also has a good, user-programmed LED display on each module that spells out the audio source. (No more white tape and felt-tip pens for us!)

Machine control modules can be placed anywhere they are needed within the board, enabling the operator to reach everything critical without having to slide down to the other end of the console for certain operations. We were also able to configure our board to contain mono and stereo submasters. This added more flexibility to suit our needs.

The board was laid out in an efficient manner. We had tight constraints on how much room we could give up for the audio console, but the trade-off for how many modules you can get per square foot is often an operational compromise. Yes, it would be nice to have 50-input modules,

but not if you'd need a pair of tweezers to make adjustments. The TV-600 has good module spacing, yet its size is fairly compact. We also went with a redundant power supply scheme to minimise any possible downtime.

In the early going, there were some problems with the power supply hum in the Smart Select card cage. But Wheatstone quickly came up with an outboard power supply modification that cured the problem. We have also had some input module switch problems, which we felt were slightly premature.

As a side note, we found that the Smart Select cage works much quieter if you run the dip-switchable gain on its cards up to a low line level for switching purposes, and then pad it back down to mic level at the input to the audio board. The preamps used in the Smart Cage and audio board are quiet enough so that this does not present a problem.

Other boards offered everything from total computer control to no control. With the TV-600, the event computer is a fairly noninvasive, "snapshot" system that remembers input assignments, names and routing. Having gain and EQ settings recalled by computer, although nice, was not of interest to us, and voltage-controlled amplifiers (VCAs) have poorer specs than their normal counterparts. We also did not want to get into a situation in which we were waiting for the audio board to reboot because it hung up during a live show after a minor power hit. Thankfully, Wheatstone again provided the solutions to fit our particular needs.

Being able to customise the board to fit our specifications was the advantage in choosing a Wheatstone console. Our ability to do multiple satellite mix-minuses and back-to-back shows using the event computer has made our audio operations much easier. ■

*Editor's note: Allan J. Batdorf is TV systems supervisor and Wes Bakken is maintenance supervisor at KATU-TV in Portland, Oregon.*

*The opinions expressed above are the authors' alone. For further information contact Ray Esparolini at Wheatstone (Phone: +1 315 452 5000; FAX: +1 315 452 0160) or circle Reader Service 85.*

## BUYERS BRIEFS

**Soundcraft** recently introduced the Ghost Le console featuring a four-band equaliser with two full parametric midrange controls, 10 auxiliary send busses, individually switched phantom power and phase reverse and a microphone preamp. The Ghost Le also features four stereo returns, allowing 56 inputs from a 24-channel desk at mix-down.

The console comes in 24- and 32-channel frame sizes. It also offers an independent PCB for each channel, and a full solo-in-place facility on the main channel path.

For more information, circle **Reader Service 24**.

The SDA-8400 stereo distribution amplifier from **Audioarts Engineering** can either be used as an eight-output stereo DA or as four 1 x 4 DAs. The 8400 also has separate connectors for every balanced input and output, enabling field wire changes and reducing cross connection.

Other features include individual 15-turn output gain trims, a fully regulated DC power supply, a magnetic field power transformer and FR4 glass epoxy circuit boards.

For more information, circle **Reader Service 49**.

## USER REPORT

# ADS and Zaxcom Make a Great Mix

by David Walker  
Vice President of Engineering  
Advanced Digital Services

**HOLLYWOOD, Calif.**

Advanced Digital Services (ADS) has been using the Zaxcom DMX-1000 digital audio mixer for more than two years. We found that this mixer was very easy to integrate into our telecine rooms and edit bay.

The DMX-1000 is perfect in applications that require the handling of both analogue and digital inputs at the same time. The many inputs and features of the unit let you switch between different types of jobs in a snap. Many different setups can be stored on either the disk drive or in its non-volatile memory.

The mixer features both editor control and its own internal timeline, allowing automation to be accomplished with ease. It is a perfect choice for live mixing due to its ability to be pre-programmed.

One of the most common difficulties we face at ADS is the wide dynamic range of material supplied to us. We need to be able to record both a wide dynamic range copy as well as a compressed copy. The DMX-1000 features both compression and limiting on each input. Because this is done digitally, you will not find the usual pumping and breathing that you are used to with other products. I doubt that anyone will ever complain about the operation of the limiters.

The mixer has many features, includ-

ing equalisation, notch filtering and a RAM recorder. An optional feature is stereo pitch correction.



