INTERNATIONAL EDITION

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What's Hot at IBC? page 42

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C5 Gears Up for Nationwide Re-tuning

UK's Last Bastion of Analogue Terrestrial TV Takes To The Streets For Massive Project

by Richard Dean

LONDON

Channel 5, the UK's last analogue terrestrial TV station, has embarked on one of the largest service operations of its type in history - re-tuning VCRs, satellite decoders and computer games to TV sets in 9.6 million homes in time for launch on 1st January 1997.

The five-month 'Give Me 5' re-tuning campaign will involve more than 7,000 test generator and screwdriver-wielding re-tuners, plus a dedicated 1,200-strong customer call centre expected to handle up to 4 million calls and make an estimated 89,000 appointments for home visits every month.

High Street TV rental chains Granada and Radio will combine to service their own subscriber bases and supply training and support. Viacom-subsidiary Blockbusters - Britain's biggest video rental chain - will also support the campaign through more than 360 stores within the nine re-tuning regions. Almost 1,500 High Street shops plus Granada's extensive network of hotels, motorway services and Travelodge hotels will offer information and promotional material to the public in total.

Amid widespread fears that the scheme could amount to a burglar's charter, C5 has adopted police security guidelines on doorstep calls including uniformed staff carrying photo ID and written pre-arrangement of visits with a security code and password. The mix of male and female re-tuners are all over 25 years old, and will under no circumstances remove equipment from homes.

Under the ITC governing body's rules a minimum of 90 per cent of affected homes must be re-tuned before the launch, and C5 is obligated to follow up failed appointments for three months afterwards.

The huge re-tuning campaign, which C5 chief executive Andrew Christie concedes is a "manifestly difficult and complex task", is necessary to shoe-horn the fifth channel decreed by the notorious 1990 Broadcasting Act into a transmitter network only designed for four.

The UK's TV broadcasting spectrum ranges from UHF channel 21 to 68 (470 to 854 MHz), with ch 35 to 37 originally reserved for aeronautical radar and ch 38 for radio astronomy. The remaining 44 channels are re-used up to a hundred times across the patchwork of transmission regions, as adjacent same frequencies would cause interference.

Adding an extra channel where this is not the case would cover less than 30 per cent of the population. So the government approved the use of ch 37 - now vacated by radar - at nine of the 33 transmitter regions to increase coverage to a more viable 74 per cent, potentially around 40 million viewers.

The snag is that manufacturers of VCRs, satellite decoders and games consoles exploit the gap in TV broadcasts at ch 37 (or ch 36) as a means of connecting to the TV via RF. These and C5 would catastrophically interfere in the affected homes, which represent more than half the homes covered.

Although some users with modern equipment could avoid the problem with a SCART lead (baseband video connection), C5 is not confident about the numbers willing or able to accept this option, and has decided to pursue the more difficult but familiar re-tuning solution instead.

If all else fails, C5 - which is owned by Pearson, United News & Media, CLT and Warburg Pincus, and anticipates a 20-year future - is obligated to insert a blocking filter. ■

The 1996 Summer Olympic Games were a global event for broadcasters as well as athletes — shown here, a Philips-BTS HDTV camera used by German Broadcaster ZDF at the volleyball venue. See page 11 for a full Olympics wrap-up.

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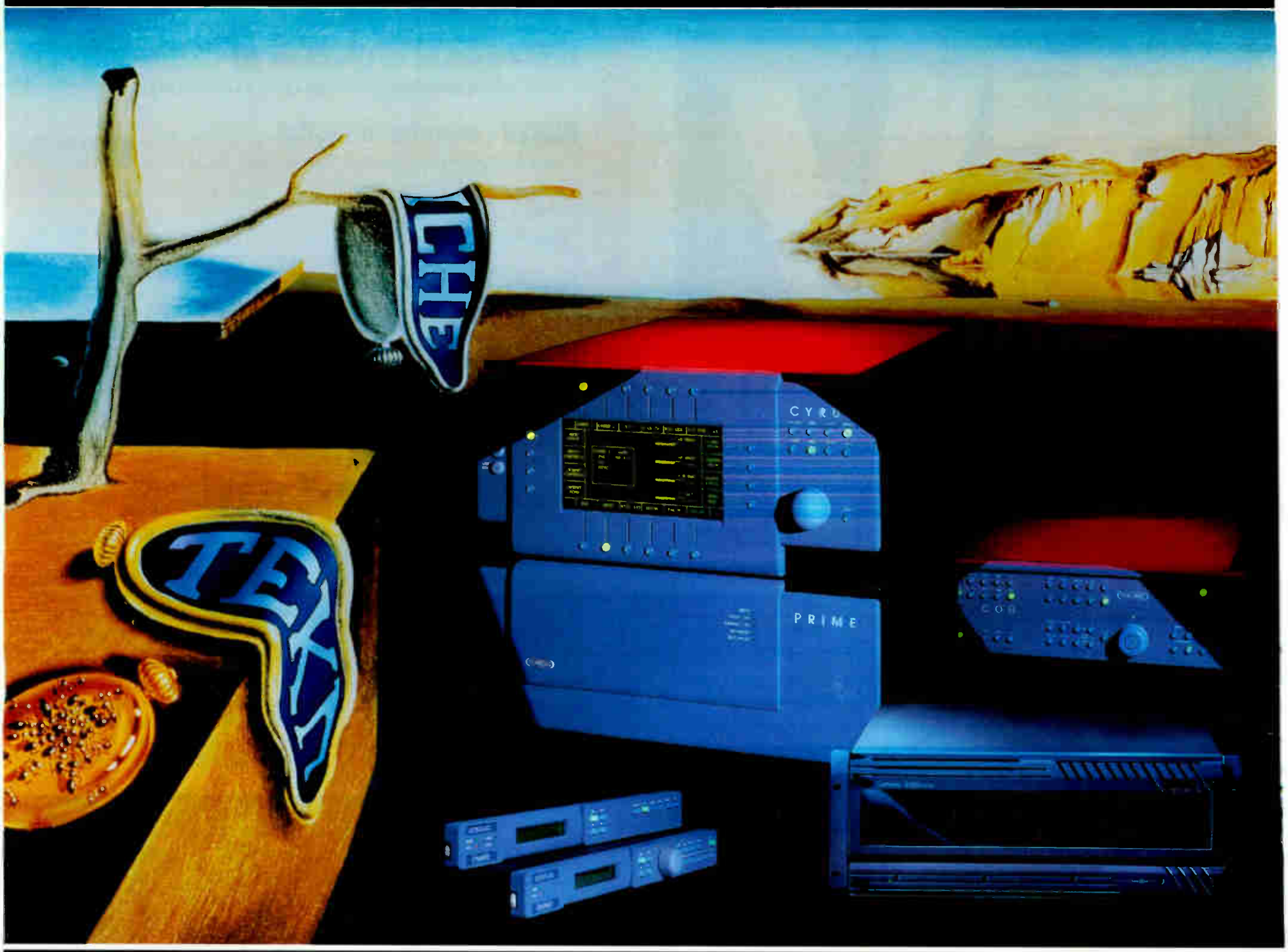

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TRANSMISSION

WORLD'S FIRST DIGITAL TERRESTRIAL TV

LONDON

UK Digital TV Group members the BBC, BT and Pace have started joint live field trials of the world's first digital terrestrial television multiplex transmissions.

Domestic BBC-1 and BBC-2 plus the 24-hour international news and information channel BBC World are being broadcast within a single digital terrestrial TV multiplex from two transmitters - Crystal Palace in London, and Pontop Pike near Newcastle-upon-Tyne. Also included is data to drive an electronic programme guide. BT is demonstrating interactive services on the multiplex.

Trial transmissions began with special widescreen coverage of Trooping the Colour on Saturday 15 June, and regional services in the North East on July 2. The signals fully conform to the DVB-T (Digital Video Broadcast Terrestrial) European standard. Reception is only possible on two prototype units developed by Pace and BBC Research & Development at present, located at the BBC's White City building in West London and the BBC's Newcastle Broadcasting Centre.

The transmissions are designed to help the UK Digital TV Group's communication, television and electronics company membership and the industry as a whole to take decisions over the coming months. Over the summer it is hoped to establish a test bed to allow receiver manufacturers to complete field trials.

"This is the first working system of digital terrestrial television in the world, and represents a remarkable achievement by the BBC and Pace teams," says Michael Starks, controller of the BBC Digital Broadcasting Project. "There is a long way still to go, but this is a very significant milestone. The BBC Kingswood Warren Research and Development department is leading the world in this technology, and the UK is well positioned to develop export opportunities over the years ahead."

The BBC's R&D department is using ATM (Asynchronous Transfer Mode) to convey its experimental digital multiplex to IBC. Transmitting on channel 57 courtesy of local broadcaster Nozema, the broadcasts will be received and shown along with their Electronic Programme Guide in the New Technology Campus.

SATELLITE

SOFTWARE BUG EXPLODED ROCKET

PARIS, FRANCE

The European Space Agency has concluded that a software error was responsible for the catastrophic failure of the Ariane 5 rocket on its June 4 maiden flight after a six-week probe.

Investigators found that fragments of its predecessor Ariane 4's code had inadvertently been left in the launcher's inertial reference guidance system. Detecting a higher than expected launch velocity, the code instructed a control mechanism to violently change the position of the nozzle and two accelerators. This caused component damage, leading to fuel spillage followed by a spectacular explosion.

The report has made 14 recommendations to prevent the disaster being repeated. According to ESA director-general Jean-Marie Luton, the launch of a second Ariane 5 has been postponed until the first half of next year.

NON-LINEAR EDITING

AVID SWITCHES TO WINDOWS NT

TEWKSBURY, MASSACHUSETTS

Avid Technology has divulged plans to move its product line from Macintosh and Silicon Graphics (SGI) platforms to Microsoft's PC-based Windows NT operating system.

Lou Shipley, Avid's vice president for The Americas and Asia Pacific, says that "a greater emphasis on Windows NT" is a key strategy for the company. Speaking about Avid's new SGI-based "uncompressed" product - the £1/2m Media Spectrum - he conceded its high price exceeded its abilities over the Media Composer range. "We're looking to move to a cheaper platform, namely Windows NT."

Elastic Reality, part of Media Spectrum's Illusion sfx package, is already available on Windows NT. Avid also has an editing package on that platform now - MCXpress - and it is thought this could be the basis of a high-end Media Fusion editing system for NT.

Avid joins a growing band of broadcast software manufacturers backing Windows NT, including Microsoft-owned Softimage, Cambridge Animation, Kinetix (Autodesk) and D-Vision.

Windows NT is a fast and robust 32-bit operating system which can run on hardware ranging from a standard desktop up to multi-processor workstations. Unlike other Windows versions it is not limited to Intel PC processors, but also operates on a range of powerful RISC processors.

Built by numerous manufacturers from off-the-shelf parts, NT systems can deliver SGI-type performance for less money. SGI has hit back at this competition with the announcement of a powerful new low-end range called Moosehead.

Version 4.0 of Windows NT is due to hit the streets any day now, having been on beta-test since February. It combines the robustness, portability and power of NT 3.5.1 with the "friendly" operating environment of Windows 95.

DIGITAL VERSATILE DISC

PANASONIC TO PRESS DVD

OSAKA, JAPAN

Panasonic parent company Matsushita is the latest to announce plans to build a plant to master and replicate DVD high-density, read-only optical discs.

Matsushita's factory will operate under a new division - Panasonic Disc Services Corporation - into which it has invested around $25m (£17m).

Several sites in California are being considered for the factory, which is expected to start production in Spring 1997. Initial capacity will be 600,000 discs a month, rising to two million within a short time, says Matsushita.

The first incarnation of DVD (Digital Versatile Disc) holds 4.7Gbytes of data, seven times that of a regular CD. It can carry 130 minutes of MPEG-2 encoded feature films or other video content to play in new consumer DVD players expected to emerge in NTSC markets late this year.

As reported in July's TVTI, EMI unveiled in June plans to open a DVD factory in Uden, Holland in a joint development with Toolex Alpha of Sweden, which is building the replication machinery. UV-laser mastering equipment from Nimbus is currently under test, and production is expected to begin by the end of the year.

Nimbus itself is to convert its CD production facility in Green County, California, to DVD production with a $25m investment, while Pioneer and JVC are also opening DVD plants in California. Others joining the DVD replication bandwaggon include Sanyo/Verbatim and TDK, both switching production from CDs at their respective Indiana and Japan plants.

MPEG

SOFTWARE-ENCODED RACE HEATS UP

LA JOLLA, CALIFORNIA

Start-up company Digigami has entered the beta testing stage of its powerful but low-cost software-only MPEG encoding package, MegaPEG. It can be used to compress video - whether for distribution via the Internet, on CD or broadcast - without the need for extra hardware.

MegaPEG is due to ship in October for Windows 3.11, Windows 95 or Windows NT 3.5.1. A Power Mac version is in development.

The software converts standard Quicktime or AVI video files, Autodesk animation files or sequences of stills to standard MPEG-1 or MPEG-2 files, with stereo audio. Accessed via a simple user interface, it includes footage pre-processing tools such as gamma and brightness adjustment, and control over all MPEG parameters such as frame and data rate. Batch processing is available to automate large jobs.

Many argue that software can do a better job at MPEG encoding than hardware. They claim that real-time hardware is compelled to pump out MPEG video at 25 or 30 frames a second, regardless of whether it has determined the best way to encode the material. It gets just one shot, while software is recursive and can take many stabs at it.

"MegaPEG is being optimised to create great-looking MPEG," says Digigami's Sue Boyer. "For instance, hardware-based real-time encoders can't make a pre-pass through the source video to optimise the bit-allocation, but MegaPEG can." At $295 (£200), MegaPEG severely undercuts high-end software-only encoders like those from Philips or IBM, which can cost thousands of pounds.

What sets it apart from low-cost competitors such as Xing Technology's StreamWorks software is that it is multi-threaded. This means it can take advantage of the greater performance of multi-processor systems such as Windows NT computers with two or four CPUs. Digigami claims MegaPEG will encode nearly twice as fast on a dual-processor system.

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FEATURES

Waiting for 2000 Chaos To Arrive

by Mario Orazio

SOMEWHERE OUT HERE *You might not have noticed* that the end of the millennium will not be a period of major problems. Ayup, I'm willing to stick my nonexistent neck out here and say with certainty that I ain't one of them there doomsayers who see that dreaded calendar change as fraught with fearful portent.

The reason I ain't sweatin' about the end of the millennium is that I happen to own a dictionary. My dictionary says a millennium is a thousand years. New Year's Eve of the year 10 marked the end of a decade. New Year's Eve of the year 100 marked the end of a century. And New Year's Eve of the year 1000 marked the end of the first millennium (for those of us who believe it's currently 1996). That means New Year's Eve of the year 2000 is gonna mark the end of the second millennium.

Heck — unless some monolith on the moon starts emittin' a screeching radio signal at 00:00:00:00 on January 1, 2001, leading to the discovery of a giant smiling fetus in the vicinity of Jupiter And Beyond The Infinite, I, for one, ain't expectin' a whole heck of a lot of trouble then. I *am* expectin' a buncha utter chaos exactly one year *before* the end of the millennium.

You guessed it: I'm a doomsayer with a dictionary. The world, as we know it, is probably gonna come to an end at 00:00:00:00 on January 1, 2000.

Yeah, I know; I'm just another soothsayer, and what I'm sayin' ain't even gonna be soothing, so I've rigged up a nice little experiment ya might wanna try. It involves that handy-dandy little desktop device you've been usin' a lot recently, your friendly personal computer.

Here's what I'd like you to do. I promise that none of this is irreversible, and it ain't gonna harm any o' your files.

Turn on the little beastie. Tell it that the date is December 31, 1999. Tell it that the time is 11:59 p.m. Turn off the little beastie. Twiddle your thumbs for at least a minute. Turn the little beastie back on. Ask it what the date and time are.

It's pretty danged likely that ya ain't gonna appreciate what it tells ya. It *oughta* say it's January 1, 2000 and it's 12:00 a.m. Ya probably ain't gonna find much trouble with the 12:00 a.m. part, but one whole heck of a lot of you are gonna be starin' at a date of January 4, 1980. I am *not* making this up. IBM and Microsoft made that up, in their infinitite, computer-aided wisdoms.

Some of the rest of you may still be gazin' at December 31, 1999. If'n you're really, *really* lucky, you're gonna see somethin' like 1/1/00.

But don't you lucky few get too cocky just yet. Got any money-related programs on them there computers? Things that subtract days, maybe? Subtract 991231 from 000101 and whaddaya get? Another day older and deeper in debt?

Not scared yet? OK, gang, try this mental experiment: You are not the only person with a computer that doesn't know what to do when the calendar changes three-and-a-half years from now. Your local telco bills you with a computer. So does your power company. Your bank uses computers, as do your vendors and customers.

Gotten anything in the mail yet from anyone tellin' you what to do to prevent utter computer chaos on January 1, 2000? Me neither. Ah, what am I worried about? We've still got over a thousand days to go.

Maybe I *did* get up on the wrong side of the bed this morning, but the idea that a gazillion computers are gonna think it's 1980 in a few years got me wonderin' whether or not we just might not be devoting quite as much planning as we oughta in a coupla other areas, too. I mean, have ya made any purchasing decisions lately?

In them there decisions, didja happen to give any thought to the future? I was in a purchasing bull session (now why d'ya suppose they call 'em that?) recently, and I happened to mention the possibility of widescreen pix comin' down the pike. You'd think I was Chicken Little complaining of decaying orbits! "We don't need to be concerned about that *now*," quoth they.

Methinks it was last month that I mentioned that, even as our beloved FCC issued its *fifth* notice of rulemaking for HDTV, the folks who may control home video well into the future and plannin' on releasing a digital video disk (called DVD for some strange reason) that ain't got a hope in heck of playin' said HDTV. Now, *there's* a good example of future planning for you.

I was in another one of them there bull sessions the other day, this time about a TV show with segments produced around the world. I thought we oughta use a motion-compensatin' standards converter if we hadda use multiple standards at all. The other folks wanted to see the difference in look (reasonable enough), so I arranged a demo with conversion and conversion back. "Whoa," quoth they, "why are you demonstrating round-trip conversion?"

"On account of ya might wanna sell the show in a country that's got a different standard," quoth I.

"Well, we ain't got any such plans *yet*," quoth they, "and, besides, if'n we do, that'll be the customer's problem."

Whuzzuh? No such plans yet? The customer's problem? I can just see the bull session at IBM/Microsoft:

"Jeez, what'll happen on January 1, 2000?"

"We ain't got any plans to be sellin' this model then, and if'n any customers are foolish enough to be usin' a 20-year-old operatin' system then, that'll be their problem."

May I point out that this is the very same IBM that would like to be your next terrestrial video network carrier? Ayup, IBM Video Services, piggybacking on the IBM Global Network. First the baseball cities, then the hockey cities, then the world. ATM-based with video and audio squashed into MPEG-2 main profile at main level on account of the folks who determined that 20 years of computer clocks are enough have determined that MPEG-2 MP@ML is enough, too. Hey — I welcome the competition. I sure ain't gonna hold a little thing like a calendar bug against 'em.

Said IBM Video Services, like Vyvx before 'em and AT&T before *them*, are usin' terrestrial circuits, which ain't such a bad idea, given some o' the things that can happen to satellites. Remember Captain Midnight? He used the FM capture effect to take over HBO's satellite transponder one day to complain about signal scrambling. Ayup, satellites are susceptible to that.

They're also susceptible to gravity. Yet another one of my bull sessions:

Me: Whaddu we do when the satellite loses orbit?

They: Whaddu ya mean?

Me: Well, there's only a certain amount of station-keeping fuel on board, and, eventually, the satellite is gonna fall outta the sky and burn up, at which point we ain't gonna have any signals, so what's the plan for then?

They: Is it gonna happen this year?

Me: Probably not.

They: Is it gonna happen next year?

Me: Probably not.

They: Then don't bother us with your crazy future doom scenarios.

Hey — don't get me wrong — I love each year's NAB show. I love playin' with the latest and greatest toys. But I've also got some existing operations to take care of, ya know?

Anyone out there made any television shows? Any of 'em stored on videotape?

I know people who are in Day One in the business who "know" ya shouldn't put a videotape down on a loudspeaker, on account of it might get erased (which is *actually* about as likely as a gnat resting in the wrong place derailing a freight train). I know producers who won't allow tapes to pass through airport metal detectors or x-ray machines lest they be erased (which is only slightly more likely than the same security systems erasing the printing on their tickets). *Everyone* knows that videotapes need to be protected.

So how come they get thrown in archives in a horizontal orientation (pretty much guaranteed to introduce edge damage eventually)? How come they're sometimes stored in cardboard boxes or cases with soft foam (pretty much guaranteed to introduce dirt)?

How come almost no one thinks about the fact that tape binders deteriorate in the presence of moisture? How come folks'll spent half-a-gazillion bucks on shooting a show and won't bother to clone the archive tape to preserve it?

Hey — far be it from me to stick my nonexistent nose in where it ain't wanted, but methinks I have an idea about them there "how come"s: People don't like to think about the future. Somethin' about death and taxes, methinks, with a little senile dementia to boot. Dang! What was I saying?

I visited an old European city a while back, and a resident proudly pointed out that the bridge we were crossing was constructed about 150 years ago. He then just as proudly announced that the engineer who designed it back then was so good that he "built this bridge to last a hundred years!" Yikes!

Fortunately, the bridge *had* been maintained and tested quite a few times since it was built. That's why it was still standing. It *was* built —and operated — with an eye to the future.

Yeah, there's a lotta sexy-lookin' new equipment at each year's NAB show — maybe sexy enough to get the bean counters to shell out some fava for it. But unsexy spare parts and archive and equipment maintenance are probably even more important, eh?

Hey — I ain't a Luddite. My rule is that as soon as new equipment costs less than

(See *Year 2000*, page 17)

From the Editor ...

WHAT'S IN A SAMPLE?

Not so much a wind as a veritable gale force of change has been blowing through the television business over the last few years. But as this year's IBC will demonstrate, now the unthinkable is happening - formats designed for the consumer market are being used professionally.

The trend is undeniable. First it was the music recording sector with DAT. Then print professionals installed Photo-CD. Somewhere along the line even the lofty feature film dubbing community started sourcing spot effects from audio CD. All began life as High Street gadgets.

Panasonic's DVCPro and Sony's DVCam are both based on the widely-supported DV consumer format, and indeed Panasonic's VJ-Cam palmcorder is straight DV. But certain issues have arisen about the way pictures are sampled.

Studio quality video is sampled at 4:2:2 - this being the ratio of luminance, red minus yellow, and blue minus yellow - on the principle that colour resolution is less perceptible than picture detail. But even after subsequent 5:1 intra-frame picture compression, the new formats could not store all the data this generates without reducing running time to an unacceptably short period.

Correctly identifying picture detail (luminance) as sacrosanct, manufacturers sought further savings in colour resolution. Two solutions have emerged - to halve the frequency at which colour is sampled on every line (4:1:1), or to sample colour at the same frequency but on every other line only (4:2:0). The former halves colour resolution horizontally, while the latter halves it vertically.

Most seem to believe that 4:1:1 is more applicable to NTSC, which has a smaller colour bandwidth than PAL. Sony's DVCam, Panasonic's DVCPro, and the widely-supported consumer DV format all use 4:1:1 sampling in NTSC markets.

Similarly DV and DVCam machines use 4:2:0 for the allegedly more colour-critical PAL market. This follows subjective tests by UK ITV regulator the ITC indicating that viewers found a reduction in colour resolution easier to accept vertically than horizontally.

But not so Panasonic's DVCPro. Just as MPEG-2 samples at 4:2:0 across both PAL and NTSC, DVCPro uses 4:1:1 sampling worldwide. The odd thing about this is that those accepting the arguments about PAL colour perception may conclude that a consumer DV machine offers higher quality.

Whatever the relative merits - and we'll be looking for answers at IBC - there is a trap for the unwary PAL user here. If a 4:2:0 picture is copied to or from a 4:1:1 machine, then the sub-sampled result will represent the worst of both worlds - a 4:1:0 picture with half the vertical and horizontal colour resolution of standard 4:2:2.

RWDean.

The View From the Living Room

by George Cole

It's often said that the British are different to their counterparts on mainland Europe - and it's certainly the case when it comes to TV viewing.

While continental Europe is enthusiastic about 100Hz flicker-free receivers, the British have turned their backs on them and opted for Dolby Surround TVs instead. The same has happened with PALplus, the enhanced version of the PAL system. This offers 16:9 widescreen pictures, digital stereo sound and the ColourPlus system to clean up the picture and removes cross-colour.

PALplus works by converting a 576-line picture into a 432-line letterbox picture, and transmits this along with a helper signal. In a PALplus set, the helper signal is used to create a full 576-line widescreen picture, but viewers with ordinary 4:3 sets see a letterbox picture. And that has been the rub in Britain.

Continental Europeans have a long tradition of watching sub-titled movies in the letterbox format, so PALplus has had little impact on their viewing habits. But in the UK, most films are shown in the pan-and-scan format.

It was fear of upsetting viewers which caused the BBC - one the PALplus group founder members - not to transmit programmes in PALplus after all. The BBC backed up this position by citing the number of complaints it receives whenever a letterbox programme is broadcast - one viewer rang to say that as his TV screen had lost one quarter of the picture, the same amount should be chopped off his TV licence.

The main supporter of PALplus in the UK is Channel 4, but even it has had to tread warily: "There's a great sensitivity about the dangers of 4:3 viewers being disadvantaged by the letterbox display," says Peter Marshall, Channel 4's assistant chief engineer, "We're the only national UK broadcaster that's doing it."

Last year Channel 4 was expected to broadcast 500 hours of PALplus programmes, but the figure turned out to be nearer 300 hours. Little more than 50 hours are likely to be added this year. Unexpected pockets of resistance to the widescreen format have been encountered among programme makers.

The UK's PALplus malaise stems from the classic chicken-and-egg dilemma.

▲ ▲ ▲

"We thought horse racing would be ideal for widescreen," says Marshall, but the production team had other views. We said 'But it's a racing programme. It will look good in a wider format.' They said 'No, it's a gambling programme.' In the end, we didn't do PALPlus with the racing."

Granada TV is expected to transmit around 200 hours of PALplus programming in the North West region this year, and the Welsh channel S4C plans to offer 12 hours a week of PALplus programming. And that's it. There are few PALplus receivers available in the UK, with the main supporters being Sony, Samsung and Nokia (all members of the PALplus group).

By contrast, there are expected to be 3,900 hours of PALplus transmissions in Belgium this year and some 6,600 hours in Germany. Sales of widescreen sets are also booming on the continent - last year 110,000 sets were sold in France (which will transmit over 10,000 hours of D2-MAC programmes this year), and over 75,000 in Germany. In the UK, the figure was around 10,000-15,000 units.

The UK's PALplus malaise stems from the classic chicken-and-egg dilemma, with few programmes to encourage people to buy PALplus sets, and too few receiver sales to encourage broadcasters and programme makers to use the format.

PALplus is also likely to be overtaken by digital TV. "Channel Four has always seen PALplus as a transitional medium, albeit in the long term," says Marshall. "We've taken the position of using PALplus to encourage more widescreen sets into homes. Then you move to digital. The BBC has decided to use widescreen to promote digital."

In the UK at least, it seems that PALplus is an all-too-familiar case of the right technology at the wrong time.

OUT OF STEP

It makes sense for broadcasters and consumer electronics companies to work together so that whenever a new technology is launched, products are available in the shops for consumers to use it. But sometimes the two industries are out of step. In 1987, JVC launched the first Nicam VCR, but it was almost three years before ITV got around to introducing Nicam, and not until 1991 that the BBC followed suit.

The same is happening with Programme Delivery Control (PDC). The system is designed to overcome one of the biggest headaches of setting a video timer - missing a programme that started late because the previous one over-ran. The system works by giving each programme a unique label, which is transmitted in the vertical blanking interval like teletext. A PDC video deck only starts recording when it has detected the ID code - even if the timer has been set to record at an earlier time.

The de facto VCR timer setting system is VideoPlus from US-based Gemstar ('VCR Plus' in the US). Virtually every VCR over £200 incorporates the system, which uses codes printed in newspapers and listing magazines.

Now more and more VCRs are featuring VideoPlus with added PDC. But the use of PDC by broadcasters is patchy, to say the least. Channel 4 has been transmitting PDC codes for some time, but the BBC only began offering a limited service on BBC2 last Autumn.

Today most BBC2 programmes are PDC coded, with plans to put PDC on BBC1 later this year. What's held up the BBC is its number of regional services, particularly in Scotland and Wales, which often broadcast programmes at different times. This makes generating universal PDC codes difficult. The ITV companies have an even bigger headache, which is why PDC has only been trialed by a handful of regional companies such as Carlton, Central and Meridian.

Another problem is the mismatch between VCRs which have both PDC and VideoPlus, and those that don't. The problem shows up when there is a late scheduling change. The PDC code never changes, and the VideoPlus code links with the PDC code.

Imagine a programme due to be broadcast at 9pm, but changed to 9.15pm. In a PDC deck, the original 9pm VideoPlus code would work with the PDC code, so the programme would not be lost. But non-PDC decks set with VideoPlus would whirr into action 15 minutes too early.

One suggestion has been to print two codes, one for people with PDC decks (the 9pm code) and another for those without (the new 9.15 code). The danger is that a simple system becomes overly complicated. The BBC says few programmes are affected, adding that as more and more people buy VCRs with both VideoPlus and PDC, the problem will eventually disappear.

UNDERWHELMING SURROUND

Last year JVC launched a new type of television which left the press and AV reviewers decidedly underwhelmed. The set featured a system called 3D Phonic, which promised to bring multi-channel suround-sound from just a pair of speakers built into the TV.

But while journalists may not have been impressed, the public loved 3D Phonic so much that JVC's set was the biggest-selling model last Christmas. Viewers liked the idea of not having to put put extra speakers and cables around the living room in order to get the surround-sound experience.

JVC's success has prompted Hitachi and Sharp to launch two-speaker surround-sound sets too. Even so, all three companies admit that their systems are not as good as a full-blown Dolby Pro-Logic system with four or five speakers.

But that still hasn't stopped the public from buying them. Whether dealers are bothering to demonstrate a full surround-sound system is debatable. It seems to be a case of what the ears don't hear, the heart doesn't grieve for. ■

George Cole (100344.1032@compuserve.com) is a freelance technology writer based in the UK.

Strong Support for World Media Expo

LOS ANGELES, California

The video industry is set to attend next month's World Media Expo, to be held in Los Angeles October 9-12.

World Media Expo is comprised of five entities: The National Association of Broadcasters' Radio unit; the Radio Television News Directors Association; the Society of Broadcast Engineers; the Society of Motion Picture and Television Engineers; and the TVB (The Television Bureau of Advertising) Conference.

Organisers note that this year's show in the Los Angeles Convention Center will be split into two distinct halls: The Television/Video/Film Exposition, and the Radio/Audio Exposition.

Each of the five organisations will have 'exhibit-only' time periods built into their schedules in order to allow attendees to view the exhibit floor without missing important sessions.

"We are seeing strong industry support for this year's WME," says Haidee Calore, senior vice president, NAB Conventions and Exhibitions. "World Media Expo is by far the best opportunity this Autumn to see the latest products and services for the broadcasting, production and entertainment industries."

Among WME's exhibitors will be Chyron, Odetics, Panasonic Broadcast & Television Systems, Philips BTS, Quantel and Tektronix. Other key contributors to the show will include Sony, Arbitron, the Associated Press, Avid Technology and Harris Corporation.

Video attendees can look forward to sessions on topics such as compression, non-linear editing, advanced television production and video servers.

For contact information, see the accompanying box.

To register or receive information on World Media Expo exhibits or conferences, including the NAB Radio Show, call the appropriate fax-on-demand number below from the touch-tone handset of your fax machine and follow the voice instructions:

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Information can also be found on the World Wide Web at www.nab.org/conventions/

Circle 36 On Reader Service Card

Pac Bell MMDS Goes Digital

by Drew Smith

EL MONTE, Calif.

Pacific Bell is putting the finishing touches on what appears, from the outside at least, to be another in a long series of ordinary looking buildings.

It is squat, white, largely windowless and surrounded by a thick cinder block wall. Its only distinguishing feature is that it is also surrounded by six 18-foot Scientific-Atlanta satellite receiver dishes. But inside, it is truly remarkable.

This building will be the nerve centre of Pacific Bell's new digital wireless television network in Southern California. When it is fully functional in late 1996, this super headend will feed signals to radio towers atop two nearby mountains, which will in turn beam 120 channels of digital video to more than 5 million homes in the Los Angeles basin.

To beam these signals, Pacific Bell Video Services (PBVS) will be using the rights to the MMDS (Multichannel Multipoint Distribution Service) spectrum acquired when it purchased Cross Country Wireless in July 1995 for $175 million.

MMDS "wireless cable" operators generally pull together 31 analogue multipoint distribution system channels and two analogue educational, Institutional Television Fixed System channels to create a viable analogue cable offering of 33 channels, which is transmitted to rooftop antennas using 2.15 - 2.7 GHz microwaves.

Analogue MMDS operators currently provide video service to more than 700,000 customers in the United States. In fact, included in Pac Bell's Cross Country acquisition was a 40,000-subscriber analogue MMDS system that is still operational in Riverside, Calif.

But many in the industry believe that the true potential of MMDS will be recognised only when it goes digital. With MPEG-2 digital video compression and QAM 64 modulation, PBVS will be able to squeeze 120 channels of video, and several audio channels, onto the spectrum traditionally allocated to the 33 analogue MMDS channels. Using a system of super headends and smaller regional headends, PBVS will ensure that all subscribers will receive a full complement of local off-the-air stations along with most national networks.

Many in the industry believe that the true potential of MMDS will be recognized only when it goes digital.

PBVS' video signals originate from one of four sources. The live video, which will fill 80 of the 120 channels, comes from off-the-air broadcasts, satellite signals or one of the educational institutions that is sub-leasing its channels to PBVS. The fourth source will be a video server that will store the content for 40 near-video-on-demand channels.

The satellite video signals are received on five of the six 18-foot satellite dishes that guard the facility. Each dish is primarily responsible for receiving the signal from a single satellite, although each receives the signals from three contiguous satellites to satisfy the telco's drive for redundancy. To further enhance the redundancy, a sixth adjustable dish, normally reserved for special event signals, is ready to go live if any of the five go down.

The satellite signals then flow into banks of Standard VideoCipher RS receivers that line one wall of PBVS' El Monte building. They then usually move to the real-time MPEG-2 video encoders. Off-the-air broadcast signals are pulled from local antennas and are passed through Videotek demodulators and then onto the encoders. Twelve channels will be diverted to the digital ad insertion device before they proceed to the encoders.

Commanding the centre of the surprisingly compact facility are several racks composed of 88 DiviCom MPEG-2 real-time encoders. Each rack supports seven encoders (six live and one hot spare), and two DiviCom multiplexers (one live and one spare). Each real-time channel requires one encoder, and each multiplexer is currently configured to handle six MPEG encoders.

At some future point, PBVS may opt to replace the existing multiplexers with statistical multiplexers, which would each support up to nine MPEG encoders. Statistical multiplexers can vary the bit-rate of the MPEG encoders dynamically, allowing more real-time signals to be multiplexed on to the same fixed rate datastream. This would significantly increase the number of channels they could offer without requiring retooling the network or the Thomson set-top boxes.

Room has been set aside behind the encoder racks for a Silicon Graphics Challenge video server that will store the movies used in Pac Bell's near-video-on-demand offering. Pac Bell plans to load the server with movies from laser discs and use Nagra's encryption and conditional access system to manage access. Most store-and-forward movies will be MPEG-2 encoded to stream out at 3 Mbit/s, which a Pac Bell spokesperson stressed is generally perceived as "much better than VHS."

ADDING UP

Sitting beside the video server will be the SeaChange digital commercials insertion equipment, which will be used initially to insert local ads on 12 of the 120 channels but has the capacity to handle 24 channels. Once the video has been digitised, encoded and multiplexed, it is passed to a Fore Systems AX100 ATM (asynchronous transfer mode) switch that switches the digital data from the El Monte facility in the valley up to the top of Mount Wilson at speeds over 1 Gbit/s using a Pac Bell OC-48c optical line.

The network grooms 28 Mbit/s chunks of data into a standard 6 MHz analogue channel using 64 Quadrature Amplitude Modulation (64 QAM), and this is what allows the telco to squeeze 130 digital signals into 31 analogue channels.

The ATM switch is the key to establishing the El Monte facility as a super headend, because it will allow Pac Bell to strip off pre-digitised national signals and send them to a smaller headend in San Diego where only the local off-the-air signals will need to be digitised. The San Diego facility will then be able to broadcast a full 120 channels without the expense of a full array of MPEG-2 encoders and multiplexers.

(See *Pac Bell*, page 8)

NEWS

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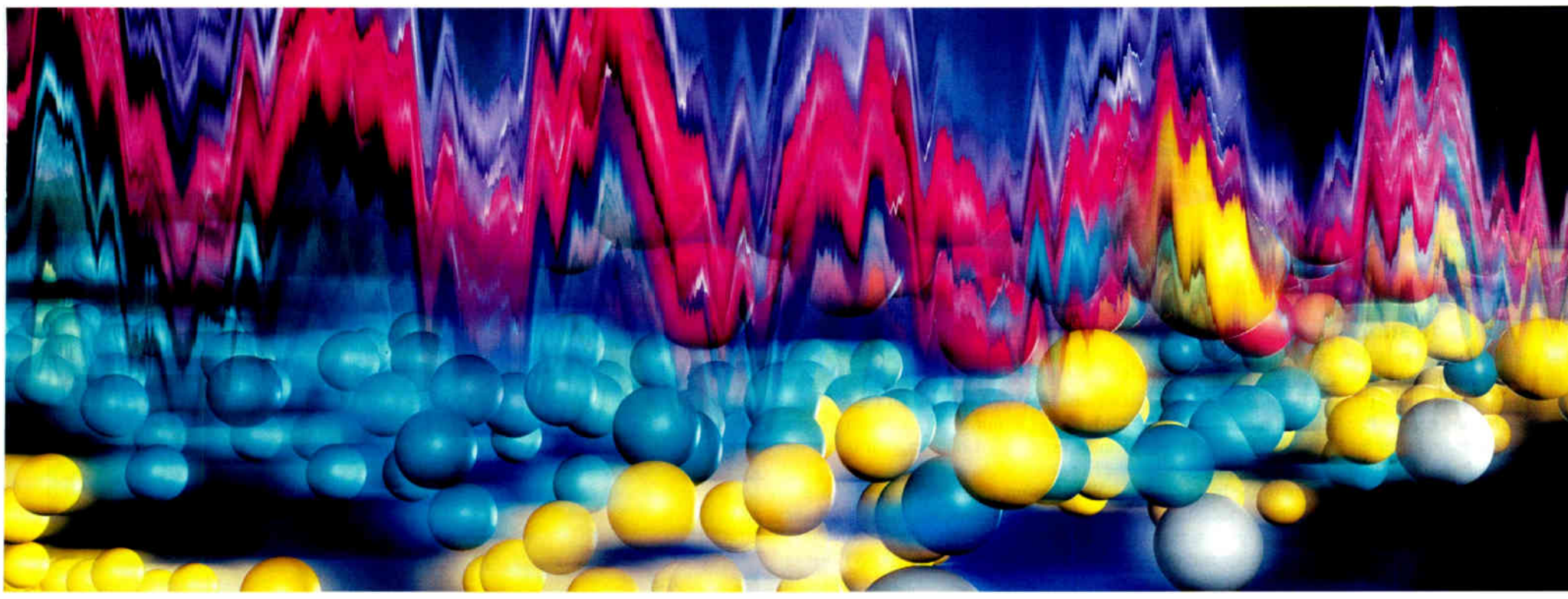

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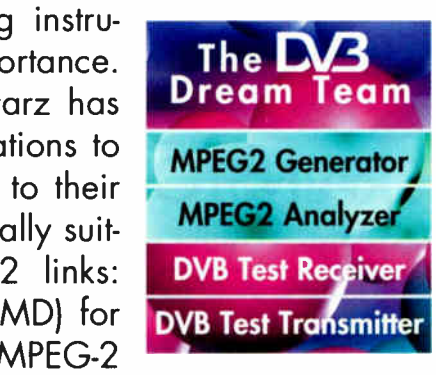

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Circle 66 On Reader Service Card

CONTINUED FROM PAGE 6

Pac Bell Upgrades MMDS

To take redundancy to an extreme even for a telco, another super headend will eventually be established in the San Francisco Bay Area. The two will be connected over a SONET network in case one should go down entirely. The ITS transmitter atop a radio tower on the crest of Mount Wilson will broadcast the MMDS signals out to a range of almost 40 miles. Any households subscribing to Pac Bell's service will receive the signals through a roof-mounted antenna that will pass the signal to a set-top box manufactured by Thomson.

LINE-OF-SIGHT

To increase the percentage of households reached by the line-of-sight MMDS broadcast, particularly in the Orange County region, Pac Bell will place a repeating radio tower on Mount Madjeska. Thus, with only two transmitters, Pac Bell expects to reach 80 percent of the homes in its broadcast area, which works out to roughly 5 million homes. The picture that subscribers will see will be crisp and the sound will be CD quality, the company said.

Pacific Bell arranged a side-by-side comparison (which it assured was fair) of a live digital MMDS signal and a signal from the local El Monte cable system, and the difference was striking. The MMDS picture looked good, but had a one-second delay because of the encoding, transmission and decoding process.

The cable picture looked good until you compared it to the MMDS picture. Then suddenly it looked slightly fuzzy with blurred colours and an odd diagonal pattern of light and dark bars that covered the whole screen.

"We will be the first in the nation to broadcast a digital MMDS signal using this unique combination of advanced technologies," said Roland Wolfram, vice president of Pacific Bell Video Systems. "What we want to make clear is that the technology issues have been addressed. It works."

When asked about using MMDS for fast Internet access similar to that supplied by MMDS provider CAI in the Washington DC area, Pac Bell spokesman Craig Watts said, "That is not a core portion of our launch product. At this stage, it is not on the front burner."

Watts went on to explain that high-speed Internet access via cable modems will be tested in the company's Advanced Communications Network (ACN) that is being deployed in the San Jose area. On June 25, Pacific Bell Video Services received a cable franchise from the San Jose City Council.

While Pac Bell made it clear that the technological issues have been resolved and the system works, there is still much for the telco to do before it begins commercial rollout. Pac Bell is planning a friendly user (employee) test in late 1996, and commercial rollout in early 1997. TELE-TV, the joint venture between Bell Atlantic, Nynex and Pacific Telesis, must finalise the content to be provided in the digital MMDS systems.

Pac Bell Video Systems and TELE-TV have also yet to finalise the brand identity under which the service will be marketed. "Digital TV" had been the brand name believed to be the favourite, but according to Pac Bell's Wolfram, "it will not be branded as Digital TV, because the term is too general."

The company also needs to finalise the systems that back-up a broad commercial rollout, determine pricing, receive sufficient set-tops (which Thomson believe should be no problem), and train installers. Although phone company forays into the video marketplace have been marked by missed deadlines and cancelled rollouts, Pacific Bell has invested several hundred million dollars in this network. With the exception of some marketing issues, the company is ready to roll. ■

Drew Smith is the president of VIPC, a Silicon Valley consulting firm specialising in telephone company video and Internet strategies. He can be reached at +1 (800) 798 8472 or desmith@vipconsult.com.

NEWS

NEWS WATCH

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LONDON

Snell and Wilcox believes it has found the solution to one of the most critical issues facing users of compression equipment.

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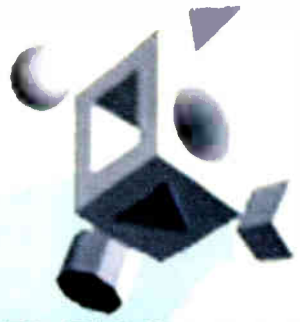

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DIGIMEDIA

Circle 72 On Reader Service Card

Making Pages for the World Wide Web

New Software Makes Web Page Design As Easy As Word Processing, As Simple As Making Java

by Roger Frost

There's a rumour that the information superhighway will be the greatest new technology which will change how we live and do business, and could even be the best thing since this morning's cup of coffee.

As rumours go there is a good chance this might be true - the idea that broadcasters could grab a clip at the click of a button will save time for plenty of coffees. But that is to come.

What we have now is an information highway, called the Internet. It's not so super, but that hasn't stopped 150 new businesses making their 'presence' on it every day. We're moving towards the day when having "http://www" on a logo will be as important as being in the phone book.

Until recently you had to be technical and talk HTML ...

▲ ▲ ▲

So much mystery surrounds the setting up of a Web site that employing professional designers and 'Web Masters' might seem like the only way forward.

Until recently you had to be technical and talk HTML, a sort of computer voodoo, to publish on the Internet. Now, there are tools which look little different from word processors which hide the complexity and expose the task for what it is - making and storing documents on another computer.

Anyone can start dabbling and publish themselves on the 'net. There are three essential steps. First get the publishing software, write the stuff, and then send it to a server - the computer which will serve up your content on request. And the easiest way to do all that is to sign up to major Internet server providers such as AOL and Compuserve and be hand-held through the mystery.

Now software giant Microsoft has Internet publishing tools which take that process much further. Its Internet Assistant for Word is a free add-on which will convert Word documents into Internet pages, instead of having to create new pages from scratch.

Features like colour, headings and graphics can be included, while adding those page 'links' that lead surfers from one page to the next is as simple as clicking a menu command. After pages have been sent with the "upload" or "ftp" command in the Internet provider's software, they can be browsed almost immediately.