Zaxcom's DMX-1000

Considering how well it performs, the Zaxcom mixer is amazingly compact and easy to use. It locks to a video source for easy integration into your facility.

Our purchase of five DMX-1000s has allowed us to do many tricky jobs that were a real pain with previous mixers. This has been one of our better purchases. ■

*Editor's note: David Walker is vice president of engineering at Advanced Digital Systems (ADS) in Hollywood, Calif. He has been with the company since it was founded in 1994. He is also president and owner of Digital Audio and Video, a manufacturer of telecine products, and is a member of SMPTE.*

*The opinions expressed above are the author's alone. For further information contact John Haronian at Zaxcom (Phone: +1 201 652 7878; FAX: +1 201 652 7776) or circle Reader Service 96.*

## U S E R R E P O R T

# Sharpe Sounds from Doremi

by Paul Sharpe  
and Jacqueline Cristianini

Owners  
Sharpe Sound Studios

### VANCOUVER, Canada

Based in Vancouver, Canada, Sharpe Sound Studios provides post production services to the motion picture and television industry. It features two 35mm Dolby

show to another quickly, or switch editors and their libraries from day to night shift.

A single software package handles spotting, recording, editing, autoconform, track sheet and cue list printout.

### AN EVOLUTION

The product has evolved quite a bit since 1991. For dialogue, we use the DAWN to autoconform from edit decision lists import-

Los Angeles and has 23 years experience in audio post production. Jacqueline Cristianini was previously a freelance sound editor in Los Angeles and former owner of The Posthouse, a post-production house in Vancouver. Contact Sharpe Sound Studios on +1 604 988 3477, fax +1 604 988 4334.

For further information contact Doremi Labs Inc. on +1 213 874 3411, fax +1 213 874 3401, or circle Reader Service 71.



Doremi's V1 random-access video recorder/player



Doremi is in the mix at Sharpe Sound Studios.

stereo mixing theatres that are DTS/Dolby certified, ADR/Foley recording stages and 12 full sound editing suites.

All sound suites use Doremi DAWN audio workstations for dialogue, ADR recording and editing, sound effects, background and music editing. A total of 12 workstations have been purchased since the facility opened in 1991, and all units are running 24 hours a day. We chose DAWN workstations because of their value and Doremi's quick response to technical problems and challenges.

DAWN hardware consists of a Sound Processing Unit (SPU) using modular hardware that can be upgraded by swapping boards, and a Sound Storage Unit (SSU) housing hard disk drives in removable trays. These trays allow us to switch from one

ed from a video editor, or to manually record from original reels. In the case of ADR, we record directly into the workstation using the DAWN built-in beeps and light signals. We then edit and sweeten the audio.

For sound effects and backgrounds, we use the DAWN to browse through an online library containing most of the sounds that we use daily. If we need a new sound from a CD library, we manually record it into the system and use it for the particular job at hand. When the editing is finished, we digitally transfer the audio from the DAWN to Tascam DA-88 8mm cartridges and bring them to the stage for final mixing.

When we received our first shipment of DAWN units, we had problems interfacing digitally to DA-88 and were forced to use the analogue domain. Doremi solved this by redesigning its synchronisation board. Similarly, when we detected some problems with the first commercially available unit of its new V1 random access video recorder/player — which adds nonlinear picture playback to any workstation including the DAWN — Doremi immediately shipped us a replacement, and is constantly evolving the product in response to our needs. The latest software includes the ability to chase to LTC, chase to serial 9-pin time code and chase to MIDI time code.

The combination of DAWN and the V1 serves as one of the most powerful audio workstations on the market, rivalling systems which cost three times as much. The instant locate feature of the V1 makes editing faster and more efficient, and allows us to jog audio and video hard-locked together at slow speed for more precise ADR and dialogue editing, for NTSC as well as PAL system projects. ■

Sharpe Sound Studios was established in 1991 by Paul Sharpe and Jacqueline Cristianini. Paul Sharpe is a former lead mixer of stage A at Todd A/O Glen-Glenn in

CONTINUED FROM PAGE 49

## Akai DD1500 on the Go at Stationhouse

functions are catered for via large, dedicated buttons on the DL and, assuming you are using a fast drive, everything happens virtually instantly.