But there comes a point when a web site or set of pages needs management, to keep it up-to-date or to grow it in size. Something more clever is needed - and Microsoft's Front Page application is stunningly clever.

For example, it can maintain a contents page, show the links between pages and look after them too. It can even create the entire structure of a web site for you. This is all done by wizards, step-by-step dialogue boxes (or 'dialogs' in Americanese) that let you choose page styles, add contact lists, and copyright notices. The process usually takes days - Front Page does it in minutes.

Front Page's editor also takes the ceiling off what Internet Assistant can do. Graphics can be dragged in, customer feedback forms added, and clickable hot spots placed on a menu page to sexy it up. Once again, when the pages are complete, they can be sent to the server computer, or Internet Provider.

Today there are some exciting add-ons allowing much more dynamic material to be published. The stars of these add-ons go by names such as Java and ActiveX. Designers can use these to activate a page and create a more powerful visual hit, adding buttons that start animation, or controls that stop, start and rewind a recording.

Perhaps the most exciting of these is ActiveMovie which allows video and audio to play as it arrives down the wire - 'streaming' rather than conventional file-based decoding. This will eventually be built into Microsoft Windows to lower the technical hurdles for surfers and page designers. The idea of a static Internet page is fast becoming passé, and creating something with dynamic impact fast becoming easier.

So should you dive into the Internet, dip a toe in, or just wait? Dreary good sense says wait, it's not a superhighway yet. And by staying out, you'll not drown, well not in a cup of coffee anyway. On the other hand, a bit of time spent sipping at this new medium could be a valuable investment for the day when the skills of producers, rather than just programmers, will be keenly sought for Web site creation. ■

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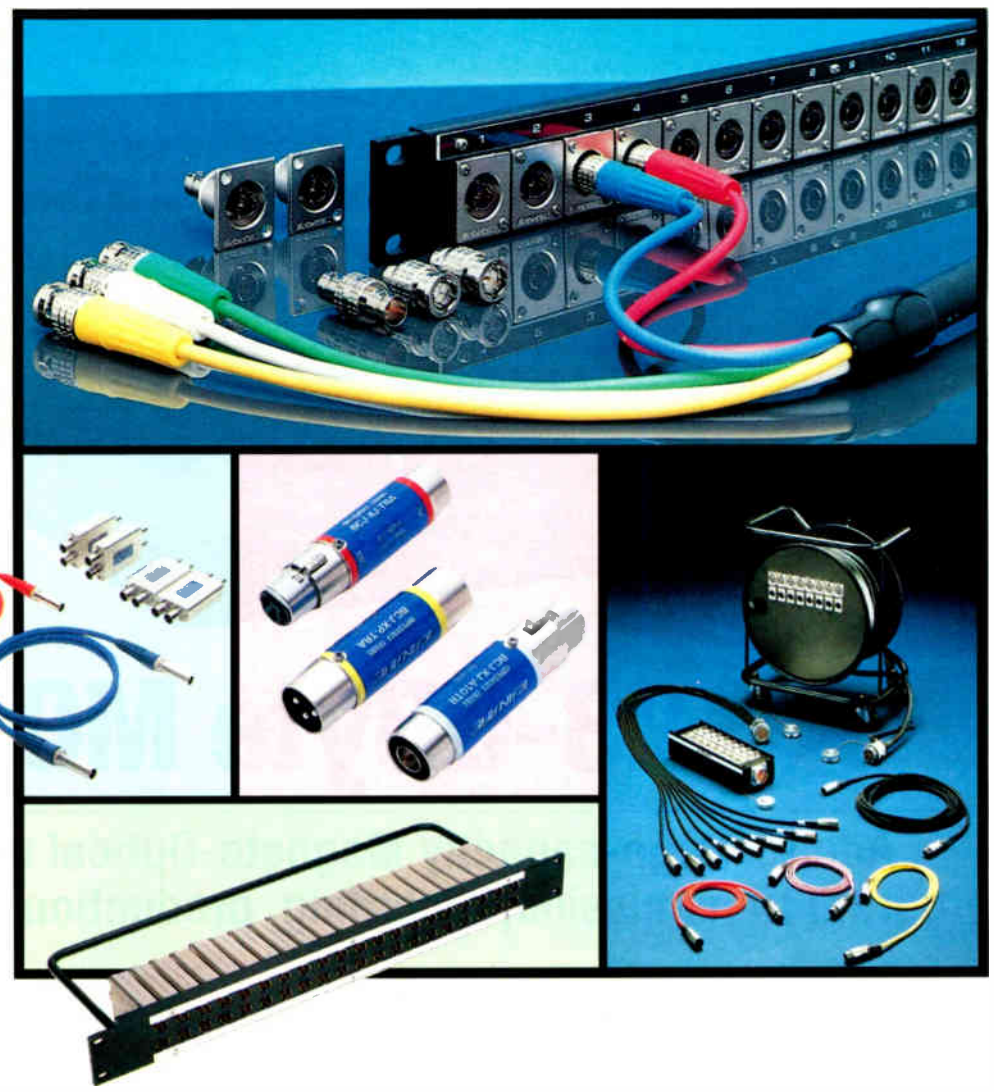

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NEC

Olympics '96 Wrap-Up

A New Era in Olympic Broadcasting?

NBC Saves Millions With 'Virtual IBC'

by Mark Hallinger

ATLANTA

What was the broadcast story of the Centennial Olympic Games? Was it the dawn of DV-family formats in an Olympic setting? Perhaps the extensive use of digital satellite hops to send stories home? What about the fibre rings that brought the host broadcaster's signals from the venues back to the IBC and the world's broadcasters?

All of these were important stories at the Centennial Olympic Games, which took place from July 19 to August 4 in hot, hazy Atlanta. The big news of the Games, however, had a New York angle. NBC - the U.S. rightsholding broadcaster - impressed the world with what can only be called the most significant feat of Olympic broadcast engineering since the beginning of the satellite era.

The network effectively split its production effort between an established plant in New York City and a 4,000 sq metre facility in Atlanta - two facilities 5,500 kilometres apart effectively worked as one. And this was more than a glorified transmit loop.

HERE AND THERE

NBC harnessed the tremendous bandwidth of fibre optic technology - and 39 fibre feeds between Atlanta and New York - to create a "virtual" International Broadcast Centre (IBC). This allowed most graphics and editing chores to be handled in New York, while the Atlanta studios focused on live coverage.

What made the virtual IBC so intriguing was the integration of systems. Routing, machine control, intercoms - even tally lights - shared data between the cities, allowing a producer wanting to view a tape in Atlanta to take direct control of the machine at the library in New York.

The intercoms were positively startling. It was impossible to ascertain, at least to this observer, whether one was listening to someone from a room down the hall, out at a venue or in a tape room in New York. The quality of connections from each location was always the same - excellent.

Live NBC productions started out like those of every other broadcaster in Atlanta. Video and audio signals either from the host broadcaster or independent shots were sent back to the IBC building on 155 Mbit/s digital transmission loops installed by regional telephone operator BellSouth.

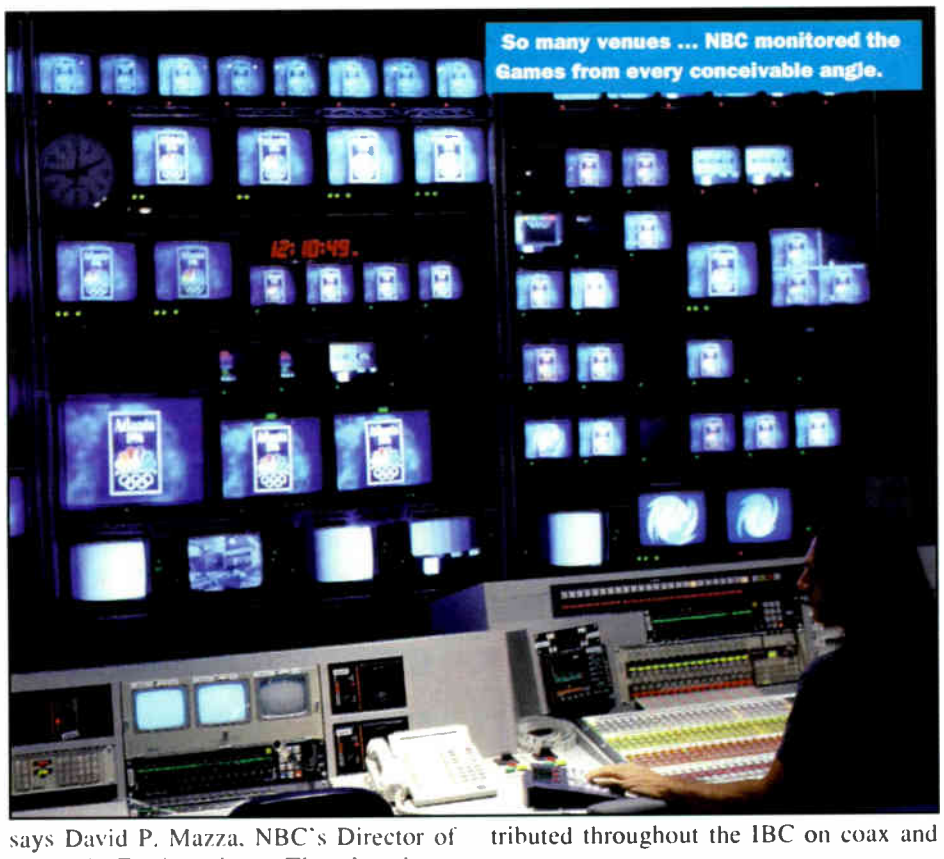
Once at NBC's section of the IBC, the signals were kept digital and switched live to New York on one of 25 northbound fibre channels. After the insertion of commercials, the signal was uplinked to NBC affiliates from New York.

Delayed material faced a more involved travel schedule. The feeds were first sent to New York for post-production. Then the taped material was sent back to Atlanta on one of 14 southbound fibre circuits, where it was rolled into a master feed and sent back again to New York as part of the program feed.

NBC used a mix of Panasonic's digital composite D-3 and digital component D-5 formats. D-3 machines were a workhorse in the edit bays, while D-5 units were used both for graphics and in an all-component digital edit truck used by NBC for sophisticated editing at certain venues.

MONEY SAVER

"From the standpoint of telecommunications, Atlanta is in New York's backyard," says David P. Mazza, NBC's Director of Olympic Engineering. "There's a huge amount of bandwidth between New York and Atlanta, and it's relatively inexpensive when compared to sending signals from overseas. Our decision to create a virtual IBC came down to the economics of bandwidth."


So many venues ... NBC monitored the Games from every conceivable angle.

Mazza says that by using NBC's established New York facilities, the network was able to minimise its Atlanta presence by almost halving the 7,000 sq metre broadcast centre area otherwise required. Mazza admitted that the layout was an engineering challenge, but he said the end result would leave the network with its New York studios upgraded for digital television - and overall cost savings of tens of millions of U.S. dollars.

This was all by design. NBC came up with the virtual IBC concept as a way to make a competitive bid on the rights to the Games. The network - currently dominating Olympic broadcasting in the United States, with over US$4 billion tied up in rights fees covering all Games bar one to year 2008 - certainly kicked off its period of broadcast domination with a show which technologically will be hard to repeat.

FIBRE OPTICS

But NBC's daring wasn't the only story from Atlanta. The enabling technology that allowed the fundamental backbone of the virtual IBC to be assembled was fibre - fibre deployed to an extent never seen before at an event the scale of the Olympics.

Video and audio feeds came in to NBC's Atlanta facility mostly on BellSouth's OC-3 155 Mbit/s SONET (Synchronous Optical Network) fibre lines, the same lines used by host broadcaster Atlanta Olympic Broadcasting (AOB) to send video to all international broadcasters. The digital signal was fed into an Alcatel codec at AOB's facility before being distributed throughout the IBC on coax and copper.

NBC took fibre distribution one more step, by routing Olympic signals up and down the East coast of the United States on 39 AT&T fibre-optic feeds running directly into NBC's New York offices to Northern Telecom (Nortel) codecs.

The critical thing about the fibre was redundancy. One set of lines ran more or less directly to New York, while another route headed west from Atlanta before returning to New York. The paths never crossed, and never shared any common architecture. NBC's technical representatives said the signal suffered no degradation on its 5,500 kilometre trip, despite mild compression.

In fact, fibre was a necessity for the virtual IBC, because NBC was sending a near-continuous stream of signals between New York and Atlanta during the Games. "There's no way we could have found all of the satellite transponder space we would have needed," says Mazza. "And we eliminated the delay inherent in satellite transmission."

TECHNOLOGY RACE

NBC used cutting-edge equipment to make its split IBC a reality. Here's a rundown of some of the most important technologies.

ROUTER CONTROL: A unique routing management application created by Cyradis Technology of Toronto controlled several routers in New York and Atlanta. Based on the Cyradis CTG 1000 RTC system, it provided router control on industrial PCs talking via Intraplex T1 lines, with a standard control panel from one of a number of manufacturers able to control a variety of different routers.

This allowed New York personnel to control the main Pesa router in Atlanta and Atlanta personnel to control the acquisition and Grass Valley Group (GVG) production routers in New York. The software also managed access to the 47 trunk video circuits between New York and Atlanta, with a display showing the status of each.

New York personnel were provided with

(See *Virtual IBC*, page 12)

Circle 40 On Reader Service Card

CONTINUED FROM PAGE 11

Virtual IBC Steals the Show

IBC control room source tally data, and an "auto follow " mode sent the on-air source to a backup circuit. Any New York or Atlanta circuit could be hot-switched to a backup fibre without interruption to the feed.

Dave Allamby of Cyradis says the software could be used in other major sporting events and large-scale planned news events. The system allows a user to take home-based assets on the road. "Potentially you would need a lot less production equipment at the site of the event," says NBC's David Mazza, adding that the system reduces the chance of errors occurring during voice communications between a technical director and people in another location. The system is also very helpful when a facility has multiple routing switchers, as is the case with a large network facility such as NBC.

100 MBIT/S TRANSFER: NBC had 100 Mbit/s transfer systems working throughout its graphics department in New York and between New York and Atlanta. The system ran on DS-3 lines (with a 10 Mbit/s backup system), allowing full, non-compressed digital picture files were transferred in less than half a second.

The majority of NBC's Olympic graphics were created in New York and then distributed to Quantel Pictureboxes and Chyron iNFiNiTi! machines in Atlanta. Graphics creation in New York used a mix of Quantel Henry, Hal, Picturebox and Paintbox units and Chyron machines.

ry because the architecture has a genuine afterlife. Mazza said the graphics transfer is "truly groundbreaking," adding that more and more graphics creation would be handled over distances using systems like this.

The majority of NBC's Olympic graphics were created in New York.

▲ ▲ ▲

The facility also used one of the first digital serial component three mix/effects (M/E) 4000 switchers from GVG. The panel, designed for live broadcasts, featured separate key rows per M/E and control of up to 24 video inputs and an additional 24 shifted inputs. Panasonic's component digital D-5 format tape was used.

The graphics upgrade at NBC's New York facility demonstrates how the virtual IBC saved cash - the 100Mbit/s upgrade will be used long after the Olympics are a memo-

T1 LINES: NBC took advantage of evolving T1-based videoconferencing technology for monitoring purposes because it involves very little delay. "This wasn't earth shattering," said Mazza, "but nobody I know of has had 11 channels of T1 video going back and forth before."

The T1 lines provided what NBC calls "reasonable" quality video for producers and directors in Atlanta to view an edit session created in New York and vice versa. Atlanta-based talent could also drop lines into a New York edit session.

INTERCOMS: The glue that held the virtual IBC together was an intercom from RTS/Telex known as the ADAM. The system - with all-digital signal processing - allowed excellent quality voice communication between the venues, the Atlanta IBC and New York. The Olympic ADAM was a 384x384 unit, and NBC News used a 64x64 unit in Atlanta.

Like the routing control system, the intercom relied on trunking to allow a user on one system to talk to a user on another system. All of NBC's intercom systems (there are 10 systems in NewYork alone) shared a controller called a "trunkmaster," which has the capability to function as a coordinator of system access. The trunkmaster determined which physical trunks were available for use and which crosspoints needed to be enabled in each intercom.

In addition to normal short conversations at 3.4 kHz voice quality, NBC used 12 party lines (PLs) at 7.5 kHz quality for production and engineering conferences. Voice traffic was carried over four AT&T T1 circuits via eight Intraplex T1 multiplexers populated with cards to carry 40 x 3.4 kHz voice channels, 12 x 7.5 kHz channels for the PLs and 38.4 kbit/s trunking control data.

NBC also connected each venue to the IBC ADAM, so venue personnel could talk directly with New York via trunking. The primary communication here was between venue technical directors and the videotape producers in New York. ■

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Widescreen Excels At Olympic Games

Atlanta mounts most extensive HD and 16:9 coverage ever seen at Olympics.

by Mark Hallinger

ATLANTA

Although high definition and the 16:9 format have been used sparingly in the last several Olympics, the Centennial Olympic Games saw the most extensive use yet of the technologies, and for the first time Europe received true Olympic broadcasting in 16:9.

The Games also saw tremendous cooperation between Japanese broadcaster NHK and Germany's ZDF. The two shared coverage, converting pictures between NHK's 1,250 line, 50 Hz Hi-Vision to the 1,125 line, 60 Hz HD system used in Europe.

Both NHK and ZDF officials believe the high-profile Olympics broadcast will spur greater consumer interest in widescreen TVs in Europe and high definition sets in Japan."We are hoping to sell a lot more sets because of the Olympics," says Tanaka Makoto, senior engineer in NHK's Broadcast Engineering Department.

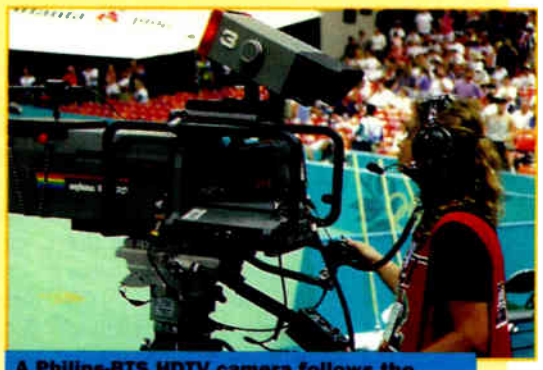
Tanaka believes the spectacle of the Olympic Games is ideally suited for Hi-Vision, while the price of sets - about US$4000, down from US$10,000 just a few years ago - is becoming more reasonable. Approximately 150,000 widescreen HDTV sets have been sold in Japan since 1991.

Tanaka's thoughts are echoed by Wolfgang Koob, technical manager at ZDF. "We are hoping that the Olympics will lead to increased interest in 16:9 within Europe," he says. "There was a lot of marketing effort prior to the Games."

ACTION PLAN

The Olympic widescreen programming was the latest step in the European Union's 'Actionplan 16:9', which has been encouraging widescreen production since June 1993. By the end of 1994, several European broadcasters had expressed interest in covering the Atlanta Games in 16:9. Ultimately the EU awarded ZDF the contract on the basis that feeds would be made available to others.

The takers were BRTN and RTBF in Belgium. ERT in Greece, Supervision in France, RTE in Ireland, TV Plus in The



A Philips-BTS HDTV camera follows the volleyball action for German broadcaster ZDF.

Netherlands and TVE in Spain, with ZDF and 3sat supplying 16:9 to German-speaking countries. The EU paid approximately 6 million ECU of the total cost of 13 million ECU (approximately 26 million DM) incurred by ZDF in Atlanta.

During the Games, NHK's 133-strong HDTV staff produced several hours of programming each day, and

(See *The Games*, page 14)

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Scenes from the 1996 Olympics

David Lynch uses a DVCAM. He was part of an Asbury College crew shooting Olympic spots for ABC & CBS affiliates in Lexington, KY.

MusiquePlus journalist-on-the-cheap Patrick Masbourian was a one-man road show using Panasonic's AGEZ1 DVCPRO palmcorder.

Chaos ensued in the wake of the Centennial Park bombing.

CONTINUED FROM PAGE 12

The Games in Widescreen

were expecting to send a total of 121 total hours back to Japan after the ZDF feeds were added. ZDF transmitted a similar amount of programming, and always had a signal up during the Games. Both broadcasters used a mix of live and tape-delay programming.

NHK used Sony HDC 750 cameras for acquisition, and ZDF used a mix of Philips and Thomson gear. Both ZDF and NHK used BellSouth's SONET (Synchronous Optical Network) fibre-optic rings to send signals from the venues back to their respective studios in the International Broadcast Centre (IBC). "The fibre works very well," says Koob.

Four ZDF OB vans were brought across the Atlantic and set up for the European high definition system. The signal was then compressed - using Thomson codecs - to 217 Mbit/s before transport back to the IBC on the SONET rings. As a normal high definition datastream is about 1.2 Gbit/s, the compression ratio used was roughly 4:1. "This gives us the opportunity to store data-reduced high definition signal on a conventional Panasonic D-5 tape," says Koob.

ZDF IN HD

Although there is currently little call for HD programming in Europe, ZDF archived the Games in high definition. Both NHK and ZDF used Panasonic's component digital D-5 VTRs and tapes for archiving and editing. A special format converter similar to a standards converter was required for the programme exchanges between the two broadcasters. ZDF used a box developed by Thomson, while NHK developed its own.

Koob says the technical problems with a 16:9 broadcast on this scale were really quite minimal, pointing to the hundreds of hours of programming produced in the format over the last two years. Both BTS and Thomson taped 16:9 shows in Barcelona and Lillehammer to gain experience and check their equipment, and NHK covered Lillehammer with HD Thames (now part of Pearson plc).

According to Koob, the real hurdle with 16:9 - at least for Europe - is emotional, not technical. "It's always difficult to convince people they should do something in 16:9," he says. "There are around 50 million conventional receivers in Germany, but only half a million 16:9 receivers." Programmers always had to be convinced to use the format, even though Koob claims ZDF has received few complaints when widescreen PALplus broadcasts appear in letterbox format on standard 4:3 sets (see Consumer Techwatch - Ed).

"We get more complaints from people who have purchased 16:9 TVs and want more programming," says Koob, adding that over 500,000 16:9 sets are in use in Europe, mostly in France, Germany and the Netherlands.

Koob is pleased that for the first time HD and 16:9 were given full respect. "We asked the AOB (host broadcaster Atlantic Olympic Broadcasting) to get proper camera positions and we got them - we have a camera on the finish line, not on the side as if it was a test. Also, we had two satellites dedicated to widescreen transmission, and just one for standard PAL. "We were very happy to obtain all our requested camera positions. This production is a real professional TV production, and is not experimental." ■

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FEATURES

BSkyB Commits to Digital Approach

by Chris Forrester

SATELLITE BUSINESS

After what seems like years of prevarication, BSkyB has now issued set-top manufacturers with detailed specifications for a digital decoder box. The requirements are understood to call for up to 1 million boxes in the first tranche and that initial supplies be ready in time for a September 1997 market launch.

BSkyB is on record saying it plans a minimum 200-channel launch, but has also developed commercial links with BT and Barclays Bank, both keen to secure a foothold on the satellite-delivered "superhighway". BT, Barclays and others interested in home shopping are expected to help subsidise the set-top box, keeping retail costs near a £200 target price.

Manufacturers are subject to a strict confidentiality clause, but the spec is believed to include facilities for a high-speed modem link (to satisfy the Sky-BT relationship) as well as an input for the upcoming UK digital terrestrial broadcasts likely to start in 1998.

German broadcasting is now in the middle of the mother of all horse-races.

Besides Near Video-On-Demand (N-VOD) movies, already agreed with most Hollywood studios, Sky is talking to the English Premier League about including PPV live broadcast rights on the package, adding to the £670 billion soccer deal already signed by Sky and the league.

BSkyB has booked 14 transponders for the service on the first of a new Astra series, a Hughes 601 craft designated Astra 2a due for launch by Ariane in August '97, ahead of the start of the football season in September.

Pace, a likely recipient of the proposals, has recently completed an IPO to fund expansion to its existing 200,000 sq ft Leeds facility. Pace also has links with Far Eastern sub-contractors and already supply some 20,000 satellite receivers a week.

Pace is also working with the BBC and BT on live trials of digital terrestrial TV, and BT has confirmed that it is testing interactive services on the system.

EARLY PPV FOR BSKYB

Sky is also contemplating an early start to pay-per-view (PPV), with plans for a three-channel movie service. "It could be November, it could be earlier," according to David Chance, managing director of BSkyB. Sky will use three Astra analogue transponders. The satcaster's first (and so far only) PPV event - the Tyson-Bruno fight in March - was a resounding success, gaining some 660,000 patrons at prices between £10 to £15, even though the short-lived fight was a 5 am transmission in Britain.

BSkyB is also reported to be talking to Bernie Ecclestone, who holds the Formula One motorsport TV rights, about launching digital TV race coverage starting next year. If successful, the race coverage would use six channels showing different camera positions including pit shots, grandstand as well as cockpit-cams and front/rear viewing cameras.

A long-standing dispute over a Star TV programme and a descendant of Mahatma Ghandi has led to an arrest warrant being issued on Rupert Murdoch. Mr Tushar Ghandi alleges his great grandfather was defamed by a guest on a Star TV chat show. Star apologised and took the show off the air. The legal action is but one conflict over Murdoch-owned Star TV's output, which frequently causes complaints from Indian religious and cultural organisations.

In a separate announcement, India's government is expected to introduce a Broadcasting Bill to allow private stations to uplink satellite signals to and from India, which is currently illegal. This would also permit private satellite broadcasters to broadcast terrestrially.

DERBY RACE IN GERMANY

German broadcasting is now in the middle of the mother of all horse-races. Two major media groups spent the July 4 weekend putting into place their plans and finance for the 'race to digital'.

Late in the evening of July 5 agreement papers were signed in Luxembourg sealing the marriage of Audiofina S.A. (parent of Compagnie Luxembourgeoise de Television-CLT) and Bertelsmann's audio-visual business, creating Europe's biggest multimedia player with annual sales topping £2 billion. Audiofina and Bertelsmann will each hold equal shares in 98per cent of the newly named CLT-UFA. CLT-UFA now await trading consents from national and European authorities. UFA is part of Bertelsmann's BMG Entertainment division.

The CLT/Bertelsmann signing set off a chain of events that, by July 9, had led to Bertelsmann's arch-rival Leo Kirch pulling off another theatrical coup hot on the heels of his mega-World Cup soccer deal, announcing a cosy new relationship with Rupert Murdoch's BSkyB. The new alliance is all the sweeter because only a few months ago Murdoch was dining at Bertelsmann's table.

CLT-UFA is a true media giant, but the engagement period has not been trouble-free. Only two weeks ago Michel Delloye resigned as CEO of CLT amid reports that Luxembourg-based CLT would increasingly come under control of Bertelsmann. At the signing Dr Michael Dornemann, Bertelsmann executive board member, hinted at possible complications ahead for some of the new pair's former relationships, saying he expected to be clarifying earlier negotiations with Bertelsmann's other TV partners.

Bertelsmann is only handing over its audio-visual interests, and a one-off cash payment of DM 1.5 billion which will be used to finance CLT/UFA expansion. The new company will be based at the CLT Luxembourg HQ, and Dr Dornemann spoke of Bertelsmann's wish to see the new group return to "greater mutual confidence" in its dealings with Canal Plus.

France's Canal Plus figured in all of the German negotiations and BSkyB, with the Kirch deal in place, says its former negotiations with Canal Plus, as with Bertelsmann, are now dead in the water. If all goes to plan BSkyB will take 49 per cent of Kirch's new digital enterprise. No money will change hands for the moment but the two companies will jointly finance the likely 200-channel venture - which means early losses - with BSkyB talking of a £200 million commitment.

GERMAN SET-TOPS MUST BE COMPATIBLE - BY ORDER

Meanwhile the row between two competing German digital operations, which looked like leading to incompatible decoders, is being resolved.

The German monopoly commission (Kartellamt) has ruled that Deutsche Telekom (DT) must make its cable system compatible with any type of decoder. DT, along with Canal Plus and Bertelsmann, is a major shareholder in the MMBG/Mediabox consortium.

The MMBG box must now be made compatible with rival Kirch Group's d-Box (DF-1) system. The action was brought by Veba, a member the Kirch consortium.

Kirch is advanced with its DF-1 digital plans. It holds the broadcast rights to some 15,000 movies, 50,000 hours of entertainment - and the World Cup (soccer) rights for 2002 and 2006. Perhaps more importantly they are first to market, with telecoms help from Vebacom, retail by giant shops group Metro, and now with Rupert Murdoch on his side, they look unstoppable and may not pause at Germany's borders. A trip into Italy, virgin territory in terms of pay-TV, could be on the cards.

The challenge for CLT/UFA is to quickly catch up with Kirch. Bertelsmann has said it will launch "by the end of the year". But the $64,000 questions is simple: Can Germany support two digi-players? Analysts suggest the German market could have 33 million homes subscribing (by cable and DTH) by 2004. It's a valuable prize, the biggest in Europe, and these two thoroughbred companies could give TV viewers a race worth watching.

The London-based European Cable-Comms '96 (October 15-17) had to put up the 'Sold Out' sign three months before the start.

Despite increasing floor space some 30 per cent and switching to the larger Olympia National Hall, it still isn't sufficient to cater for demand. More than 220 booths are now booked.

General Cable, the French-controlled MSO, is to buy the 50 per cent of Yorkshire Cable it does not already own from Singapore Telecom.

The deal is an all-share agreement, worth some £160 million. General Cable will issue 84 million shares, equal to 25 per cent of its equity, to Singapore Telecom who confirmed their intention to switch from Britain to the Asian cable market. Earlier this year Singapore sold its half interest in Cambridge Cable to Comcast.

This deal sees General Cable's equity homes rise from 917,000 to 1.35 million. The next expected take-over on the British cable scene is Groupe Videotron's sale of its 56 per cent holding in Videotron. Top favorite is minority partner Bell Cable Media.

DIGITAL NEWS IN BRIEF...

France TV has reduced its stake in new digital venture Television Par Satellite (TPS) from 28 per cent to 8 per cent. Investment will be picked up by France Telecom... Canal Plus Spain will launch more than 25 digital channels before end of year... NBC Super Channel and CNBC will be carried on Kirch's DF-1 digital bouquet. GIGA TV and MSNBC will be added next year... Orbit, the Middle Eastern digital broadcaster, is switching from Intelsat 704 to Intelsat 703 at 57 degrees East... meanwhile Channel 5, the UK's last analogue terrestrial channel due to start transmitting Jan 1, is scheduling feature films each weeknight at 9pm and talking to satcaster UK Gold about joint-venture programming. ■

CONTINUED FROM PAGE 4

Year 2000 Chaos

maintenance on the old, I dump the old and buy the new (keeping at least two machines, spare parts, tools and manuals in the tape archive). But I factor into my equation maintenance of the new stuff and archiving of its material, too.

And I sure as heck ain't gonna build a new transmission tower these days without factorin' in DTV. I ain't gonna order new phone lines without considerin' HDSL, ATM, and stuff liked that there. About the only purchases I make without considerin' the future are of ready-to-eat food; my girlish figure has to fend for itself.

Lookee: I know no one can predict the future. I know what it's like to make a big purchase the year before the rules change. I don't know anyone on earth who became a gazillionaire by shorting the stock market just before a crash.

But some things *are* predictable. Barring something like a collision between the earth and an anti-matter asteroid during the night, there *will* be a sunrise tomorrow. Barring some unforseen amendments to the laws of physics and chemistry, satellites *will* fall out of the sky, and archived tapes *will* eventually deteriorate. It ain't a bad idea to think about the future every now and then.

Oh, yeah! Don't forget to tell your computer it's today and now before ya put down my rantings this month. Ya might as well have a few years of proper dating before utter chaos arrives. ■

Mario Orazio is the pseudonym of a well-known television engineer who wishes to remain anonymous. Send your questions or comments to him c/o TV Technology. Or drop him a note on e-mail 581-6729@MCIMail.com.

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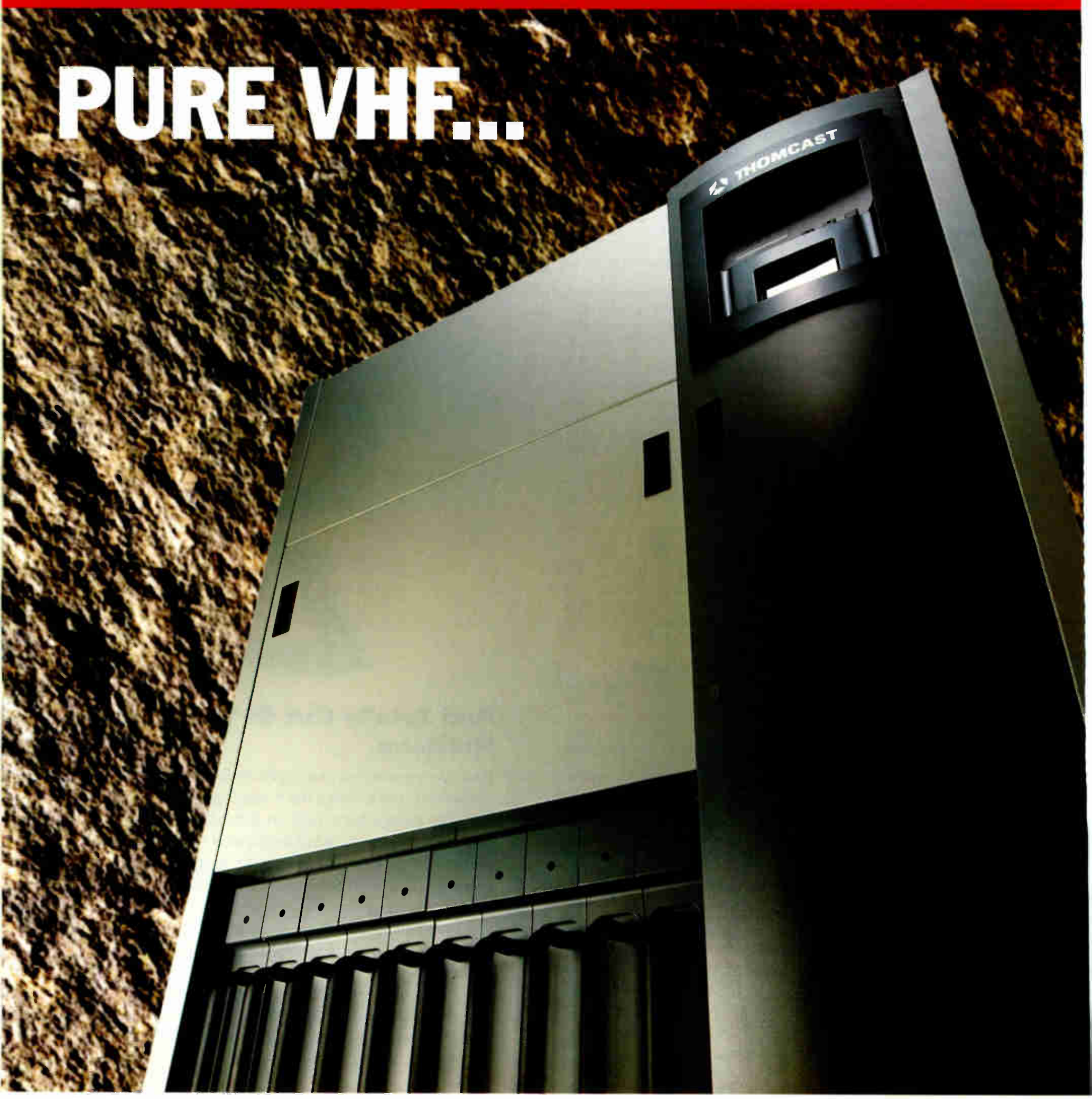

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PEMA 2B

The Soundcraft B800 Audio Production

by Keith Spencer-Allen

Despite the growing complexity of production audio, most available consoles have been either in the low-cost simple feature or the high-cost full feature category, with little between these extremes.

Following an increasing number of requests for broadcast modified versions of its live sound consoles, Soundcraft started to research the background. The company found that multiple auxilliary sends of the live consoles were fulfilling production requirements for creating multiple clean feeds, the compact design was ideal for outside broadcast trucks, and that users liked its 'middle ground' pricing policy. The B800 is its purpose-built response.

The precise specification of the console operates on two levels, and is largely in the hands of the customer. Soundcraft offers a choice of mono and stereo input channels, and groups which can be mixed with the master module sections in any permutation and in virtually any layout within one of five frame sizes between 24 and 56 modules.

At a more user-specific level, the control surface has been kept simple by placing rarely-touched options at circuit board level. For example a mono input channel has 14 jumper options offering such choices as aux feeds pre or post mute, or the position of the insert pre or post EQ. In this way a standard console can be customised to a high degree without incurring high costs.

The mono input modules offers routing to either of the main stereo output buses, any or all of the eight group buses, and a direct output that may alternatively carry one of two clean feed buses (one a mix-minus) or talkback. EQ is in the form of a semi-parametric 4-band EQ with high-Q mid frequency settings and separate filters. Six mono and two stereo aux sends are standard, and all can be switched pre or post fader. Rather cleverly, aux 1 can be switched to control the level of the channel direct output.

The lower section of the fader holds the pan control, a large channel mute button and an LED indication of a remote channel mute. Running parallel with the fader is the Cue button, signal input LED meter (pre/post EQ), grouping for the four VCA groups and a fader remote start/stop select button. Not mentioned so far are all the standard features such as mic/line select, 48V mic powering, gain/trim and oscillator tone inject that you might expect to find.

The stereo modules are very similar, but differ in the areas of routing and EQ with the addition of an M/S decode option with stereo width control for use with M/S mics. The direct output is an option on stereo modules for space reasons - not on the module but the rear panel. All I/Os are fully balanced and appear on XLRs, but there is physically no further room so if the option is taken up they are wired to an EDAC connector.

The design of the input modules allows the B800 to cover most of the mixer requirements identified earlier. The fact that each input channel is able to generate a clean feed/mix minus signal frees up the aux sends for production needs. The addition of the four VCA groups then allows further level control independent of the main groups, so increasing flexibility.

The Group Modules are also available as mono or stereo types, with features that include routing to the stereo outputs as well as the other groups, stereo returns, full aux sends, and a simple adjustable limiter. The Stereo Module is virtually identical with the addition of a stereo width control.

The B800 master section is actually four separate modules - a pair of dedicated Master Stereo output modules, a Communications Module and a Monitor Module. The Stereo Modules are identical with the master aux send levels, a stereo limiter, insert, a separate mono level send, mutes and the main stereo fader. One is equipped with the power supply status indications, and an On-Air button which can switch external equipment as well as restricting potentially disruptive console functions. The Monitor module allows the selection of eight external and six internal sources - the latter chosen through the monitor source selection matrix inside the console - plus the main monitor controls and master Cue functions. The Communications Module carries the oscillator functions, talkback and headphones controls, and both of these modules carry the faders needed to adjust levels of the VCA groups.

Not on the demonstrated console is an optional six channel surround sound module.

The meterbridge spec is also in the hands of the customer. Dimensioned to DIN standard, it will accommodate most meters and displays in addition to the standard features of talkback mic socket, meter source select, and VCA control indication.

The B800 is a very compact and comprehensively featured console. The use of a 31mm module width enables the 56 frame size to be just over 1.8 metres. A sensible balance between features immediately to hand and those requiring a small amount of internal set-up produces a console which is not only clear and uncluttered, but also easy to use. There are also many clever touches as one would expect from a manufacturer of this experience. With all the channel, aux sends, group and master outputs, this console would seem to meet the production design aims initially set. The fact that over 50 units are already in service worldwide since IBC 95 suggests that significant numbers of TV facilities agree with that. ■

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

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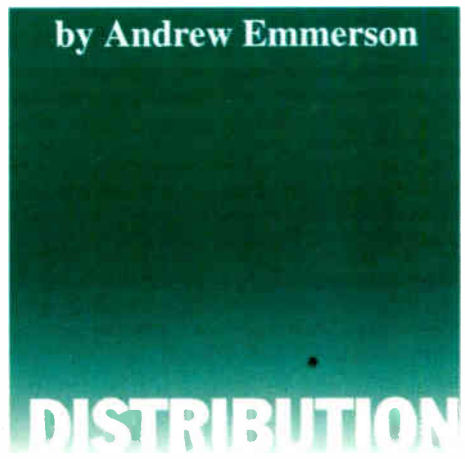
The Answer is ATM - But What's the Question?

Now May Be The Time To Re-Examine Broadcast Signal Distribution As ATM Trials Begin

by Andrew Emmerson



Even within the broadcast industry, to most people television distribution systems - the contribution circuits and studio-to-transmitter links - are about as interesting as drains. In other words, the only time they are considered is when something goes wrong. In fact, distribution systems play a vital, if unsung role in the broadcast business.

The options - and opportunities - have never been wider. Digital compression and new data transport technologies offer the prospect of more efficient transmission, whilst thanks to telecoms liberalisation, the actual price that broadcasters pay for transmission is falling in real terms.

As we all know, technologists often have a tendency to present new techniques as panaceas or universal solutions, and one of the current fads is Asynchronous Transfer Mode (ATM). So what is ATM, why is it trendy just now, and how appropriate is it in reality? After all, ATM has been touted as the coming technology for the last five years or more... and amazingly, it's still coming!

So what is ATM; why is it trendy just now?

▲ ▲ ▲

By the time you read this article, UK carrier NTL will be starting ATM trials across its network, whilst earlier this year BT arranged a live ATM link-up to the States for the NAB 96 convention. This Spring also saw the SohoNet consortium sign up for a major ATM network (see TVTI July), so the technology is nothing if not topical.

Faced with this activity and keen talk from network carriers and hardware vendors alike, it might appear that ATM was a technology whose time had finally come. In a way, it has... and in another way it's still to come. The true implications for broadcasters are not what they seem.

INTEGRATED BROADBAND

To judge ATM's true significance we need to put the technology into context, and that context is not television or broadcasting, but telecommunications as a whole. Today's digital transportation environment really has little concern as to what kind of signal the individual bits hold. So broadcast transmission is no longer a separate discipline (see panel: Broadcast Distribution in the '90s), but an integral part of broadband distribution.

It's little wonder that with the exception of local residential connections, the Integrated Services Digital Network (ISDN) has supplanted most other telecommunications networks. Observers now see the migration of this technology towards broadband ISDN systems, capable of handling not just existing telephony and data services, but also wideband image transfer such as high-definition television and other capacity-hungry services yet to be developed.

The implication is that broadband ISDN could become the universal information delivery mechanism of the future.

Networks like this are currently few and far between, although we're getting there. A European-wide pilot ATM network was launched in November 1994, with a live video link-up connecting eleven capitals. Seventeen national carriers are now committed to developing what is described both as the broadband high-capacity network of the future (in one breath), and as "a valuable proving ground for the capabilities of ATM to support future services" (in another).

The initial emphasis is on non-broadcast video and on linking local voice and computer networks rather than broadcast distribution, and most commercial activity involving ATM is focused on office automation applications.

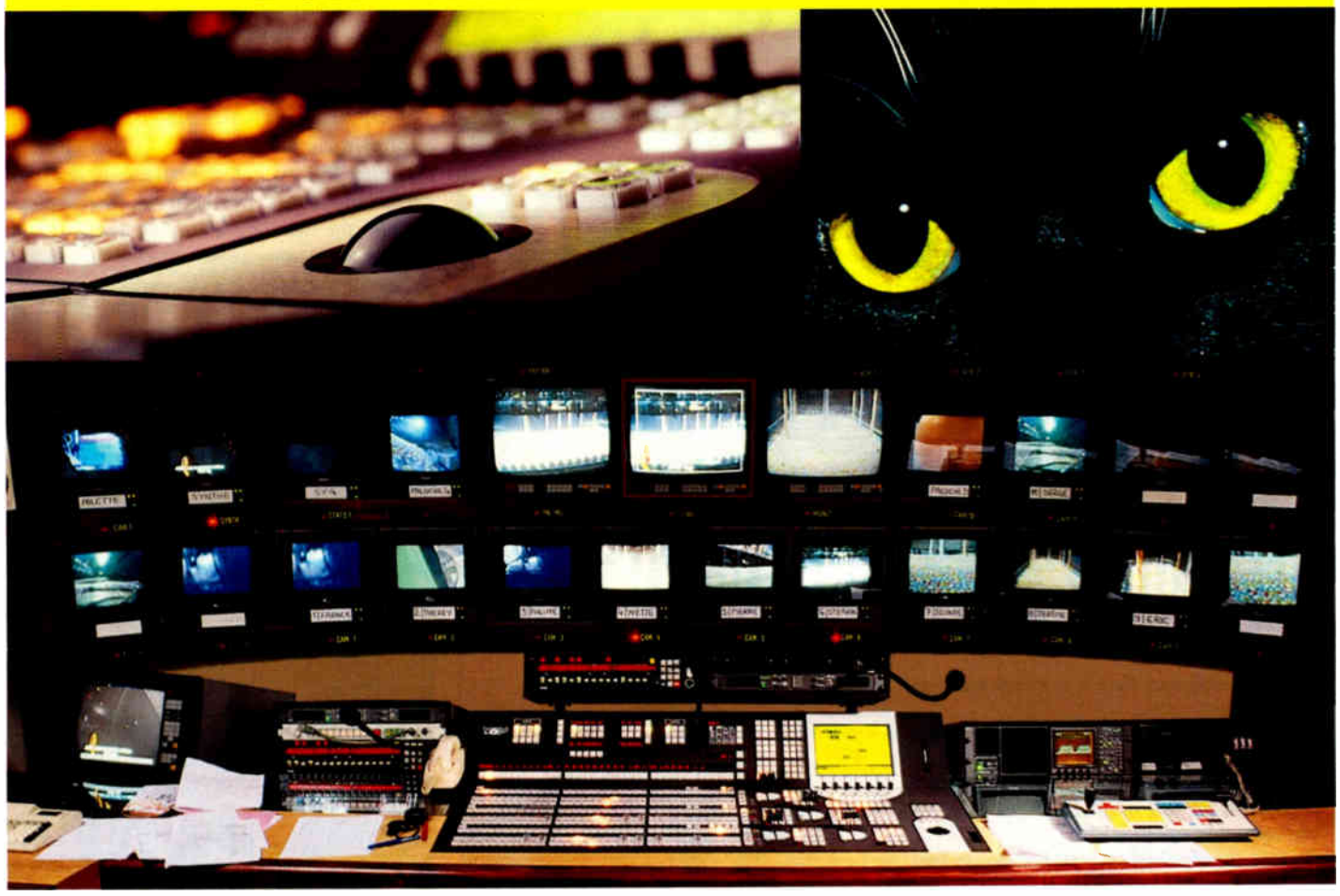
In the UK, office connectivity vendors such as GPT already offer practical ATM switches which deliver ATM to the desktop for video and multimedia users whilst retaining existing Ethernet and Token Ring cabling. GPT has also launched an ATM-compatible high-capacity storage system, allowing network managers to feed live high-definition video across their networks.

ATM could serve broadcasters well too, albeit by default. That's because if broadband ISDN is to become the universal tele-

(See *ATM*, page 22)

THE BIG PICTURE

DON'T MIX WITH JUST ANYBODY



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CONTINUED FROM PAGE 21

ATM Not Just a Cash Machine

coms delivery method of the future - as looks extremely likely - a new, more all-embracing information transfer mode capable of carrying both interactive and distributive services such as broadcast will be called for.

That mode is ATM, which by combining circuit- and packet-switching technologies synthesises the simplicity of the former with the flexibility of the latter. It is supported by specific elements in the new-generation digital switches in the telecoms network.

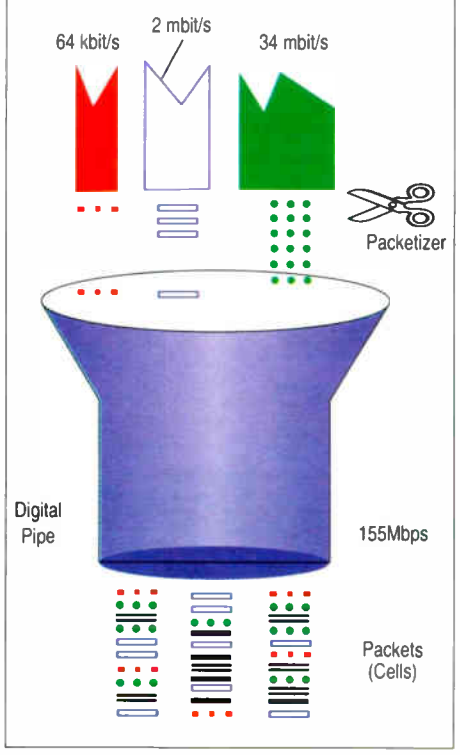
ATM uses short, fixed-length cells with minimal headers, to allow information to be routed at high speed by means of hardware-implemented routing tables at each switch. The header identifies both the cell and the path it takes, although in the ATM environment the path between two points does not have a fixed capacity and the cell may be routed from node to node by any appropriate route.

THE REAL WORLD

What looks elegant on paper may be one thing, but the real world is another. ATM was over-hyped in the early 1990s, and hardware vendors have not seen their predictions fulfilled - yet. That said, ISDN itself blossomed late but has now accomplished all that was expected of it and more, so we can reasonably expect ATM to follow suit.

Commercial services are few and far between, meaning the technique has had no opportunity to make any impact on broadcast operations. But the indications are that interest in ATM will really hot up next year when public services have emerged.

Figure 1



By that time three carriers in Britain (BT, Energis and Mercury) should have services up and running, although the geographic availability and capacity offered will probably restrict their utility to corporate networking, where ATM is finding favour for the high-user elements of wide-area networks (WANs).

Broadcast carrier NTL started network tests of ATM this Summer, as part of its recent expansion into general telecoms. "NTL is looking to ATM to provide the benefits of an integrated, common and cost-effective transport mechanism for all types of traffic direct to its customers," says Tim Wainwright, NTL's telecoms product development manager.

The company adds that it will also be considering the application of ATM to video transmission and high-quality audio, but it's too early to predict the outcome. That said, there is growing interest in integrated vision and telecoms networks, and NTL has already installed systems of this kind for Westcountry Television and Yorkshire-Tyne Tees.

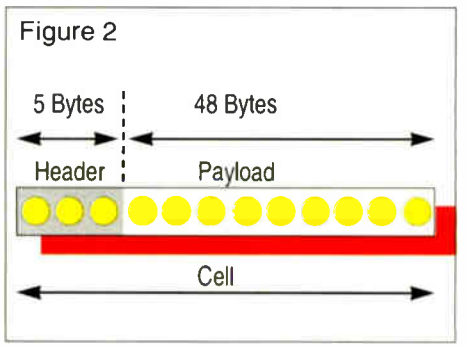
Probably the only existing exponent of ATM for broadcast-standard video and audio is London's SohoNet consortium, which has sourced a 155Mbit/s metropolitan network in London from Videotron as well as national and international facilities from BT using ATM throughout.

The seven post-production houses in SohoNet now enjoy the facilities of a fully supported and managed end-to-end ATM-based digital video data network covering Greater London, the UK and beyond, including high speed links across the Atlantic. In a specialist market where rapid turnaround times are the norm, the service enables the fast transfer of video and digital film and offers cost-effective links between post-production houses and their customers.

The same technology was put to the test earlier this year during NAB 96, when BT Broadcast Services ran a high speed, ATM-based demonstration connecting Las Vegas with a number of London's facility companies. According to John Swingewood, general manager of BT Broadcast Services, ATM links offer a competitive edge to British companies.

"The UK's post-production industry has a tremendous reputation world-wide and the ability to network both nationally and internationally can only further enhance this. Extending the domestic network, BT's pioneering transatlantic capability provides UK companies with access to Hollywood's lucrative film and programme editing marketplace - where they can take advantage of the fact that local demand outstrips supply," he declares.

Figure 2



However, it's clear that ATM has yet to make an impact on broadcasters. In fact one observer suggests that many are still unaware of the technique's implications, whilst others are standing by until a critical mass is evident or hardware prices fall.

All the same, ATM provides the most likely progression towards a universal bearer for voice, text and data all the way up to high-definition television. Time will tell if this is fulfilled. ■

Andrew Emmerson (midshires@cix.compulink.co.uk) is a technology writer and consultant in the UK.

BROADCAST DISTRIBUTION IN THE NINETIES

The days when long-distance circuits were set aside exclusively for broadcast use are drawing to a close. Analogue vision circuits (coaxial or microwave) and so-called 'music lines' may exist in legacy networks but in the main, the integrated services digital network, where all communications traffic is combined, has put paid to these. With digital transmission, all traffic - wide-band or narrowband - goes down the same communal digital 'pipes'.

The expression Asynchronous Transfer Mode is not particularly meaningful, and can even be misleading given that it is not a transmission technique, and has nothing to do with asynchronous data transmission. So how does it work? NTL's Tim Wainwright has a neat way of describing the actual mechanism of ATM.

"ATM works by filling small- and fixed-size cells with data and, once full, transmitting the cells over a predetermined route to their final destination," he explains. "Because ATM uses small cells, many different types of traffic (video, voice, data, etc.) can be accommodated. ATM is known as a connection-oriented service in that the route required to take the customer's traffic from A to B is set up before the data is actually sent. This 'virtual circuit' is held open for the duration of the transfer only - and then dropped once all the data has been sent."

ATM was selected by the International Telecommunications Union (ITU-T) in 1988 as the target solution for implementing broadband ISDN, for very clear reasons. Its key strength is enough flexibility to cope with all the demands imposed by an all-purpose broadband ISDN both now and in the future. ATM can support a wide variety of services with different information transfer rates all at the same time.

Because information transfer rates and the mix of services carried are independent of the characteristics of the switching fabric, low and high bit-rate services can all be carried simultaneously in the same type of 'container'. For continuous bit-rate transmission ATM can emulate circuit-switched conditions, while periodic traffic can also be concentrated by statistical multiplexing.

Most information flows will have balanced bandwidth requirements in each direction, but others - for instance entertainment distribution - will require continuous transmission in one direction only.

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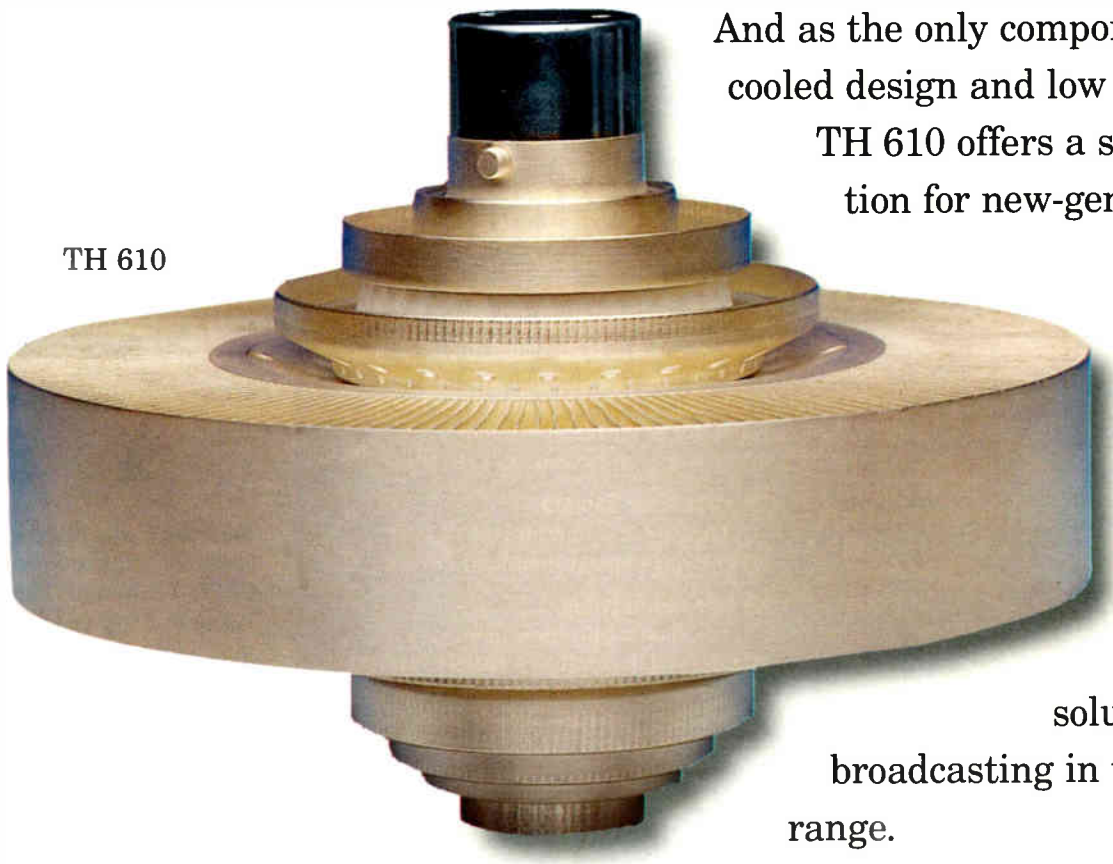

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UNCOMMON SAVINGS

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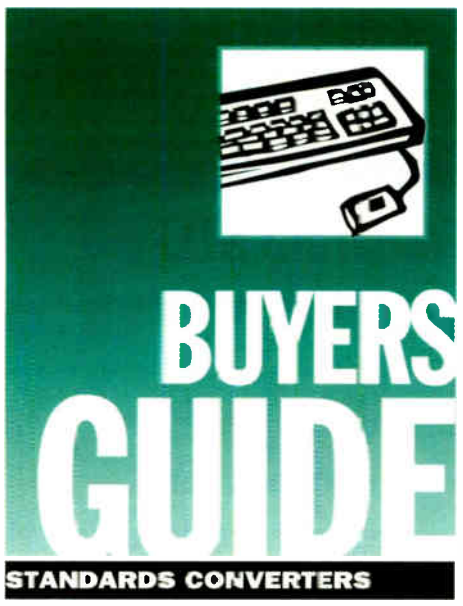

USER REPORT

Tekniche at Optus Vision

by Siri Hewawitharana
System Design Engineer, Optus Vision

SYDNEY, Australia

Optus Vision started in 1995 as the pay-TV arm of Optus, beginning a 3 billion dollar project.

I was involved in Optus Vision from day one as the system designer for the Broadcast Centre at North Ryde, Sydney. This is an AUS$40 million dollar project to design a full SDI/AES centre with fibre-optic cabling to transport all our pay-TV using the Synchronous Digital Hierarchy (SDH) transport layer.

We use a Hybrid Fibre Coax (HFC) network architecture to transport our video, voice and high speed data to customers' houses. All these services go through one cable as Australia is a huge country with different State architectures. Initially, we only had three head-ends around Australia, but this has increased to more than 6 sites.

In March 1995 I was evaluating the hardware for the Broadcast Centre, which had to be on-air by 29 September 1995. In order to assess the new standards converters I attended the NAB and Montreux conventions, and also visited post production houses which had products from the top three manufactures of standards converters.

As a former Design Engineer at AVS Broadcast and with expert knowledge of standard converters, I thought this would be an easy task, but believe me it was not. A year ago I was involved with the same test when working for STAR TV in Hong Kong. At that time products with Vector Motion Compensation (VMC) and Phase Correlation (PHC) were just appearing and the machines from all three major manufacturers were basically prototypes.

Although the Optus Vision Operation Centre is fully digital, our fibre codec only has composite in and out. This means we need good PAL comb filter decoders for the front end, and only Tekniche met my criteria for vertical and horizontal resolution.

At that time we had two ESPN networks coming through our Optus Com earth station. For these sport channels I decided to use two

Optus Vision has been using more than 20 Tekniche standard converters.

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Tekniche Cyrus Prime converters due to the heavy motion nature of sports material. For CMT, CNN and Turner I chose three Tekniche Prime converters, and for backup I went for the Tekniche EOS.

So the complete Tekniche order comprised Genesis for SDI coding/decoding, SDI-to-PAL decoders and PAL-to-SDI coders, two Cyrus Prime and three Prime converters, and one EOS.

Once the Broadcast Centre was operational, I went on to design head-ends for the Satellite and Broadcast Engineering Group, starting with direct satellite receiving stations as they are still analogue. For channels with a high profile such as CMT, I opted for the EOS.

Besides its good front end, EOS was chosen because when using the NTSC-to-PAL mode you not only get full bandwidth, but also its noise reduction capability and signal tolerance are legendary within industry circles. For ethnic channels such as CTN, I decided to go for the Tekniche DSC small converter as this is the only converter in this price bracket with noise reduction. Tekniche also has a very competitive pricing policy.

Since July 1995 Optus Vision has been using more than 20 Tekniche standard converters and SDI switching equipment without any problems. In Australia, we have excellent support through Magna Systems and also from Tekniche Hong Kong, plus design engineers from the UK. In due course we might integrate the Tekniche TACS System in the Broadcast Centre. ■

Siri Hewawitharana is a System Design Engineer with the National Broadcast and Satellite Engineering Group at Optus Vision. His previous positions have included Design Engineer with the Standard Converter Group at AVS Broadcast, System Consultant at the Australian Overseas Telecommunication Research Unit and System Design Engineer with STAR TV Hong Kong.

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USER REPORT

Claxton Opts for Vistek Vector VMC

by Rod Deas
Project Manager
John Claxton Associates

LONDON

John Claxton Associates (JCA) is a mainstream dubbing & broadcast duplication facility located in West London and is mainly committed to serving the needs of the international programme distribution market.

The company was formed more than seven years ago as a result of a management buyout of the former BBC Enterprises - now BBC Worldwide - technical facility, which had itself existed to meet the needs of the BBC Programme Sales Operation. In its early years, JCA continued to provide extensive services to this commercial arm of the BBC, by carrying on with much of what had been previously undertaken as an in-house operation.

One of the first actions of the newly-formed company was the acquisition of a four-field linear interpolating motion adaptive standards converter, which was a new and relatively exclusive piece of kit at that time. It was seen as essential to own a 'state of the art' product particularly in order to develop services for a wider customer base. Indeed JCA clients soon included many international programme distributors and also broadcasters who had extensive requirements for standards conversion.

As high grade standards conversion became increasingly accessible throughout the programme distribution business with the installed base of equipment increasing rapidly in the early 90s, JCA sought to maintain its exclusive position among the independent facilities. Various developments in the field of image processing were being pursued by certain manufacturers, giving rise to the possibility of motion compensation being used to enhance the standards conversion process.

In mid 1992, after having seen the initial demonstrations, JCA undertook an evaluation with a range of programming, and became convinced that the Vistek Vector VMC motion compensated system had achieved commercial viability. There seemed little doubt that almost any type of material likely to be encountered in day to day operations would benefit from this process, when compared with results obtained from existing four-field linear types. Encouraged by the reaction of some of its own clients, JCA decided to proceed with the acquisition of a Vistek Vector converter complete with the VMC Motion Estimator option.

During four years of ownership of the Vector VMC converter, and offering the service to commercial customers, JCA has encountered little obstacle to its routine use with the normal range of material. This includes documentary programming, entertainment items and perhaps most successful of all in this context, action sports, which are often duplicated or repackaged for onward distribution. There is little doubt that with the action sports material there is increasingly a perception among JCA operational staff and clients that linear conversion cannot give acceptable results.

Many JCA clients will have benefited from motion compensated conversion; often the technical staff have some discretion and ensure material particularly in need of the process will get appropriate treatment even if the client did not originally specify VMC. Although linear interpolation may well give perfectly satisfactory conversion for certain scenes, the VMC can be applied where the interpolation artefacts would be most disturbing. Conversely, occasional picture material may confuse the motion estimator - all real-time converters will exhibit minor artefacts with some rare combinations of demanding material - and the simpler interpolating converter will give visually acceptable results.

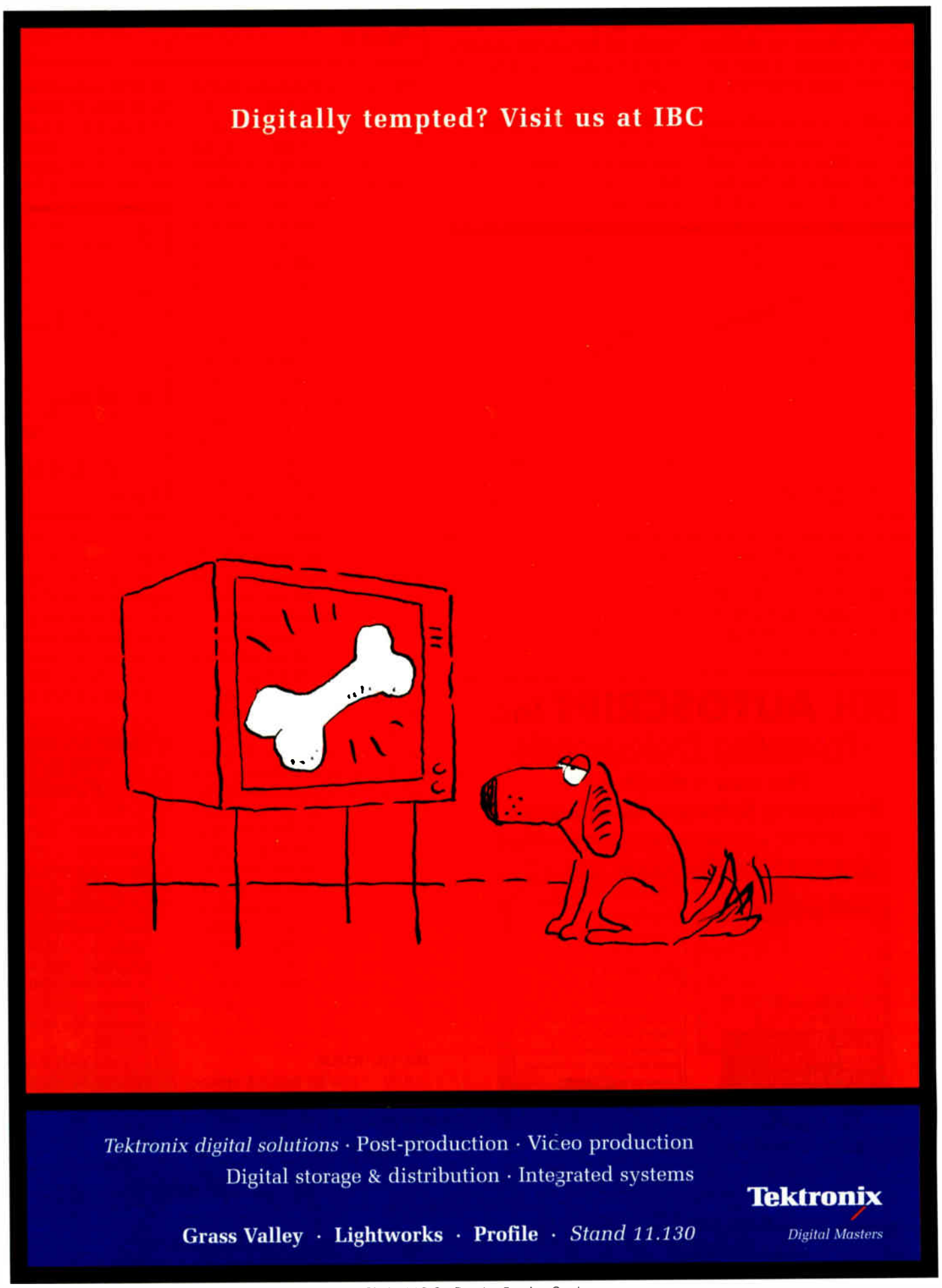
The ability of Vector VMC to seamlessly 'hot switch' between modes of operation allows JCA to satisfy even the most critical client with the most testing material.

The Vector converter at JCA is installed as a router destination. Composite analogue and digital VTR sources, C format, D-2 and D-3, are all accessed by the main composite router, while the converter also appears as a source to the router. A digital audio delay is accessed through the router audio levels. Local patching of analogue component signals to adjacent Beta SPs and digital component patching to digital mixers and Digital Betacam VTRs is provided throughout the technical areas.

The JCA Vector has, for the last two years, had the enhancement provided by the Noise Reducer/Aperture Corrector option. This provides stepped median and recursive noise reduction and discrete control of both horizontal and vertical aperture correction. In practice, it has been found advantageous to work with a fixed low level setting of all three parameters - the noise reducer to some degree offsets increased noise due to aperture correction - to cater with routine conversion assignments.

The general result is that in VMC mode, with good quality input, the conversion is subjectively of the best overall transparency. If the input is of less than accepted standard for broadcast quality, as can arise on material

(See *Vistek*, page 41)



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Atlanta's Digital Hop, Skip and Jump

by Brian Flowers

ENGINEERING CORNER

Whatever your view of the blanket coverage of sport on television recently, bringing the Atlanta Games to European screens was a feat of Olympian proportions in itself.

The EBU's (European Broadcasting Union) coverage required no less than fifteen satellite feeds from Atlanta to Europe - four multilateral feeds, ten unilateral feeds, (London, Frankfurt, Paris, and Hilversum), before being distributed to 48 countries via the EBU leased satellite channels on Eutelsat II/F4.

The ten unilateral feeds were transmitted as five pairs of 2 x 17 Mbit/s signals, using the 2 x 17 Mbit/s version of the Thomson 34 degrees Mbit/s codec. 525 NTSC to 625 PAL conversion was carried out in Atlanta, upstream of the digital compression to 17 Mbit/s. This enabled us to receive ten signals via five satellite channels, with good quality pictures and sound.

WIDESCREEN SIGNAL

The 16:9 widescreen signal was transmitted using a standard RE 34 Mbit/s codec, which works very well when the source

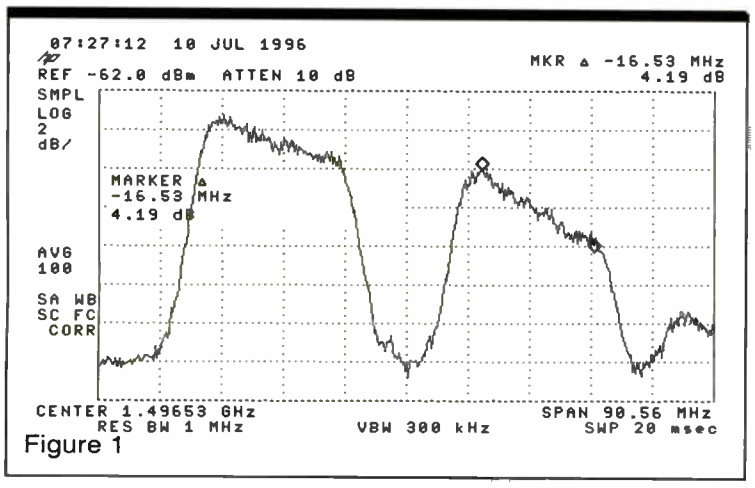

Figure 1

and one widescreen 16/9 feed.

The four multilateral feeds were transmitted as NTSC (FM analogue) signals, with conversion to PAL at the four respective gateways in Europe video is fed to the encoder as a 270 Mbit/s 4:2:2 signal. Individual European broadcasters then coded the received signal into PAL-Plus or D2-MAC for their national networks as appropriate.

A temporary 3.7-metre diameter dish was installed at the Eurovision Control Centre in Geneva, to monitor the digital signals transmitted via the Intelsat 332.5 degrees East satellite (see Fig. 4). Under clear sky conditions we obtained an Eb/No of about 12 dB for the 34 Mbit/s signals on the Ku-band down-leg, which corresponds to a margin of 6 dB. This was enough to ensure trouble free reception, even on a rainy day in Geneva. The up-leg from Atlanta was in C-band, which is less affected by rain.

Fig. 1 shows the spectrum of two of the 2 x 17 Mbit/s signals, as received at the Eurovision Control Centre in Geneva, and Fig.3 shows the received spectrum of the 34 Mbit/s widescreen signal, with a composite analogue signal in the same transponder. QPSK modulation with _ FEC was used to transmit the various 34 Mbit/s signals.

The 4 dB slope on the 'UNI 2' spectrum is a fault condition, but the fact that it did not adversely affect the demodulated signal is testimony to the ruggedness of the system. It was subsequently improved as shown in Fig.2.

A problem arose with one of the composite analogue signals, namely MULTI 3, which was received at the France Telecom earth-station at Bercenay and sent to TDF Paris for conversion from 525 NTSC to 625 PAL. Initially France Telecom was using a 34 Mbit/s link to carry the signal from Bercenay to Paris. This meant that digital compression was taking place upstream of the converter, which caused noticeable degradation of the converted PAL pictures. Replacing the 34 Mbit/s link with an analogue link cured the problem.

BASIC RULE

A basic rule for network operators to observe as we change to digital transmission, is never to carry out standards conversion downstream of equipment which utilises a significant amount of digital compression.

A level problem was encountered with the audio signals, which were J.41 coded within the 17 Mbit/s signals. EBU Recommendation R.68 specifies 18 dB headroom above EBU test level (0 dBm), for all wideband digital audio signals. The normal

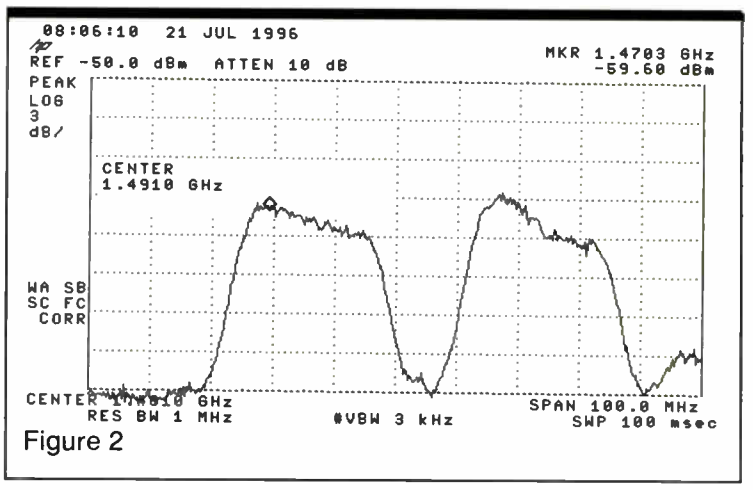

Figure 2

34 Mbit/s encoders/decoders can be set from 12 dB to 21 dB headroom in steps of 3 dB, so normally they are adjusted to 18 dB headroom, in accordance with Recommendation R.68.

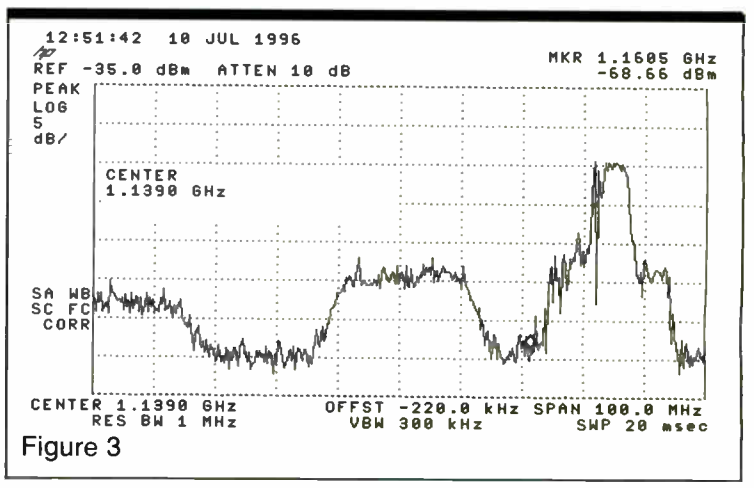

Figure 3

However one manufacturer makes smaller "fixed format" 34 Mbit/s decoders, which are permanently set to 12 dB headroom. Crosstalk from the digital circuitry to the analogue audio circuitry occurs in this model due to the compact layout, and this results in a mediocre S/N ratio of about 60 dB.

Consequently, for the Olympic Games, all the 34 Mbit/s encoders and full-size decoders had to be set to 12 dB headroom, to ensure correct audio levels.

MORE HEADROOM

The full-size decoders achieve about 75 dB audio signal/noise ratio, even when set to 18 dB headroom, so we have a difficult choice to make for our future operational audio headroom standard. Do we respect the R.68 specification and install only the more expensive full-size decoders, or do we accept 12 dB headroom, to permit use of the smaller and cheaper decoders?

In fact 18 dB headroom is somewhat excessive for transmission purposes. It was chosen to ensure adequate headroom in a worst case studio scenario. However if the EBU does not conform to its own recommendations, how can we expect other broadcasters to do so? ■

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.

ARE EXHIBITIONS VIRTUALLY FINISHED?

You may have received this issue of TVTI at IBC Amsterdam. Some people have suggested that with the availability of modern means of communication, such as E-mail, CD-ROMs, video conferences, multimedia, mobile telephones and the like, there is less need for grandiose gatherings such as the IBC in Amsterdam and the ITS in Montreux.

Personally I strongly disagree with this view. As our normal means of communication become more impersonal, getting together at IBC Amsterdam and ITS Montreux becomes more important than ever. After all, it is people who make television systems work properly, not computers.

There is no substitute for meeting other people engaged in television engineering, learning about the latest developments, and exchanging ideas over a cup of tea or coffee.

Recently I gave a lecture on digital compression to Iranian Television personnel in Teheran. This gave me the opportunity to visit Iran, from the Caspian Sea in the north to the ruins of Persepolis in the south. Six thousand years of Persian civilisation and culture were everywhere in evidence.

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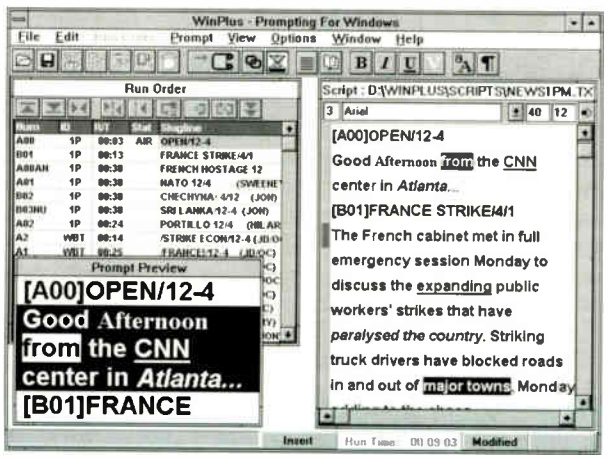

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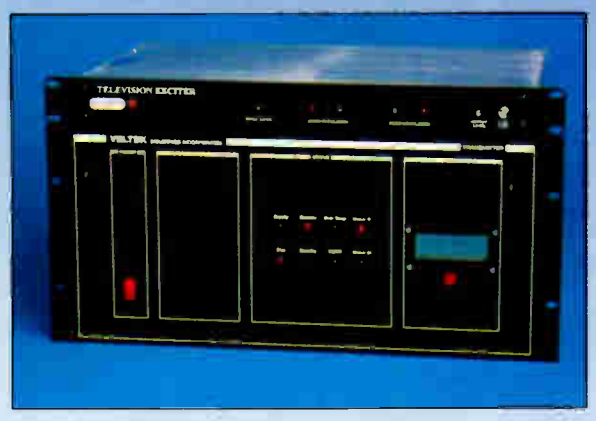

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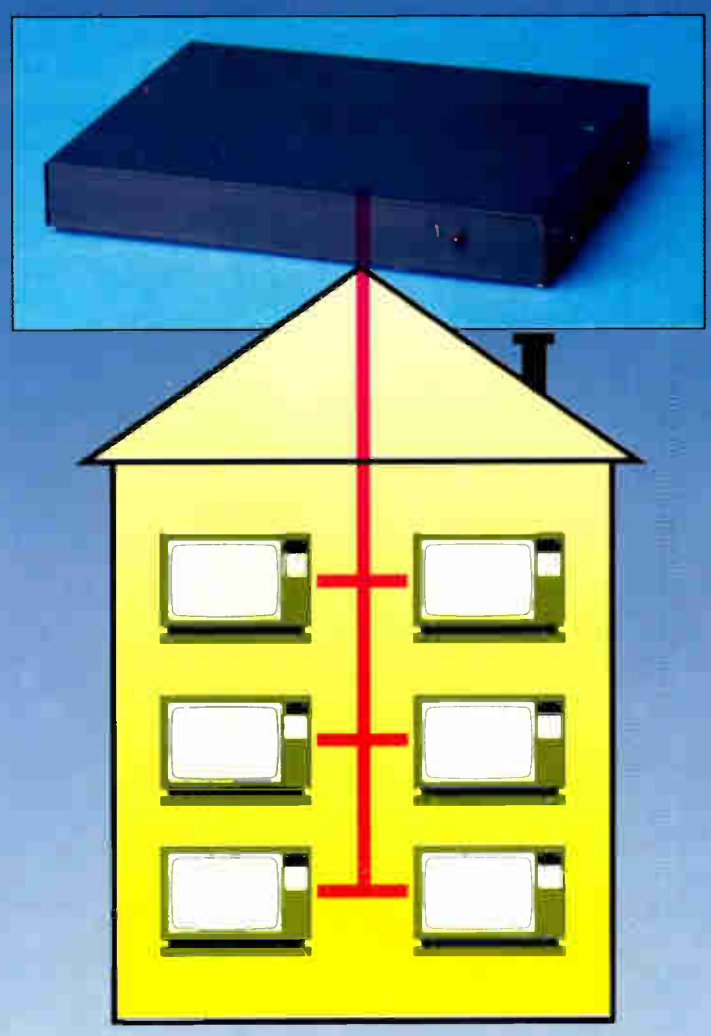

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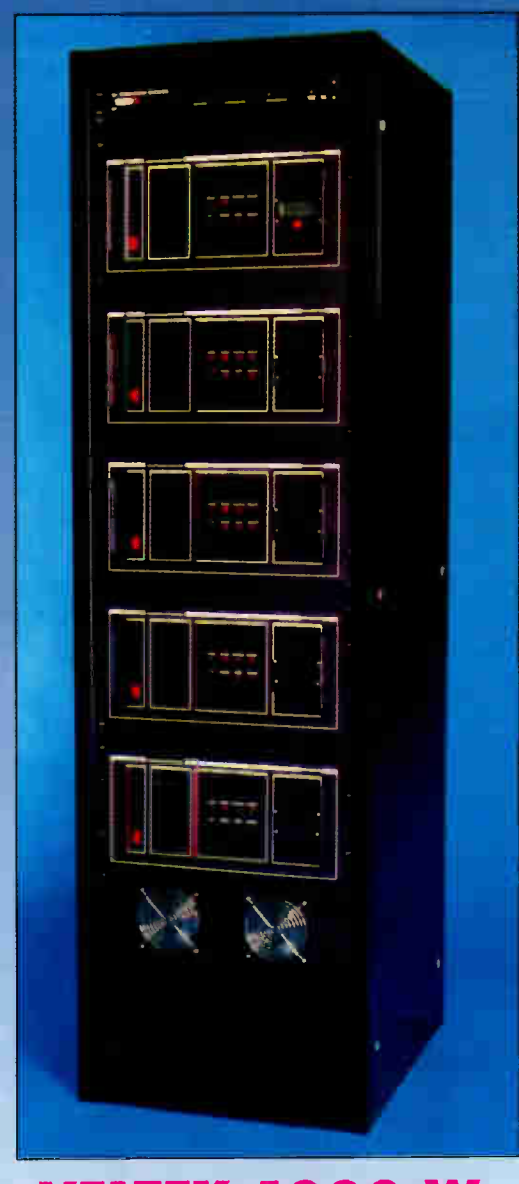

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Archiving Material on Tape

How Do You Keep Up With Changing Formats?

by John Watkinson

VIDEO WATCH

In 1950 there was no such thing as a video recorder. The item we take for granted below the TV set simply didn't exist - nobody had managed to make one commercially available until Ampex produced its first Quadruplex model around 1957.

This was an awkward beast requiring rack upon rack of vacuum tubes alongside the gargantuan tape deck. Its ability to provide instant replay caused a sensation in a world where moving images had only been recorded on film which then required processing before it could be replayed.

So effectively the history of video recording is only forty years old, making the history of aerospace seem positively pedestrian. In that time the video recorder has come from a vacuum-tube-based monster to a device which will fit in the palm of the hand via a plethora of short-lived standards.

This is all very fascinating for the student of technology, but very frustrating for the archivist who is trying to preserve television material stored on these formats. It may be useful to look at some of the major formats in that history to gauge the problem.

In fact the Quad era ushered in a family of formats, as development of the technology led to wider bandwidth and the introduction of color. The Quadruplex format used segmentation because the short transverse tracks couldn't hold a complete field with the technology of the day. This gave problems with slow-motion and still picture - basically it was impossible.

ENTER QUAD

Later Quad machines gave an outstanding technical performance, as they recorded the full bandwidth of the composite signal. The solution to these so-called 'stunt' modes was to use helical scan to allow longer tracks and narrower tape. C-format with its 1-inch tape stock soon made 2-inch Quad obsolete and became the production workhorse, with excellent quality due again to full-bandwidth recording.

The 3/4-inch U-matic became the industrial workhorse, while a long running format battle took place between VHS and Betamax in the emerging 1/2-inch consumer market (sounds familiar - Ed). U-matic and the consumer formats used a technique called color-under where the chroma was down-converted to a low frequency so that the full video bandwidth did not need to be recorded.

The alternative approach to reduced bandwidth recording was to use component signals, and this is just what Betacam and the M format did, inventing the term ENG to distinguish it from the prior use of film. The development of metal particle tape and heads to go with it was a technological breakthrough allowing the storage density to rise - but of course led to a new spate of formats.

Betacam became Betacam SP with full-bandwidth video, although the audio quality was underwhelming. The 8mm consumer format arose to challenge VHS and lost - outside of the camcorder market at any rate - followed by Hi-8 with the same result.

There are only two important characteristics of VHS. First is that technically it's crap. Second is that it is in such widespread use that it is virtually impossible to replace. I believe that VHS will probably be catalogued by historians as the longest-lasting video tape format, if that's not a contradiction in terms.

INEVITABLE DIGITS

And so to the inevitable advent of digits. The original fuss about digital VTRs was the stunning picture quality. But in a world which accepts VHS, the real impact has been that digital simply costs less to run because it's more reliable, and automation is a breeze. With digital circuitry there's less to adjust, and all the personnel who used to tend analogue VTRs now run sheep farms and franchise operations.

The digital VTR era began with D-1, which was meant to be all things to all people but ended up being too expensive for most people. Furthermore, at the time D-1 was a component format in a largely composite world.

This slight disparity was solved by the introduction of the 3/4-inch D-2 format, whose own success was heavily undermined by D-3 which did the same job with 1/2-inch tape and made a digital camcorder viable. D-3 begat D-5, a component format which could replay D-3 tapes. The reason the Japanese skipped a number is that '4' sounds like their word for death, and is considered an unlucky number. Given the transience of other format iterations, it

(See *Keeping Up*, page 32)

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CONTINUED FROM PAGE 30

Keeping Up with Formats

doesn't seem to be the only one...

The era of viable compression technology allowed the picture to be represented by less data. In recording this meant less tape and a smaller-sized cassette - and inevitably more formats. Digital Betacam and DCT used mild compression to shoehorn component digital into earlier cassette shells. DVC used higher compression to make a component DVTR so small that it could be hard to find if it was accidentally put down.

I've had to miss out a number of formats in the history above, but the point is clear. On a historical scale video formats have a lifespan roughly approximating to that of a butterfly, making archiving a major problem.

I am often asked how long magnetic recordings last. This is the wrong question. Even if someone invented an everlasting magnetic tape tomorrow, the archiving issue would not change. The real archiving problem is the necessity to have umpteen tape machines to play different formats.

As little as a decade later it can be difficult to find a suitable player - and even if a player of the correct format can be found, parts may no longer be available to maintain it. As I've argued before, archiving has no need of an editing function, yet the incorporation of the edit function in VTRs compromises other more useful features such as density and data integrity (see last month's TVTI).

So a key conclusion in the search for a long-term archiving solution has to be that archiving source material on original media is out of the question. The only reason to archive video tape formats is to show your grandchildren what the cassettes looked like.

INFORMATION NOT ARTIFACTS

This is an obvious matter to a data storage expert. But it flies in the face of the traditional archivist's approach to preserving artifacts. Archivists need to understand that what they are trying to preserve in television is information, not artifacts, and this understanding is slow in coming.

If the information approach is taken, the digital domain can be very helpful because it has some characteristics which are valuable to the intelligent archivist. The key feature of digital recording is that there is no generation loss. Thanks to error correction a digitally-transferred copy contains the same data as the original tape.

Consequently it is possible for data to live for ever, even if the storage medium has a finite life. It is simply a matter of transferring data before the current medium expires. Again digital technology can help, because error correction circuitry can measure the media quality by counting the rate of correction. This is achieved by playing the tape from time to time to see how well it is surviving storage.

The cost of performing such an operation manually would be prohibitive, but again digital comes to the rescue because it works naturally in automated systems. A suitable robotic system, conceptually similar to a cart machine, could store data indefinitely by copying to a new verified tape automatically whenever a tape showed signs of deterioration.

In most cases manufacturers believe that the market demands constantly improving performance, which warrants a succession of new designs. This is just the opposite of the needs of an archivist, who wants a machine which is maintainable for a long period of time, like a steam locomotive or a grandfather clock. Clearly a different design approach is required. A major library could fund the development of such a machine which, whilst initially expensive, might last 50 years or more.

Archivists need to understand that what they are trying to preserve in television is information, not artifacts.

▲ ▲ ▲

The alternative is simply to accept that all machines will become obsolete or wear out eventually, and build in to the archive's terms of reference an acceptance that every ten years or so a new automated robotic data store will be built beside the old one, and all of the data will be copied across with minimal human intervention. Hopefully the new store would not be any larger than the old, as its tapes would have a higher storage density to compensate for the greater volume of data accrued over the years.

So there are solutions to television archiving, but only if the material is transferred from the wide range of source tapes whilst players are still available. The man-hours required to do this represents a stumbling block, but this will only become more expensive - the right time to do it is now.

All you have to decide now is what to keep. Thankfully the bad old days of erasing drama and comedy classics to save tape are gone. But in television news, the arguments over whether to keep out-takes or material never broadcast - and at what quality - are likely to persist long after today's VTRs have been casually slung into the back of a scrap dealer's truck. ■

FEATURES

NEWS WATCH

VIRTUAL SETS

ORAD'S REAL DEALS WITH SET SYSTEMS

KFAR SABA, ISRAEL

Orad Hi-Tech Systems, developer and manufacturer of Cyberset Virtual set systems, has announced separate agreements with Accom and Digimedia to interface its pattern recognition camera tracking system with Accom's ELSET and Digimedia's B. EST (Brainstorm Estudio) virtual set systems. A similar deal has been struck with Discreet Logic.

The Orad Cyberset camera tracking system is based on pattern recognition technology and can determine the exact camera position without the need of special sensor heads. This allows standard studio or handheld cameras to be used with virtual sets, thereby significantly increasing the flexibility of virtual sets for many applications.

The agreements will enable Accom and Digimedia to eliminate the need of attaching special camera heads equipped with sensors to track the actors/presenters position. Orad, which already offers complete virtual set solutions, hopes this will help further the development of virtual set technology as a whole.