The transport controls include the standard play, wind and stop buttons plus TO, FROM, OVER and LAST. The first three allow you to check an edit point in all directions, and the LAST key simply duplicates your previous commands — which is surprisingly useful.

When editing, large IN, SYNC and OUT buttons allow these points to be entered, on the fly if desired. Having established the area of the track or tracks you wish to affect, dedicated keys allow you to cut, copy, erase, paste, insert or trim. The waveform is always visible on the screen, and you simply

zoom in if you want to take a closer look. However, maximum zoom is still insufficient for accurate waveform editing, and so the jog wheel is used for fine location of an edit point. As jog wheels go, it is excellent and, as someone who once swore by waveform editing, I very rarely miss it these days.

A lot of the work we do tends to be around for a number of weeks or months, and during that time nicks and tucks might be required at short notice. That's why we decided to use entirely removable optical drives, one 1.3GB and one 650MB. The speed of the 1.3GB limits us to simultaneous playback of about 10 of the 16 available tracks, and by the end of the year a 2.6GB drive will be available, fast enough to provide eight-track record and 16-track playback. Using a fast hard drive unquestionably speeds up the response of the system a little, but for us the benefits of inexpensive, removable optical media are paramount.

The DSP functions on the DD1500 include time stretch, pitch shift varispeed and EQ. In practise I very rarely use the latter, as the DD1500

tends to be connected to the totally automated Yamaha 02R digital mixing console to create an entirely digital system at a very reasonable price. I also have a Tascam DA88 and a couple of DAT machines. All the digital ins and outs for all these devices come up on a digital patch, so that the 16 digital AES/EBU inputs on the 02R and its eight digital group outs can be patched as required.

For picture work we use a Sony UVW1800 Betacam machine controlled via RS422 from the DL1500, which works very well with the DD1500 software making laybacks extremely simple. A recent software update for the DD1500 has included a new intelligent auto-conform facility. This includes optional handles that are hidden

unless required, at which point they can be uncovered using the trim function. Users of nonlinear picture editing systems might like to know that it can also convert mono cues from an EDL to stereo cues on the conform, meaning that the off-line can be done with mono sound which is far less taxing on disk space.

Since we bought the DD1500 over a year ago it has unquestionably revolutionised the way we work, especially in conjunction with the Yamaha desk. The speed, agility and operational elegance once the exclusive domain of big facilities owning six-figure hard disk systems and mixing consoles has been made available for the first time at a price affordable to virtually any professional recording facility. ■

Chris Dale has worked as a sound engineer and composer for over 18 years. Contact Stationhouse on +44 (0)171-602-9906, fax +44 (0)171-603-1106. For further information contact Akai UK Ltd on +44 (0)181 897 6388, fax +44 (0)181 759 8268 or circle Reader Service 102.

The DD1500 has  
unquestionably  
revolutionised the way  
we work.



## BUYERS BRIEF

The bright-VU audio meters from Logitek feature analogue or digital inputs, loophrough on digital inputs, four-colour 20 LED bar graphs and simultaneous VU and true peak display. The displays are controlled by a 16-bit digital signal processor so that the meters conform to the international VU standards and true peak ballistics while maintaining a basic accuracy of 0.1 dB over the entire scale.

Alarm outputs are now offered on the bright-VU meter lines. These outputs allow the user to select trigger points for both overmodulation and undermodulation, as well as time delay before alarm activation.

For more information, circle Reader Service 14.

# EQUIPMENT EXCHANGE

TV Technology's Equipment Exchange provides a FREE listing service for all broadcast and pro-video end users. Brokers, dealers, manufacturers and other organizations who sell used equipment on an occasional basis can participate in the Equipment Exchange on a PAID basis. All free listings run at the discretion of the publisher. Call 1-703-998-7600 for details. Submit your free listings on your letterhead and state the make, model number, a brief description, sale price and complete contact information and mail it to: TV Technology, PO Box 1214, Falls Church VA 22041

## ANTENNAS

### Want To Sell

Alan Dick B16UT antenna, very directional, strong signal, selling due to chnl change. BO. 603-279-4758.

## CAMERAS

### Want To Sell

Sony EVW-300 camcorder 3 1/2" CCD, Hi-8, mint, incl Canon 13:1 zoom, 4 NP1SB batts & chrg, PortaBrace rain cover, case, plate & 3 tapes, \$5400. 802-563-2934.

Ampex BVP-50 w/Fuji 13x lens & BVV-1A Beta deck & Kangaroo case, excl cond, \$7000; Ampex BVP-3A, \$500; Panasonic D-5000 w/ENG config, stereo mic & hard case, \$300; JVC KY-1900 w/10X lens, \$350. Eric, 203-357-8488.

JVC KY-25 w/BRS411 camcorder, full pkg ENG/EFP incl lens, mic, full hard case, batts, chrg/AC unit, tripod adapter & attachment for M11, approx 125 hrs on head, excl cond, \$4900; JVC BY110 camera w/lens & hard case, no mic, \$200. G Beaudin, 604-753-0102.

Sony DXC-325 w/Fujinon 16X lens & EVV 9000 dock Hi-8 rcd r soft case, excl cond, \$4250. 619-767-3331.

JVC KY-27UB camera head & ENG viewfinder only, 62 db S/N & 750 lines+, used once, will sacrifice \$5295/BO. J Gross Studios, 800-874-8466.

Sony BVP-5 camera head & viewfinder only, 3 CCD 2/3" chip, block in excl cond, camera chasis like new, \$3500. Frank, 705-749-0641.

Sony DXC-327 w/Fujinon 12X lens, EVV-9000 dockable Hi8 rcd r, CA325 genlock adapter, CCU-M3, CMA8 pwr sply, 163' CCU cable, hardcase, tripod, shoe plate & camera mic holder, \$8000. R Metz, 610-865-6157.

Sony BVV-5 dockable Betacam SP rcd r, well maintained, micrometer shows 4-500 hrs remaining on head, \$7200/BO; Betacam adapter for JVC KY-27 series heads, \$475/BO. John, 808-596-7658.

Sony BVH 1100 (2); Sony BVH 2000 (2), incl all books & ext cards, \$600/all. 301-445-5450.

Hitachi Z-One 3-chip camera w/Fujinon 16x9.5/macro lens, tripod plate, 26 pin cable, manual, hard shpg case, excl cond, \$4700. Chuck, 970-224-3612.

Sony BVP3/BVV1 Betacam pkg w/Fuji 12X lens, case, batt belt & chrg, \$4000/BO. Jim, 201-825-7659.

Minolta PRO 8-918 Hi-8 camcorder, 2 CCD, \$1000; Canon RC-250 still video camera, \$200. Roger, 616-847-0021.

Panasonic WU250 A/C adapter, tripod plate, hard case, PortaBrace case, mic, (2) 7450 S-VHS dockable rcd rs, \$6500. K Krohn, 515-842-4934.

Ampex BCC-10 (2) w/lens, VF & CCU, gd cond, needs tubes, \$500/ea + shpg. F Schuler, 318-235-3333.

Sony DXC-327A w/Fujinon 16:1, CA537 adapter, 24-pin cable, tripod plate, NRG 12V pwr, hard case, \$5500/firm. Sam, 415-564-6378.

Panasonic CLE 200 w/case, Canon J12X10 lens, ITE tripod head, tripod handle & lens cntrls, not over 20 hrs use, like new, \$3900. George, 303-969-9324.

Canon L-1 15X zoom lens, AC batt chrg, DC automobile chrg, 3 batts, remote cntrl, users & service manuals, 200 hrs usage, mint cond, \$1650. Hilary, 412-327-1333.

Panasonic Supercam new H model w/Betacam out, 700 lines, 1.5 lux, 60 dB, w/14x1 lens, NP batt adaptor, less than 10 hrs use w/case, \$6250. B Montbleau, 603-898-1240.

Sony BVW-300 w/Canon 15:1 lens, shpg case, tripod plate, service manuals, operators manual, PortaBrace run bag, rain coat & ENG jacket, 821 total hrs & 160 hrs since upper drum change, \$21000. G Strother, 801-621-0084.

Minolta Pro 8-918 Hi-8 camcorder, 2 CCD, excl cond, \$1000; Canon RC-250 still video camera, \$200. Roger, 616-847-0021.

## CAMERA ACCESSORIES

### Want To Sell

Canon J8x6IRS wide angle zoom lens w/2X extender, Sony mount, excl cond, \$10500. Rob, 770-446-0796.

Canon J13x9, 2X w/Sony mount, recently overhauled, \$3000/BO; Peter Lisand standard Adjust-a-grip for Sony Betacam/Canon zoom grip, \$400/BO. David, 813-895-9595.