Virtual sets have caught the attention of the broadcast industry as a way of lowering costs and adding new capabilities in the traditional television production studio. They allow complex backgrounds and props to to be swiftly changed, added or deleted through the merging of computer graphics and animation with live images, and eliminate set storage overheads.

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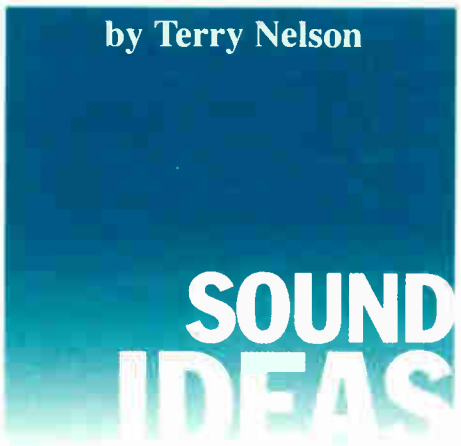
Better Sound Means a Better Picture

by Terry Nelson



With the Atlanta edition of the Olympic Games currently dominating TV sets over the world, this seems like a good moment to air some thoughts on sound production for sporting events - with an obvious bent towards surround sound.

For the sake of simplicity, we will assume 'surround sound' to be just that - multichannel audio delivered either by a proprietary system such as Dolby Surround or experimental sound production in the 5.1-channel Dolby AC-3 or MPEG digital formats. In each case, the monitoring setups will be assumed to be appropriate with encoding-decoding gear included for matrixed productions.

Let's fall back onto some pretty basic ground rules before moving further on and ask some simple - but pertinent - questions. After all, we are now in the era of the 'sound designer' and this is, after all, what most audio engineers have been up until now before someone had to come up with a more trendy handle! In my view, just the fact of putting a microphone in the right place is sound design, but no doubt others might disagree. However, I digress...

BEING WHERE?

Now that we are all sound designers, we can now start thinking about the effect we want to produce. The main attraction of surround sound for sporting events is to put the viewer right there in the centre of the action - the illusion of 'being there' rather than sitting at home in your living room.

However, just where is 'there'? In the middle of the football pitch or at a grandstand seat just at the side? Underneath the horses' hooves at a race or just close by? So the first thing to define is the acoustical viewpoint of the spectator.

Once you have established this, it's important to establish that the camera director's idea of the 'best seat' is the same as yours. This this is obviously something to be discussed in the early stages of planning. Producers should be aware that in this case, the audio is an extremely important part of the overall programme, however much the role of audio may be underestimated in other circumstances.

Once the best seat has been chosen, this point becomes the lynchpin for the main L-C-R microphones. We could, of course, just use straight stereo with a phantom centre image, but let us be adventurous. Next decision - which microphones, and how are we going to place them?

If you want a very wide image, then three spaced microphones (even omnidirectional ones) will do the trick. This will give more of an overall impression of the event rather than a fixed point perspective and again, depending on the camera angles may be the most appropriate.

In order to give a more 'focused' audio image, a little experimentation with a microphone cluster will be in order (see diagram). Again, the choice is yours but my personal preference would be for medium-to-short rifle microphones with cardioids or supercardioids coming close behind. The centre microphone will obviously be pointing straight out with the left and right angled apart.

As a starting point, I would suggest a 45 degrees angle which can then be varied according to personal preference and desired effect. We should remember that we are not recording purist stereo for music so Blumlein (90 degrees) pairs or ORTF configurations (120 degrees) are not particularly invited.

There are now some extremely high quality rifle microphones around and your choice may even fall on some long reach models - it will all depend on how sharp an audio focus you want.

We now have L-C-R sorted out. What about surrounds? Let us note in passing that the front channels in a multichannel system provide the audio cues for the location of sounds with the surround channels (in general) providing the overall atmosphere -or ambience - of the event. Those studios with generous budgets could consider a microphone such as the AMS Soundfield, while others may prefer spot microphones or even various stereo pairs at key locations. The important thing is to experiment and follow through your ideas.

You may wish to leave the domain of general ambience for the surrounds and introduce some discrete sounds. All well and good, but try and avoid giving the viewing audience twisted necks as they keep turning round to see what is coming behind them! It is a natural human reaction to turn the head towards a sound coming from behind, so here we are in the wonderful world of psychoacoustics (as if being a sound designer was not enough). It's best to preserve a link between specific sounds and the on-screen image to prevent attention from leaving the screen.

We mentioned spot mics and psychoacoustics. Spot microphones are a great way of getting more excitement into the audio image by lending a 'larger than life' sound to events such as a ball kick, baseball bat hit, and so on.

TIRING EFFECT

However, some caution needs to be exercised here. If the audio vantage point is located back in the stands, a spot microphone will give a virtually instantaneous correlation between, for example, seeing a ball hit and hearing the sound. Remember that from a distance, we see the event first followed by the sound, as sound travels much slower than light. If you see something happening 60 metres away and hear it instantaneously, the brain will flag up a 'does not compute' signal and this will have a tiring effect on the listener.

So how can the problem be solved? The answer is digital delay lines, used to introduce a lag in the spot microphones so that they integrate into the sound picture as a whole. Once again, easy enough to say but is it always practical? What happens when the camera shot is a closeup? Here we are back again to co-ordination with the picture. For live coverage, delay techniques can prove tricky unless you can literally follow the action by switching the delays in and out. For postproduction, life becomes a little simpler.

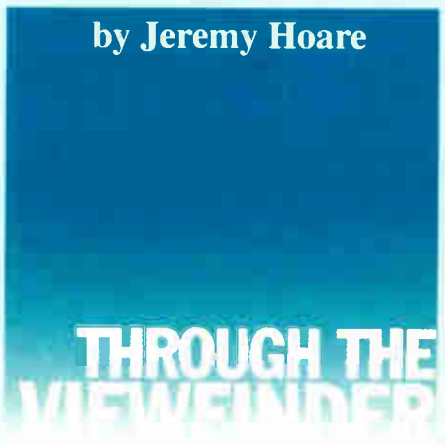
New techniques always bring a whole new can of worms with them - wouldn't life be easier if we could just put up one microphone and be done with it? Mind you, this soon gets pretty boring so it's worth putting a little more excitement into the whole thing.

The impact will not be lost on the viewers, and we all know that better sound means a better picture (this last point has been proved by research). The best of both worlds, I'd say. Happy experimenting, and see you next time. ■

Terry Nelson is an audio equipment consultant and writer based in Switzerland.

Curse of the Twitchcam

by Jeremy Hoare



A style of camerawork has developed over the last few years which as a viewer I find completely unwatchable. I call it Twitchcam.

Recently a comedy series with a lot of location shooting was intercut with a comedian in a club performing at a stand mic. This might seem to you and I the easiest sort of shot to hold steady, a static MCU (Medium Close-Up), but no.

Viewers were subjected to something that looked like the worst of Uncle Bill's camcorder videos shot at the long end of the zoom after several drinks too many. That was when domestic camcorders didn't have the built-in optical image stabilisers which a lot of them use today.

But now we have this fashion to keep twitching the camera on shot, even though it may be just two people sat at a desk. The camera never stays still, and it looks like the cameraman only just makes each shot (but not quite) and there was no time for a second take. On people sat at a desk?!

They are also usually a mix of Beta, 16mm and Hi-8 and use oversaturated mismatched colour as if it was cobbled together from out-takes. Add to this dreadful editing for more fake impact, and it becomes absolutely insufferable in my opinion.

I think this 'style' started with a certain New York Police Department series with added primary colour which I have found equally impossible to watch. Some commercials and even a sitcom have used Twitchcam in an attempt to fool the viewers into thinking how immediate, vital and dangerous they are. The problem is that when fake impact gets this melodramatic, it just ends up looking phoney.

If you are one of the cameramen responsible for using Twitchcam then you either have yet to learn how to frame a shot and keep it steady, or have been persuaded by directors not to stay on a static frame for more than two seconds. Keep trying if the former, and I feel sorry if you are the latter - but maybe it is the fee or getting the next job that counts.

And if you happen to be one of the more clued-up Producers or Directors (if you're reading this magazine you must be!) who are the perpetrators, then please stop being so self-indulgent and try to have at least some faith in the talent you put in front of the camera.

The use of Twitchcam is bad camerawork as it draws attention to the cameraman and his operational ability. It can never be said enough times that a camera is a device with which to tell a story, and the story is not how 'clever' the cameraman is.

I just hope this 'style' of Twitchcam goes away very, very soon. Although maybe I should patent the name Twitchcam in case we're stuck with it!

CAMERAMAN IN FOCUS

Christopher Fryman is one of the growing number of cameramen who move freely between film and tape dependent on the production. English by birth, his parents emigrated to Canada and he has since lived in Australia and Papua New Guinea. Twenty two years ago he settled in Japan, is now married to a ballet teacher and lives in the beautiful city of temples and shrines, Kyoto. Not just a cameraman though, he runs his own successful company making programmes all over Asia as well as being a Producer, Director and Editor.

JH: How did you get into television?

CF: I entered television with CBC Toronto in 1959 as a copyright clearance clerk but used to watch the studio during lunchtimes and thought being a cameraman was a better job. The cameras then were Marconi MKIII B&W image orthocons with four lenses with focal lengths of 2, 3, 5 and 8 inches. After six years I moved into film and became freelance in 1968.

JH: What's your favourite piece of kit?

CF: My favourite kit for tape shooting is the Sony 400 Hyper-HAD which kicks in with beautiful pictures when used at low light levels, but this only comes with experience of using the camera. With film, my choice is the Aaton XTR.

JH: What's your proudest programme achievement?

CF: In the late 70s I shot a film about monkeys in the mountains of Japan for the BBC's Life on Earth series with a 16mm mute Arri ST and used a mountain climber as an assistant, not a technician.

JH: What else would you like to achieve?

CF: Getting more time to light properly as I prefer to start from scratch and build the picture. Simple lighting is invariably the best, too many lights can not only create a confused picture but

(See *Twitchcam Curse*, page 38)

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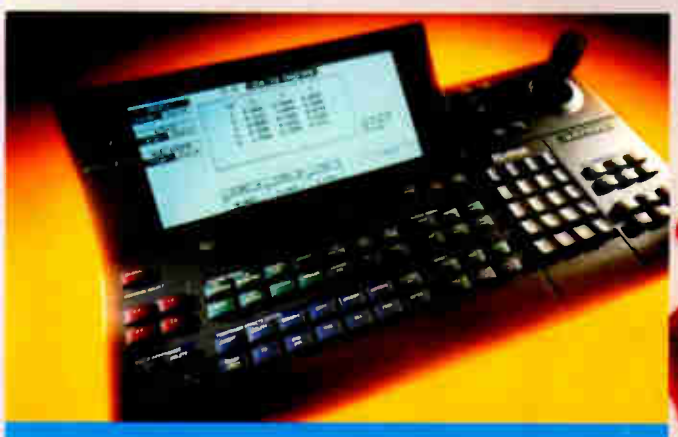

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Blank Takes High Tech Home

by Susan Ashworth

STAMFORD, Conn.

Housed in a 100-year-old farmhouse that backs up against the Connecticut woods, Blank Productions has gone "out of the way" to prove that it's anything but an ordinary post production facility. With a television star as its West Coast contact, a former James Brown Revue singer as one owner and a record producer as the other, Blank has joined the hundreds of digital project studios across the country that are proving every day that talent always rises above location, even if you are a bit hidden from the world.

After operating a sophisticated audio recording studio in Manhattan called Blank Tapes for 12 years, co-owner Bob Blank (producer of records like "Nothing But the Sun" by Sting) decided that fighting the rat-race in New York City had lost its appeal. After finding an abandoned farmhouse on two acres of land in the town of Stamford, Bob and his co-owner wife Lola decided to make the move. They converted the house and surrounding buildings into an all-digital post production facility, featuring a graphics room, five production suites and a non-linear on-line edit bay.

OUT INTO THE WOODS

"It's a whole different world out here," said Bob Blank. "You always hear of these studios in an industrial park and you see a room that's usually very dark and tedious, and I said 'I don't want to do that.'"

So he sold his studio in New York and took up the farm, so to speak, setting up a compound of buildings on the lot to accommodate such high-profile clients as Nike, Pepsi and IBM. Once up in the country — after restoring the original pine floors and scraping strange day-glo paint off the windows — Blank Productions began scouting its neighbors for work.

"Fairfield County is the home of more Fortune 500 companies than any other county," Blank said. "My neighbors are Pitney Bowes, IBM, and GTE — those are the guys down the block. We started out doing audio post for them and little by little we kept growing and soon we got into video."

Once inside, one immediately notices the juxtaposition of high-tech success and down-home living. For instance, the front hall is lined with gold records and family pictures. The Blank's living room is on one side; an audio post suite is on the other. "It's a whole different atmosphere for clients," Blank said. "Instead of an office, a client can be sitting in my kitchen."

The production and post production rooms are housed in various buildings on the lot, and Bob Blank is most proud of his newly designed Avid on-line production suite. The room contains an Avid Media Composer 1000 with AVR 76 resolution running on a 100 MHz PCI-based Macintosh platform (with 132 GB of memory). The suite — decorated with natural art to inspire creativity, he explained — also includes a Pinnacle Alladin 3D DVE, several JVC monitors and VTRs of various formats.

TECHNOLOGY BY THE POOL

A separate pool house located behind the main house has been partially transformed into a state-of-the-art 3D graphics room, boasting a 150 MHz Power Computing 604 computer with Iomega and Syquest drives, in addition to an Alesis ADAT XT multichannel digital audio recorder.

Five audio production suites are located in another building on the grounds, three of which are used for production and contain Panasonic DAT recorders, 12-channel Yamaha digital FX processors, digital multitrack recorders and a custom-designed Yamaha audio console. Each of the rooms also contain T1 and ISDN line connections to the outside world.

The technology is there, Blank said, just like in any other post production facility, but what's unique about his "facility" is the low-pressure environment in which the work gets done.

"When we work with clients, they really feel they're in a situation that they're in control of," he said. "The older model of a studio had the editor sitting up on platforms, directing the project. People aren't looking for that anymore. Here, if you're editing first thing in the morning, deer walk up to the door."

When he and his wife decided to move out of New York, they weren't sure what they were looking for, but they knew it had to be unique. "I said, 'show me all the strange places nobody else wants,'" Bob said. "This place was owned by two older women who lived their whole lives here and then it was abandoned for 10 years. So when we found the house, the windows had been painted with real 60s-style colors, and a lot of the floors were covered with linoleum. The third floor of the main house — which is where our audio mixing facility is now located — had a 4-1/2-foot ceiling, so I don't know who lived up there."

In order to pull big-name customers out of New York and into the country, Blank invested a lot of time and money to improve the grounds and beef up his facility's technology to the point where he now calls his production company the largest all-digital production house in the New England area. Blank Productions currently provides video and audio duplication, digital music and sound design and production, on-line editing and 3D graphics production. Blank's actor son, Kenny, (recently seen in the WBN sitcom "Parenthood") runs the Blank Productions office from Los Angeles, setting up post production projects from his end.

(See *High Tech*, page 38)

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CONTINUED FROM PAGE 37

High Tech Fills in Blank

Blank's wife, Lola, brings in clients from her contacts in the music business (she sang with the James Brown Revue in the late 1970s). In addition to the Blanks, six full-time employees work out of the Stamford base, while 15 additional employees provide scriptwriting, preproduction, and EFP services off-site.

"When we moved up here, the work and the focus changed," Blank said. "We were doing 100 percent audio production in New York. Up here we decided to do both audio and video. And because we now have ISDN capability for audio, we can produce a commercial here and transmit it anyplace in the country."

Blank Productions decided to install ISDN lines two years ago because Bob Blank saw it as a way to make his out-of-the-way facility an international force. "Because we have ISDN capability, if a client comes in and needs a recognizable voice-over, we can offer them Patrick Stuart (of "Star Trek: The Next Generation" fame), who's located in London," he said. "Basically what it means is that we're not limited to working only with clients who are within driving distance. Now if you need a character voice, we can choose anyone in the world." ISDN lines are connected to APT codecs that hook up like a two-way talk box, Blank said, allowing the studio to provide real-time audio.

Despite the relaxing atmosphere outside, Blank said his facility's success comes from its internal capabilities. "We're successful because we're flexible. We're not bound by staff or location; we'll put together any staff situation to complement the individual project. When a client comes in and says 'let's do such and such,' my reaction is, go for it! And that's what I want my people to say. Even if we're doing corporate work, I want it to be cool, not dull." ■

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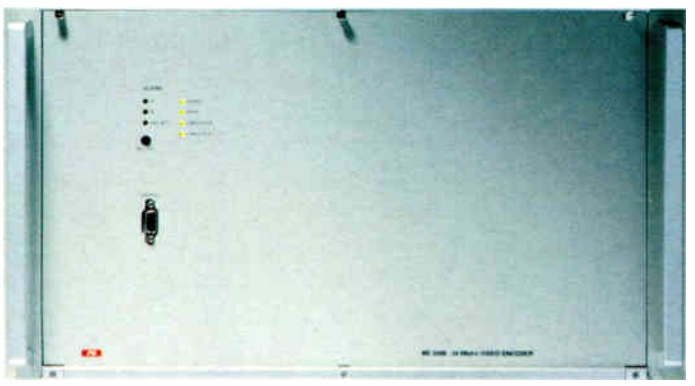

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CONTINUED FROM PAGE 34

The Twitchcam Curse

also take longer to rig and focus.

JH: How do you treat the image, such as the use of filters.

CF: I like a clean image so don't use filters much. I prefer to add any visual manipulation in post production, now that this is so easy to do.

Christopher now likes to originate on colour negative film, transfer to tape then do everything else and his most recent production was made this way in the Philippines. This was commissioned and shot for a Manila museum about the gold artifacts there from around 1,000 years ago when Filipinos were goldsmiths. He shot, transferred to tape, online edited and dubbed the ten minute production in ten days.

Another on-going production has been originated on tape and is a documentary on the work of the acclaimed Chinese born American architect I.M.Pei for an US network about a new museum in the mountains north of Kyoto. Because of planning restrictions, they had to take away a mountain, build the museum then put the mountain back around it so very little is visible.

One of the 'early movers' of adspeak, he bought one of the original Betacam BVW 3 cameras which he now only uses for his own projects, and also purchased an EMC non-linear edit suite four years ago.

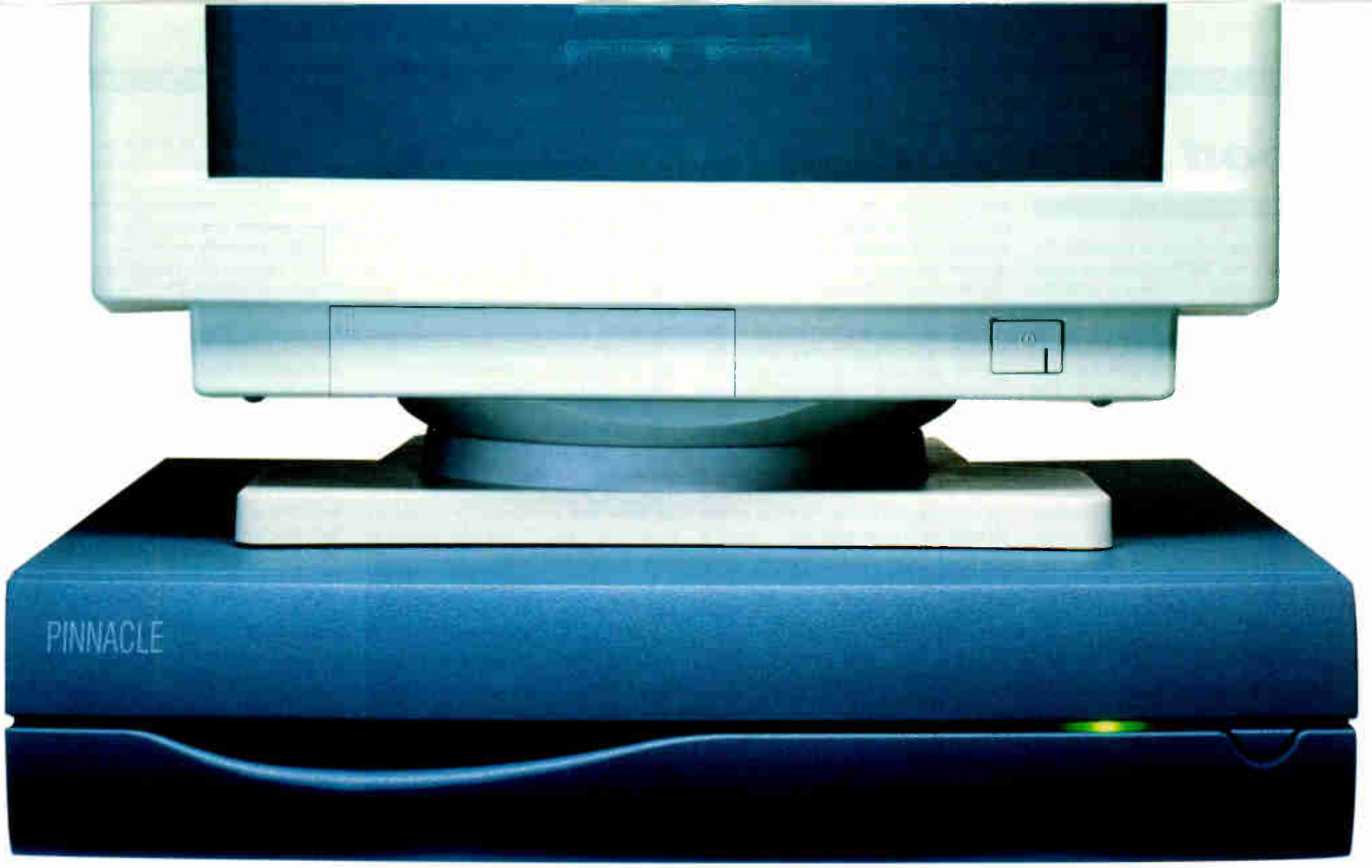
Now with television production worldwide being subjected to ever diminishing budgets, even Christopher has become a little disenchanted. So in his spare time he plays the trumpet, studies classical composition and is writing a piece for an amateur Count Basie big band. Some of his music has already found its way onto productions he's shot.

The division between tape and film is becoming increasingly blurred and in the future could almost disappear. A good working knowledge of both mediums will be vital then as a cameraman will operate whatever camera is considered right according to time and budget, film or tape.

Cameramen the world over are much of a muchness, drawn together by common goals. We all like to improve, and the best manufacturers of all the splendid equipment available to us not only want to sell it but like to see it used in a manner which can inform and entertain, just like the cameramen who operate it.

Christopher Fryman would never use Twitchcam I'm sure. But maybe you either do or would. Let me know why, and we will print the best response. ■

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, or e-mail us at 100270.2756@compuserve.com



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FEATURES

Good Presentation is Everything

by Dennis Hamilton

We in the business of producing for television feel that the production is everything. Let's face it, when the production is "hot" and "working" and the lights are burning, the tape is rolling, the microphone levels peaking, and the client is demanding, there is nothing more important to the production than producing the darn thing and getting it to post. Or so it seems at the time. Realistically we know better, but at that moment there is nothing more important than the issue at hand.

We work hard preparing for the shoot. We have client meetings in the pre-planning stages. We have client meetings in the planning stages. We meet with the crew, the talent, and yet again with the client. We are dedicated to what we do, and we want to ensure that what we do is "exactly" what the client wants. We take our job as producers very, very seriously.

However, there are those of us in this business of producing who sometimes degrade our work by overlooking a very essential part of the work we do. That is the final presentation of our efforts to those who have paid us to create it ... and I don't mean the client; I mean the target audience. How this effort is presented to those for whom we have created it is as important as the effort itself; because without proper presentation, a production loses so much of what went into it.

Consider these factors when preparing the presentation for its viewing audience:

- How many individuals will view the video?
- Where will the viewing of the production take place?
- Will there be a question and answer session following the presentation?
- Who will be responsible for equipment operation?

As you prepare the presentation, you want to ensure that every individual will have the opportunity to see and hear the program. This is an obvious understatement, but we all know that sometimes 45 people are expected to view a 27-inch television set — not the proper way to present your work. Let's accept a couple of rules of thumb.

One: Plan for one 27-inch monitor for every 15 viewers. More viewers require more monitors. Don't try to involve your viewers in a video they can barely see and hear.

Two: Fifty viewers require one six-inch diagonal projection TV. You can fill an auditorium with 1,000 people and one six-inch diagonal projection television, and they will all see something, but how involved will they feel when they must squint to see everything?

Work with these formulas as you see fit, but remember this objective: Make sure that the viewer becomes involved in the presentation by allowing him or her complete access to all the audio and all the video. Try to make everyone feel they have the best seat in the house.

The facility chosen for the presentation is as important as the number of individuals who will view the video. The size and shape of the room will dictate many aspects of your presentation. For example, if the room is rectangular with rectangular tables, never place the television at one end of the room — you'd place too many people too far from the set. Instead, place your TV in the center of the room against one wall.

If the room is larger, place your video monitors along a common wall so the audience continues to face the same direction. If your facility has round tables, it may be necessary to place the video monitors in such locations that the least number of viewers will have to move their chairs from the table.

Consider audio for a moment. You know, the most neglected, overlooked part of television. Don't cheapen your production by using the speakers provided with your TV monitors. Bring in a quality audio system, or even use the house system if it is acceptable, or combine the two. But don't rely on a four-inch or eight-inch speaker to project the audio to your audience. Remember all the impact that audio has on the production. Make the sound as impressive as your video.

While we're talking audio, consider also whether or not your audience will participate in a question and answer session following the video presentation. If so, there are additional considerations that must be addressed.

For example, how are you going to get a microphone to each individual who would like to ask a question? Solution: Use what I call a staging area. Set up, according to the number of people in attendance, an easily accessible area for all the audience to be able to reach.

In each area (there certainly may be many more than one if your numbers are large) place a competent individual with a microphone on a stand who can prepare each question in advance by briefly speaking to audience members about their questions, before they ask the question. This person is instrumental in ensuring that the question is asked in the most appropriate way and that the person asking the question stands close enough to the microphone and speaks clearly and loudly.

Where there are considerations for the handicapped, make sure not to overlook their individual needs, as well.

Convince the clients that the money they are going to pay you or your personnel to operate the presentation equipment is small compared to the money that went into the production and the presentation forum. Stress to your clients the fact that presentation is everything! ■

Dennis J. Hamilton has been working in television for nearly 20 years. He has taught television production, production techniques, and conducted seminars all over the United States. He has produced more than 1,000 programs since 1978. He can be reached c/o ***TV Technology.***

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INDUSTRY REPORT

Standards in Conversion

by Claudia Kienzle

WASHINGTON

Most professionals considering standards conversion have the same basic need: to convert video signals between NTSC's 525 lines/60 fields and PAL and SECAM's 625 lines/50 fields, but applications and price range varies considerably. Recognizing this, manufacturers of these units have begun to expand their product lines to meet a wide range of price, performance, space and quality requirements. The following is intended as a basic roundup of what some of these companies are currently offering.

THE ALCHEMIST

The Alchemist Ph.C, by U.K.-based Snell & Wilcox (with a U.S. office in Sunnyvale, Calif.), is also a 10-bit motion compensated standards converter that has proven to be ideal for real-time broadcast applications due to its sharp, smooth output, which virtually eliminates image artifacts associated with bad conversions.

The Alchemist's Phase Correlation Motion Compensation (Ph.C) technology offers processing accuracy to the subpixel level, with a bidirectional vectoring algorithm used to process objects that move in and out of a frame and large object displacement.

The Alchemist Ph.C has been used by ABC for its primetime broadcast of the 1995 World Music Awards, as well as by broadcasters in Japan, Southeast Asia, New Zealand, Africa, Europe, China and the Middle East and, recently, Italy-based Orbit Communications.

Snell & Wilcox also offers its Kudos line of affordable standards converters. Its CVR45, with analog and/or serial digital I/O processing, is a compact four-field, four-line standards converter with 8-bit 4:2:2 processing, TBC and noise reduction.

Thomson Broadcast is another major player in the high-end standards converter field, winning a technical Emmy in 1992 for the motion compensation technology it introduced in its Model 7810 standards converter (developed for the Summer Olympics that year in Barcelona, Spain). Thomson's latest offering, the Model 7830 Motion Compensated Standards Converter, incorporates the 7810's advanced motion detection and compensation technology, while representing a more compact design. The 7810 requires 14 rack units, whereas the new 7830 uses four.

Thomson's 7830 was used by the European Broadcasting Union (EBU) for conversion of NTSC footage coming out of the Atlanta Olympics into PAL and SECAM.

While the conventional approach to standards conversion has involved interpolating between a group of four fields, the significant drop in the cost of solid-state memory has enabled Saratoga, Calif.-based Prime Image to pioneer a new approach based on five field interpolation. "The key numbers in standards conversion — 525/60, 625/50 — are evenly divisible by five, so moving to a base of five fields is a natural progression," said Prime Image President Bill Hendershot. Thus, the name Penta was chosen.

PENTA PRICE

Another breakthrough for Penta is its price of $6,600, and — due in part to its digital component 4:2:2 internal processing — performance comparable to units costing a lot more. Like most high-quality standards converters, Penta includes automatic audio delay compensation, remote control, control via an RS-232 port, and effects like strobe and freeze. It also includes all-world standards capability and accepts composite and Y/C video. Component analog capability can be added for an additional cost.

Prime Image also now offers Penta technology in a new plug-in card, called Xpon, that converts to and from all standards including PAL-M and PAL-N, and accepts composite, Y/C and component signals.

So whether your needs are simple or complex, there's a standards converter out there designed to suit your needs and your budget. The world is indeed becoming a smaller place, and bridging the gap between world television standards is a further step in that direction. ■

CONTINUED FROM PAGE 27

Vistek's Vector VMC

dubbed up from colour-under recordings or from multi-generation analogue recordings, then judicious use of the controls will often allow some subjective quality to be restored.

The Vector converter has proved cost-effective over the last four years. With the technology proven, the future of this type of converter should be assured. JCA would express a wish to see some features developed allowing the converter to adapt to the nature and quality of its input, the type of motion update (field, frame or 3:2), type and distribution of spatial frequencies, camera motion awareness, pans, zooms, etc.

Without doubt the most desirable objective is a completely automatic standards converter that uses its own internal intelligence to set its configuration, adapt and optimise its own performance. Although, whatever information the internal intelligence of the converter derives for itself, the operator must have feedback. This feedback can flag a problem, eliminate operational delay from status conflicts, allow intervention - in other words enhance the overall level of service within a facility. ■

Rod Deas is Project Manager at John Claxton Associates (JCA).

He joined JCA at its inception, and was formerly Manager of Engineering Services for BBC Enterprises.

Circle 69 On Reader Service Card

What's Hot at IBC?

by Gideon Summerfield

Not only is the coming IBC the biggest ever, but it marks a point when enabling digital technologies - like desktop computers and compression - are revolutionising every area of broadcasting at a pace never seen before.

For those who frown on any compression in production, good news is at hand. The big thing for desktop non-linear editing at IBC will be zero compression, something only a £300,000 Silicon Graphics (stand number 2.130) or Quantel (10.130) set-up could manage a year ago. Avid (2.220) is now down to 3:1, while Data Translation (11.261) has got down to 2:1.

But at IBC, Intergraph (2.240) will unveil its new StudioZ working with uncompressed digital video. It's unlikely to be alone. Fast (3.152), D-Vision (11.472), Matrox (2.341) and Play Inc (7.410) are among those tipped to do the same.

Panasonic will bring DVCPro to IBC

NO OBJECTION

Ironically now that we can be rid of it, objections to compression are falling away. After all, DigiBeta has proven that a 2.3:1 intra-frame compression ratio is to all intents and purposes lossless and transparent. And perhaps 4:1 does provide artifact-free pictures - it certainly saves disk space. Many have decided that the 5:1 compression used by DV-based camcorders is acceptable, claiming it enables cheap digital acquisition with compact equipment at a picture quality comparable to Beta SP.

For the first time at IBC you'll also find MPEG compression in the production sector. Originally MPEG was only suitable for distribution, but an editable version - with the catchy name of 'MPEG-2 4:2:2 Profile@ML' - has now been agreed. It is around twice as efficient as the Motion-JPEG used by non-linear systems like Avid, so you get the same picture quality with half the data. And as well as boosting storage capacity, it's easier to pump around computer networks.

Tektronix (11.130) proposed the standard. Sony (8.140) is another proponent, using a "compliant" variant of the standard at 10:1 in its long-awaited Betacam SX equipment, now due to ship by the end of this year. It will be interesting to see which other companies at the show back editable MPEG-2 or DV-family formats instead of the established M-JPEG.

Which wins out depends on the success of the new digital tape formats in acquisition. Compression has enabled a host of new formats to emerge, and the ability to digitally dub straight from a camera into an editing system without re-compression promises improved quality and speed (via high-speed VTRs).

For once Panasonic (10.320) looks to be in a stronger position than Sony in a tape format war, with a coherent push of a single format. Its DVCPro is a professional variant of the DV consumer format (formerly known as DVC), which can also play cassettes from its VJ (Video Journalist) palmcorders or any other DV-based machine. Although camcorders cost around £12,000 to DV's £3,000, DVCPro is enjoying the sort of industry support previously only afforded a Sony format.

Panasonic's simple message is: "Wherever you use Beta SP you can use DVCPro." It was first to endorse the DV cassette as a professional medium, a gamble which paid off and handed it a market lead. SMPTE has even agreed to tag its format 'D7', and Panasonic already boasts orders from broadcasters, hire-companies and facilities. London post houses HeadFirst, Future Proof Facilities and Mosaic Pictures all took delivery of DVCPro VTRs in late July.

Some believe that Sony's format strategy, by contrast, is confused. In the space of 18 months it has launched three digital formats which, on the face of it, could all be competitors for each other. Picture quality and features are too close for comfort.

First there's SX, which looks and smells like Beta SP. Sony has used compression to bring the cost of the digital _-inch format into line with analogue Beta SP, doubling the footage recorded on regular Beta stock. According to Sony, Canadian broadcaster CBC tried out SX at the Atlanta Olympics, while Prime Television International recently placed the first SX order in the UK for its acquisition facility business. Further units are planned next year for dry hire.

With SX using a version of MPEG-2 - the standard for DVD and digital broadcasting - it may appear great for broadcasters wanting a single, end-to-end digital solution. Sony has produced a range of editing systems, servers, networks and transmission kit using SX, which is also at the heart of the Sony News Network. However, any SX data stream would have to be decompressed and re-encoded into normal MPEG-2 for transmission, just like M-JPEG or DV.

Sony was also first to ship DV camcorders. It isn't targeting the broadcast market - but TV producers are eagerly scooping up its £3,000 3-chip VX1000.

Then there's the new DVCam format, Sony's pro (for professional and proprietary) version of DV to answer Panasonic's. It speeds up the tape, but at a different rate to DVCPro, and can also play DV tapes. However Panasonic recently confirmed claims made at NAB that its DVCPro VTRs can play back tapes recorded in Sony's DVCam equipment. The bad news for Sony is that the converse isn't true, due to a one-way incompatibility of the tape stock. At IBC Sony will be making great efforts to clarify the roles of its formats.

Meanwhile Philips BTS (8.520) has chosen to badge Panasonic's DVCPro kit, while Ikegami (11.330), Sony's main rival in broadcast cameras, is building its own. Several computer companies have also backed DVCPro, including - crucially - Truevision (7.120), which supplies the Targa 2000 video hardware at the heart of Avid (2.220), Scitex (11.170) and Panasonic non-linear systems.

TAPE-TO-DISK LINKS

Any computer system capable of editing DVCPro can also edit DV and DVCam, if you can get the video data into the system. A new low-cost interface known as Firewire (or IEEE-1394) has been chosen to digitally link DV camcorders to VTRs and non-linear editors at up to 100 Mbit/s, more than enough for DV's 25 Mbit/s. Versions running at 200 Mbit/s, 400 Mbit/s, 800 Mbit/s and 1.6 Gbit/s will filter out over the next year or so, but right now it is too slow to handle the 270 Mbit/s or so of uncompressed video - and new real-time effects systems like the Targa 200RTX demand over 320 Mbit/s.

SCSI (Small Computer System Interface), the regular choice for hooking up computers to the disks where video is stored, hits a ceiling at about 160 Mbit/s. This is a key bottleneck, and those aiming for zero compression are looking for faster links.

You'll see a number of high-speed options in use at IBC. First is UltraSCSI running twice as fast, with the latest dual-channel systems reaching data rates of some 640 Mbit/s. The same rate is also

(See *What's Hot*, page 45)

PAL Digital-S Debuts

One of the newest arrivals on European soil this month is JVC's Digital-S format to help facilities ease the transition from analog to digital.

Digital-S machines are designed to interface with other components in the Digital-S family (such as the portable camcorder, source player, editing machine or non-linear editing system) or to fit into existing systems and mix with other formats.

The addition of an editing machine helps integrate an analogue facility to the digital world. The BR-D85E Digital-S editing system comes equipped with pre-read function and creates a virtual digital source player.

Digital-S boasts such digital advances as a 4:2:2 sampling rate, 3.3:1 compression ratio, and 50 Mbps data rate.

The sampling rate is based on CCIR 601 and its minimum bandwidth for colour difference signals of 2 x 3.375 MHz to maintain the necessary chrominance quality in post production work.

The compression ratio helps reduce artifacts and deliver a pure reproduction of an original. The new format uses DCT-based intraframe coding for greater compression and decompression efficiency and aids in single-frame editing. Continuous slow-motion playback is available within a range of +/- 1/3 normal speed.

JVC BR-D85 Digital-S editing recorder

The audio used in Digital-S is recorded via two-channel 16-bit PCM (pulse code modulation) signals with a sampling frequency of 48 kHz. Either track can be individually edited. In addition, Digital-S supports four-channel audio. ■

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JVC ASIA PTE. LTD.	101 Thomson Road #29-04 United Square, Singapore 307591	Asia	tel: (65)-25-52-577
JVC BELGIUM S.A./N.V.	Rue de la Petite Ile 3, Klein-Ellandstraat, Bruxelles 1070 Brussel	Belgium	tel: 02-529-4211
JVC CANADA INC.	21 Finchdene Square, Scarborough, Ontario M1X 1A7	Canada	tel: 416-293-1311
JVC PROFESSIONAL PRODUCTS COMPANY	41 Slater Drive, Elmwood Park, NJ 07407, USA	Central, South America, Mexico, USA	tel: (1)-201-794-3900
JVC SHANGHAI SYSTEM DEVELOPMENT ENGINEERING CO., LTD.	640 Lu Jia Bang Road, Shanghai, 200011	China	tel: 021-6318-5975
JVC DANMARK A/S	Helgeshøj Allé 30 DK-2630 Tåstrup	Denmark	tel: 43-509000
JVC VIDEO FRANCE S.A.	102, Boulevard Héloïse, 95104 Argenteuil, CEDEX	France	tel: 01-39-96-33-33
JVC PROFESSIONAL PRODUCTS GMBH	Grüner Weg 10, D-61169 Friedberg Hessen	Germany	tel: 0-603-1-6050
JVC PROFESSIONAL PRODUCTS ITALIA S.P.A.	Via Mario Pannunzio 4, 20156 Milano	Italy	tel: 02-38.050.1
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JVC ESPANA S.A.	CTRA Gracia Manresa, KM14, 750 Edificio Can Castanyer 01890 St. Cugat Del Valles (Barcelona)	Spain	tel: 03-565-3220
JVC SVENSKA AB	Veddestavägen 15, S-175 62, Järfälla-Stockholm	Sweden	tel: 08-7950400
JVC PROFESSIONAL PRODUCTS (U.K.) LTD.	Ullswater House, Kendal Avenue, London W3 0XA	United Kingdom	tel: 0181-896-6000

4:2:2 COMPONENT DIGITAL

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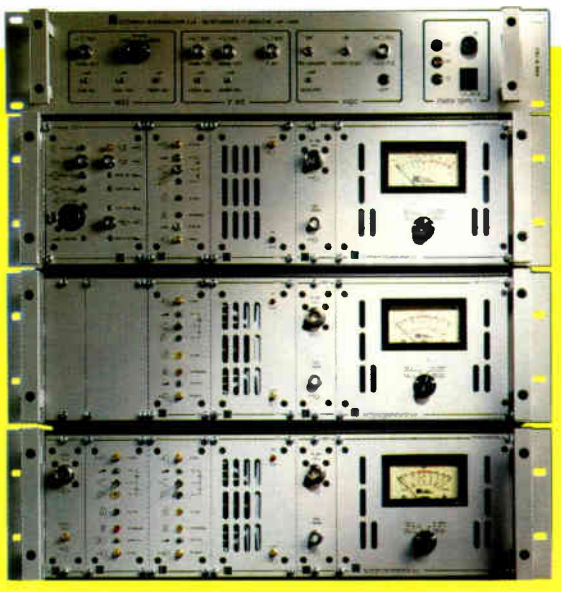

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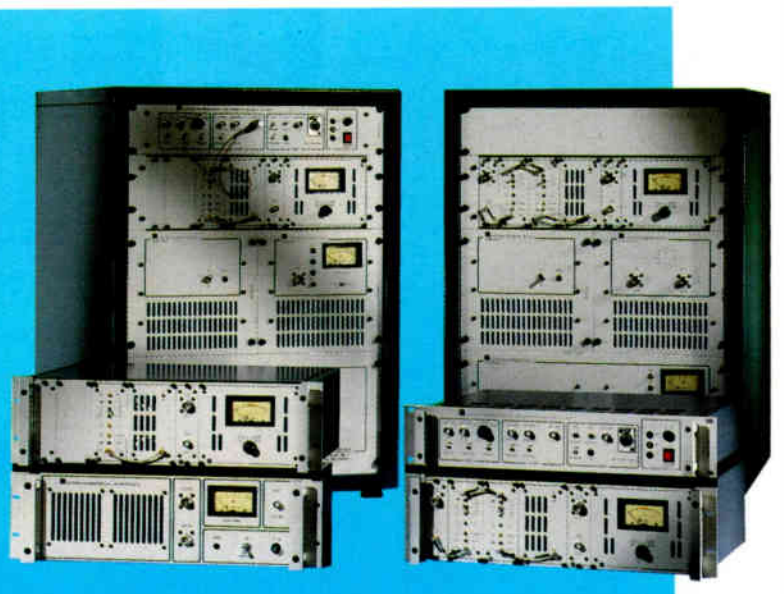
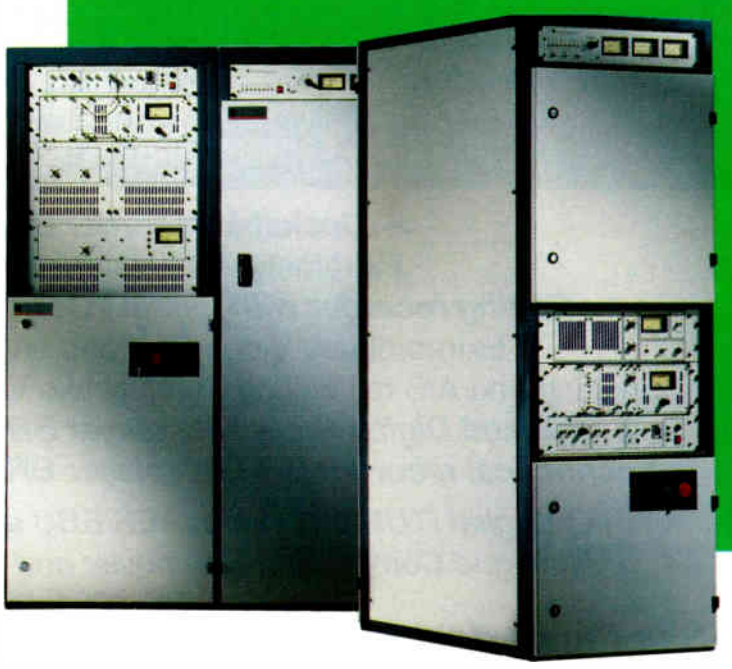


TV Solid State transmitters from 10 W to 500 W output power for I - III - IV/V Band.

TV Cavity Transmitters from 1,000 W to 10,000 W output power for III - IV/V Band.



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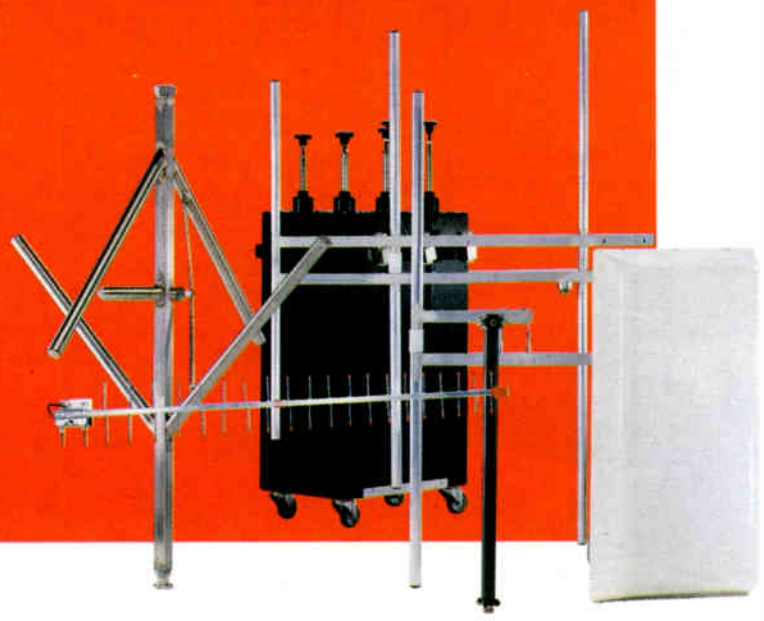

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CONTINUED FROM PAGE 42

What's Hot at IBC?

offered by SSA, an alternative which like Firewire uses simpler serial cables. Disk manufacturer Xyratex (2.335) is demonstrating SSA at the show.