Light equip 200 W, soft light, \$100; batt belt, \$140; adapters, \$60. 516-486-5007.

Monfrotto tripod for JVC KY-25, fair condition, \$400. G Beaudin, 604-753-0102.

Fujinon TV lens A14x9BERM-8B, Pegasus II focal 9mm-126mm w/2X extender, bayonet mount, \$3500. Mike, 614-444-8229.

Matthews T40 w/fluid head, O'Connor 50 head w/Peter Lisand sticks, \$1000/ea; Bencher M-2 copy stand w/moveable stage, 2 quartz lights, \$1000; Anton Bauer charge module w/5 NP-13 batts, \$600; Anton Bauer Ultralite DUAL, \$250; JVC chrg/12V AA-G10U, \$150; (3) Panasonic AG-BP212 batts, \$120; rain cover for Sony DXC, \$100. Sam, 415-564-6378.

## COMPUTERS

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## DIGITAL EFFECTS

### Want To Sell

Pinnacle 2010 DVE w/Montage, Sony 9" color monitor, \$2250. Ron, 714-538-5811.

FOR-A MF1000P digital effects processor, effects incl compression, zoom positioning, flip & tumble, wipe, mosaic, posterization + custom movement patterns, S-VHS & composite input/outputs, excl cond, \$3495; Grass Valley DPM-700 digital picture manipulator composite w/Traillblazer, sgl chnl, montage, eraser, shadow, matte & fill, latest software, upgrades for 2nd chnl avail from GV, excl cond, \$19995. Tom, 313-971-3535.

Sony DFS 500, like new, \$8500; Jazz DVE, \$4500. John, 954-472-2888.

## EDITING EQUIPMENT

### Want To Sell

Sony RM-440 edit cntrlr, needs work, left side of unit not working, \$200; Panasonic S-VHS edit system complete w/3 AG 7500 rcd rs, Abner cntrl, Crosspoint Latch switcher, Fairlight digital effects, Laird 7000 CG, audio mixer, TBC's, cables & console w/color monitors, used less than 300 hrs, turnkey edit system, \$16000. Mike, 714-847-6131.

S-VHS 1960 edit decks, new in box (2), \$1350; Videonics edit cntrlr, \$225. 516-486-5007.

Chyron Scribe Jr, 2MB memory, 20MB HD, excl, \$3750; Sony BVE-900K, 910 upgrade, serial, parallel, 6 deck cntrl, \$4350. Ron, 714-538-5811.

United Media UMI 420 edit cntrlr, \$2650; Panasonic AG-7750 S-VHS edit deck/time shift, \$3955; Ad Maestro insertion cntrlr, \$2000. J Seal, 800-894-5636.

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Tel 201-427-1160

Horita BSG-50 black burst gen, \$150; Fast Forward SMPTE TC gen/reader, \$250. Linda, 716-227-4693.

Panasonic AG-7500A (2) S-VHS recorders, AG-A750 edit controller, Amiga 2000 with GVP 68030 80MEG HD, SuperGen SX, Panasonic WJ-MX12, Videonics MX-1, PVW-1390, Panasonic KXP-1124 printer, \$8750/BO. Alan, 619-635-5507.

Editing station 3/4" (2) JVC CR 6650U recorder/player, JVC CR 8250U recorder/editor, JVC RM88U edit controller, very low hours, \$2500/all; Sony Trinitron 3 up 5" color rack mountable video monitors, \$200; Amiga computer with Toaster 2000 card, TBC IV card Toaster 3.1 software, 18MEG RAM, like new, \$4995; JVC portable VTR CR 4900U with PortaBrace case & Sony DXC 1820 video camera & brand new NRG pwr pak, \$1500. 757-419-1607, leave message.

Videonics Titemaker char gen, digital video 90, incl 24 special effects wipes, cuts, fades, 8 speed, many more features, excl cond w/book, \$300. Jim, 716-264-0335.

Avid Media Composer, brand new, must sell, reduced for quick sale. Ken, 800-461-8450.

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**EDITING EQUIPMENT...WTS**

**Panasonic MX12 AV mixer**, like new, \$900; Panasonic AG7500A, AG7510, AG A750 w/cables & manuals, under 100 hrs use, \$3900. George, 303-969-9324.

**Edit control (2) modules**, Videomedia V-Lan-R-Ser parallel rcvrs programmed for Sony VO-5800s, connect these parallel cntrl VTRs to any V-Lan equipped editing cntrlr, \$600/ea. G Strother, 801-621-0084.

**Sony PVE-500 A/B roll editor**, like new in box w/manuals, \$2100. John, 954-966-0260.

**Sony BVE 3000A A/B roll edit cntrlr** complete w/extras, RS 422 & type 5 U-matic interface cards, internal audio/video switcher w/DT cntrl & effects or external switcher cntrl interface cards, extra boards, status monitor & EDL computer, presently in use w/component switcher & Beta SP machines, \$3000. Stimulus, 415-558-8339.

**S-VHS editing system**: JVC 811U & 611U, Videomedia Micron V-Lan keyboard editor, JVC-MI2000 audio mixer, Gateway 2000 386, 2 Data CTRs, cables, boxes, manuals, lw hrs, \$6000; Nuvista Plus Graphics Card, \$600. D Harty, 607-829-3305.

**Sony EVO-9700 Hi-8 edit deck**, approx 400 hrs, \$2800/BO. David, 800-953-0912.

**LIGHTING**

**Want To Sell**

**Studio lights**, grid, patch, dimmers w/19 lights, 1K, 1/2K, cyc strips, \$3000/all; port kits: Colortran, \$550; LTM pepper, \$1200; S Victor, \$300; Lowel tri-stand, \$225; Lowel access, umbrellas, lamps, track lights w/b doors, call for list. Sam, 415-564-6378.

**Light grid 40x40 w/all electrical breaker box & wiring**, all lights fixed/suspended mounts, 3-sided curtain rail, new, never used, KMWA, 407-293-1114.

**MOVIE PRODUCTION EQUIPMENT**

**Want To Sell**

**Bolex 16mm camera outfits** with 2 400' mags, camera motor, take-up motor, battery & Pan Cinor 17-85 zoom lens, \$2500; Bolex outfits with Angienux 12-120 zoom lens, \$3200; Kodak Cine Special cameras with C-mount lens adapter & Fast Crank handle with 100' film mag & 17-85 zoom lens, \$900; 100 & 200' film mags, S-mount lens avail. Jim, 201-825-7659.

**Kodak Ektagraphic III A (2) slide projectors**-carousel, auto focus w/remote, wired forward & reverse, also has 102 to 152mm lens, \$300/ea. R Metz, 610-865-6157.

**Revere 16mm motion picture camera** w/lens, color filters, manual, lens, care kit, carrying case, \$295. Stuart, 312-969-2154.

**SIGNAL PROCESSING**

**Want To Sell**

**Nova Systems NovaSync 2F frame sync/TBC**, \$725. D Harris, 703-319-1431.

**Sigma VDA-100A video DA**, BSG-100A black gen, 3 ADA-106 audio DAs, VSS-120 video/stereo audio switcher, \$1000/all. Sam, 415-564-6378.

**GVG 8500 DA tray w/8 8551 audio cards**, \$1700; GVG 8500 DA tray w/4 8503 Precision EQ video cards, \$1400. Maurice, 516-294-4416.

**Hotronics TBC**, \$875. J Seal, 800-894-5636.

**Alta Celeris Y/C format converter**, Y/C 688 Y/C 3.58 converts either way, like new, \$1200. Chuck, 970-224-3612.

**Sierra CIK-1 component keyer/mixer/chromakeyer**, like new in original box w/manuals, \$1950. John, 954-966-0260.

**Nova 950 transcoding TBC**, like new, \$1900. George, 303-969-9324.

**SWITCHERS**

**Want To Sell**

**3M video switcher**, 101 vertical switches, 10 in, 1 out, audio follow video, \$185. N Macrae, 702-366-2844.

**Grass Valley 100X1 switcher** w/serial borderline options, excl. Ron, 714-538-5811.

**Light-Ning matrix switcher**, \$2500. J Seal, 800-894-5636.

**Duca/Richardson 4000 working**, gd cond, needs interconnect cables, \$200/BO + shpg. F Schuler, 318-235-3333.

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**Transmitters - Harris, Acrodyne, Toshiba, RCA**, 50 watt to 60 kilo. VHF, UHF, FM, Antennas, towers, transmission line, microwave. English, Español, Portugues, Frances. Miami, 305-757-9207.