Yet another option is Fibre Channel, a 800Mbit/s system developed by Sun, IBM (11.160) and Hewlett Packard (11.270). Ciprico, whose disk arrays are favoured by SGI-users, has launched a Fibre Channel array.

Unlike Firewire, UltraSCSI and SSA, Fibre Channel can work at distance up to 10km, and is suitable for networks. Tektronix, HP, Panasonic and Avid are pushing it as the standard to link equipment at broadcasters and post-production facilities.

HIPPI is an alternative adopted by Discreet Logic which can also reach 800 Mbit/s. There is also talk of a 6.4 Gbit/s Super HIPPI.

A year ago ATM was still everyone's favourite network, but its 155 Mbit/s appears sloth-like now. Even the 622 Mbit/s next-generation ATM can't match the competition. But it will still play a major part in wide-area networks such as London's SohoNet.

With Sony launching yet another computer interconnection scheme at IBC - SDDI - it's all a long-way from the simple choice between a composite and component cable.

DESKTOP PLATFORMS

It wasn't long ago that SGI was the only choice of computer for high-end applications, and in the absence of the traditional big exhibitors, the computer manufacturer and its partners dominated last year's IBC. But the tide is turning, and desktop Macs and PCs are moving in. New multi-processor machines, with two, four or more CPUs, deliver SGI-beating performance for a fraction of the price.

Microsoft's Windows NT is making serious inroads across the board. Unlike regular Windows, this rugged and powerful operating system isn't married to machines with a single, puny PC microprocessor. Unsurprisingly Microsoft-owned Softimage (7.520) is at the vanguard of the assault. Its 3D graphics package has been ported from SGI to Windows NT, joining its high-end editing system Digital Studio. This operates on Play Inc's PC-based Trinity hardware, built by some of the folk who invented the legendary Video Toaster. Starting at £8,000, vision and audio mixers, DVE and paint system come as basic.

Several other vendors within the OpenDML group are also working with Microsoft to add professional video production features to its new ActiveMovie standard, including D-Vision, Matrox and Digital Processing Systems (11.284).

Windows NT is having an impact on even the most power-hungry applications, like the virtual sets which will be prominent at the show. Like other virtual set developers, Israel-based Orad (7.130) originally turned to SGI, but now also offers an NT solution. Cyberset W uses a 3D graphics accelerator from Evans and Sutherland, which like others built around chips designed for video-games and costing as little as £250, are raising the graphics performance of PCs to SGI realms.

With $30 chips generating as many as 500,000 rendered polygons a second, the demand on top-dollar systems like SGI's Onyx Infinite Reality is to reach the magic 2 million polygons experts say are needed for photo-realistic sets.

SGI's inroads in TV triggered the stand-off between general-purpose computer systems and traditional dedicated hardware. Today's computer solutions however look like a hybrid. Basic computers are supplemented with dedicated hardware such as 3D accelerators, but in the form of slot-in cards rather than huge, expensive black-boxes.

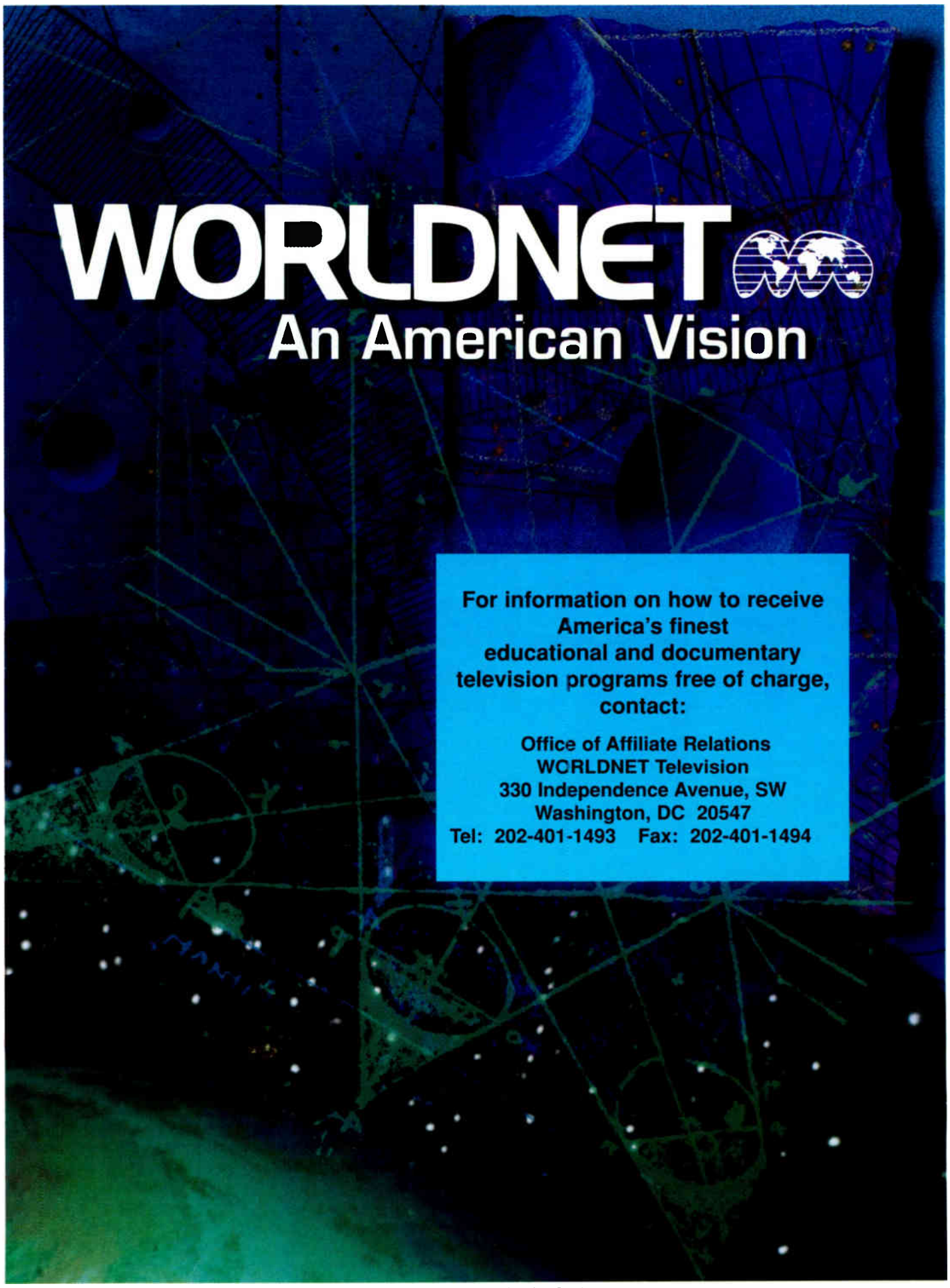
Along these lines DPS is launching a PC board to speed up video effects rendering. If it's real-time effects you're after, take a look at D-Vision's Fxellerator board, Matrox's DigiMix and the new Genie 3D DVE from Pinnacle (11.250).

This power surge on the desktop is bringing new players into the broadcast business, armed with valuable expertise in CD-ROM and the World Wide Web. Several desktop software developers from that world make their debut at this year's IBC. Adobe (7.221), famous for its Photoshop software, is perhaps the most important with its popular £500 Premiere video editing software and After Effects, its £1000 rival to Flame.

Another newcomer is Macromedia (3.155), whose products dominate the interactive authoring world. Its portfolio includes a new 3D animation package called Extreme 3D, and expectations are high that IBC will be the launch pad for its new video-editing software, codenamed KeyGrip.

As low-cost computer equipment takes on more areas of broadcasting, a new spectrum of different people is emerging as the sellers, buyers and users of the equipment on show. This is going to make IBC 96 as unique an experience as it will be immense. ■

Gideon Summerfield (gideon@dial.pipex.com) is a freelance broadcast technology writer.



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EXHIBITION LISTINGS

Editor's note: *The following IBC company listings ("Company row#.booth#) and exhibit information includes material received by* ***TV Technology*** *by July 25. Manufacturers who wish to be included in our database for future inquiries should submit their company name, contact information and products and/or services they provide to: Listings Editor, TV Technology International, PO Box 1214, Falls Church, VA 22041 USA. Material also may be faxed to +1-703-998-2966.*

Aaton **8.634**
*On Display:*Aaton plans to display its new Keylink Greyfinder, Keylink Webslate, and Keylink Foreteller, its ScriptLink, and Aaton XTRprod, as well as new accessories.
Contact: Danys Bruyere
2 Rue de la Prix - BP3002
Grenoble, France F-38001
Telephone: +33-1-76-42-64-01
Fax: +33-1-76-51-34-91

AAVS **7.521**
*On Display:*AAVS will present its new software range of applications for a TV center based on a common architecture using CORBA standard (an Object Management Group standard defining relationships management between distributed object applications). Main end user applications are: automated broadcasting, automated recording, archiving, equipment supervising. Based on the Miranda Imaging digital video interfaces product line, AAVS will present the following new products: 4:2:2 detector; AES/EBU translator; multiformat selector; logo generator and remote control for multichannel managment.
Contact: P. Fournier
222-226 rue de Rosny
Montreuil, France F-93100
Telephone: +33-1-49-88-34-34

Ahit **11.442**
*On Display:*Abit will display multi-channel capabilities in its transmission automation and materials management line.
Contact: Paul Baker
Unit 1.08 Marlborough Workshops,
159 Marlborough Rd.
London, United Kingdom N19 4NF
Telephone: +44-171-281-3815
Fax: +44-171-561-9622

Acrodyne Industries, Inc. **11.101**
*On Display:*Acrodyne is focusing its exhibit on the its Model TRU/30KV UHF Tetrode equipped transmitter. It will also display its ATM series MMDS transmitters.
Contact: J. Wozniak
516 Township Line Road
Blue Bell, PA, United States 19422
Telephone: +1-215-542-7000
Fax: +1-215-540-5837

AKG **9.421**

Alcatel Telecom **11.483**
*On Display:*Alcatel plans to show several products, including its Videocodecs line.
Contact: Marco Dinaro
Via Trento 30
Vimercate, Milano, Italy I-20059
Telephone: +39-39-686-4623
Fax: +39-39-608-1483

Alias Wavefront **2.140**
On Display: PowerAnimator version 7.5 modeling, animation, rendering and effects tools; Composer version 4.0 compositing and effects software; StudioPaint 3D for 2D sketching and painting with the ability to paint textures and displacement maps directly across multiple 3D surfaces; Web Animator software to create interactive World Wide Web content, including VRML and 3D modeling.
Contact: European Headquarters
Handelsdockcenter
Stapelein 70
B-9000 Gent, Belgium
Telephone: +32-9-266-1242
Fax: +32-9-266-1240

Amek Technology Group, Inc. **9.325**
*On Display:*Amek Technology Group plans to feature its Digital Mixing System and will show several analogue consoles, including GALILEO, RECALL, and the AMEK BCIII. In addition, Amek will display several rack-mounted devices, including the SYSTEM 9098 Equalizer, the Limiter Compressor, Crosspoint Matrix and Post-Production Monitor units.
Contact: Nick Franks
New Islington Mill, Regent Trading Estate, Oldfield R
Salford, United Kingdom M5 4DE
Telephone: +44-161-6747

Andrew Corporation **7.420**
*On Display:*Andrew Corporation will show its array of products for broadcast, terrestrial microwave and wireless applications. Several of those featured will be the MMDS and ALP antennas, HELIAX coaxial cable as well as several accessories.
Contact: Marketing Manager
Ilex Building, Mulberry Business Park
Fishponds Rd, Workingham, Berkshire
United Kingdom RG41 2GY
Telephone: +44-118-977-6886

Angenieux **8.334**
*On Display:*Angenieux will extend its range of Assisted Internal Focus (AIF) lenses with the 22 x 7.5 AIF for studio and OB applications. Also scheduled for introduction is the Super 16 Lens, featuring fast aperature, extended range, and wide angle.
Contact: J. van Gorsel
Kuiperjhof 34
Oosterhout, Netherlands NL-4902 DD
Telephone: +31-162-460-700

Anton/Bauer **8.120**

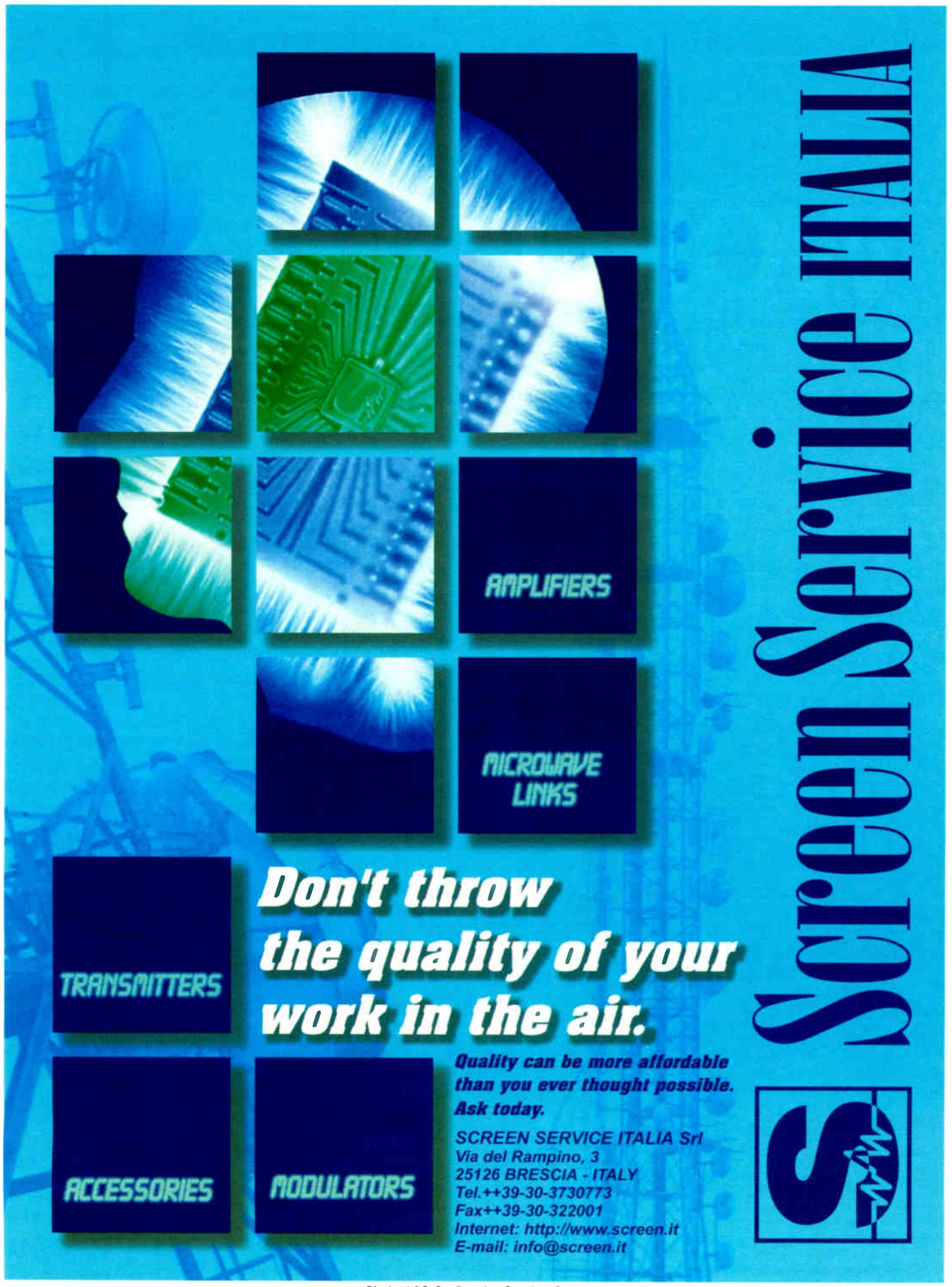
ARRI (GB) Ltd. **8.124**
*On Display:*Arri plans to show its new luminaries, the 200W and 575W, along with the new 12kW Studio Tungsten Lamp. Arri will also display several Arriflex cameras and Arri Variable Prime Lenses.
Contact: Angie Wort
1-3 Airlinks, Spitfire Way
Heston, Middlesex, United Kingdom TW5 9NR
Telephone: +44-181-848-8881
Fax: +44-181-561-1312

Artsum **7.214**
*On Display:*Artsum will focus on UNIVERS, a concept of audiovisual organization.
Contact: Marketing Manager
5&7 Rue Moret, Paris, France F-75011
Telephone: +33-1-43-38-79-71
Fax: +33-1-46-07-64-47

ASC Audio and Video Corporation **11.260**
*On Display:*ASC Audio and Video Corporation will show its range of disk-based digital broadcasting equipment.
Contact: Oliver Carmona
3816 Burbank Blvd
Burbank, CA, United States 91505
Telephone: +1-818-843-7004
Fax: +1-818-842-8945

Aston Electronic Designs Ltd. **8.210**
*On Display:*The Aston family features a line of anti-aliased character generators, featuring Motif, Motif ESP, MotifXL and the dual channel Ethos. New for IBC'96 the range is further enhanced with a series of upgrades and options, including a new option for the storage and recall of video and animation on Ethos, and a new graphics and image manipulation package.

(Continued on page 49)



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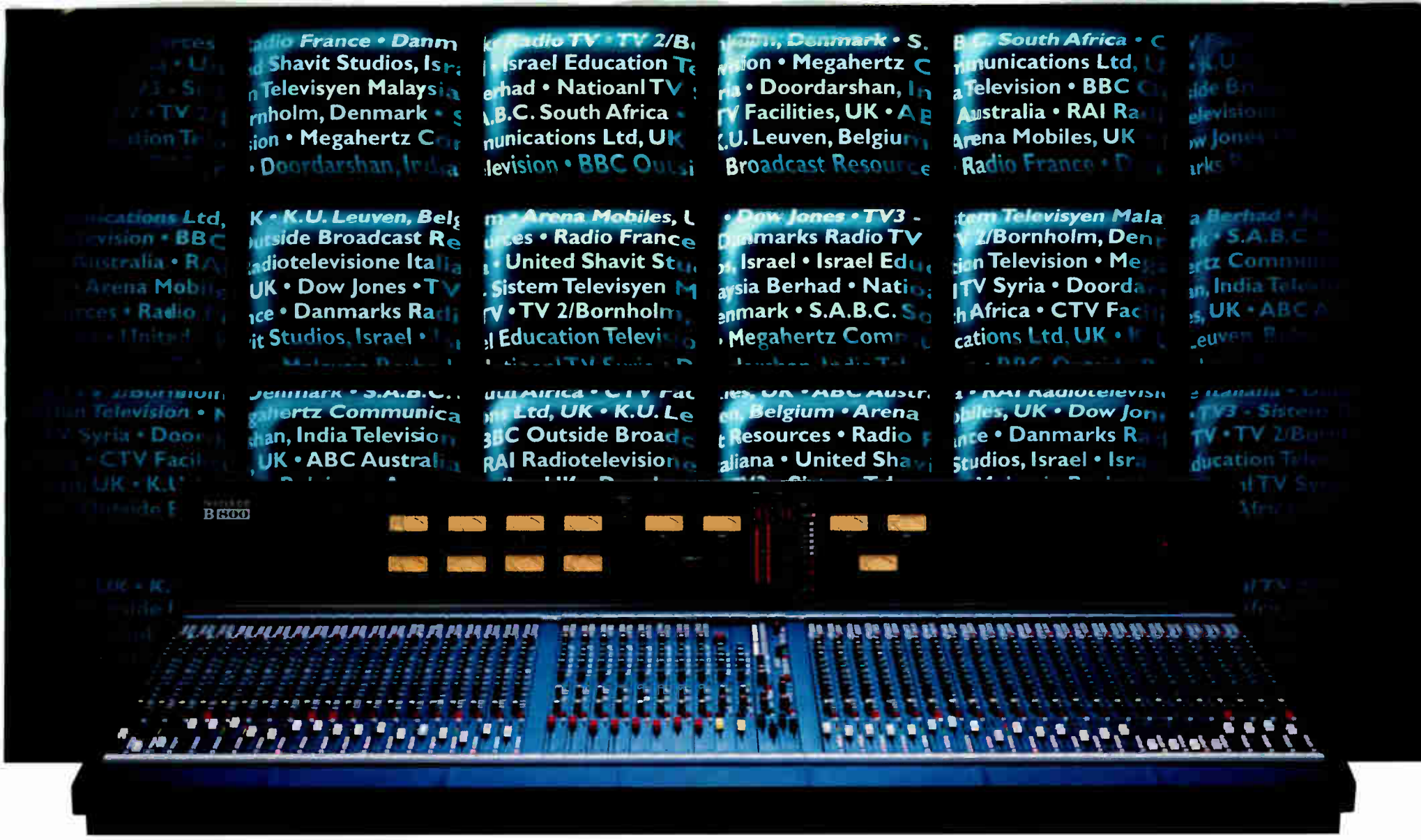

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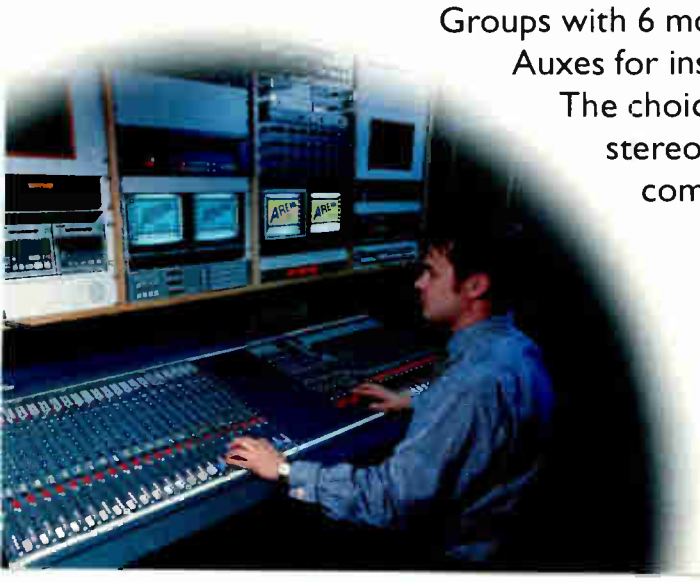

Location photography courtesy of Arena Mobiles

But there again, perhaps we should leave that to the hundreds of audio professionals around the world that rely on the Soundcraft B800 day after day, night after night.

Thank you.

Soundcraft

H A Harman International Company

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SOUNDCRAFT HARMAN PRO NORTH AMERICA INC. PO BOX 17251, NASHVILLE, TN 37217-0251, USA.

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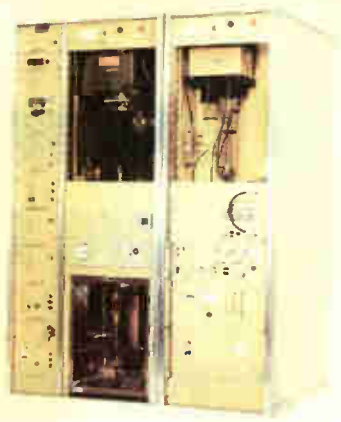

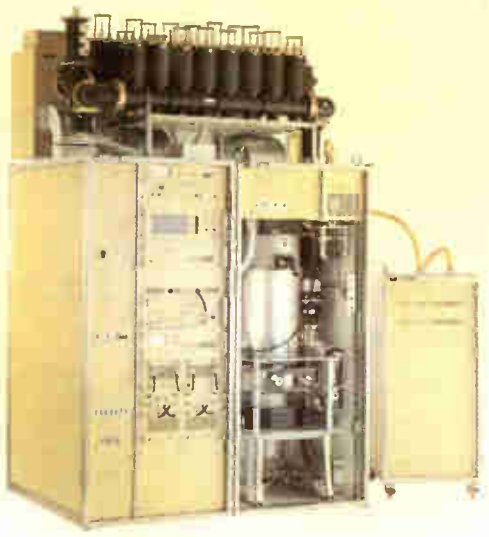

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For further details please contact:

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U.S.A. offices: *Miami:* Phone 305 715 9410 Fax 305 715 9414 • *Denver:* phone 303 431 1699 Fax 303 431 2868

Contact: Marketing Manager
123-127 Deepcut Bridge Road, Deepcut, Camberley
Surrey, United Kingdom GU16 6SD
Telephone: +44-1252-836-22

Atecom **11.546**
On Display: Atecom plans to show an integrated system for the ATM system.
Contact: Ron Burnip
Kaiserstrasse 100
Herzogenrath, Germany D-52134
Telephone: +49-2407-95860
Fax: +49-2407-9586449

Audio Design **9.434A**
On Display: Audio Design plans to show the upgrade of the Digital Mini-Mixer (DMM-1), the DMM-V1. In addition, Audio Design will display the PROBOX 15 and PROBOX 16, with accessories such as a Smartbox.
Contact: John Frazer
Unit 3, Horseshoe Park, Pangbourne, Reading
United Kingdom RG8 7JW
Telephone: +44-118-984-4545

Audio Developments Ltd. **9.244**
On Display: Audio Developments will preview the AD144 - 4 output + 4 auxiliary mixer for studio and live o.b., featuring transformer balanced inputs, outputs and auxiliaries, choice of mic/line, mono line, stereo line modules and much more. Also new is the AD149 - 2 output + 2 auxiliary mixer for location film and drama, featuring transformer balanced inputs, outputs and auxiliaries, choice of mic/line, channel inserts and more.
Contact: David Hadaway
Hall Lane, Walsall Wood
Walsall, West Midlands
United Kingdom WS9 9AU
Telephone: +44-1543-375-351

Audio Processing Technology **9.443**
On Display: APT will demonstrate the latest products and enhancements to their apt-x based WordNet series of digital audio codecs and peripherals for full bandwidth stereo audio distribution via networks such as the ISDN. A new and complementary coding system for broadcasters, apt-Q, will also be shown. Other new products for IBC include the ADK 200 Professional PC audio card, and WorldNet Voyager a Win 95 compatible graphical user interface for APT's Pro-Link ISDN Manager.
Contact: Emma Wickens
5A Prospect Street, Caversham
Reading, United Kingdom RG1 8JA
Telephone: +44-1734-473-851

Auditem S.A. **11.125**
On Display: Auditem S.A. plans to display both new and established products. As part of the new product line, the Audemat DI FMTX and the Audemat RXFM-MC3 will be exhibited, and for the established line, the Audemat RDS3, the Audemat CONF490, the Audemat ANA RDS, the Audemat RXR1, and the Audemat RXFM RDS ST will show.
Contact: Paul Belin
Centre Counord, Rue Portmann
Bordeaux, France F-33300
Telephone: +33-5-56-69-37-37

Autocue **9.134**
On Display: Autocue plans to show its range of prompting systems, several flat displays, newsroom and station automation solutions, and two election system

AutoMedia Ltd. **2.137**
On Display: AutoMedia Ltd. Integrates Automated Video Retouching, Rotoscoping, Painting and Special-Effects into your post-production software and systems. AutoMasker, Automated Video Mask Cutter, the world's first software for accurate isolation of colored, moving and changing objects, from any dynamic background, in a fraction of the time used in conventional masking, "masking" keying or "cleaning" techniques. Following initial rough marking, locates the exact object border in subsequent frames.
Contact: Pastor Yossef
P. O. Box 17043
Tel-Aviv, Israel 61170
Telephone: +972-3-699-7164

Avid Technology Europe Ltd. **2.220**

Avitel Electronics Ltd. **8.412**
On Display: Avitel plans to display its new products and upgrades, including converters, analyser/inserters, amplifiers, and adapters.
Contact: Gilbert Viegas
Unit 6 Croydon Rd. Ind. Est. Tannery Close
Beckenham, Kent
United Kingdom BR3 4BY
Telephone: +44-181-655-3200
Fax: +44-181-655-0509

AVS Graphics **11.150**
On Display: Still stores and character generator product lines.
Contact: Simon Powell-Evans
3406 South 1400 West
Salt Lake City, UT 84119 USA
Telephone: +1-800-975-9799

AVT — Advanced Video Technologies Srl **11.433**
On Display: AVT will show Colby transmission systems for sending video over phone lines, video servers for entertainment and broadcast applications, Cripto transmission systems for audio-only or video and audio, and multimedia MPEG applications.
Contact: Pietro Amati
Via Mosca, 77 Vill 5, Rome (RM), Italy I-00142
Telephone: +39-6-510-371

Aztek Video Ltd. **2.121A**
On Display: Aztek Video Ltd. plans to display the "Electro-Patch" router, and will focus on its new "Electro-Patch Digital" router.
Contact: Nick Hunter
6 Tan-y-Bryn
Llandgai, Gwynedd
United Kingdom LL57 4LG
Telephone: +44-1248-362021
Fax: +44-1248-371895

Balcar **8.310**
On Display: Balcar manufacturer of fluorescent cold lights equipping TV studios in over 50 countries, offers 4 sixes: Flexlite 6 lamp (phase controlled in 230V and 0/10V control in 120V), Quadlite 4 lamps, Duolite 2 lamps, and Twinlite 2 separate lamps with Twinpack (Tungsten 3100 degreesK or Daylight 5200 degreesK lamps). Large range or accessories.
Contact: Patricia Baliolian
11 BD Emile Augier, Paris, France F-75016
Telephone: +33-1-45-03-00-30

Barco n.v. **8.110**
On Display: Barco introduces the "Marco Polo," a multistandard TV demodulator, the CBM 5051, a 19" 32kHz VGA display for broadcast applications, the "Titan" a digital QPSK satellite receive and the "Quasar" a 64-256 QAM TV modulator.
Contact: Kristien Verhaeghe
Th. Sevensiaan 106, Kortrijk, Belgium B-8500
Telephone: +32-56-233-458

BDL Autoscript **10.518**
On Display: +WINPLUS+ for News Windows application prompting software; +WINPLUS+ VGA for use with laptops; a wide-range of on-camera promters in many screen sizes; SCROLLBUDDY pocket-sized DOS-based dual-screen telemprompter; PC VDA card.
Contact: Chris Lambert
A8 Poplar Business Park
10 Prestons Road, London E14 9RL
Telephone: +44-171-538-1427
Fax: +44-171-515-9529

Beyerdynamic GmbH & Co. **9.121**
On Display: Beyerdynamic plans to debut the Studio microphone MCD 100, the first digital condenser, as well as their line of studio equipment.
Contact: Klaus J. Wischgoll
Theresienstr. 8
Heilbronn, Germany D-74072
Telephone: +49-7131-617-0
Fax: +49-7131-60459

Bocom International **10.125**
On Display: Bocom International will display several of its products, including encoders, decoders, network management software, application software, as well as an explanation of its advisory services.
Contact: David Cross
14 Cranwilliam Square
Dublin 2, Ireland
Telephone: +353-1-676-0899
Fax: +353-1-676-0898

British Broadcasting Corporation **11.161**
On Display: British Broadcast Corporation (BBC) will be showcasing all elements of the broadcast system from Production to Design, Research & Development to Training, Project Management to Transmission. On hand will be representatives to discuss new ventures into studio and transmission consultancy as well as training in new technologies.
Contact: Paul Eaton
P. O. Box 98
Warwick, United Kingdom CV34 6TN
Telephone: +44-1926-416-504

Broadcast & Surveillance Systems Ltd. **11.500**
On Display: Broadcast & Surveillance Systems supplies a range of highly stable airborne camera systems which mount to the outside of a helicopter or fixed-wing aircraft and are controlled from within the aircraft via a remote control console. BSS and our parent company, FLIR Systems, have over 1200 airborne sensors flying on 70 different aircraft types in 45 countries around the world. Untramedia, the five axis gyrostabilised system has been designed to minimise size and weight while offering very high performance lenses. The Fujinon 36:1 lens is offered as standard with a switchable x2 extender effectively doubling the zoom range.
Contact: Andrew Griffin
40 Churchill Square, Kings Hill, West Malling
Kent, United Kingdom ME1 96DU
Telephone: +44-1732-220011

Broadcast Electronics, Inc. **9.220**
On Display: Broadcast Electronics plans to show its line of transmitters, consoles, and other studio equipment.
Contact: Kim Winking
4100 North 24th St
Quincy, IL, United States 62301
Telephone: +1-217-224-9600
Fax: +1-217-224-9607

The NewsRoom

CEA Digital Newsroom Systems will debut the latest newsroom automation software running under Windows 95. Features include user-defined rundowns (bulletins), on-line script archive, media library, electronic mail and messaging, and direct Internet access.

Split-screen multi-language editing will be featured in Arabic, Chinese, English, German, and French. The system has the ability to copy from any active rundown (bulletin) to another, even in different languages. Many languages may be used on the system simultaneously. Approximately 40 different international character sets are supported.

Teleprompting in a multi-language environment will be demonstrated using the BDL Autoscript prompting system. Chinese titles and supers will be downloaded from the system and displayed on a Chyron character generator. All items are integrated into a complete system package.

CEA Newsroom Systems
Contact: Paul Keys
8227 Cloverleaf Dr. Suite 308
Millersville, MD 21108 USA
Telephone: +1-410-987-7003
Fax: +1-410-987-6710

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(Continued on page 51)

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Circle 10 On Reader Service Card

Calrec Audio, Ltd. **9.437**

Canal+ **3.212**
*On Display:*Canal+ has developed and markets the Mediahighway Interactive TV system which provides the necessary tools on both the broadcast and IRD side with a total independence of the IRD's manufacturers. Also developed by Canal+ is the Mediguard CAS which enable numerous commercial schemes (Subscription, PPV, PPFile...) in open architectures (multi-operators, multi-SMS...) with extended capacities (15 operators, 960 bouquets...).
Contact: Robert Boyer
85-89 Quai Andre Citroen
Paris, France F-75015
Telephone: +33-1-44-25-74-63

CANAL+

Canal+, the leading European pay-TV broadcaster, has developed and markets Mediahighway, an MPEG2-DVB solution for development and implementation — by air — of interactive TV applications (e.g., EPGs, PPV, WEB). It provides the entire set of necessary tools on both broadcast and IRD side with a total independence of the IRD's manufacturers.

Societe Europeenne de Control d'Access, a subsidiary of Canal+ & Bertelsman, has developed and markets Mediaguard, a state of the art MPEG2-DVB conditional access solution based on the Canal+ 12 years and 3 systems' experience in conditional access. It enables numerous commercial schemes (subscription, PPV, PPFile, etc.) in open architectures (multi-operators, multi-SMS, etc.) with extended capacities (15 operators, 960 bouquets, etc.).

Contact: Robert Boyer
Canal+
85-89 Quai Andre Citroen
75015 Paris
Telephone: 33-1-44-25-74-63
Fax: 33-1-44-25-75-65

Circle Reader Service 58

Canon Europa NV **8.234**
On Display: A full line of camera lenses for the studio and ENG/EFP broadcast industry. Also the new Canobeam II laser system.
Contact: Eddy Meijer
Telephone: +31-20-545-8638
Fax: +31-20-545-8203

Cartoni (Video Film Grip) **8.121**
*On Display:*Cartoni will highlight its full range of tripods and pan/tilt heads from the ENG to the EFP ranges including the Alfa, Beta, Delta, C20S, and C40S. The Alfa provides dynamic counterbalancing of camera loads up to 17 pounds, while the Beta is the ideal mate for compact camcorders. The Delta features a fully variable counterbalancing system designed to accommodate offset payloads such as long lenses, small prompters and top-mounted viewfinders.
Contact: Guido Soro
Via Mirri 13
Rome, Italy I-00159
Telephone: +39-6-4396499

Cavena Image Products AB **3.232**
*On Display:*Cavena Image Products AB plans to show its line of subtitling systems, including multilingual and multilanguage subtitles, as well as several other products.

CCS Europe GmbH **11.511**

CED UK Ltd. **8.513**
On Display: D-1 test signal generator; portable D-1 to CVBS/YC converter; 10-bit digital decoders; compact D-1 to YUV modules;modular range of Eurocards for insertion into a 1 RU powered frame.
Contact: Mktg. Mgr.
40 The Ridgeway
London N11 3LJ
Telephone: +44-181-368-8110
Fax: +44-181-368-9417

Chyron Corp. **3.240**
On Display: A full line of graphics systems, including the Infinit and Max, Liberty Paint 64 and CMX editing systems. Pro-Bel master control and automation gear. Trilogy Broadcast Talkback system. RT-SET Ltd. virtual studio.
Contact: Chyron Corp.
5 Hub Dr., Melville, NY 11747
Telephone: +1-516-845-2182
Fax: +1-516-845-3896

Cine Power International Ltd. **8.108**
On Display: Nickel cadmium battery systems, batteries and chargers. Cine Power specializes in the design, development and manufacture of a large range of rechargeable batteries. Shown will be the Powerflex, Powerlight, Hollywood Powerhouse, Powerbank, Powerport, Powerstation, Power Source, Shotsaver, MSR light kits, and MSR battery ballast.
Contact: Elemer L.A. Nyiry
Magnolia Lake, Mamhead, Nr. Exeter,
Devon, Great Britain EX6 8HG
Telephone: +44-1626-888433
Fax: +44-1626-888435

CMAC Microcircuits, Ltd. **11.591**
*On Display:*C-MAC plans to feature its SMART series of active video filter products.
Contact: Laurenced Brooks
South Denes, GT Yasmouth
Norfolk, United Kingdom NR30 3PX
Telephone: +44-1493-856-122
Fax: +44-1493-858-536

Composite Video Ltd. **10.123**
*On Display:*Composite Video Limited is one of the leading suppliers of video and audio accessories in the UK. They will be showing a selection from the range of products available from their new 1996/97 catalog, including connectors and cables, tripods, mixers and batteries and their extensive range of distribution and switching equipment.
Contact: W. A. Costello
3 Four Seasons Crecent, Kimpton Road, Sutton
Surry, United Kingdom SM3 9QR
Telephone: +44-181-641-4044

Computer Engineering Associates Newsroom System s **9.433A**
*On Display:*CEA will feature its line of Windows 95 based newsroom automation software.
Contact: Paul Keys
8227 Cloverleaf Dr., Suite 308
Millersville, MD, United States 21108
Telephone: +1-410-987-7003
Fax: +1-410-987-6710

Concision Ltd. **10.131**
*On Display:*Concision delivers innovative and elegant solutions to the entertainment industry. Having developed applications that manage the entire program sales and acquisition process for major international licensees and licensors, Concision now has a unique understanding for: rights management, availability analysis, program library management, complex program finance functions, royalty calculation and reporting, deal memo control, multiplexing control and verification, multi-currency license tracking and administration, traffic administration, programming, scheduling and multimedia databases including image and video manipulation.

Continental Microwave Ltd. **8.730**
On Display: GPS Auto Pod microwave antenna; UCL Series compact portable microwave links; Ultra Compact DSNG Terminal; Satellite Converters; SNG Vehicles; VFL-2 fixed microwave links series; UT Series TV transmitters in configurations now extended to 4 kW.
Contact: Richard Martin
1 Crawley Green Road, Luton
Bedfordshire LU1 3LB ENGLAND
Telephone: +44-158-242-4233
Fax: +44-158-245-5273

Creative Equipment Intl. **7.531**

Crystal Vision Ltd. **2.121**
*On Display:*Crystal Vision Ltd. plans to launch the "X-Key" digital effects keyer and the "X-Face" serial digital interfacing system.
Contact: Philip Scofield
161-163 Hight Street, Sawston
Cambridge, United Kingdom CB2 4HN
Telephone: +44-1223-506515
Fax: +44-1223-506514

D&R Electronica Weesp b.v. **10.113**
*On Display:*D&R plans to feature a Surround Sound Mixer called Cinemix, as well as the new PowerVCA Automation system.
Contact: Duco de Rijk
Rijnkade 15B, Weesp, Netherlands NL-1382 GS
Telephone: +31-294-418-014
Fax: +31-294-416-987

Delta Meccanica S.R.L. **11.204**
*On Display:*Delta Meccanica plans to show its line of filters, couplers, and other components and accessories.
Contact: Longo Marco
Via Fontanelle di Bardano N.20
Orvieto, Terni, Italy I-05019
Telephone: +39-763-316-222
Fax: +39-763-316-267

Deutsche Telekom NL Oldenburg **11.124**
On Display: Digital and analog, long- and short-term global broadcast services. Transportable ATM connection over satellite; ATM access to broadcast studio LAN.
Contact: Bernhard Fürstos
Berliner Aller 1, Freiburg GERMANY D-79114
Telephone: +49-761-880-2320
Fax: +49-761-880-2329

Digidesign **3.122**
On Display: Pro Tools III version 4.0 and AudioVision version 4.0 digital audio workstations.

Digigram **9.216**
*On Display:*Digigram will show the Windows version of Xtrack. Digigram's multitrack digital audio workstation. Xtrack features real-time virtual editing, simultaneous record and playback, time expansion/compression, noise reduction, pitch shifting, equalization, mixing, direct CD access, sound library management, various synchronization modes, video insertion, network operation and a dedicated remote control. The complete range of PCX audio cards — including the new PCXi9 and PCX20 — and new development tools also will be shown.
Contact: Christelle Berger
Parc de Pré Milliet, Montbonnot, France F-38330
Telephone: +33-76-52-47-47

Digimedia S.A. **7.611**
*On Display:*Digimedia offers B.EST (Brainstorm Estudio) a system specially created to simulate virual scenery in real time for use in TV stations. They design any proposed scenery by software of 3D modelling such as the optical parameters and physical position of the studio cameras, generating a virtual scenery whose perspective is made to match with the real one, creating the integration between both images with great quality.
Contact: Jorge Huete
c/Gomera 12
San Sebastian de los Reyes (Madri, Spain E-28700
Telephone: +34-1-66-37-227

Digital Audio Research **9.210**
*On Display:*Digital Audio Research Ltd. plans to feature its range of audio workstations, the OMR-8 Open Media Recorder, and the D-net digital audio network.
Contact: Joanne Thomas
2 Silverglade Business Park, Leatherhead Rd
Chessington, Surrey, United Kingdom KT9 2QL
Telephone: +44-1372-742-848
Fax: +44-1372-743-532

Digital Graffiti **11.510**
*On Display:*Digital Graffiti will be showing a new range of additions to their VideoStore Disk Recorder. These additions include the TC-1 Time Code Board (for reading and displaying VITC and longitudinal Time Code). The SD-1 601 Serial Digital I/O Board option, and there will also be various software enhancements for their VideoStore Disk Recorder which will include tranmission delay, importing files via SCSI etc.
Contact: Peter Rowsell
204-226 Imperial Drive, Rayners Lane, Harrow
Middlesex, United Kingdom HA2 7HH
Telephone: +44-181-866-6503

The V1 and V4 are "Direct to Disk" video recorder/players designed to replace any VTR as standalone units with front-panel controls including jog/shuttle, CCIR601 compliance in PAL and NTSC. Added to video, two to four digital audio tracks and full time code are recorded and offer instant access from any edit controller connected to the Son 9-pin RS-422 ports or from the front-panel controls. The Motion JPEG is configurable from 3.5:1 up to 32:1.

DOREMI Labs Europe
1853 Chemin des Colles
06740 Chateauneuf de Grasse, France
Phone: +33-08-53-70-02
Fax: +33-93-60-12-21
E-mail: 101637.247@compuserve.com

Circle Reader Service 73

Digital Graphix, Inc. **11.223**
On Display: NetDeko line of character generators, which include TypeDeko, TitleDeko, PostDeko and WriteDeko, and anti-aliased character generator, operates under Windows NT operating system. The system is available as a standalone character generator or as a Creation Station/Video Processing Engine combination. Graphics can be designed in multiple layers and the preset on-line fonts can have a variety of styles applied to them.
Contact: John Palma
6 Forest Avenue, Paramus, NJ, United States 07652
Telephone: +1-201-845-8900 (x271)
Fax: +1-201-845-8063

(Continued on page 54)

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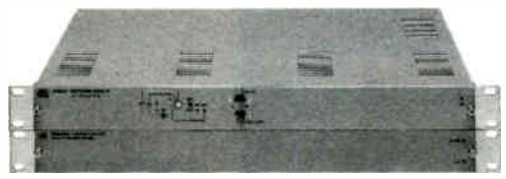

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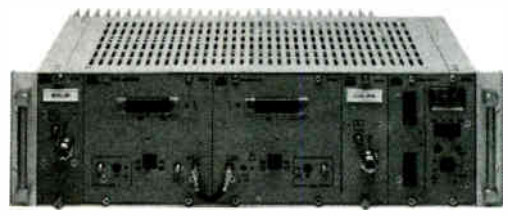

NEW

RP - Compact 2/5W V-UHF TV transmitters and transposers

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PRODUCTS & SERVICES SHOWCASE

For more information on the products shown below, circle the appropriate Reader Service No.(s) on the enclosed Subscription/Reader Service card or contact the advertiser directly.