**TV FILM EQUIPMENT**

**Want To Sell**

**Arriflex BL16 10x120 zoom lens** with housing, CP crystal drive, 2 magazines, \$3500. David, 314-397-1414.

**VIDEO PRODUCTION EQUIPMENT**

**Want To Sell**

**Panasonic MX50 titler**, WJ-KB50, BO; Pride PIV 2000 A/B roll video cntrlr, \$500/BO; Panasonic WV 3260 camera w/power supply, \$500/BO; DPS Perception non-linear turnkey computer system, BO; Thumbs Up edit cntrlr, never used, BO. S Dementenaere, 319-393-1993.

**Dubner 5K char gen**, good cond, latest software, \$1995. Tom, 313-971-3535.

**Videonics TM-2000 char gen**, \$550; DTMF keypad DTMF tone gen, \$50. J Seal, 800-894-5636.

**Fortel Y-688 total error corrector TBC**, composite or U-Matic Y-688 component input, composite, Y-688 or Y/R-Y/B-Y component outputs, Faroudja Pilot circuit, 50 MHz bandwidth, exc cond, \$1000. G Strother, 801-621-0084.

**VCRS/VTRS/RECORDING MEDIA**

**Want To Sell**

**Panasonic DS 850 slow mo editor VCR**, like new, \$3500. John, 954-472-2888.

**Sony VO-6800 port 3/4" VCR** with JVC BY110, 200 hrs on deck, exc cond, including camera hard case, lens & mic, 10 blank tapes, \$975/both; Toshiba S-VHS SV771C deck, exc cond, 40-45 hrs, \$450. G Beaudin, 604-753-0102.

**JVC HRS-10000 S-VHS edit rcdr**. Maurice, 516-294-4416.

**Sony VO-9800 3/4" SP deck w/BKU 704 TC reader**, exc cond, 1200 hours on heads with Winsted slide-out hardware, \$3395; Sony BVW 35 Betacam SP port recorder w/camera cable for Sony 537, exc cond, \$6895. Tom, 313-971-3535.

**Sony VO6800 (2) w/PortaBrace cases**, one for parts, \$750/BO. K Krohn, 515-842-4934.

**Sony VO-9800 3/4" SP VCR**, \$3500; Sony VO-5600 3/4" VCR, \$500; Sony VO-6800 3/4" port VCR with AC & case, \$750. Roger, 616-847-0021.

**Sony VO-9800 3/4" SP rcdr/plyr**, \$5950; Panasonic AG-7150 S-VHS player for insertion, \$2000. J Seal, 800-894-5636.

**Ampex VPR-3 with TBC-3 in console**, \$8000; Ampex VPR-2B with Dolby & TBC-2B in console, \$2900; (2) Ampex VPR-2Bs with TBC-2Bs in consoles, \$2400/ea; (2) Sony BVU-800s, \$2800/ea; Sony VO-5850 with TC, \$1800; Sony VO-5850, \$1500; Sony VO-8800 with Kangaroo case, \$1250; Sony BVU-150 W/Kangaroo case, \$1500; 114 Sharp XA-200 VHS dub decks, \$60/ea; 2 Sony VO-5600, \$600/ea; Sony BVW-10, \$3200. Eric, 203-357-8488.

**Panasonic 9450 3/4" port video deck** with timecode, 4 batteries, AC adaptl/charger, \$575; Panasonic CT-1383y video monitor, S-input, \$200; Panasonic CT130v monitor/VCR combo, \$275; Barco 13" RGB monitor, \$150; Sony 35W camera light with battery charger, \$150; Cullman Titan video tripod, \$85. Dave, 610-644-4991.

**Sony 327A with Canon PH15xB KR5II lens** docked to EVV-9000 Hi-8 deck, approx 600 hours, including CA-327 camera adapter & case, \$3500/BO. David, 800-953-0912.

**Sony VO5800 3/4" rcdr/plyr w/zero off-set address track time code PB mod**, exc cond, \$1500. Stimulus, 415-558-8339.

**Complete system**, broadcast qual, 1" NTSC composite video, Ampex VPRs, GVG 1600, CMX 3500, Tek scopes & gens & Chyron, \$35000. Joel, 310-828-2292.