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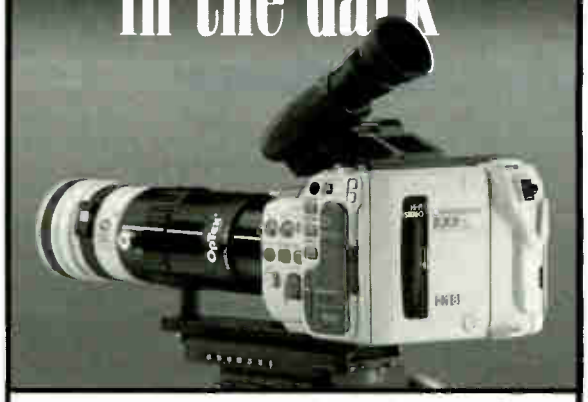

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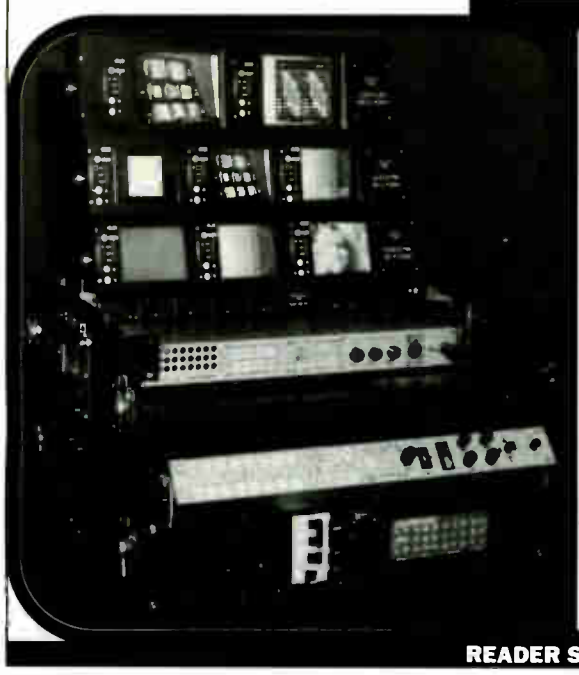

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PVR / RAZOR 3.5 $3,498
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INTERGRAPH - TD, TDZ : ALL

ARRAYS / DRIVES Call for Arrays / Drives not listed

JAZ Int. $425 Array(2) 1850 Cart. $100
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READER SERVICE NO. 3

the NONLINEAR video BUYERS guide

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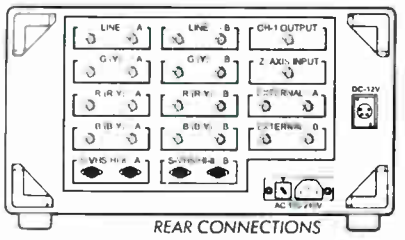

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- 2-CH XLR AUDIO BALANCED OUT
- AC 100-240/DC 5-16V/BATT 4-AA SIZE
- NTSC or PAL

DIFFERENT MODELS AVAIL FROM $ 249

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- 12 PATTERNS incl SMPTE & BLACK
- 6 BLACK BURST OUT (GENLOCK)
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- 2-CH XLR AUDIO BALANCED OUT
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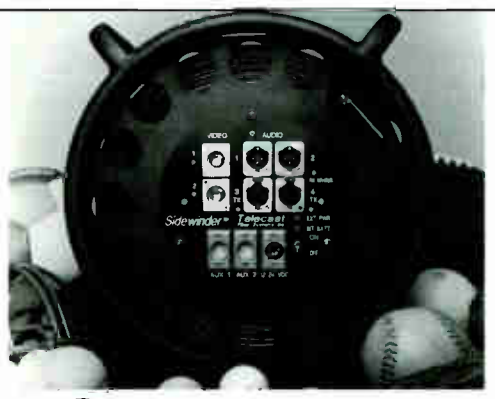

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READER SERVICE NO. 5

Digital Processing Systems **11.284**
On Display: A full line of digital signal processing products, including TBCs and frame synchronizers, as well as the Perception digital audio and video recorders.
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11 Spiral Dr.
Florence KY 41042 USA
Telephone: +1-606-371-5533
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Digital Vision, DV Sweden AB **9.130**
*On Display:*Products on display include: Bitpack - MPEG2 authorizing system aimed at the upcoming DVD market and server applications where the highest quality compression encoding is needed; DVNR Image Processing Workstation - industry standard in film-to-tape and processing; AFC Film Standard Coverter - Improved quality and reduced cost for multi format/standard film releases; TV345 - broadcast quality 8-45 Mb/s TV codec; AC724 - broadcast quality 2 Mb/s Audio codec; DVM16 — single- or multi-channel high performance MPEG2 codec for fixed and variable bitrate applications.
Contact: Suisanna Thuresson
Upplagsvagen 1
Stockholm, Sweden S-117 43
Telephone: +46-8-18-24-65

Discreet Logic **7.320**
*On Display:*Discreet Logic will display several visual effects systems, focusing on FIRE, the on-line, non-linear video editing system. Also showing will be INFERNO, FLAME, FLINT, and RIOT.
Contact: Dave Swan
5505 Boul. St. Laurent, Boreau 5200
Montréal, Québec, Canada M2T 1S6
Telephone: +1-514-272-0525
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DoReMi Labs Europe **10.433**
*On Display:*DOREMI Labs plans to show two video recorder/players, the V1 and the V4.
Contact: Sophia Antipolis
Place J. Bermond, Ophira 1
06560 Valbonne, France
Telephone: +33-93-00-43-30
Fax: +33-93-65-35-73

Drake Automation Ltd. **8.311**
Contact: Salvatore DiMuccio
The Hydeway
Welwyn Garden City, Herts, United Kingdom AL7 3UQ
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Fax: +44-1707-393-530

DVB Digital Video Broadcasting **10.120**
*On Display:*DVB aims to help broadcasters bring digital television to the home. Grouping together over 200 organizaitons from the TV industry, the Digital Video Broadcasting Project is a market-led industry initiative. DVD has developed specification for the transmission of MPEG-2 video and audio via satellite, cable, terrestrial, MDS (Multipoint Distribution Systems) and SMATV media.
Contact: Lou Dutoit
17a Ancienne Route, Grand Saconnex
Geneva, Switzerland CH-1218
Telephone: +41-22-717-2719

Dwight Cavendish Developments Ltd. **11.342**
*On Display:*Cavendish Developments Ltd. plans to show the COPYMASTER 2500 video duplication system and the Quality Control and Management System.
Contact: Mazen Abdin
Vincent House, Alington Rd
Gynesbury, Cambridgeshire, United Kingdom PE19 4EA
Telephone: +44-1480-215-753
Fax: +44-1480-474-525

Eds Portaprompt Ltd. **11.292**
*On Display:*EDS Portaprompt will display its prompter, the Digiprompt DP1200, prompting software, and Microprompt CRT.
Contact: Brian Barker
Lane End Rd. Sands
High Wycombe, Bucks
United Kingdom HP12 4JQ
Telephone: +44-1494-450-414
Fax: +44-1494-437-591

Egripment B.V. **8.312**
*On Display:*Egripment will be demonstrating its extensive range of camera support systems, including its full range of remote pan and tilt heads, camera cranes, tracking systems, dollies and fixed camera rigging systems. Featured products are the HotShot, a full remote pan and tilt system; The MiniShot, a small remote pan and tilt head; The HotHead, a remote head; The Javelin, an easy to assemble remote camera crane; The Maxi Jib, a compact, remote camera and The Hi-Lo Platform.
Contact: Laurie Frost
Machineweg 22
Nederhorst Den Berg, Netherlands NL-1394 AV
Telephone: +31-294-253-988

Electronic Media Systems Ltd. **2.332**
*On Display:*Electronic Media Systems Ltd. has been working on the installation of Studio 8 at The London Studios, new home for Granada TV's This Morning Show with Judy Finnegan & Richard Madeley, following the show's transfer from Liverpool. Specification cover technical design of the studio vision/sound system, editing graphics and tape library facilities. Members of EMS will be on hand to discuss various projects with visitors.
Contact: Veronica Cahppell
Sir William House, 6-8 Emerald Street
London, United Kingdom WC1N 3QA
Telephone: +44-171-404-0478

Electronic Visuals **11.490**
*On Display:*Electronic Visuals will feature the EV-4000 series — full product range of Waveform & Vector monitors including serial digital component analog monitor-EV4171 & combined waveform/vector-EV4161. Also featured is the EV-1629 series widescreen monitors; The Logger wireless remote time code reader; The Mini-Shutter variable high resolution adjustment control for CCD cameras; and the Activ -remote TBC controller for control of up to 16VTRs in any combination of digital or analog.
Contact: Stuart A. Fordham
14 Boundary Way, Working
Surrey, United Kingdom GU21 5DH
Telephone: +44-1483-771-663

Elettronica Industriale/ Telecommunications Technology **11.312**
*On Display:*Elettronica Industriale will present the new Cart Machine, the automatic broadcasting system which allows TV stations to broadcast their programs automatically with precision and simple management. Other products on display will be the 5KW TV UHF Solid State Transmitter "Stone", the new TV solid state transmitter generation featuring a range of high power equipment from 1,000W to 20,000W; 150/250W TV UHF Solid State Transmitter; basic 3 transmitters 5/10 W; Auge System; Normal or Precision Offset; FM Radio Link 10/12/14 Ghz; Filter 250 W UHF Band-Pass and Notch Filter.
Contact: Achille Arienzo
Via Filipo Turati 7, Lissone (Milan), Italy I-20035
Telephone: +39-39-73981

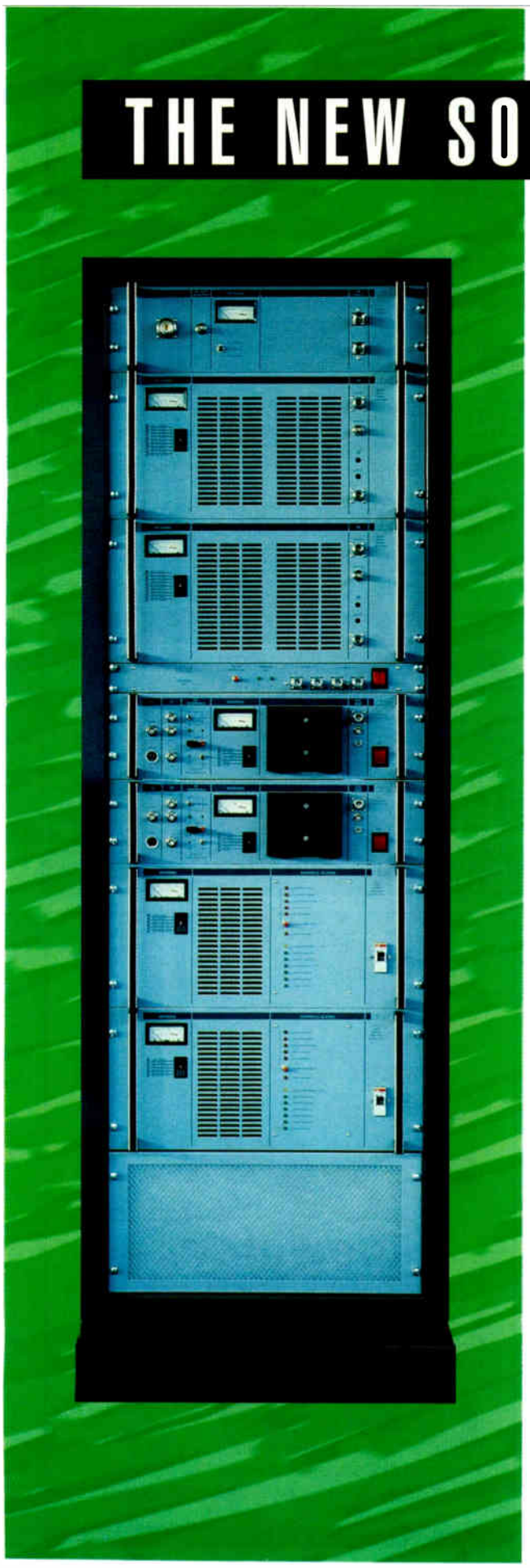
Elman SRL **10.115**
*On Display:*Elman Srl plans to debut its Personal TV Production Flightcase, as well as its components, which will be displayed separately.
Contact: Francesco Collepardo
Via Clarice Marescotti, 15, Roma, Italy I-00151
Telephone: +39-6-6574-1287
Fax: +39-6-6574-1291

Ensemble Designs **3.213**
*On Display:*Ensemble Designs plans to display several graphics products, including the Video Gateway for Mac, PC, & SGI which allows graphics transfers between the computer and video, the Serial Box Convertors for conversion between digital and analog video, the Catalyst Digital Keyer, the Jacquard CG Solutions for SGI, and the TBC Control Systems.
Contact: Cindy Zuelsdorf
PO Box 993
Grass Valley, CA, United States 95945
Telephone: +1-916-478-1830

Esser Test Charts **9.434**
*On Display:*Esser Test Charts will feature its various new test charts and improved illuminators.
Contact: Hans-Hubertus Esser
Steinanger 21
Hummeltal, Bavaria, Germany D-95503
Telephone: +49-9201-1559
Fax: +49-9201-79518

Eutelsat **8.543**
*On Display:*Eutelsat, the European Telecommunications Organization, is one of the world's leading satellite operators with a fleet of eight satellites reaching across Europe and the Mediterranean Basin. Services offered by Eutelsat include television, telephony, business services and satellite newsgathering.

(Continued on page 56)



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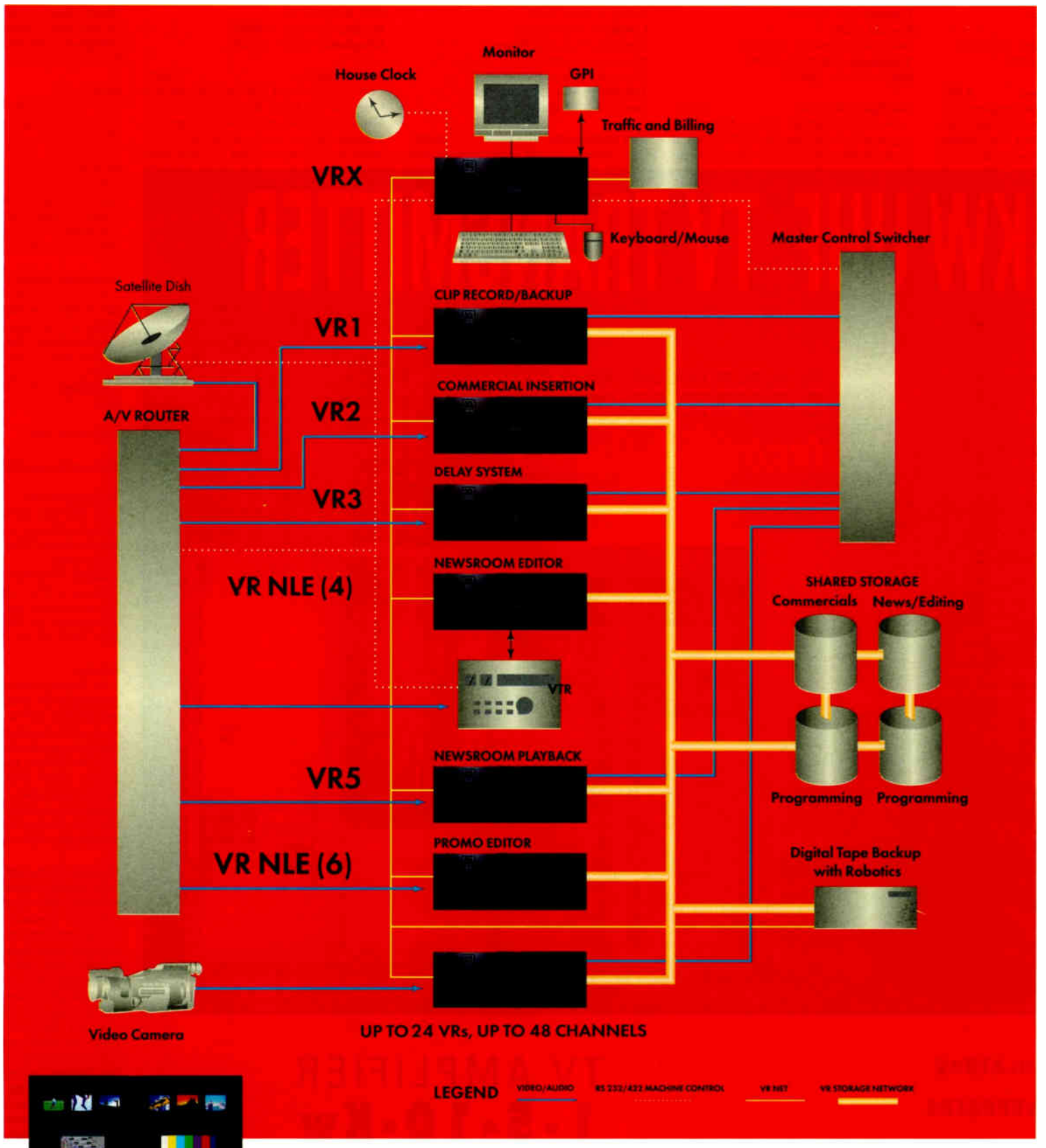

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Contact: Thomas Lohvey
70 rue Balard
Paris, France F-75502
Telephone: +33-1-53-98-46-82

Evertz Microsystems, Ltd. 10.113
*On Display:*Evertz Microsystems plans to launch several new products, including the Model 8950 D-VITC, the Model 8025-SIO, the 8200 series of modules, and the 4025-RC remote control unit. Also on display, there will be several established products available for demonstration.
Contact: Carter Lancaster
3465 Mainway Dr.
Burlington, Ontario, Canada L7M 1A9
Telephone: +1-905-335-3700

EVS Broadcast Equipment 3.157
*On Display:*EVS Broadcast Equipment presents its new Multi-Access Disk Recorders dedicated to Live Broadcasting. New products include Air Box, a stand alone video server and Spot Box, a slave video server with Odetics & Louth protocol. Also from EVS is a full range of ADA multisystem converters.
Contact: Jean LaPrince
Rue Courtois 22, Liege, Belgium B-6000
Telephone: +32-41-323-800

F.A. Bernhardt GmbH 3.230
*On Display:*F.A. Bernhardt will display its newest products in Teletext Level 2.5, Teletext Subtitling for Windows 95, EPG System and IRT Data Transmission, as well as the FAB In-Vision Teletext.
Contact: S.T. Sokolov
Postfach 1628
Bad Toelz, Germany D-83636
Telephone: +49-8041-76890
Fax: +49-8041-768932

Fairlight ESP LTD 7.412
*On Display:*Fairlight will be demonstrating new software for the MFX3 Digital Audio Workstation, DAD (Digital Audio Dubber), as well as FAME (Fairlight Audio Mixer Editor) which combines a hardware console control surface with an MFX3.
Contact: Nick Cook
Unit 12, Spectrum House,
32-34 Gordon House Rd
London, United Kingdom NW5 1LP
Telephone: +44-171-267-3323

Faraday Technology Ltd. 11.290
*On Display:*Faraday Technology Ltd. plans to show several new format 601 filters for composite systems, as well as a variety of other filters.
Contact: Callum Craig
Croft Road Industrial Estate
Newcastle, Staffs,
United Kingdom ST5 0QZ
Telephone: +44-1782-661-501
Fax: +44-1782-630-101

Fast Multimedia 3.152
*On Display:*At this year's International Broadcasting Convention in Amsterdam (September 12-16), digital video pioneer FAST Multimedia will showcase their entire professional range of editing products, including the new VM-Studio PLUS multi-layering and rendering software for Video Machine DPR. Also, at the FAST press conference on Day One of IBC, the company will unveil the concept for a new encoding product for the high-end broadcast community based on MPEG-2 technology, FASTwill be located in hall 3, booth 152.
Contact: Markus Florian
P. O. Box 200719
Munich, Germany D-80007
Telephone: +49-89-502060

Feral Industries 2.145
*On Display:*Feral Industries highlights four new products. First is an all new MPEG-2 encoding system that incorporates a unique chip-set configuation. New DVE products include the Feral QS-400 Quad split, the LD2000 Line Doubler and the VP-4000 Flat Panel Display, a 42" 16x9 version of Feral's Flat Panel Display line.
Contact: Tom Brick
9204 Bond Street
Overland Park, KS, United States 66212
Telephone: +1-913-492-3245

Focal Press 11.175
*On Display:*Focal Press will display its array of professional and academic books covering the fields of television, film and video.
Contact: Claire Johnston
Linacre House, Jordan Hill
Oxford, United Kingdom OX2 8PD
Telephone: +44-1865-310-366
Fax: +44-1865-310-898

FOR-A Ltd. 2.242
*On Display:*FOR-A will be demonstrating its line of digital products, such as Digi Warp, Epique, Kaligrafer, VPS-200, FDM-V162, CV-120, UDP-700, and Multi-bus D/A,A/D system.
Contact: Nick Ashley
Heritage House, 21 Inner Park Rd
London, United Kingdom SW19 6ED
Telephone: +44-81-788-7664
Fax: +44-81-788-7435

Fougerolle Audio/Video 6.216
*On Display:*Fougerolle plans to display its line of digital products, including encoders, decoders, transcoders, and synchronisers.
Contact: Mktg. Mgr.
10 rue Charles Cros
Saint-Leu-La-Foret, France F-95320
Telephone: +33-1-39-32-7350
Fax: +33-1-34-18-1566*48*

Fuji Photo Film 10.302

Fujinon Europe GmbH 10.301

Gatekeeper Ltd. 7.408
*On Display:*Gatekeeper plans to debut two new products: the dual AES/EBU Digital Audio Delay, and the 4:2:2 Serial Video Delay.
Contact: John Wakeford
19 Kingcup Close, Broadstone
Dorset, United Kingdom BH18 9GS
Telephone: +44-1202-659-138
Fax: +44-1202-658-175

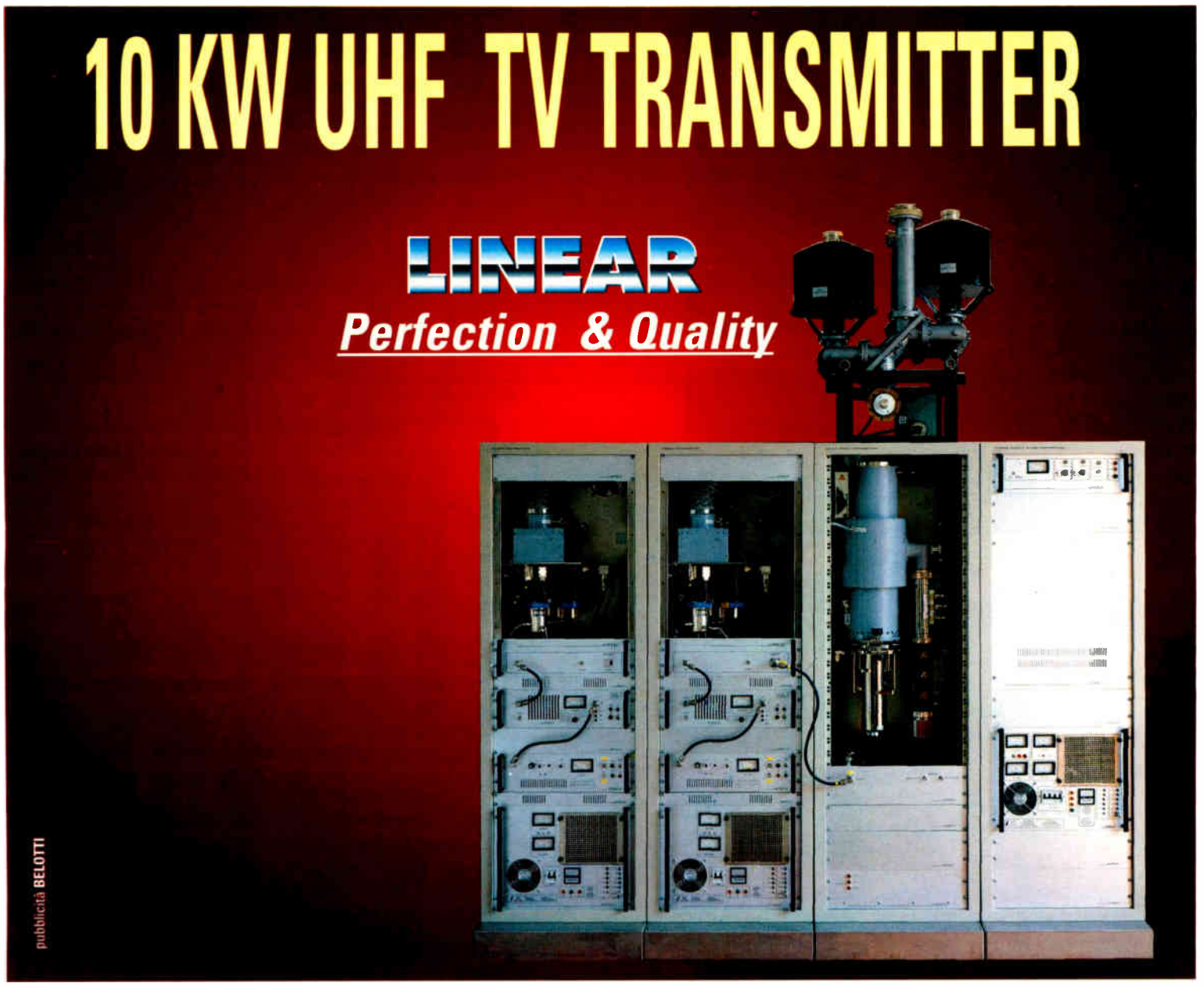
Genelec 11.520
*On Display:*Genelec will exhibit for the first time at this years IBC show. On display and audition will be the Genelec monitors most sold to broadcasters and for video- and film post-production use. These models from the Genelec range are: Model 1030A, 1031A, 1032A, S30C, 1037B and in addition the subwoofers 1092A and 1094A.
Contact: Lars-Olof Janflod
Olvitie 5, Iisalmi, Finland FIN-74100
Telephone: +358-77-133-11*50*

Gennum Corproation 10.330
*On Display:*Gennum Corporation will be displaying their Genlinx line of digital video interface products for SMPTE 259M. Featured products will include the GS9004C automatic serial digital cable equalizer and the GS9001 EDH coprocessor. The MultiGEN, DSP product lines provides ICs focusing on standard conversions, rate conversions and FIR filtering. The featured products will be the new GF9105, component digital transcoder, which implements a wide range of digital format conversions. The ASP product line includes analog video ICs and anlog video crosspoints for routing. Featured products will include the GS4882 and GS4982.
Contact: Paul Reiland
P. O. Box 489, Station A
Burlington, Ontario, Canada L7R 3Y3
Telephone: +905-632-2999*51*

Ghielmetti Communications AG 9.410
*On Display:*Ghielmetti Communications offers Patch Panels, Electronics Cross Matrixes, System Solutions, Project Management, AES/EBU Signal Distribution, Dolby Surround Summing Amplifier, Monitoring Systems, AD/DA - Conversion.
Contact: Paul Schnedoerger
Industriestrasse 6
Biberist, Switzerland CH-4562
Telephone: +41-65-321-196*52*

GI Communications Europe 11.460
*On Display:*GI Communications Europe will be demonstrating its portfolio of leading product solutions including: GI's DVB compliant, MPEG-2 based digital broadcast system for delivery via cable, satellite and telephone networks; SURFboard ATM, network system to link PCs to the Internet via broadband channels, whether Cable,

(Continued on page 58)



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Satellite or Wireless. The company's family of addressable set-top converters will also be on display—the 1900, 2000, 2100 and 2200. A variety of interactive applications developed with technology offered by Wink Communications will also be demonstrated.
Contact: Cathi Ulsenheimer
Imperium, Imperial Way, Reading, Berkshire
, United Kingdom RG2 OTD
Telephone: +44-1734-755-555

Global Access
Telecommunications Services, Ltd. 8.728
*On Display:*Global Access Telecommunications Services, Ltd. plans to display its array of satellite and fiber viedo transmission services.
Contact: Deborah Pappas
Pinewood Studios, Pinewood Rd. Iver
Buckinghamshire, United Kingdom SL0 0NH
Telephone: +44-1753-654-111
Fax: +44-1753-653-12153

Graham-Patten Systems, Inc. 3.112
*On Display:*Graham-Patten Systems will feature its new D/ESAM 200 Digital Edit Suite Audio Mixer, as well as provide a demonstration of the same and will show the D/ESAM 400 and the D/ESAM 820.
Contact: Mike Patten
P.O. Box 1960
Grass Valley, CA, United States 95945
Telephone: +1-916-273-8412
Fax: +1-916-273-7458

Greenway Ltd. 10.512
*On Display:*Greenway plans to launch several new products, including the Applied Digital range of storage solutions, a format synchroniser card, digital conversion products, video isolators, code readers, and logo inserters.
Contact: Richard Crosoer
169 Main Street, New Greenham Park
Newbury, Berkshire, United Kingdom RG19 6HN
Telephone: +44-1635-528-700

Gruppo TNT 2.129
*On Display:*Gruppo TNT is a small Italian software house specializing in multilingual graphic/tilting applications for broadcast companies, using a standard Windows interface. Our display will include sports, clocks, weather forecasts, etc. and specific projects we have customized such as quizzes and games. Gruppo develops for many of the high-quality PC boards like Truevision, AT-Vista, Targa 2000K, EFE Gallea and the new Matrox Digimix.
Contact: Giancarl Peli
Piazale Europa, 64 Sarezzo, (BS), Italy I-25068
Telephone: +39-30-8900884

Hamlet Video International Ltd. 8.510
*On Display:*Hamlet plans to launch five new products, and display a new range of portable devices. Among those products will be Video Windows, two new Stereo Scopes, the Hamlet Glitch Catcher, and the Hamlet Chameleon.
Contact: Steve Nunney
Orchard house, Amersham Rd
Chesham, Bucks, United Kingdom HP5 1NE
Telephone: +44-1494-793-763

Harris Corporation 11.220
On Display: Full line of transmitters for the broadcast industry.

Harrison 9.226
*On Display:*New products on display wil be the ADTA (Analog/Digital Transition Architecture), SeriesTwelve console, and the award-winning TV950 console designed for broadcast and video production. Unique ADTA architecture allows Harrision's fully automated console to facilitate digital, analog or hybrid audio paths, while maintaining a consistent desk control surface. The award-winning TV950, available in frame sizes up to 64 positions with LCRS surround panning, is customizable to integrate into an broadcast or video production facility.
Contact: Steve Turley
7104 Crossroad Blvd., Suite 118
Brentwood, TN, United States 37027
Telephone: +1-615-370-9001

Hewlett-Packard 11.270
*On Display:*Hewlett-Packard plans to demonstrate the HP MediaStream server broadcast series.
Contact: John Hewkin
Harewood House, Wherwell Rd, Longparish
Andover, Hampshire, United Kingdom SP11 7AH
Telephone: +44-1264-720636
Fax: +44-1264-720514

Hi Tech Systems, Ltd. 2.346
*On Display:*Hi Tech plans to display its broadcast equipment, featuring its Disk Controllers.
Contact: John Wakeford
Beech House, 58 the Vale, Oakley, Basingstoke
Hampshire, United Kingdom RG23 7LD
Telephone: +44-1256-780-880
Fax: +44-1256-782-600

Hirschmann 11.322
*On Display:*Hirschmann will introduce theTVU 600, a TV transposer; the DVB 7500 processor; and the LA86/DA86 amplifier. Hirschmann will also display other processors and amplifiers, including the DAB 600 series, the KARIN DVB, the KARIN, the RME 320, the PME 350, and the SV 606/LV 606.
Contact: Thomas Knäple
Oberer Paspelsweg 6 - 8
Rankweil - Brederis, Austria A-6830
Telephone: +43-5522-307-0

Industrial Acoustics Company (IAC) 9.324
*On Display:*Industrial Accoustics Company plans to launch its Quad Series VIII, a single wall studio system, as well as show its line of accoustic doors.
Contact: Marketing Manager
IAC House, Moorside Rd
Winchester, Hampshire, United Kingdom S023 7US
Telephone: +44-1962-873-000
Fax: +44-1962-873-111

Inscriber Character Generator 2.331
*On Display:*Inscriber will launch two new products, the Inscriber CG Supreme and the VideoCarte, as well as display the Inscriber VMP Version 1.2c.
Contact: Doug Strable
1131a Leslie St., Suite 300
Toronto, Ontario, Canada M3C 3L8
Telephone: +1-416-391-4500
Fax: +1-416-391-1999

Intelfax Developments, Ltd. 10.534
Contact: Ray Goff
Rogers House, Osney Mead
Oxford, United Kingdom OX2 OES
Telephone: +44-1865-202-815
Fax: +44-1865-200-660

Intelsat 8.630
*On Display:*Entertainment broadcasting will be the theme of Intelsat's booth at IBC 1996 and three of Intelsat's largest customers will be jointly exhibiting with them: BT, Comsat and TeleGlobe. The booth will feature a video wall with customer programming directly downlinked from two different Intelsat spacecrafts. Intelsat is a premier broadcaster for entertainment, sports and news.
Contact: Gail Yamazaki
3400 International Drive, NW
Washington, DC, United States 20008
Telephone: +1-202-944-7500

International
Telecommunication Union (ITU) 7.442
On Display: The International Telecommunications Union plans to promote its intergovernmental cooperation of the development of telecommunications.
Contact: Guy Girardet
Place des Nations, Geneva 20, Switzerland CH-1211
Telephone: +41-22-730-5229
Fax: +41-22-730-6444

Itelco SpA 11.213
*On Display:*Itelco will debut two new transmitters, the T614WB and the TKFM 10, as well as display several established transmitters, filters, and a multiplexer.
Contact: Ralf Unger
Via Del Merciari, snc, zona Sferracavallo
Orvieto (TR), Italy I-05019
Telephone: +39-763-316231
Fax: +39-763-316290*61*

ITIS 11.300
*On Display:*ITIS plans to introduce a digital encoder/modulator for DVB-T transmitters, and display a range of products for digital equipment, including encoders, multichannel data interfaces, multiplexers, and adapters.
Contact: Alain Untersee
Centre Espace Performance, Bat C1
Saint Gregoire, France F-35769
Telephone: +33-99-23-72-20

Jünger Audio Studiotechnik GmbH 2.336
*On Display:*Junger Audio will show their family of digital dynamics processors model d01, d02 and d03: sophisticated digital dynamic range processing with differnt in- and output interfaces (analog and digital). The digital transmission processor model d05 is a digital dynamic range processor for conditioning and matching of audio transmission signals. The new digital filter processor model e07 will also be on display. Junger Audio will launch a new range of digital audio tool boxes for use in video systems.
Contact: Peter Pörs
Rudower Chaussee 5 (GZ), Berlin, Germany D-12489
Telephone: +49-30-6392-6145

JVC Professional Products Ltd. 11.230
*On Display:*JVC plans to launch its new Digital S video recording system, as well as show its other Digital S products. JVC will also launch a new editing system, as well as show VCRs, monitors, projectors, and displays.
Contact: John Carpenter
Ullswater House, Kendal Ave.
London, United Kingdom W3 OXA
Telephone: +44-181-896-6000

K5600 Lighting 8.131
*On Display:*K 5600 Lighting plans to focus on its Daylite location kits, including Par fixtures. Another product featured will be the Bug-lite 200W.
Contact: Marc Galerine
11 rue Beauregard, Fresnel
Guerville, France F78930
Telephone: +33-01-30-42-3432
Fax: +33-01-30-42-3329

Kata 8.123
*On Display:*KATA plans to display its line of bags, vests, and accessories for monitors, cameras, etc. KATA will focus on the iris-lens-control motor
Contact: Nir Reches
3403 West Pacific Avenue
Burbank, CA, United States 91505
Telephone: +1-818-841-9655
Fax: +1-818-841-7649

Kino Flo Inc./Cirro-Lite (Europe) Ltd. 8.710
*On Display:*Kino Flo Inc. will show its 250,000 watt and the 70,000 watt Lightning Effect lights and will demonstrate its Cracked Oil Mist Machines, the Cirro Micro Mist and the Cirro MK3.
Contact: John Coppen
3 Star Works, Salter St.
London, United Kingdom NW10 6UN
Telephone: +44-181-964-1232
Fax: +44-181-964-3134

Kintronic Laboratories, Inc. 6.214
*On Display:*Kintronic Labs will debut the RFC150 and RFC200 series of RF switches for AM/Medium Wave applications. Also featured are the new Model DAC-MOD-2-12 series of software programmable controllers with voice activiated remote access, the new model VP-2000-1 low power vertically polarized FM antenna and the new series of weatherproof, quick-install VLF, LF or medium wave dummy loads for transmitter power. Other products include medium wave wideband matching networks, directional antenna systems, multiplexed systems, tower monopole skirt kits, transmitter combiners, dummy loads, RF switches, RF patch panels and miscellaneous RF components.
Contact: Tom King
P. O. Box 845
Bristol, TN, United States 37621
Telephone: +1-423-878-3141

Kodak 7.530
*On Display:*Kodak plans to show its array of solutions for digital and special effects, restoration and repair.
Contact: Brian Kercher
Telephone: +44-171-432-4000
Fax: +44-171-432-4019

Komtech GmbH 7.570
*On Display:*Komtech plans to display its array of periphery equipment for Video and Audio applications.
Contact: Holger Heide
Pfingstweide 39
Friedberg, Germany D-61169
Telephone: +49-6037-62098
Fax: +49-6031-15000

Lindos Electronics 9.441
On Display: LinPsi LA100 results management software running on a Psion 3a palmtop computer; LA100 audio analyser.
Contact: Andy Barkley
Telephone: +44-139-438-0307
Fax: +44-139438-5156

L.&S Hochfrequenztechnik GmbH 9.438
*On Display:*L&S plans to show a range of software tools, and offers its software services. Among the software on display there will be CH1Rplus, SPECTRAplus; of the services offered by L&S, they plan to feature their mapping and network planning services.
Contact: Dr. Manfred Lebherz
Im Gewerbegebiet 31
Lichtenau, Germany D-77839
Telephone: +49-7227-9535-0

L.TEQ Ltd. 11.177
*On Display:*L.TEQ Ltd. plans to show its Profile Video Modulator and its Profile Video Demodulator, as well as the SDM-9000 DVB Compliant Satellite Modem, and the Model 4044 Radiation Hazard Monitor.
Contact: Penny Taylor
Lapwing 440, Frimley Business Park
Frimley, Surrey, United Kingdom GU16 5SG
Telephone: +44-1276-686-566

Louth Automation 3.204
*On Display:*Louth Automation plans to demonstrate the ADC-100, an automation system.
Contact: Tracy Judy
1731 Embarcadero Road
Palo Alto, CA, United States 94303
Telephone: +1-415-843-3665
Fax: +1-415-843-3666

Lund Halsey 2.230
*On Display:*Lund Halsey manufacturers control desk furniture for the broadcast industry. New for IBC '96 is KUDOS, a modular, off-the-shelf desking system combining quality and style with versatility, ease of assembly and operator comfort. Kudo's flexibility and a full range of modular components and accessories allow systems for any application to be configured, adapted and expanded to build a desking system exactly as you want it.
Contact: Katie Babbs
Unit 12, Chamberlain Road, Aylesbury
Buckinghampshire, United Kingdom HP19 3DY
Telephone: +44-1296-8996*469*

Matrox Video Products Group 2.341
On Display: Matrox will display the DigiSuite, a complete family of digital video boards and Windows NT software tools that provide a high-powered, open architecture platform for broadcast, cable and post production applications including: non-linear editing systems, digital disk recorders, broadcast media servers, live video switchers, M-JPEG to MPEG transcoders, commercial insertion systems, CATV barker channels, CG/paint/animation workstations and visual effects/compositing systems. DigiSuite features true CCIR-601 10-bit D-1 video quality, PCI-bus high performance and highly integrated, modular architecture.
Contact: Janet Matey
1025 St. Regis Blvd., Dorval, Quebec H9P 2T4
Telephone: +1-514-685-2630
Fax: +1-514-685-2853

Matthey Electronics 9.131
*On Display:*Matthey Electronics will show several new products, including its Embedders and Extractors, Fiber Optic systems, decoders. Among its established products, Matthey Electronics plans to display several Serial Digital Interface Products, and Analog Distribution Products.
Contact: Mark Townsend
Burslem
Stoke on Trent, Staffs, United Kingdom ST6 3AT
Telephone: +44-1782-52491*870*

Maxell Europe 2.142

Maycom Automation Systems 9.211
*On Display:*Maycom offers the Digicorder, a portable digital audio recorder, with editing and communication facilities. Recording is done linear or compressed using MPEG II. PCMCIA flashcards or harddisks are used as storage media. Audio can be sent from location by using a modem, the GSM network or ISDN. Two-way communication through ISDN is possible as well. The

(Continued on page 63)

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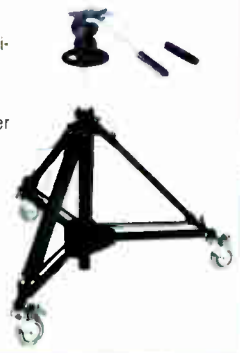
HOT POD TRIPOD SERIES

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.

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 camer balance for ENG camcorders, industrial CCD cameras or small studio camers

#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

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.
- Provide total stability and durability with payloads up to 33 pounds.
- Ideal for the latest generation of dockable and one-piece camcorders.
- 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 it's 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/VITC (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 LOLUX 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) continuosly 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 24dB, 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 computers 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 subtlest 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 increases 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 ±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 ±32X normal speed.
- They have a self diagnostic warning system.plus, an RS-232 diagnostic service 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 it's 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 BDKF-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.

Effects Modification

- To suit individual tastes, allows effects modification for some of the preset effects like mosaic, posterization, solarization, wave, multi-picture, strobe, frosted glass, cinema mode, etc.
- Fine control over various parameters such as size, density and amplitude further enhances effects editing.

Transitions

- 111 of the most frequently used wipes are available from the preset patterns and 13 of them are directly accessed with a press of the keypad.
- Mixes, wipes, as well as digital effects transitions can be performed manually or automatically. Automatic transitions can be varied from 0 to 999 frames in duration for both foreground and background bus transitions and the DSK transitions.

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.

Optional Down Stream Keyer

- Optional BDKF-504 DSK (Down Stream Keyer), lets you introduce captions, characters, etc. with clear edge quality, after mix/effects processing.
- DSK key input accepts composite, component or RGB signals
- Position and type of the DSK are selectable and a box mask is provided to mask unwanted areas of the picture.

Built-in Matte Generator
Three matte generators for backgrounds; can be a solid color or one of 31 different textured patterns, border and effect matte signals. Also instantly selectable color bars, grid pattern and solid black. With the BKDF-504 DSK, you get two more matte generators for DSK matte and DSK border matte.

Other Features

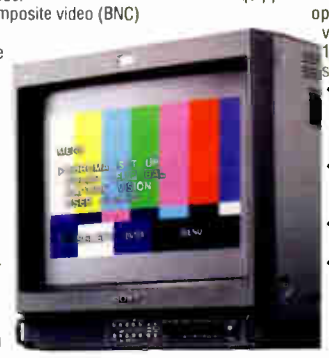
- Four different title modes offer the ability to perform key effects such as luminance key, chroma key, external key or downstream key from a variety of input sources.
- Three black-burst outputs provide synchronization to equipment requiring sync signals. A genlock input allows the DFS-300 to be synchronized to an external timing source.

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 deguassing 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, multiburst and blackburst. Titles can be placed atop any of the patterns.

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in:sync SPEED RAZOR MACH III

Digital Video Editor for Windows NT

The ultimate digital video editing software, Speed-Razor MACH III allows you to edit full screen, 60 fields per second, CCIR 601 broadcast-quality video. Designed for the DPS PAR DR-2100/ Perception PVR-2500 and Truevision's TARGA 1000/2000 video capture cards, Speed-Razor MACH III 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 faster than Windows 3.1 on the same machine and up to ten faster 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—analog 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 new batch capture module allows 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.

EDITING FEATURES:
- Real-time straight cut editing (this doesn't require a new file to be made and requires less space on the hard drive to edit)
- The only video editor with the ability to cut to the field
- Work in Thumbnail or Final Output resolution mode (you set the resolution for each)

COMPOSITING:
- Infinite number of layers of video clips, still and animations can be composited together
- Handles any resolution from Betacam (720 X 480) up to Omnimax film (4000 X 4000)
- Video clips can be combined using an alpha channel, key color transparency, still or traviling mattes

FILE FORMATS:
- Reads and writes ANI files (created by DPS' PAR), PVD files (Perception), DVM files (TARGA 1000 and 2000) and sequences of TARGA files
- Convert files between any of the following formats: ANI, PVD, DVM, AVI, BMP, TGA, FLC, FLI, WAV
- Project-based Library for organizing your work

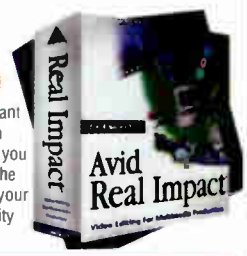
AUDIO:
- Handles audio up to DAT (48 kHz) quality
- Infinite number of audio tracks for multi-layer audio mixing

EFFECTS:
- Blur (circular, gaussian, fast), tint, brightness adjustment, chroma key, crop, displacement, emboss, freeze frame, glass texture, greyscale, invert, loop, matte, pixelate, repeat fields, scale, transparency, strobe. turn red/green/blue
- 3D DVE (translates and/or rotates an image in three dimensions on the X, Y and Z axis)
- Sets a color channel to an assignable value)
- Titles (full blown CG using any Windows font in any color with automatic drop shadow)
- Sub-pixel rendering for incredibly smooth motion
- Effects can be applied to infinite sources

TRANSITIONS:
- Includes over 100 grayscale image transitions, crossfades, luminance fades, fade to/from black, fade to/from white, push, twirl, twist in/out tumbles, flip, turn, scale (zoom)
- Transitions can be applied between infinite inputs

in:sync Speed Razor MACH III for DPS PAR-2100 and PVR-2500	CALL
in:sync Speed Razor MACH III for Truevision TARGA 1000 and TARGA 2000	CALL

Real Impact



Windows NT-based Video Editor for TARGA 2000

Real Impact provides the same professional image quality, intuitive cut/copy/paste editing, and instant random access capabilities that have won Avid 2 Emmy awards—for thousands of dollars less than outsourcing an average video. Designed exclusively for Truevision's TARGA 2000, Real Impact lets you create professional-quality video with audio, graphics, animations, special effects and titles—with the speed, flexibility and creative freedom you need. Create sales, training and product videos right on your PC quickly and easily—without compromising quality. Produce video in 24-bit color, with CD-quality sound and perfect lip sync.

Includes free upgrade to AVID MCXpress ($2000 Value)

Easy to Use: A true 32-bit application (Windows NT 3.51), Real Impact's intuitive interface and extensive on-line help get you productive right away. It's powerful editing features let you work with video, audio, graphics, animations and titles with the simplicity of cut, copy and paste.

Video Capture: Digitize video and audio–without dropping a frame. Video is full-screen, full-motion, 60 fields-per-second and your audio in sync. It's Dial-a-Quality image feature lets you adjust image quality for differing system, storage and delivery requirements.

Create a Storyboard: Extensive media management with built-in media library and database lets you easily find the video and audio clips that you want. Instant access makes previewing edits simple and immediate. And, with timeline editing, you just click and drag to experiment with different cuts, rearrange clips and assemble your story. There are 32 levels of undo and redo.

Add Graphics, Titles and Special Effects: Create and seamlessly incorporate audio, graphics and animations into your video using popular Windows-based applications. Real Impact supports AVI video files, WAV audio files, FLC animation files as well as BMP, JPEG, PCX, TGA and TIFF graphics files.

Add Audio: Polish your audio with music and narration. Adjust pan and volume in real time. Simultaneous playback of four audio tracks makes audio editing quick and easy. View your four audio tracks in sync with the video immediately, no waiting for tracks to compile.

Digital Media Interchange: Compatible with the Open Media Framework (OMF) Interchange, a file format for the seamless integration of digital data among applications and across platforms. Through OMF, you can import video and audio files from other OMF-compatible applications like Avid's Media Composer.

Output to Tape, CD-ROM or Over a Network: Gives complete control over video distribution. There's no long rendering process, creating professional quality tape is a snap. Embedding video in multimedia presentations for distribution on disk or CD-ROM is as simple as the click of a mouse. Supports third-party MPEG tools to create MPEG files for network distribution.

Avid's Support Advantage: Real Impact is backed by Avid's world-class customer service. Toll-free telephone support and bulletin board service are just some of the benefits.

FEATURES:

Video
- Real-time JPEG compression/decompression and playback at 60 fps
- Supports RS-422 control protocol and SMPTE time code.
- Edit two tracks of video for layered effects.

Audio
- Edit up to four tracks of 44.1 KHz, 16-bit CD-quality audio.
- Real-time pan and volume adjustments, digital audio scrub.
- Waveform for precise audio editing.

Import/Export
- AVI video files, WAV audio files, FLC animation files.
- OMF Interchange files.
- BMP, JPEG, PCX, TGA and TIFF graphics files.

Special Effects
- Filter effects with previews and adjustable parameters.
- Transition effects include wipes, dissolves, zooms, pushes and squeezes.
- Layered effects include picture-in-picture, luminance and chroma key.

Integrated Title Generator
- 32-bit processing (24-bit color and 8-bit alpha channel).
- Support for TrueType fonts and international character sets.
- Drop shadows, transparency and color blends.
- NTSC and PAL-safe color palettes.

Media Management
- Media library for organizing digital clips.
- Database with search capabilities.
- Customized views for easy clip access and retrieval.

DIGITAL PROCESSING SYSTEMS INC. PVR-2500

Digital Video Recorder

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 SCSI-2 interface that connects up to seven dedicated hard drives. Because the SCSI controller is integrated with the PVR-2500, video data never has to move over the PCI bus during playback. This avoids the bottlenecks found in systems which use the computer's hard drive for video storage.
- Designed to run under Windows NT 3.51 on computers employing Pentium, DEC ALPHA or MIPS processors. Perception's software utilizes NT 3.51's native support for multitasking and multiple processors, allowing use with-in the most powerful computers.
- Perception's multi-format virtual file system ensures complete integration with your existing Windows NT applications. Comparable with new NT versions of Lightwave 3D, 3D Studio, TOPAS 5.1, SoftImage and Elastic Reality.
- Video output section utilizes 10-bit 2x oversampled encoding and provides broadcast quality CCIR-601 (720 x480) resolution. Its dynamic range is in excess of D1 scaling so that images are brighter, have more color and greater spatial resolution. Outputs component, composite and S-Video via the included breakout cables.
- Use with any 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.
- Can perform real-time interpolation of 30 fps video to 24 fps film rates or vica versa.
- VCR-like controls on the Perception's GUI simplifies the task of batch digitizing and recording. In this mode, it reads SMPTE time code from the source deck.

AD-2500 CAPTURE CARD
- The optional AD-2500 is a video capture daughtercard, that transforms the Perception into a digital video recorder. It has component, composite and S-Video inputs for real-time recording, and storage capacity is limited only by the size and number of your hard drives. Captured video can also be exported as sequential RGB files for rotoscoping & other compositing applications.

TRUEVISION TARGA1000/2000

Digital Video Capture Boards for Windows & Windows NT

The TARGA 1000 and 2000 are an easy and affordable way to transform your computer into a powerful digital editing system. Along with their high-speed PCI interface, both the TARGA 1000/2000 incorporate all the functions you need to create spectacular multimedia content. They support NTSC and PAL video standards and let you capture, edit and playback full-motion, full-resolution digital video with fully synchronized CD or DAT quality audio. Designed for high performance IBM compatibles and Power Macintoshes their advanced architecture provides incredible processing speed for video and audio effects, titling and compositing.

TARGA 1000/2000 Features:
- Allows recording and playback of video directly to/from hard drive at full motion, full frame rates (50 fields/sec - PAL, 60 fields/sec-NTSC). Video is stored and played back at the highest resolution for each format (768 x 576 x 24 bit - PAL, 640 x 480 x 24 bit - NTSC). Compression can be adjusted on the fly to optimize for image quality and/or minimum storage space.
- The audio is digitized at 16-bit resolution (at 44.1KHz or 48KHz sampling rates), yielding professional quality stereo sound. Since all audio and video processing is done by on-board DSPs, you are assured of perfectly synchronized sound and images.
- Equipped with composite and S-video inputs and outputs. Also available with component input/output (TARGA 1000 PRO).
- Genlock using separate sync input for working in professional video suites
- Optimized to work with Winsows NT-based software (Adobe Premiere 4.2, in:sync Speed-Razor MACH III)

Macintosh version only:
- Video capture plug-in for Adobe Photoshop.
- Quicktime 2.1 compatible, can be used directly out of the box with many applications.

TARGA 1000 for Windows or Macintosh PCI (specify)	2595.00
TARGA 2000 for Windows or Macintosh PCI (specify)	3995.00
TARGA 2000 RTX for Windows or Macintosh PCI (specify)	CALL
Special! TARGA 2000 for EISA (PC) or Nubus (Macintosh) (specify)	2495.00

TARGA2000 RTX

Truevision's most advanced digital solution, tthe new TARGA 2000 RTX features a breakthrough architecture to deliver broadcast quality video and real-time effects processing on the desktop. It provides input and output connections through an advanced breakout box, works in Windows NT or Mac OS environments and can drive an 21-inch RGB monitor at 24-bit color. It also supports full-motion previewing on both RGB and video monitors. The 2000 RTX installs in a single PCI slot and the breakout box plugs directly into the TARGA. The box can be rackmounted or utilized as a stand-alone device on your desktop. It allows for easy connection to your input and output cables for composite, component and S-video as well as XLR balanced audio, genlock and alpha channel.
- QuickTime and Video for Windows Native lets it work with a large number of off-the-shelf video applications
- Dual Motion JPEG Codec Architecture processes 2D digital effects in real-time
- Breakout box allows for easyentegration into post-production environments
- Alpha Channel output supports downstream luminance and chrominance keying
- CD and DAT quality audio via XLR connectors
- Delivers near lossless broadcast quality video to your desktop (up to 9 MB's per second (300KB per frame)
- CCIR 601 and Square Pixel support

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 • Focus 2001A keyboard • Microsoft MS mouse
- Princeton Ultra 17+high resolution 17-inch multiscan monitor • Windows NT 3.51 operating system software.

*PVR-2500/AD-2500 Turnkey System with Adobe Premiere 4.2	$7495
*PVR-2500/AD-2500 Turnkey System with in:sync Speed-Razor MACH III	$8695
TARGA 1000 Turnkey System with Adobe Premiere 4.2	$7495
TARGA 1000 PRO Turnkey System with Adobe Premiere 4.2	$7795
TARGA 1000 Turnkey System with in:sync Speed-Razor MACH III	$8995
TARGA 1000 PRO Turnkey NT System with in:sync Speed-Razor MACH III	$9295
TARGA 2000 Turnkey System with in:sync Speed-Razor MACH III	$10,695
TARGA 2000 PRO Turnkey System with in:sync Speed-Razor MACH III	$11,395
TARGA 2000 Turnkey System with AVID Real Impact	$10,995
TARGA 2000 Turnkey PRO System with AVID Real Impact	$11,695

*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)

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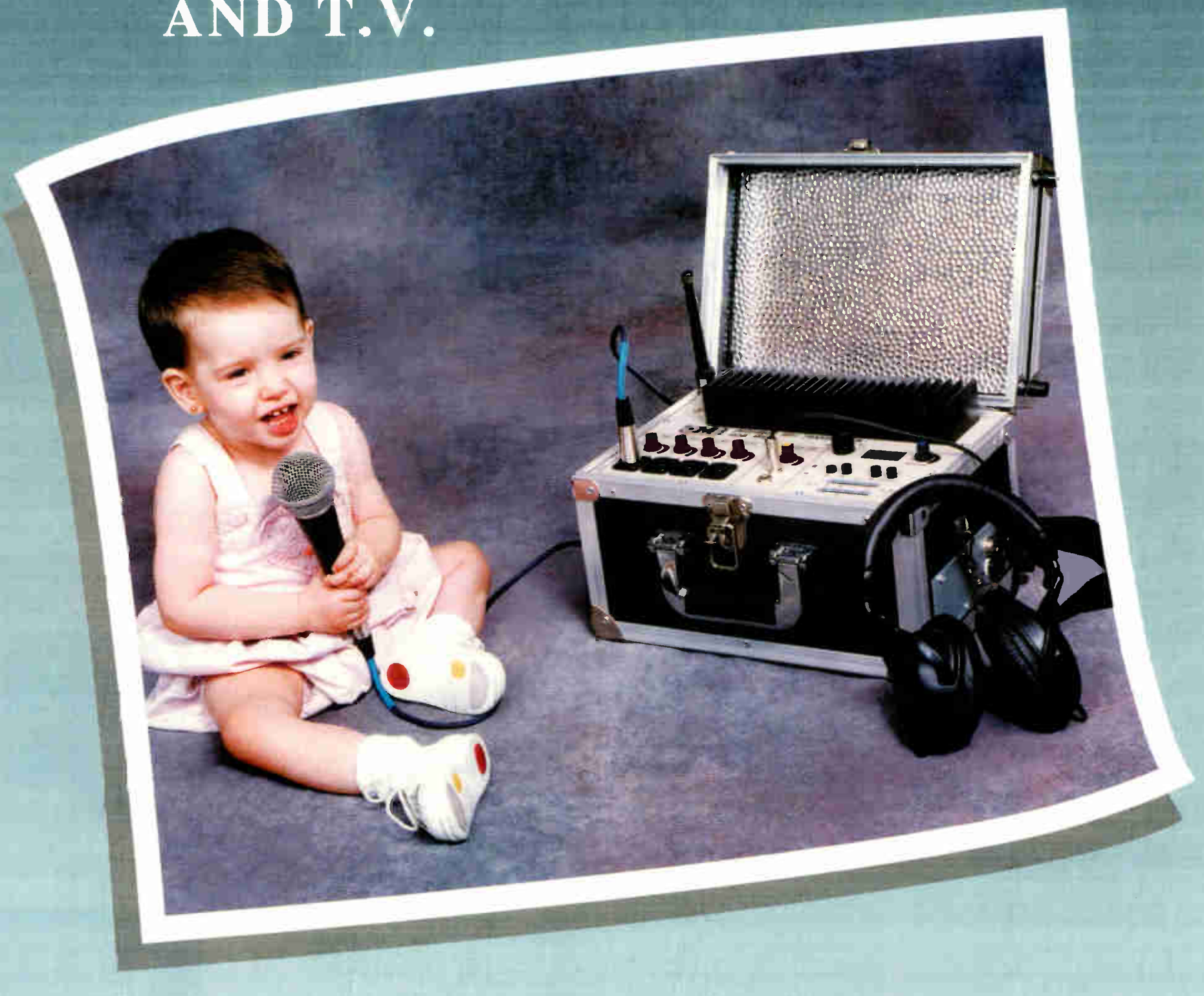
PORTABLE REPORTING UNITS FOR RADIO AND T.V.

OMB



Even a child can operate them!

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EUROPA

María Moliner 74-76
50007 Zaragoza - ESPAÑA
Teléfono: (76) 370300
Fax: (76) 372336

Circle 88 On Reacer Service Card

digicorder is able to communicate with Maycom's receiving application Digitrans (without loss of quality) or other ISDN codecs.
Contact: Jasper Williams
Dorpssbroab
Elsb (Gld), Netherlands NL-6661 EG
Telephone: +31-181-377-710

Microdolly Hollywood **3.352**
*On Display:*Microdolly will display its camera dolly and dolly track system.
Contact: J. Johnson
1311 North Highland Ave.
Hollywood, CA, United States 90028
Telephone: +1-213-464-2712
Fax: +1-213-464-0139

Microvideo **9.121**
*On Display:*Microvideo plans to display its Flash-Logogen generator, the SDE card, and the closed caption encoder.
Contact: Stewart McGhie
Old Farm Offices, Copley Hill Farm, Cambridge Rd.
Babraham, Cambridge, United Kingdom CB2 4AF
Telephone: +44-1223-834-114
Fax: +44-1223-834-471

Microwave Radio Corporation **11.550**
*On Display:*Microwave Radio Corporation will show its new product, the Millenium PML Portable Two-Box Microwave Link. Also scheduled for display are several established products including antennas, control systems, short haul links, and portable microwave transmitters and receivers.
Contact: Dave Glidden
Broadband Division, 20 Alpha Rd.
Chelmsford, MA, United States 01824-4168
Telephone: +1-508-250-1110

Mier Comunicaciones
*On Display:*Mier Comunicaciones will feature several of its main products, including TV transposers and transmitters, filters, splitters, multiplexers, turnkey installations, antennas.
Contact: Pete Alemany
Poligon Industrial Congost, Parc 4S
LaGarriga, Barcelona, Spain 08530
Telephone: +34-3-871-7500
Fax: +34-3-871-7230

Miles Consultants Ltd. **2.131**
*On Display:*Miles Consultants plans to present several generators, programming packages, and automation systems.
Contact: B.D.R. Miles
5 West Mills Yard, Kennet Rd
Newbury, Berkshire, United Kingdom RG14 5LP
Telephone: +44-1635-552-524
Fax: +44-1635-552-858

Minerva Systems, Inc. **3.210**
*On Display:*The Minerva Compressionist 200 creates the highest quality, real-time MPEG-1 and MPEG-2 encoded streams for the professional video production market. It offers a powerful video encoding engine, accurate inverse telecine detection and extraction, advanced preprocessing, video server support, and high speed networking, and support for a wide range of video resolutions. The Minerva Publisher is a high-quality MPEG digital video publishing system for the corporate and institutional market — for use in sales tools, training, presentations, video collaboration, kiosks, and multimedia titles. With the system's plug-and-play design and easy-to-use interface, users can connect the system to equipment already in use to start encoding video immediately.
Contact: Sue Correll
2933 Bunker Hill Lane, Suite 202
Santa Clara, CA, United States 95054
Telephone: +1-408-970-1780

MIT, Inc. **3.330**
*On Display:*MIT, Inc. plans to show its range of connectors and cables.
Contact: Lew Hirabayashi
Hashizume Bldg. 2F, 1-25-12, Umeqaoka, Setagaya-Ku
Tokyo, Japan 154
Telephone: +81-3-3439-3755
Fax: +81-3-3439-3877

MRMC Ltd.
*On Display:*MRMC Ltd. plans to demonstrate the MILO portable motion control system and the Flair motion control computer.
Contact: David Heald
Unit 4, Birches Industrial Estate, Imberhorne Lane
East Grinstead, United Kingdom RM19 1X2
Telephone: +44-1342-313-522
Fax: +44-1342-327-566

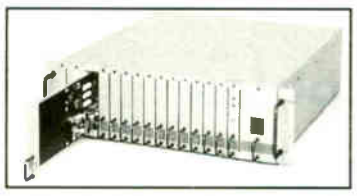
Multipoint Communications, Ltd. **10.342**
On Display: A comprehensive range of fixed, mobile, flyaway and stabilised earth stations for uplinking TV, voice, videoconferencing and business data.
Contact: Mktg. Mgr.
Satellite House
Eastways Industrial Park, Witham, Essex CM8 3YQ
Telephone: +44-137-651-0881
Fax: +44-137-650-2233

Nagra Kudelski SA **3.331**
*On Display:*Nagra Kudelski will show a range of products including the Nagra ARES-C Solid State Recorder, the Nagra-D Digital Audio Recorder. Nagra Lysis SA will show its Integrated Broadcast Systems, consisting of hardware and software for broadcasting needs. Nagra Vision will demonstrate line of access control packages for digital and analogue pay-TV.
Contact: Aldona Mury
Route de Geneve 22
Cheseaux, Switzerland CH-1033
Telephone: +41-21-732-0101

National Museum of Photography, Film, & TV
*On Display:*The National Museum of Photography, Film, and Television plans to demonstrate the pioneers in color television by showing two TV cameras: EMI three tube Vidicon color camera and the Marconi experimental color camera, and a TV studio set.
Contact: Bob Cox
Pictureville Bradford
West Yorkshire, United Kingdom BD1 1NQ
Telephone: +44-1274-727-488

Nautel, Ltd **11.523**
*On Display:*Nautel plans to focus on its transmitters, including the Medium Wave AM Transmitters, NAUTEL NA100-300, NAUTEL XL12, VHF-FM, and NAUTEL FM Series.
Contact: Jorgen B. Jensen
Hackett's Cove, R.R. #1
Tantallon, Nova Scotia, Canada B0J 3J0
Telephone: +1-902-823-2233
Fax: +1-902-823-3183

NEC Corporation **11.432**



The Nova StudioFrame Series is a modular, flexible, digital/analog signal processing system designed to efficiently combine a wide variety of individual function boards into more complex function groups, all in one equipment mainframe.

The scaleable nature of the StudioFrame design allows it to be easily reconfigured and/or upgraded as today's video standards and requirements continue to evolve. Based on two rack-mount frame models, up to 13 modules can be accommodated. Available function modules include serial digital converters, frame synchronizers, noise reducers, DAs, transcoders and encoders.

Nova Systems
A Videonics Company
50 Albany Turnpike
Canton, CT 06019 USA
Telephone: +1-860-693-0238
Fax: +1-860-693-1497

Circle Reader Service 43

Nova Systems **11.582**
*On Display:*A leading designer and manufacturer of audio/video signal processing equipment, will display the new StudioFrame modular signal processing family of 10-bit plug-in modules; the new NovaMNR median noise reducer for impulse and transmission noise reduction; the new NovaScan broadcast-quality computer-to-video scan converter; and the new NovaAVD audio/video delay system, with up to 10 seconds of uncompressed programming delay with frame synchronization. Nova's established NovaBlox signal processing system also will be shown.
Contact: Mark Podesla
50 Albany Turnpike
Canton, CT, United States 06019
Telephone: +1-860-693-0238
Fax: +1-860-693-1497

NTL **11.280**
*On Display:*NTL provides broadcast transmission and telecommunications services for the UK, with international connectivity via a global digital network. In addition to terrestrial broadcast networks, the company offers broadcasting, distribution and contribution services by satellite — backed by acknowledged expertise in MPEG-2 technology. Specially featured at IBC will be NTL's joint service platform with Orion, providing a competitive digital video distribution service to Europe and the United States. Plus the latest developments in Digital Terrestrial Television for the UK, and international turnkey projects from Nexus Internationalm NTL's broadcast systems division.
Contact: Bruce Randall
Crawley Court, Winchester
Hampshire, United Kingdom SO21 2QA
Telephone: +44-1962-823-434

NTP Elektronik A/S **9.420**
*On Display:*NTP Elektronik A/S will display its array of solutions for digital audio. NTP will feature the Master Sync Reference Generator, and will also show several converters.
Contact: Arne Mulstrup
Knapholm 7
Herlev, Denmark DK-2730
Telephone: +45-44-53-11-88
Fax: +45-44-53-11-70

NTW Datawave B.V. **2.147**
*On Display:*NWT Datawave features the Multichannel Video (DVE) Effectbox which produces all kinds of TV media-like video, teletext, audio, etc. Also on display is theTeletex editing and management system featuring unlimited amounts of teletext editions, and Image, media management and scheduling system.
Contact: Walter Verbruggen
P. O. Box 10214
Rotterdam, Netherlands NL-3004 AE
Telephone: +31-10-46-25-844

Nucomm, Inc. **11.556**
*On Display:*Nucomm plans to show its portable microwave link Series PT5/RX5 and the Digalog Series of fixed link analogue/digital video, as well as the MPT1 Miniature Transmitter and HTG4 Hand-Held Multi-Function Video/Audio Test Generator.
Contact: Dana T. Doner
101 Bilby Rd.
Hackettstown, NJ, United States 07840
Telephone: +1-908-852-3700

Numeric Video **8.511**
*On Display:*Numeric Video plans to lauch several new products, including the Elephant, a slow motion control panel for TEKTRONIX's Profile; the RC 2010, a remote control panel for colour correction with improved ergonomy; two new aspect ratio converters, the AR 169 and the AR 43, both featuring extensive functionalities (panning H+V, zoom, crop, etc.)
Contact: M. Jambart
57 Rue Hippopke Pinson
Joinville Le Pont, France F-34340
Telephone: +33-1-48-83-15-55

Odetics Broadcast **11.444**
*On Display:*Odetics Broadcast will display several Automated Systems for Program and Commercial (spot) Replay, including the Spectrum Multichannel Video Management System, the Spotbank Automation & Commercial Insertion System, and the Compressed JPEG Data Archive.
Contact: Robert Stopford
The Minster, 58 Portman Rd
Reading, Berkshire, United Kingdom RG301EA
Telephone: +44-118-956-0564

Omnibus Systems **11.150**
On Display: New products offered by OmniBus Systems include the Columbus Automation system. Columbus is a suite of applications which provides central control over a wide range of automation and media mangement functions — e.g. dubbing, archiving, routing of video (digital and tape) and audio. Featured will be a newsroom system running under OmniBus control. Also new is Portfolio TX - a rapid, on-air Still Store feturing Archiving on CD ROM to CD Jukebox. Dual channel or netowrked systems available. Also featured is a New Character generator for broadcasters and Machine Control & Master Control.
Contact: Bridget Fletcher
Stanford House, Stanford on Soar, Loughborough
Leicestershire, United Kingdom LE12 5PY
Telephone: +44-990-004-300

Optex **8.312**
*On Display:*Optex will be introducing their own mechanically converted and designed Electronic Cinematogrpahy type lenses—the OpTex/Canon 8-160mm, T1.8 and 5.2-47mm, T2 macro zooms; OpTex optical extension viewfinders for the Sony DVW 700 and Thomson 1657 cameras. Other new products will be a 3:1 miniature zoom lens; a new Pan & Tilt system for the Toshiba Ik-M48P, Sony XC-999E and Pulnix TMC-X miniature cameras.
Contact: Geoff Clappell
20-26 Victoria Road
New Barnet D. London, United Kingdom EN4 9PF
Telephone: +44-181-441-2199

Optibase Ltd. **3.130**
*On Display:*Optibase will be showing the capabilities of the MPEG Fusion which provides full D1 MPEG-2 encoding, and offers outstanding quality MPEG-2 streams for cable TV, satellite transmissions and broadcast applications. Also on show will be the MPEG ComMotion - a digital video networking system that transmits MPEG high-quality full motion video over E1 or T1 lines. The MPEG ComMotion can also be connected to standard RS-422/X21 high speed interfaces for link-up to other communication equipment.
Contact: Marcia Bana
91 Medinat Hayehudim, Herzliya
Herzliya, Israel 46766
Telephone: +972-9-599-288

Options International, Inc. **6.113**
*On Display:*Options International plans to exhibit several products, including the Advanced System Telecine Edit Control (ASTEC), Meta-Speed Digital Servo, and the QuattroScan 4:4:4.
Contact: Nancy Fite
913 18th Avenue, South
Nashville, TN, United States 37212
Telephone: +1-615-327-8090
Fax: +1-615-327-132*684*

Optivision, Inc. **7.513**
*On Display:*Optivision, Inc. will show three of its products: the V STOR MPEG Storage Encoder, the MPEG Video Transmission Product, and the High Speed Quad.
Contact: Bronwyn Johnson
3450 Hillview Avenue
Palo Alto, CA, United States 94304
Telephone: +1-415-855-0200
Fax: +1-415-855-0222

Orad Hi-Tech Systems **7.310**
*On Display:*Orad Hi-Tec Systems will highlight its unique pattern recognition technology and realtime digital video processing for virtual set applications. A world leader in the development of virtual sets, Orad will exhibit its award-winning Cyberset product family. The Orad Cyberset offers a unique virtual set solution based on pattern recognition that allows for camera and lens parameters to be measured in real-time without mechanical or other sensors being attached. Cyberset allows the user complete freedom to use hand-held or shoulder-mounted cameras.
Contact: Dr. Miky Tamir & Avi Sharir
P. O. Box 2177
Kfar Sava, Israel 44425
Telephone: +972-9-767-6862

Oxtel Limited **11.190**
*On Display:*Oxtel will be showing its new Image Distribution System, an Ethernet-based system for transferring images between its imagestore SDI logo-image inserter and image library units, as well as new remote control panels for the Imagestore. The Imagestore has two independent keyers to allow the insertion of two separate images, or alternately to allow a dedicated preview keyer. The unit's image library is expandable to to 400 full-screen images, and it can also provide digital audio mixing (embedded audio and AES/EBU) with the EasySound option.
Contact: Neil Sharpe
The Market Place, Didcot
Oxfordshire, United Kingdom OX11 7LE
Telephone: +44-1235-510-000

PAG Ltd. **8.320**
*On Display:*Pag Ltd. presents PAG System RTI, an accurate instantaneous Battery Status Recognition and Run-Time information system for all broadcast cameras; the PAG System RTI Batteries, Paglok 13.2V 2.5Ah and 5.0Ah batteries which communicate digitally w ith PAG System RTI; PAG System RTI Battery Reader, instantly determines and displays the charge status of System RTI batteries; and PAG MC124 RTI, uses data received from System RTI batteries to determine the most appropriate charge program.
Contact: Nigel Gardiner
565 Kingston Road
Raynes Park, London, United Kingdom SW20 8SA
Telephone: +44-181-543-3131

Panasonic Broadcast Europe **10.320**
On Display: Major showings incluyde the DVCPRO tape format and associated gear, including comcorders.

Pastega Elettronica Professionale S.r.l. **435A**
*On Display:*Pastega will show the upgrade of its wireless microphone systems.
Contact: Donata Smaniotto
Via Pola, 1
Bassano, Italy I-36061
Telephone: +39-424-512873
Fax: +39-424-35683

Pearson Television Broadcasting **11.588**
*On Display:*Pearson Television Broadcasting plans to offer its services as a design consultancy and systems implementation house.

PESA Switching Systems, Inc. **7.315**
*On Display:*PESA Switching Systems, Inc. plans to focus on its audio/video analog/digital switchers: the Bobcat, the Lynx, the Jaguar, and the Cougar.
Contact: Elise Taylor
330A Wynn Dr
Huntsville, AL, United States 35805
Telephone: +1-205-726-9200
Fax: +1-205-726-9271

Philips
*On Display:*Philips will show a full range of ISDN codecs, including the Baby Blue full-duplex mono ISO/MPEG Layer II/G.722 codec, the Marte 10/348 real-time ISO/MPEG Layer II multi-encoder system, the Musicore 2.x system and the Compact Musicore Codec.
Contact: Marketing Manager
Advanced Systems and
Applications Laboratory Building
Eindhoven, Netherlands NL-5600 JB
Telephone: +31-40-2734092

Phonak Communications AG **9.430**
*On Display:*Phonak Communications will feature its "in-the-ear" Microear-VHF communications receiver.
Contact: Rahel Bronnimann

(Continued on page 64)

Langgasse 17
Murten, Switzerland CH-3280
Telephone: +41-37-72-9676
Fax: +41-37-72-9677

Philips-BTS **8.520**
On Display: Full line of telecines, including the Quadra and Spirit datacine; Diamond digital production switchers, including the DD110, DD120 and DD130; cameras, including the LDK-10, LDK-10P and the DVCPRO line of equipment; routing switchers; master control; facility control; video servers; the BDR-100 disk recorder; and the company's full systems configuration group.

Photron Ltd. **7.609**
*On Display:*Pseudio, a low-priced virtual studio system from Photron is based on a totally different concept from other virual set configurations. Its biggest feature is the low price — about 1/10 of the cost of conventional virtual sets — while still maintaining the high image quality required for TV broadcast. With this system, background images are pre-modeled and rendered and then stored in a D1-quality digital disk array. These images are then read out from the disk in real time in conjunction with the movement of studio cameras. The Primatte chromakey system will also be featured.
Contact: H. Osato
Shibuya 1-9-8, Shibuya-ku
Tokyo, Japan 150
Telephone: +81-3-3486-3480

Pinnacle Systems, Inc. **11.250**
On Display: The Genie family, including GeniePlus and Genis Fusion, a single PCI card that delivers high quality 3D digital video effects to desktop personal computers. Featured also are Alladin, professional desktop video post-production system and FlashFile, still storage and clip management system.
Contact: Rebecca Rosi
870 W. Maude Avenue
Sunnyvale, CA, United States 94086
Telephone: +1-408-720-9669
Fax: +1-408-720-9674

Pinwood Associates Ltd. **11.552**

Pioneer Electronic Europe **7.430**
*On Display:*Pioneer Electronic Europe will exhibit the DVD Multimedia Library System: an optical disc storage system for professional use, based on CD-ROM and DVD, with nearline browsing and archiving functions and Digital Video Broadcasting (DVB) products: Receiver/decoders from Pioneer for home and business communication applications.
Contact: G. Eggermont
Haven 1087, Keetberglaan 1, Melsele, Belgium B-9720
Telephone: +32-35-700-511

Pixel Instruments Corp. **11.133**
*On Display:*Pixel Instruments plans to launch its new PixStore and ClipStore systems, designed to capture and replay stills and clips. Also scheduled for introduction are the SDY400, the AD300, the DD3100D Delay Detector, the FD2900, and the FD1900.
Contact: Dave Horton
718 University Ave. #210,
Los Gatos, CA, United States 95030
Telephone: +1-408-354-9122

Pixel Power Ltd. **3.120**
*On Display:*Pixel Power Ltd. plans to introduce an accessory for Collage, as well as display its current Collage products.
Contact: James Gilbert
Unit 1, Trinity Hall Farm Industrial Estate, Nuffield
Cambridge, United Kingdom CB4 1TG
Telephone: +44-1223-423399

Plasmec Systems Ltd.
*On Display:*Plasmec plans to display its line of jack sockets and jackfields, the SDV video jackfields, audio jackfields, and the Flexipatch.
Contact: Marketing Manager
Grosvenor House, 36 North Lane
Aldershot, Hants, United Kingdom GU12 4QG
Telephone: +44-1252-366-300
Fax: +44-1252-366-301

Prime Image, Inc. **11.593**
*On Display:*Prime Image, Inc. plans to launch several new products, including the Pick-2 chassis, the CableLok-20, and "The Time Machine". In addition to the new products, Prime Image will show the Xpon, the C-Sync, the Penta, the Pipeline, and the 50II time base corrector/synchronizer among its established products.
Contact: Bill Hendershot
19943 Via Escuela, Saratoga, CA, United States 95070
Telephone: +1-408-867-6519

Pro-Bel **3.240**
On Display: The Sextant automation system for multichannel broadcast control; XD Series digital routers featuring a field expansion capability and advanced system facilities for compatibility with current Pro-Bel routers and control systems. TM32 series multiformat routers offering expanded matrix configurations of 32 x 16 and 32 x 32; Accent digital video peripherals for logo generation, keying and video/audio mixing within automated, multichannel environments; MAPP video server management system featuring acquisition and playout functions using a standard SQL database; and multistage tie-lines for multirouter interworking.
Also: System 3 Router controller; Procion AV-Workbench PC-based control and monitoring platform; TX-220 master control switcher; AV-402 multichannel playout automation; complete range of router control systems; modular signal management equipment, signal processing and distribution amplifiers.
Contact: Mktg. Mgr.
Danehill Lower Earley
Reading Berkshire RG6 4PB, United Kingdom
Telephone: +44-173-486-6123
Fax: +44-173-475-5787

QDesign Corporation **10.210**
*On Display:*QDesign introduces its new family of software-based MPEG audio compression products which enable users to do real-time encoding from a live or recorded audio source using the processing power of a standard Pentium PC and the audio interface of an MPC-compliant audio card. Fully compliant to the ISO/MPEG Layer I and II standard, i-Media Audio offers optimized audio compression at all sample rates, bit-rates and compression levels. Available as: 16/32-bit static library or DLL 32-bit Windows 95 application.
Contact: Mandy Chan
Suite 340, 1122 Mainland Street
Vancouver, British Columbia, Canada V6B 5L1
Telephone: +1-604-688-1525

Quantel **10.130**
*On Display:*Quantel plans to demonstrate many new products for the range of production stages.
Contact: Karen Spriggs
Turnpike Rd, Newbury,
Berkshire, United Kingdom RG14 2NE
Telephone: +44-1635-48222
Fax: +44-1635-46361

Quartz **8.711**
*On Display:*Quartz plans to launch its new focus, the Q6400 Serial Digital Video Router; also being intro-

Quartz is a specialist manufacturer of broadcast Routing Switcher Systems. IBC sees the launch of a range of 64x64 digital routers.

64x64 Serial Digital Video Router in 8U
32x32, 48x32, 48x48, 64x64 matrix sizes
Automatic cable equalisation on each input
143Mb/s, 177 Mb/s, 270Mb/s & 360 Mb/s
Twin 75(video outputs with re-clocking
Optional backup power supply
Dual references for 525/625 mixed systems
64x64 AES Digital Audio Router in 3U
synchronous option
8U with BNC connectors
CP-6408 8 destination keypad Control Panel
CP-1604 20 button multi-mode Control Panel
SI-0002 4 Port Multi-mode Serial Interface
provides extra ports for Q-link and RS232/422
AVS Omnibus Interface for all panels and frames.

Quartz

Unit 1, Woodside Business Park
Whitley Wood Lane
Reading, England RG2 8LW
Tel: +44-118-975-5770
Fax: +44-118-975-5456
Email: 100130,670@ CompuServe.com
Stand No: 8-711

Circle Reader Service 102

(Continued on page 67)

THINKING OF BUYING A CHYRON?

Make your accountant happy and take a look at ManuScript from AVS Graphics

AVS Graphics gives you what you need the most

...a choice

Unbeatable quality at an unbeatable price has made AVS Graphics' ManuScript the fastest selling range of dedicated broadcast character generators in the world.

From under $6,500, the ManuScript range of dedicated character generators offers a wide variety of features and prices to suit every application - and budget.

ManuScript Junior offers simple, fast operation with high quality anti-aliased text and logos, color gradations, a composite linear keyer and separate RGB edit output at an unbeatable price.

ManuScript Elite gives full anti-aliasing to a resolution of 10nS, logo compose drawing package and an optional 'Video Toolkit', offering VTR slate clock, test pattern generation and video fade to black. With a choice of composite or component keying, the system meets full broadcast specifications at a price of less than half that of other manufacturers' devices.

For the full story on the world's fastest selling range of dedicated broadcast character generators, call us today for a full information pack or to arrange a local demonstration.

AVS Graphics, 5 Mead Lane, Farnham, Surrey, UK, GU9 7DY
TEl +44 (0)990 003200 Fax +44 (0)990 003203

Circle 41 On Reader Service Card

SIMPLY THE BEST IN ITS FIELD

SEE US AT IBC STANDS 8233 & 8234

THE DIGI SUPER 70 FROM CANON IS A REVOLUTIONARY NEW FIELD ZOOM LENS WITH A BUILT-IN DIGITAL SERVO SYSTEM. THE DYNAMIC RANGE OF SERVO SPEEDS FROM ULTRA-SLOW TO HIGH SPEED IS WIDER THAN EVER. THE NEW IF SYSTEM ACHIEVES AN INCREDIBLE 70X ZOOM RATIO AND A MAXIMUM FOCAL LENGTH OF 1340MM (WITH A BUILT IN 2X EXTENDER) DELIVERING CANON STANDARD OPTICAL PERFORMANCE IN A COMPACT BODY.

THE DIGI SUPER 70'S DIGITAL SUPERIORITY INSIDE MAKES IT THE IDEAL CHOICE OUTSIDE.

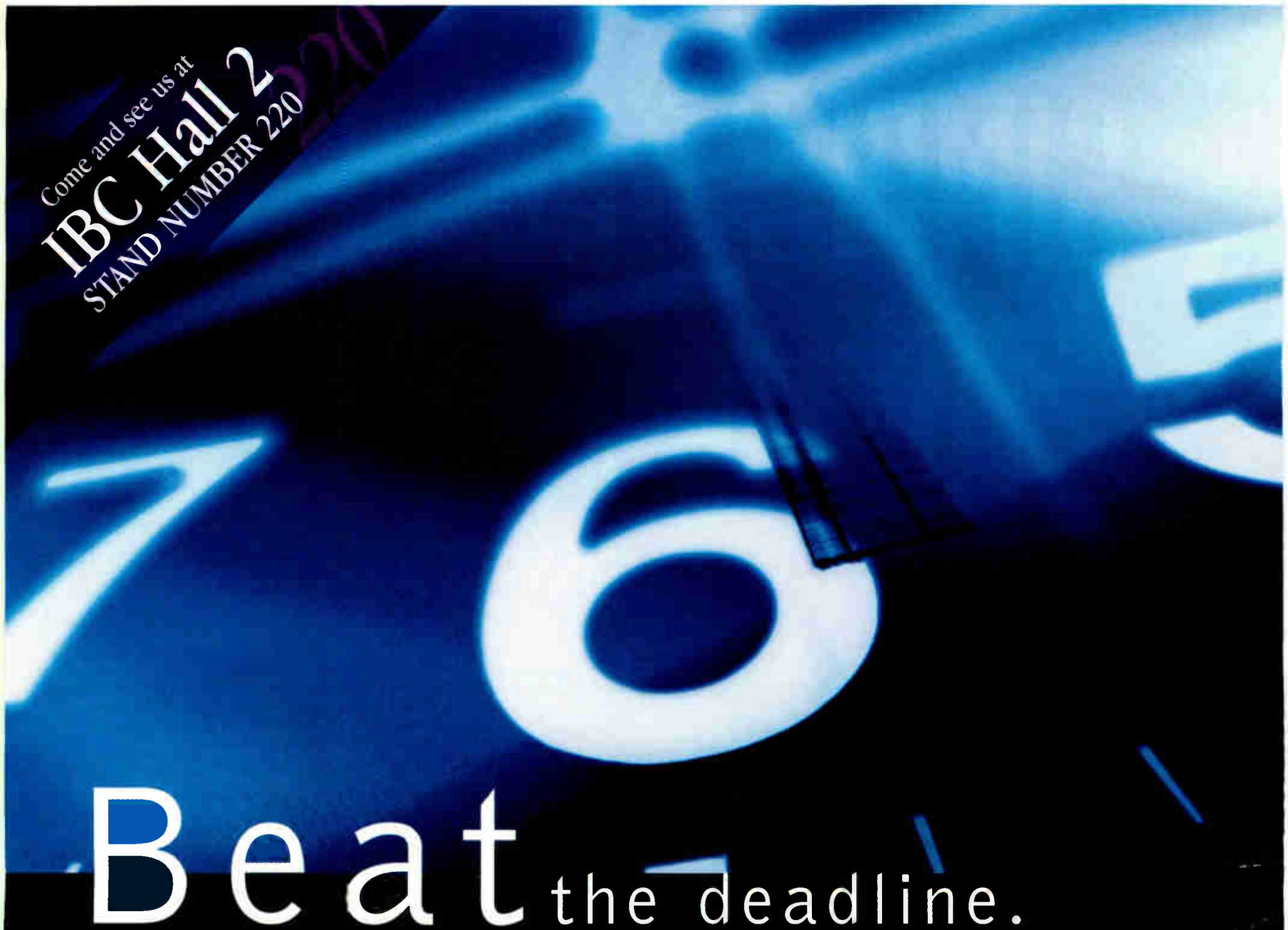
CONTACT CANON FOR MORE INFORMATION.

Canon

FOCUSING ON THE FUTURE

Circle 56 On Reader Service Card

THE NETHERLANDS Canon Europa NV Tel: +31(0)20 5458905 Fax: +31(0)20 5458203 **UNITED KINGDOM** Canon UK Ltd Tel: +44(0)1293 524358 Fax: +44(0)1293 562008
GERMANY Canon Euro Photo Tel: +49(0)2154 495491 Fax: +49(0)2154 495498 **FRANCE** Canon Photo Video France Tel: +33(0)1 49040608 Fax: +33(0)1 49040699



Beat the deadline.

You deliver the story on the hour. The story is everything—and the tools you use to deliver it must be proven. Flexible. And fast

Avid can help you beat your deadlines. Letting you transmit consistently high-quality broadcasts while the competition's still running around with tapes.

Our disk-based editing system, NewsCutter®, is, quite simply, a better way to edit news. Just like word processing for video. Cut and paste. Pinpoint shots frame by frame. Make copies without degradation. And no prerecording. No other technology allows the control and flexibility that disks and servers do.

Avid's newsroom computer system, Avid NetStation™, lets your entire team share wires, scripts, rundowns and assignments.
The latest graphical interface makes it fast and easy. Imagine the impact on productivity and efficiency.

And our unique Digital News Gathering (DNG) system integrates our news editing and playback products into a complete server-based production system. No more waiting. No more missing the deadline.

Avid's field-tested systems are scalable, modular and open. They can be integrated into your existing analogue or digital facility and will grow with you.

Science-fiction? Look again. Avid's systems are in use in more than 900 broadcast facilities worldwide. Today. That's a lot of broadcasters who can react to late-breaking news faster—and better—than you can, if you're relying just on tape.

For more information on Avid disk-based news editing, newsroom computer systems or Digital News Gathering, call +44 1753 655 999. You can't control time. But you can make better use of it.

Circle 22 On Reader Service Card

AVID®

NEWS SOLUTIONS

duced will be the AES Digital Audio Router, the CP-6408 Control Panel, the CP-1604 Control Panel, the SI-0002 4 Port Multi-mode Serial Interface, and the AVS Omnibus Interfaces. Several established routers and control panels will also be on display.
Contact: Marketing Manager
Unit 1, Woodside Business Park, Whitley Wood Lane
Reading, United Kingdom RG2 8LW
Telephone: +44-118-975-5770

Radyne Corporation **11.522**
*On Display:*Radyne Corporation plans to show its new DVB 3000 Digital Video Broadcast Modulator and the DMD 15 IBS/IDR Universal Satellite Modem. Among the established products, the Ku-Band up and down converters and loop test translator will be shown.
Contact: Alan Potter
5225 South 37th Street
Phoenix, AZ, United States 85040
Telephone: +1-602-437-9620

Rank Cintel **6.110**
*On Display:*Rank Cintel will demonstrate two film scanning products, the URSA Gold, and the Klone.
Contact: David Fenton
Watton Road, Ware
Hertfordshire, United Kingdom SG12 0AE
Telephone: +44-1920-463-939
Fax: +44-1920-460-803

RE America **3.211**

RIT (UK) Limited **8.137**
*On Display:*RTI will be exhibiting the new Excel 1100 film cleaner featuring isopropanol wetted buffers and PTR rollers. Also new, the Cart Machine designed for use with the Proline 4100 enabling operators to load a larger valume of cassettes for cleaning, etc. Other products include the Tapechek 4100D evaluator/cleaner/eraser for Beta SP and Digital Betacam and the Tapechek DXA-11 dropout anlyser.
Contact: Mark McMullon
Unit 6, Swan Wharf Business Center,
Waterloo Road, Ux
Middx, United Kingdom UB8 2RA
Telephone: +44-1895-252191

Rohde & Schwarz **11.212**

Rorke Europe **3.155**
*On Display:*Rorke plans to show several products, including the MediaMaster CD Duplication & Mastering system, the Rack & Raid storage solution, the VMOD-100 PRO, the Media Controller Edit Suite, and several other types of solutions.
Contact: Bob Herzan
Nautillusstraat 5A,
Emmen, The Netherlands 7821 AG
Telephone: +31-5916-51165
Fax: +31-5916-51185

Sachtler AG **8.517**
*On Display:*Sachlter introduces the Video 60 Plus fluid head, Studio Prdestal 2-75, tungsten studio line including the Director series fresnels from 300W up to 5kW.

The new Video 60 fluid head is the ideal companion for today's popular EFP, OB and Studio configurations, i.e. ENG camera with Studio lens up to 60 kg. It features the patented Sachtler fluid damping for the first time in 9 steps, a perfected counterbalance system, illuminated bubble and 90 degree tilt range.