**Sony VO-9600 3/4" SP VCR**, 400 hrs total time, exc cond, \$1650. D Harris, 703-319-1431.

**JVC BR-S622 S-VHS plyr/rcdr w/TC**, TBC, DNR, manual, vgc, \$3500; Sony VO-9800 3/4" SP plyr/rcdr w/manual, lw hrs, \$3700. Chuck, 970-224-3612.

**Sony VP-7020 3/4" video player w/BKU interface** for remote control, currently used w/Spotmatic for commercial insertion, excellent, like new, \$1050. 603-279-4758.

**Panasonic AG-800 video floppy rcdr** w/remote, \$550; Sony VO-6800 port 3/4" recorder with case, \$1100; Sony VO-2610 3/4" U-matic top loading player & rcdr in good cond, \$550; Panasonic AG 7400 S-VHS port recorder, \$1250; Panasonic CLE 200 camera & AG 7400 rcdr w/AC power, batteries, mics, & Canon 12x1 lens, will separate, \$3800. Mike, 714-847-6131.

**Sony CCDV3 3-chip Hi-8 camcorder**, perfect condition, original box, Sony extended warranty to 2/98, \$2000. 619-767-3331.

**JVC BR-S622 source rcdr/plyr S-VHS edit deck**, 500 hours, time code board, rack mount slide tracks & handle & owners manual, exc cond, \$2300; JVC BR-S525 variable tracking plyr S-VHS edit deck, T/C & component TBC, exc cond, original box, packing & owners manual, \$4800. 808-593-8866.

**BCB-65 Sony Betacam SP**, low hours, excellent condition, full DT operation, \$14500. Teleworld, 212-489-9310.

**Sony BVU 850 3/4" SP edit VCR**, exc cond, \$4000/BO. Jim, 201-825-7659.

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B. UHF-TV station  M. Medical TV facility

D. Prod/post-prod studio  N. Government TV facility

E. Cable TV  P. Educational TV facility

G. Network/group owner  Q. Recording studio

J. Broadcast consultant mfg, dist, or dealer  K. Other (specify): \_\_\_\_\_

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A. Corporate mgt  D. Prod/oper mgt or staff

B. Engineering/tech mgt  E. News mgt or staff

C. Engineering/tech staff  G. Training

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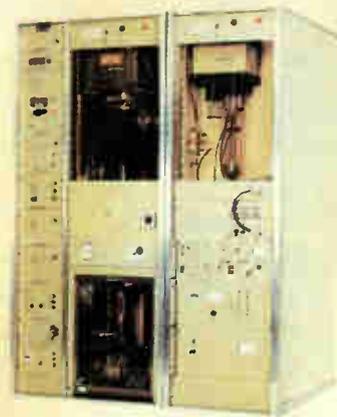
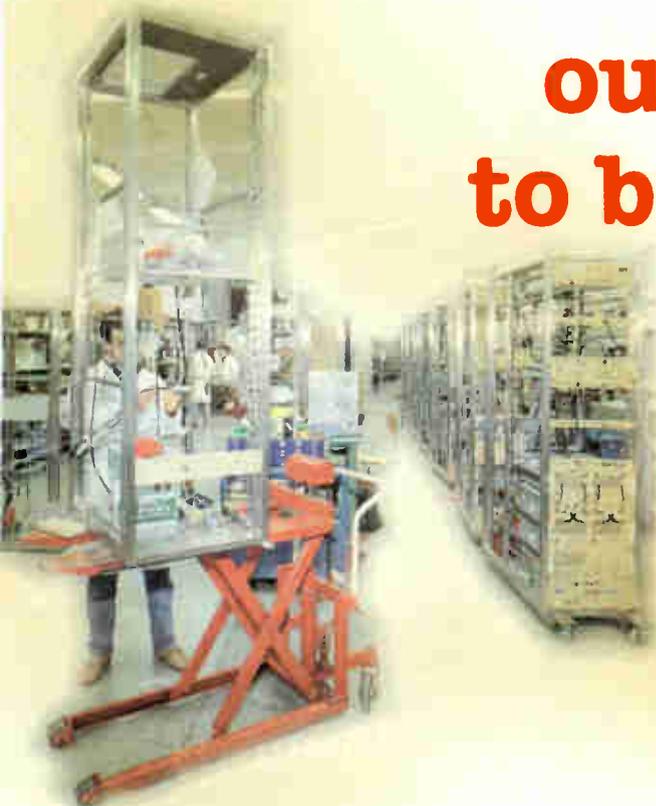
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