Sachtler AG
Gutebergstr. 5
85716 Unterschleissheim
Germany
Telephone: +89-32-158-200
Fax: +89-32-158-227
IBC Booth # 8.517

Circle Reader Service 42

Cyclorama background and the new Widescreen 1250W and 2500W floodlights. Daylight Director fresnels series includes a new, super compact lightweight 4kW/250mm fixture. Also featured are a wide range of tripods, fluid heads and pedestals, portable lights and tungsten and daylight, mains. Sachtler also plans and designs cost-effective small and big studios, with manual, motorized and computer-controlled suspension equipment.
Contact: Florian Granderath
Gutenbergstr. 5
Unterschleissheim, Germany D-85716
Telephone: +89-32-158-241

Sandar Electronics A/S **2.340**
*On Display:*Sandar will exhibit its complete program for routing audio, video and 140 Mbps telecom networks, along with Sandar PESE software for PC control of routing. PESE can handle eight matrixes and can be configured to meet user needs.
Contact: Odd Evensen
P.O. Box 1733
Sandefjord, Norway N-3208
Telephone: +47-3345-9600

Scientific-Atlanta, Inc. **11.344**
*On Display:*Scientific-Atlanta plans to show the PowerVu compression system and will demonstrate PowerVu Command Centre, along with the new PowerVu Business Satellite Receiver.
Contact: Laura Dunbar
4356 Communications Drive
Norcross, GA, United States 30093
Telephone: +1-770-903-6057
Fax: +1-770-903-6464

Scitex Digital Video, Inc. **11.170**
On Display: New at IBC will be the Abekas ASWR8150 compact component digital vision mixer with full-featured DVEous DVE option; Abekas Texus version 3.0 software, with support for Asian and Arabic character sets; Abekas Clipstore, combining an enhanced Diskus digital disk recorder with QuickStore clip- and still-management software and an easy-to-use Shotbox control interface; ImMix Sphere family of digital non-linear post production workstations.
Contact: John Pichitino, ImMix products
Telephone: +1-916-272-9800
Fax: +1-916-272-9853
Contact: Pete Challinger Abekas products
Telephone: +1-415-369-5111
Fax: +1-415-599-3109
Scitex Digital Video
101 Galveston Rd, Redwood City, CA, 94063 USA

Scopus DVC Ltd. **6.111**
*On Display:*Scopus DVC Ltd. will introduce CODICO, its MPEG-2, DVB compliant digital video compression product line. The CODICO IRD-250 is a satellite receiver aiming at the commercial market. The CODICO NMS - 400 provides the operator full control and monitoring of all compression sub-systems used the the Headend. There will also be a presentation and demonstration of a complete solution of MPEG-2, DVB video compression products.
Contact: Hanan Klainer
26 Hashoftim St, POB 267
Holon, Israel 58102
Telephone: +972-3-5574630

The new Power Vu business satellite receiver from Scientific-Atlanta is designed for use in private business television networks and is well suited for making the transition from analog to digital transmission.

The versatile receiver supports expansion from single-channel-per-carrier (SCPC) services to multiple-channel-per- carrier (MCPC) services in partial or full transponder applications, and processes PAL and NTSC video formats.

Scientific Atlanta

4356 Communications Dr.
Norcross, GA 30093 USA
Telephone: +1-770-903-6057
Fax: +1-770-903-6464
Home Page: www.SciAtl.com
Contact: Laura Dunbar

Circle Reader Service 103

SeaChange International **3.125**
On Display: SeaChange International plans to demonstrate several digital video management and delivery systems, such as the scalable SeaChange Video Server 100 and MediaCluster.
Contact: John Coulbourn
124 Acton St.
Maynard, MA, United States 01754
Telephone: +1-508-897-0100
Fax: +1-508-897-0132

Seem Audio **9.432**
*On Display:*Seem plans to exhibit several products, including SEELECT, an on-air mixer, SEEPORT mixers, SEECOR, an audio rack, and SOUNDMANAGER, an automation system.
Contact: Caryn Miron
P.O. Box 233
Billingstad, Norway N-1361
Telephone: +47-66-98-2700
Fax: +47-66-84-5540

Shootview Ltd. **2.344**
*On Display:*Shootview plans to show several products, featuring the NR728 Nicam Off-Air Receiver, LOGOS, the VIP8000 Digital Linear Keyer. Also on display will be the DAC270, and the VIP120 Color Encoder.
Contact: John Wakeford
87 Cadbury Rd., Sunbury-on-Thames
Middlesex, United Kingdom TW16 7LS
Telephone: +44-1932-782-823
Fax: +44-1932-772-824

Silverstone Broadcast Ltd. **6.215**
*On Display:*Silverstone Broadcast plans to display its line of microwave video link equipment, featuring receivers and transmitters.
Contact: David Millar
12 Vincent Ave., Crownhill Business Park
Milton Keynes, Bucks, United Kingdom MK8 0AB
Telephone: +44-1908-265-223
Fax: +44-1908-265-143

SIS — Società Italiana Software Srl **10.435**
*On Display:*At its first appearance at IBC, SIS will show its range of television and radio automation systems, including the Etere library system and RD74 spot player for television applications and the Etere Radio Windows-based multilingual radio automation system.
Contact: Stefano Bargauan
Contrada Cisterna
Tolentino, Italy 1-62029
Telephone: +39-336-609238

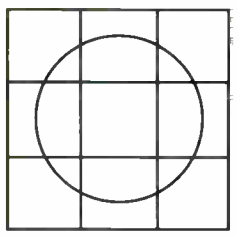
(Continued on page 68)

IBC '96

PRODUCTS & SERVICES SHOWCASE

For more information on the products shown below, circle the appropriate Reader Service No.(s) on the enclosed Subscription/Reader Service card or contact the advertiser directly.

TOP QUALITY AT RED HOT PRICES

Hot Shots  Hot Shots

Video Wall Processors
High Resolution, Modular, Low Cost

Routing Switcher
Audio St. Balanced/Video, Low Cost

"More affordable than you can ever imagine"

Looking for Distributors & Dealers

LANETCO
"Direct From Manufacturer"
International Business Park
74160 Archamps, France
Tel: 33-50-315263
FAX: 33-50-31265

READER SERVICE NO. 4

SANDAR

YOUR ROUTING PARTNER

SANDAR offers ultracompact Routing Switchers, analog and digital video and audio for broadcast, and also various digital formats for telecom. Stand alone and multilevel systems, up to 8 routers. Control panels and advanced software for PC-control. Also special designs combining the different formats. Full range from 16 x 16 to 128 x 128.

32 x 32 stereo audio or AES/EBU	1RU
64 x 64 AES/EBU	2 RU
32 x 32 analog and digital video	3 RU
64 x 64 stereo audio or video	6 RU

SANDAR Electronics AS
P.O. Box 1733 Thorøya
N-3208 Sandefjord, NORWAY
Telephone: +47 3345 9600
FAX: +47 3345 9333
Email: sandar.info@sandar.no

SEE US AT IBC STAND 2.340

READER SERVICE NO. 30

TOWERS By LA ROUGE®

In a world full of excuses, all that counts is what you can have done properly. LA ROUGE CAN DO IT... WELL!

Manufacturers of self-supported and guyed towers up to 1200' high! Everything is hot dipped galvanized and engineered for prescribed load.

LA ROUGE is also located on the perfect center of the Americas, near Miami, Florida. We are waiting to hear from you!!

B&K Installations
246 SW 4th Avenue
Homestead, Florida 33030
305-245-6968
In FL 1-800-624-7612
Fax 305-245-8119
Outside FL 1-800-523-3870

READER SERVICE NO. 13

Snell & Wilcox **11.452**
On Display: The company's main focus at the show will be an important new range of MPEG-2 compression products, a versatile new modular digitisation system and the latest technology in advanced standards conversion, HDTV and widescreen conversion. In the post-production arena the company's IBC appearance also marks the commercial launch of the full featured Magic DaVEW, its low-cost, high-quality DVE.
Contact: Joe Zaller
6 Old Lodge Pl., St. Margaret's
Twickenham U.K. TW1 1RQ
Telephone: +44-181-607-9455
Fax: +44-181-607-9466

Societe Europeenne des Satellites **8.430**
*On Display:*Societe Europeenne des Satellites (SES) offers the ASTRA Satellite System. ASTRA delivers TV and radio channels through direct-to-home reception and cable redistribution. Currently six ASTRA orbiting satellites provide a total transmision capacity of 64 analog transponders and 40 digital transonders.
Contact: Yves Elsen
L-6815 Chateau de Betzdorf, Luxembourg L-6815
Telephone: +352-710-7251

Solid State Logic **9.310**
*On Display:*Solid State Logic will demonstrate the latest versions and enhancements to a range of advanced analog consoles and digital systems. Axiom is the most powerful and fully featured audio mixing system available, offering digital mixing with signal processing configured to meet the precise operational needs of the facility. OmniMix - the world's first multi-format digital surround-sound audioproduction system. SL4000 G+, and SL9000 J Series advanced analog consoles-incorporating technological advances to meet the rigorous demands of modern audio production.
Contact: Judith Pennington
Begbroke, Oxford
Oxou, United Kingdom OX5 1RU
Telephone: +44-1865-842300
Fax: +44-1865-842118

Sonifex Ltd. **10.137**
*On Display:*Sonifex will be displaying two new products, the prototype of the Courier Portable Audio Recorder, designed for in-the-field recording on PCM-CIA card, editing and transferring digital audio, and the Sentinel+ Audio Logger which offers DAT and hard disk storage and features including up to 8 audio transmission inputs, search by time and date, selectable bandwidth recording and battery backup.
Contact: Jo Barker
61 Station Rd Irthlingborough
Northants, United Kingdom NN9 5QE
Telephone: +44-1933-650-700

Sony Broadcast Prof. Europe **8.140**
On Display: Highlights will include the DVCam tape format equipment, including camcorders.

Soundcraft **9.320**
*On Display:*Soundcraft plans to show several new consoles, including the Broadway, the B800 Surround, the RM105, the BVE100S, the LM1, and the Ghost Range.
Contact: Candy Davies
Cranborne House, Cranborne Rd.
Potters Bar, Hertfordshire, United Kingdom EN6 3JN
Telephone: +44-1707-665-000
Fax: +44-1707-660-742

Standard Communications Europe **8.533**
*On Display:*Standard Communications Corporation is a leader in video rebroadcast quality satellite receivers and a provider of CATV headend satellite receivers and modulators. Standard provides sales, technical support, and servicing and repairs to European, Middle East and Eastern Block markets.
Contact: David Remnant
23 Watford Metro CenterTolrts Lane
Watford, United Kingdom WD1 8SB
Telephone: +44-1923-800-510

Stidop Systems Electronics Ltd. **3.312**
*On Display:*Studio Systems plans to launch the Ranger. In addition to its newest product, Studio Systems will display the Twisted Pair Multimedia Link.
Contact: Peter G. Randall
Unit 10, Falcon Business Park,
Ivanhoe Rd, Finchampst
Wokingham, Berkshire, United Kingdom RG40 4QQ
Telephone: +44-1734-731-737
Fax: +44-1734-734-679

Storage Concepts **3.318**
*On Display:*Storage Concepts plans to launch two new products: theFibreRAID II storage system, and the VIDEOPLEX Video On Demand server solution.
Contact: Martin Bock
2652 McGaw Ave, Irvine, CA, United States 92614
Telephone: +1-714-852-8511
Fax: +1-714-852-8930

Studer Professional Audio AG **9.429**
*On Display:*Studer is featuring their new product line premastering equipment for multimedia DVD; both audio and video coders are on display. The line comprises a MPEG Stereo Audio Codec; a Variable Bit Rate MPEG 2 Audio Encoder, and a Studer DVD 320 Varibit Encoder. In connection with multichannel DVD recording, the Studer 980 mixing console for Film/HDTV sound will be shown as well as the D940 digital console with the digital multitrack recorder D827 and the magneto-optical recorder D424.
Contact: Bruce Hochstrase
Althardstresse 30
Regensdorf, Switzerland CH-8105
Telephone: +41-1-870-75-11

Studio Audio and Video **9.334**
*On Display:*Studio Audio and Video will be displaying the SADiE3 software which accompanies the SADiE disk editor, and supports OCTAVIA. In addition, Studio Audio and Video will show other editing programs.
Contact: Julian Mitchell
The Old School, Stretham
Cambridge, United Kingdom CB6 3LD
Telephone: +44-1353-648888

Studio Systems Electronics, Ltd. **3.312**
*On Display:*Studio Systems Electronics Ltd. plans to display several products, including video, audio, and data transceiver products, and the new RANGER microwave link video signal processor.
Contact: Peter G. Randall
Unit 10, Falcon Business Park, Ivanhoe Rd
Finchampstead, Berkshire,
United Kingdom RG40 4QQ
Telephone: +44-1734-731737
Fax: +44-1734-734679

SyntheSys Research, Inc. **11.196**
*On Display:*The new BitAlyzer DVA 184 Digital Video Analyzer integrates recognized state-of-the-art analysis for testing SDI signals as well as digital format compatibility, test parttern generation, jitter insertion, 200 frame error logging and multi-format capability. Features of DSOs, EDH monitors, waveform/format monitors, jitter spectrum, and analyzers are all integrated. The capability to insert jitter, then display the Jitter Hisotgram, and isolate the Jitter frequency components by looking at the FFT of jitter are some of the unique features offered. The option of handling multiple formats makes the system complete.
Contact: Chuck Pope
3475-D Edison Way
Menlo Park, CA, United States 94025
Telephone: +1-415-364-1853

Tandberg AS **3.227**
*On Display:*Tandberg AS will display several decoders, its SmartMux family, inserters, converters, transmitters, and receivers.
Contact: Petter Boe
POBox 322, Lysaker, Norway N-1324
Telephone: +47-67-59-00-20
Fax: +47-67-59-00-15

Technosystem **11.430**
*On Display:*Technosystem will show its 30 kW tube-based UHF transmitter, a 5 kW solid-state UFH and VHF band III transmitters, a remote control system and a 10 W synthesised TV exciter.
Contact: Mauro Collalto
Via P. Fumaroli 14, Rome - RM, Italy I-00155
Telephone: +39-6-2282049
Fax: +39-6-2282355

Tekniche Ltd **3.150**
On Display: Tekniche plans to show several products from its lines of interface and conversion equipment.
Contact: Tracey Clarke
18 Boundary Way, Woking, Surrey
United Kingdom GU21 5DH
Telephone: +44-1483-728-006
Fax: +44-1483-770-195

Tektronix **11.130**
On Display: Video test and measurement equipment as well as editing gear from Lightworks.

Telecast Fiber Systems **3.200**
*On Display:*Telecast will display several products, focusing on the Sidewinder Fiber Optic control snake, the Viper Fiber Optic control system, the Adder Digital Fiber Optic control snake, and the Cobra Fiber Optic Triax Camera Interface.
Contact: Sheila Checchi
102 Grove Street,
Worcester, MA, United States 01605
Telephone: +1-508-754-4858

Telekom South Africa **8.734**
*On Display:*The International Business Unit of Telekom South Africa, responsible for TV and radio broadcasting and other services, will exhibit occasional use and direct to home (DTH) TV, transponder leases, satellite news gathering, contribution links and video conferencing services.
Contact: Marius van Rensburg
P.O. Box 925, Pretoria, South Africa 0001
Telephone: +27-12-311-4046

Television Partnership International Ltd. **10.532**
*On Display:*The Television Partnership International Ltd. will discuss its methods for integrating system design, architecture, building services and project management.
Contact: Arthur Moore
Northumbrian Way, Killingworth
Newcastle upon Tyne, United Kingdom NE12 0RT
Telephone: +44-115-941-2392
Fax: +44-115-947-5110

Telex Communications **10.432**
*On Display:*Telex Communications plans to show the new Camlink Wireless Video PAL Version, their Windows Keypanel, and the RTS 802 TW Intercom.
Contact: Patti DuFresne
9600 Aldrich Ave. So.
Mineapolis, MN, United States 55420
Telephone: +1-612-884-4051
Fax: +1-612-884-0043

Telford Technical Research Ltd. **2.344**
*On Display:*Telford Technical Research Ltd. plans to launch three new products, the TTR700/55 Commercial Insertion Cueing Systems, the TTR Line Indent System, and the TTR5000 Serial Digital Video and Audio Routing Matrix. Telford also plans to show the TTR2000 Audio Monitoring Units, the TTR500/550 AES/EBU converter, and the TTR SNG Fly-away pack.
Contact: John Wakeford
84 Bridge Rd, Chertsey
Surry
United Kingdom KT16 8LA
Telephone: +44-1932-564-063

Telos Systems **9.111**
*On Display:*The Telos line of ISDN transceivers now includes ZephrExpress, combining a full featured codec, an ISDN terminal adapter, and an audio mixing/monitoring system in a road-rugged chassis. Zephyr studio and field units incorporate MPEG Audio Layers III and II and G.722. Their talk-show/call-in equipment includes the 100 Delta and Telos ONE digital hybrids, the ONE-x-Six talk show system, and the Link telephone-to-intercom interface.
Contact: Neil Glassman
2101 Superior Avenue
Cleveland, OH, United States 44114
Telephone: +1-216-241-7225

Thomcast **9.230**
Contact: Jean-Charles Daninos
1, rue de l'Hautil
Conflans - Ste. Honorine, France F-78700
Telephone: +33-1-34-90-31-00
Fax: +33-1-34-90-30-00

Thomson Broadcast Systems **9.230**
*On Display:*Thomson Broadcast Systems, subsidiary of Thomson multimedia will present: a full range of cameras including the 1657 high performance 16/9 & 4/3 portable camera with Triax link, format converters, a full range of digital component mixers-9000 Series, the new Betacam SX recorders, the evolution Series interfaces, the Pro-Cart automation system and cart machine, Pixtore Graphics, digital compression & transmission systems and cable TV network equipment.
Contact: Marketing Manager
17 Rue de Petit Albi B.P. 8266
Cergy Pontois Cedex, France F-95801
Telephone: +33-1-36-20-70-00

Thomson Tubes Electroniques **11.340**

Truevision UK Ltd. **7.120**
*On Display:*Truevision UK Ltd. will focus on the TARGA 2000 RTX, and will display the Bravado 1000 and the TARGA 1000.
Contact: Samantha Grey
Suite 4, Bulldog House, London Rd
Twyford, Berkshire
United Kingdom RG10 9HD
Telephone: +44-1734-344636
Fax: +44-1734-344624

Tyrell Corporation **7.146**
*On Display:*Tyrell Corporation plans to show a variety of products, including removable and fixed storage systems, high-speed archive devices, and multi-channel RAID solutions.
Contact: Elizabeth Rice
49/50 Great Marlborough St.
London, United Kingdom WIV 1DG
Telephone: +44-171-287-1515
Fax: +44-171-287-1464

VDP, Inc. **3.354**
*On Display:*VDP introduces VidCAD PowerTOOLS, for innovative engineering documention automation. VidCAD eliminates typing and drafting, thereby cutting design time 80-90% over conventional CAD or hand-documentation methods. VidCAD PowerTOOLS come in six progressive levels of productivity enhancement: powered with Autodesk Technology (AutoCAD R13 run-time), VidCAD's Windows interface uses recognizable engineering symbols (not text). This makes VidCAD faster to use and easier to understand in any language.
Contact: Jennifer Black
749 Carver Road, Suite 2
Las Cruces, NM, United States 88005
Telephone: +1-505-524-8959

Vertex International Ltd. **11.548**
*On Display:*Vertex plans to show its full line of antennas, SSPA's and microwave components, with a focus on the VISAT truckmount antenna, RF and Equipment.
Contact: Gary Giles
Clembro House, Weydown Road
Hasuemere, Surry, United Kingdom GU27 2QE
Telephone: +44-1428-661-100
Fax: +44-1428-661-000

Videotek **6.212**
*On Display:*Videotek will launch several new products, expanding its digital line, with the VSG201D and VSG202D, Serial Digital Sync Generators; DPA-100 Serial Digital Proc Amp; DDA-144 Serial Digital Distributution Amplifier; and RCU-102. Videotek also plans to introduce the RS-12A, and will show test and measurement equipment.
Contact: Paul Calkin
243 Shoemaker Rd
Pottstown, PA, United States 19464
Telephone: +1-610-327-2292

Vinten Broadcast Limited **8.220**
*On Display:*Vinten will be launching a completely new 4-stage studio pedestal at IBC. The Quatrro is an exiciting new addition to the pedestal range joining the Quartz One and Quartz Two studio/OB pedestals. Also new will be the Pro-130 Pro-Touch pan/tilt head system and the latest lightweight HS-102P servo remote pan/tilt system and LCP-8000 Touchscreen controller from AutoCam. The complete range of Vision tripods and pan/tilt heads with Perfect balance will also be on show.
Contact: Suzanne Walker-Robinson
Western Way, Bury St. Edmunds
Suffolk, United Kingdom IP33 3TB
Telephone: +44-1284-752-121

Vision Audio & Video Ltd. **3.332**
On Display: Symphony and Minuet talkback systems.
Contact: Chris Pearoe
Unit 1 Swan Ct. Station Rd.
Pulborough RH20 1RA
Sussex, United Kingdom
Telephone: +44-1798-874-552
Fax: +44-1798-874-553

Vizuall, Inc. **11.163**
*On Display:*ScheduALL plans to display its array of facility management software.
Contact: David Legow
20377 NE 15th Ct
Miami, FL, United States 33179
Telephone: +1-305-654-9287
Fax: +1-305-653-1355

Vortex Communications Ltd. **8.111**
*On Display:*Vortex Communications plans to show a broad range of analogue and digital video audio signal processors, converters, routers, and signal fail detection products built on standard Eurocards which enables special configurations to be built from standard modules as well as clock systems, and Vortex and Comrex digital audio codecs and accessories.
Contact: Stephen Cole
75 The Grove, Ealing
London, United Kingdom W5 5LL
Telephone: +44-181-579-2743

Wegener Communications, Inc. **11.102**
*On Display:*Wegener offers broadcast quality MPEG-2 digital video, stereo digital audio, and QPSK modulation in 5.25" enclosure. Packaged for SNG. Video data rates from 2.5 to 15 Mbps, multiple audio channels, auxiliary data channels, selectable forward error correction (FEC) coding rates, and frequency-agile RF output. Also, half D1 MPEG-2 encoder which products 352 x 480 pixel resolution video. Features continuous real-time encoding of composite, YUV, or S-Video inputs, auxiliary data, and data rates of 1.536 to 4.608 Mbps.
Contact: James Hamby
11350 Technology Circle
Duluth, GA, United States 30155
Telephone: +1-770-623-0096

Weircliffe International Ltd. **10.111**
*On Display:*Weircliffe International Ltd. will show a range of Magnetic Media Degaussers/Bulk Erasers. Among the degaussers will be the BTE 210 Betacam SP/Digital Betacam, the BTE 101, and the BTE 301. Also featured will be the BTE 220 Compact Hi eraser.
Contact: Andy Smith
St. Andrews Rd.
Excwick, Exeter, United Kingdom EX4 2AG
Telephone: +44-1392-72132

Wohler Technologies, Inc. **2.310**
*On Display:*Wohler plans to exhibit several products, featuring level meters, alarm systems, signal controllers, and speaker systems. Also on display will be a range of self-powered speaker systems, and audio routers & source selectors.
Contact: Carl J. Dempsey
713 Grendview Dr
South San Francisco, CA
United States 94080
Telephone: +1-415-589-5676

Yamashita Engineering Manufacture, Inc. **11.131**
*On Display:*Yamashita Engineering will display the Line Quadrupler EDC-500 "The Silk", and the Video Wall Processor VWP-600.
Contact: Yoshikazu Ikegami
1-3-33 Okata, Atsugi-Shi, Kanagawa, Japan 243
Telephone: +81-462-28-8883
Fax: +81-462-29-1944

You/Com Telecommunicatie BV **9.433**

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.
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TV Technology, PO Box 1214, Falls Church VA 22041

CAMERAS

Want to Sell

JVC GR-DV1 DV camcorder w/extended warranty, $2000 firm. Darrel, 913-625-3546 or E-mail: 102726.2363@compuserve.com

Sony VX3 Hi 8 camera, 1 battery & charger, cables, remote control, 3 yrs old, $2000 + shipping. Perry, 800-698-0307.

Sony DXC-327 with Fujinon 12x lens, EVV-9000 dockable Hi 8 recorder, CA-325 genlock adapter, CCU-M3, CMA8 power supply, 163 ft CCU cable, hard case, tripod shoe plate, mic holder, $8000; Panasonic CCD WVD-5000 single chip with CCU, CG, 30 ft CCU cable, mic & shoulder grip, $1500. Robert, 610-865-6157.

JVC BY110 3-tube camera with lens, viewfinder, charger, AC adapter, $400; Kodak 8mm camcorder with AC adapter-base unit, $100; Ambico video light, camera or handle mount, adj beam, 300 W lamp, AC powered, $50. Jerry, 401-739-9655 after 6 pm EST.

Ikegami ITC-730 (2) w/CCU, 5" viewfinder, 1.5" viewfinder, 330 ft camera cable, $1550 ea. Terry, 916-626-5325.

Sony BVW-507A, Fuji 14x lens, nearly new, access available, $26,000 or Best Offer. Gene, 314-894-5536.

Hitachi Z-One 3-chip camera with Fujinon 12x10 with macro, tripod plate, extender boards, 26-pin & 14-pin umbilical cables, excellent cond, $4500. Mike, 717-840-4048.

Ikegami HL-78A (5) cameras; Sony DXC-1610 camera, lens, case; RCA TK-86 MI-SS7949 camera, case, tripod adapter; Telemation TMC1100 camera, all items B/O. Phil Patnaude, 219-233-3141 ext 251.

Panasonic AG450, w/hard case & batts, $600. Bryan, 708-279-9650.

Sharp XC700 with viewfinder, Fujinon 12Ax9B lens (ERM-70), A/C adapter, tripod plate, run cable, hard case, $1200 or Best Offer. Mike, 540-951-8625.

Sony CCD-VX3 Hi 8 3-chip camcorder, less than 30 hrs, original box, Sony warranty to 1/2001, $2600. Ray, 305-538-5241.

Panasonic 200 CLE with Porta-Brace & stock cases, Canon 12x, MC35 shotgun, cable 32/14, AG-B640, studio config with 5" viewfinder, zoom & focus controls, Bogen 3068 tripod with ball leveler, 3127 dolly, excellent condition, $3500/all. George, 770-923-7613 or E-mail: mvpatl@aol.com

JVC KY-25 (2) cameras & studio set ups, 16x Fujinon lens, JVC portable SVHS hi fi deck, heavy duty tripod, 5" studio viewfinder, hand controls, platform & wheels, A/C power supply, port mic, battery belt, hard case, $6700 ea + shipping. ARS Video, 330-633-2255.

Sony BVP7 camera, well cared for & maintained, Fujinon 14x9 lens, CA3, Anton Bauer gold mount, manuals, Sony access, $10,000. Paul, 503-241-0046.

Ikegami 730A 3-tube camera with CCU & studio viewfinder, $900 or Best Offer, will consider trade. Eli, 404-289-6542.

Sony DCR-VX1000 digital video camera recorder, never used, extra batt & videotape, $3500. RW MacDonald, 407-452-4326.

Panasonic 300 CLE (2) cameras, 1 w/12x lens, $2200; 1 w/15x lens, $2500. David, 804-721-2467.

Sony DXC-6000 (2) 3-tube cameras, 525 resolution, Fuji 12x1 zoom w/2x extender, hard case, $500 ea or B/O. David, 619-347-8489.

CAMERA ACCESSORIES

Want to Sell

RCA/Houston Fearless heavy duty steel tripod, used w/TK-30's, head smooth & legs telescope w/o binds, pan handle incl, $150 + shipping. Paul, 610-827-7561.

O'Connor 1030 fluid head with 55D aluminum tripod & spreader, 2 yrs old, good condition, $2900; Canon WA-75II wide attachment lens with adapter 80II, $700; Fujinon WCV-80B wide converter lens, zoom through version, $1500. Kevin, 417-861-5183.

Fuji 16x/2x lens for Sony UVW100, DXC327/325 1/2" cameras, new condition, original packaging, $4900 or Best Offer. Jim, 619-436-2308.

Bogen 3036 tripod w/3063 head, $100. Bryan, 708-279-9650.

Panasonic 32A-25 (2) cables, new, $225 ea; 2 32A-100, $375 ea; Sony CCZ-M10, $250; CCZ-A10, $250; CCQ-25AM, $200; CCQ-50AR, $125; 2 RCC5F remote cables, $25 ea. Tom, 201-575-3634.

Ikegami VFM-57 (4) viewfinders; 5 Fujinon A10x11 FRM1 lenses; 2 Fujinon A12x9 FERM-1C lenses; Fujinon A12x9B lens for RCA TK-86; Canon V6x18 lens; Sony 6 slot battery charger; Samson tripod, all items Best Offer. Phil Patnaude, 219-233-3141 ext 251.

Bogen 3036 tripod with 3035 fluid head, arms & Bogen case, great condition, $400 or B/O; Anton Bauer Lifesaver 8 hr single charger, LSQC/E/Q4E without battery, good condition, $100 or B/O. Eric, 812-372-1957.

Lens controls, zoom, $200; focus, $350; 5" studio viewfinder for Sony, $275. Tim, 512-837-3766.

Sony CCU-6000 for Sony camera, like new, exc cond, $600 or B/O; Sony DXE-40 viewfinder, 5" black & white, exc cond, $500 or B/O. David, 619-347-8489.

COMPUTERS

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Want to Sell

Cel Maurice DVE, 2D digital effects, frame store, manual control & track screen, frame sync, $2500. M Levin, 212-807-7711.

Microtime 3D & 2D DVE's w/warranty. Roger, 800-295-1571.

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Ampex ADO 100 single channel, 3 axis, Digimatte, 3.5" disk drive, all manuals, very good condition, $6000 or Best Offer. David, 216-696-1122 Ext 497.

Sony DFS500 switcher, trails & lights option, new cond, $14,500. John, 954-472-2888.

EDITING EQUIPMENT

Want to Sell

Sony RM580 RCU, $300. William, 904-231-4828.

Sony 3/4" edit system, VO5850, VO5800, RM450, 2 Panasonic 13" color monitors, all cables, excellent condition, $4900. Tom, 212-929-2439.

Sony VO9850 editor, VO9800 source, Editmaster CV Tech system, Gateway 486 computer, 2 13" monitors, Amiga 2000, 2 Nova 700 TBC's, Tascam M-06 mixer, 2 Yamaha speakers, printer, all manuals & cables, $14,900. ARS Video, 330-633-2255.

Sony VO5850 (2), one with new heads, both in perfect low-use condition, original boxes & manuals, RM440, cables, Hotronics AP-41 TBC, Best Offer. Sequoia Sun, 970-920-9292.

Avid Media Suite Pro v 3.1.1, 36 GB, Quadra 950 (57/350), broadcast quality (AVR-26), loaded w/programs, CD ROM, 12 chan Mackie mixer, 17" Radius & 20" Mitsubishi color displays, EDL, DOS file compatability, Roland stereo speakers, NuVista transcoder, RGB correct color capture kit, tech support & upgrades avail, $22,500 firm. Bobby, 310-277-2229.

Sony RM430 edit controller with 25" cables, Best Offer. Barry, 541-895-5007.

Panasonic WJMX-50 A/V mixer, excellent condition, original packaging, incudingl KB-50 CG, $3650. 410-686-0867 eves.

Sony RM400 auto edit controller; 5 Sony BVE-500A auto edit controllers; 2 Microtime 2525 frame sync; Sony IF-500 edit controller, all items Best Offer. Phil Patnaude, 219-233-3141 ext 251.

Fostex 4010 TC read/gen, like new, $1200; Sony BVG-100 port TC gen, $450; Laird CG7000 w/keyboard, font & memory modules, $300. Mike, 540-951-8625.

Panasonic NV-8500/NVA-500, VHS R/P editors w/edit controller, excellent condition, low hrs, $1000. Jim, 716-264-0335.

Sony VO5800, 200 hrs, $1200; Sony RM440, $500; Sony VO5850, 400 hrs, $1700; Sony RM450, $1100. Tim, 512-837-3766.

Videonics AB-1, new, never used, cables, warranty, $450. Terry, 916-626-5325.

CMX 330A A/B/C roll, GPI's, GVG 100 interface, GISMO, all manuals, very good condition, $1250 or Best Offer. David, 216-696-1122 Ext 497.

LIGHTING

Want to Sell

Colortran assorted 2 K & 850 W Fresnel lights w/barn doors & stand adapters, great cond, $50 ea. Michael, 212-744-2845.

Mole Richardson (2) 200 W Tiny-Mole solarspots with edison plugs, 4-way barndoors, Molevac base plates with suction cups (5/8" spuds), $300/all. Chris, 214-460-2234.

ACTION-GRAM

EQUIPMENT EXCHANGE

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LIGHTING...WTS

Desisti/Fresnel nice studio lighting, will trade for computer equip. Chris, 607-733-5518.

MOVIE PRODUCTION EQUIPMENT

Want to Sell

Kodak AV-085 16mm port projector, Best Offer. Phil, 219-233-3141 ext 251.

Moviola 16mm magnetic recorder w/Inovonics 375 record electronics, new 16mm mag stock, 4 sel-syn 16mm mag players & electronics, rack, 16mm sel-syn projector, motor generator & controls, $2000. CJ Scheppers, 816-221-0231.

Arriflex 16MB camera, v. clean, exc cond, 400 ft magazine, 200 ft magazine, 50mm Schneider, variable speed motor, matte box, $2200 or B/O. Beth, 206-654-4459.

SIGNAL PROCESSING

Want to Sell

Evertz 3600D TC read/gen, manuals, vgc $150 or B/O. David, 216-696-1122 Ext 497.

Prime Image II TBC, full field w/still, like new, $1000. Jerry, 401-739-9655 after 6 pm EST.

For-A FA210 digital TBC, like new, $800 or B/O. Jon, 360-786-0070.

GVG 8500 DA tray with 8 8551 audio cards, $2000; GVG 8500 DA tray with 4 8503 precision EQ video cards, $1600. Maurice, 516-294-4416.

SWITCHERS

Want to Sell

Shintron 374 Super 80 prod switcher, like new, never used, 2 M/E w/positioners, chromakeyer, DSK, 8 inputs, $2000. Kevin, 417-881-5183.

Echolab DV5, exc cond, in box, $7500 or B/O + shipping. Perry, 800-698-0307.

JVC KM-1200U, 5 input switcher/SEG, new in box, A/C, D/C, genlock, chromakey & DSK, $1300; Panasonic WJ5500B switcher/SEG, 8 input, 3 channel, genlock, chromakey & DSK, $600. Tim, 512-837-3766.

JVC KM2000 video switcher, very gd cond, $1600; Ward EVS7 small basic 7 input composite, 1 mix/wipe, GPI input, manual & extra boards, $150. Tom, 201-575-3634.

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Want to Sell

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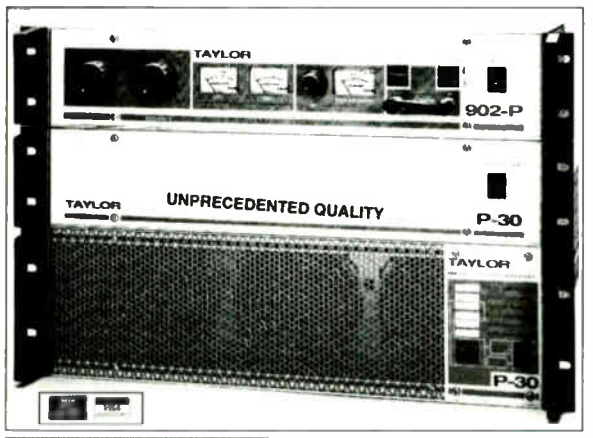

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TV FILM EQUIPMENT

Want to Sell

5/16mm edit bench, like new, 16mm rewinders, 4 gang sync, moviscope, cyro splicer, $1350 or will sell separately. Bennu Productions, 914-964-1828.

VIDEO PRODUCTION EQUIPMENT

Want to Sell

Complete TV prod package, Beta SP, 3/4" SP, 1", editing & EFX, CG, cameras & EFP, dupe system, all turnkey & ready to go, call for complete list. JR, 813-360-0050.

Sony VO5850 (2), one with new heads, both in perfect low-use condition, original boxes & manuals, RM440, cables, Hotronics AP-41 TBC, Best Offer. Sequoia Sun, 970-920-9292.

Sony VO8800 3/4" SP port, 300 hrs, TC, excellent condition, $1600; Sony EVV-9000 Hi 8 dockable, 100 hrs, TC, excellent condition, $1600; Sony VO5600 R/P, 200 hrs, excellent condition, $750; Sony VP5000 3/4" player, low hrs, excellent condition, $350. Tim, 512-837-3766.

Sony BVW35 with Porta-Brace case, Anvil case, A/C power supply, excellent condition, $6800. Michael, 212-744-2845.

JVC CR850 3/4" editing recorder, low hrs, built-in editing control functions, owner & service manuals, $3500. Bill, 708-246-3110.

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Sony EV550, 8mm video, digital stereo audio, $400. Cal, 215-567-7080.

Pesa CG-4711N CG, dual disk drive, good cond, $3000. Kevin, 417-881-5183.

VCR/VTRS/RECORDING MEDIA

Want to Sell

JVC MII KR-M800U modified VTR w/SVHS inputs & outputs, $2900; JVC CR4900 3/4" field deck, $550; AC batt charger, $350. Bennu Prod, 914-964-1828.

Sony BVU-800 (2) 3/4" editing machines with cables & manuals, BVU-50 recorder, $5000/all. Tom, 503-654-3813.

Sony LVR/LVS-5000A, CRV laserdisc video recorder system, recorder & processor unit, very good condition, $10,000. Tom, 201-575-3634.

Sony VO5600 (3) 3/4" R/P, good condition, $800 ea; Panasonic AU-400 MII dockable recorder, low hrs, $2500. Kevin, 417-881-5183.

Ampex VR-2000B 2" quad machine, exc cond, 2 new head assemblies, spare parts, all manuals, $500. Ed, 541-687-8285.

Sony VO5600 3/4" recorder, $8000 or Best Offer; Sony VO5030 multistandard player, plays PAL/SECAM/NTSC, $500; Sony BVW20 Betacam port player, plays metal & oxide tapes, 30 hours on new head, $2500; Ampex VPR5 port 1" recorder, very good condition, weighs 15 lbs with battery. Eli, 404-289-6542.

Panasonic AGDS850 edit recorder w/digital slow, like new, $3800. John, 954-472-2888.

Sony VO5800 & VO5850 3/4" edit decks, total overhaul, $3500; JVC CP550U 3/4" top load, $25; Panasonic NV9240 3/4" top load, $20; 2 Panasonic 7150 SVHS, like new, $1200 ea; 2 Panasonic 7350 SVHS, like new, $1800 ea. Jerry, 401-739-9655 after 6 pm EST.

Sony VO3800 (2) VCR's; 5 Sony BVU50 VCR's; other items avail. Phil Patnaude, 219-233-3141 ext 251.

Sony BVU-110 port VTR with TC & Kangaroo case, $850. Mike, 540-951-8625.

Sony BVW-15 VCR, $4500 + shipping. Perry, 800-698-0307.

Sony BVW-10 Betacam to 3/4", VO5850, RM450, 2 Sony monitors, cables, manuals, $6500/package. Gene, 314-894-5536.

Sony 5800H hi-resolution b&w 3/4" R/P, low hours, looks & works like new, $400 or Best Offer. Eric, 812-372-1957.

Sony EVO-9850 Hi 8 editor with 353 hrs, $3000; EVO-9800 Hi 8 R/P, $750. Robert. 610-865-6157.

Sony VO9850 (2) 3/4" SP edit decks, 1 with TC, 1 without TC, Sony RM450 2-machine edit controller, dub cable, good condition, $9000/all or will consider selling separately. Mike, 717-840-4048.

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NEW PRO VIDEO SYSTEMS INC.
Miami, FL

BROADCAST & PROFESSIONAL USED EQUIPMENT SALES
BETA SP - BETA - 1" - 3/4" - SVHS
Repair - Maintenance - Installation

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I would like to receive or continue receiving **TV Technology** FREE each month via surface mail ☐ Yes ☐ No

Signature _____ Date _____

Please print and include all information:

Name _____ Title _____

Company/Station _____

Address _____

City/Province _____

Postal Code _____ Country _____

1 Type of Firm *(check one)*

- ☐ A. VHF-TV station
- ☐ B. UHF-TV station
- ☐ D. Prod/post-prod studio
- ☐ E. Cable TV
- ☐ G. Network/group owner
- ☐ J. Broadcast consultant mfg, dist, or dealer
- ☐ L. Corporate TV facility
- ☐ M. Medical TV facility
- ☐ N. Government TV facility
- ☐ P. Educational TV facility
- ☐ Q. Recording studio
- ☐ K. Other (specify): _____

2 Job Function *(check one)*

- ☐ A. Corporate mgt
- ☐ B. Engineering/tech mgt
- ☐ C. Engineering/tech staff
- ☐ F. Other (specify): _____
- ☐ D. Prod/oper mgt or staff
- ☐ E. News mgt or staff
- ☐ G. Training

Reader Service

September 1996 Issue Use Until January 1997

Use this section to receive free information about products or services advertised in this issue. First fill out the contact information to the left. Then find the Reader Service number printed at the bottom of each advertisement you are interested in, and circle that same number below.

Purchasing Authority *(check one)*
☐ 1. Recommend ☐ 2. Specify ☐ 3. Approve

001	016	031	046	061	076	091	106	121
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003	018	033	048	063	078	093	108	123
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FAX _____

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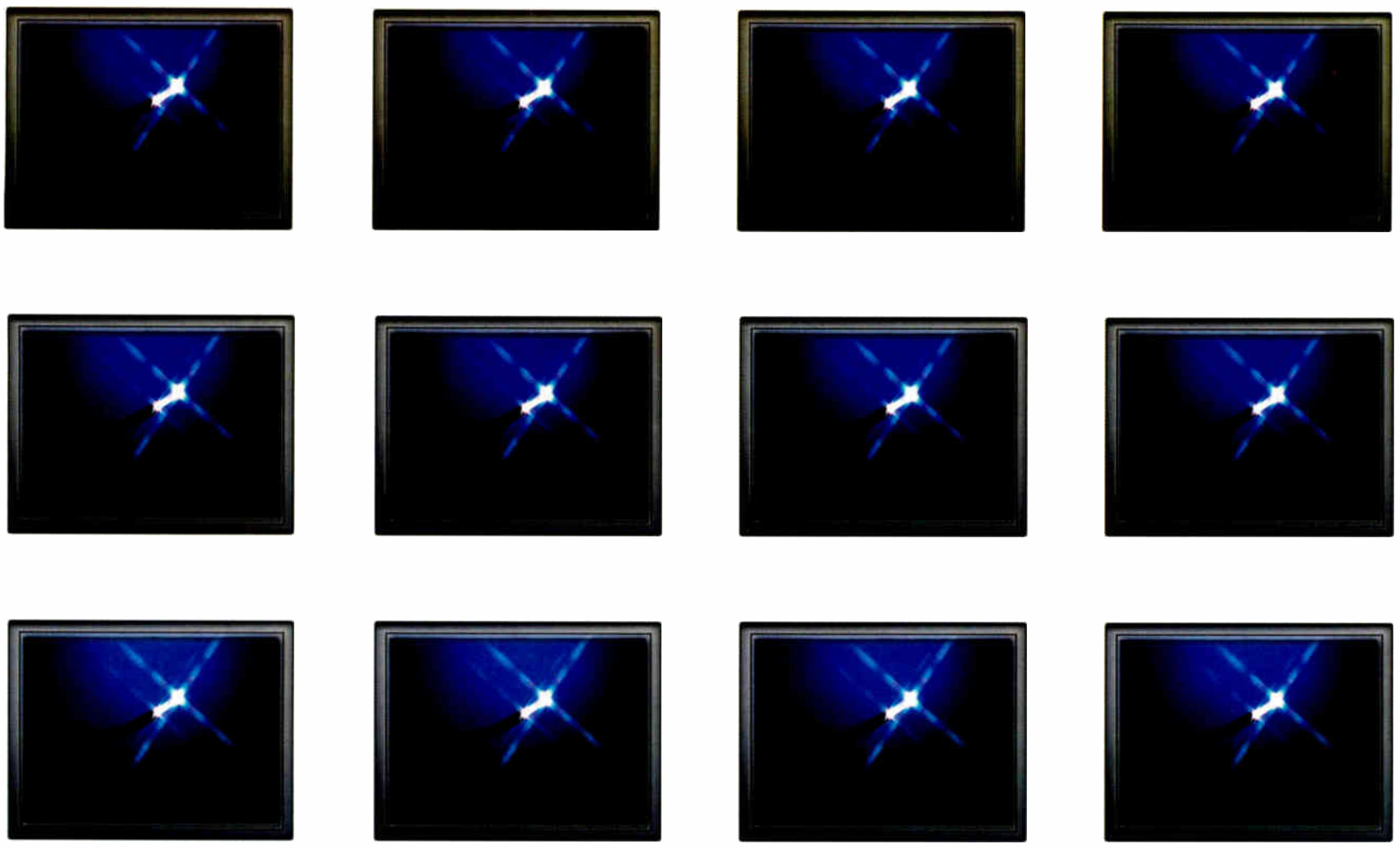

Real-Time Video Storage at the Speed of Light

How much storage bandwidth does your high performance digital image application need? 20 Mbyte per second? 50? Up to 100? No matter what level of real-time performance you're looking for, you'll find a proven, industry-standard RAID solution at Storage Concepts.

In fact, we introduced the world's first real-time disk storage system twelve years ago. More than 2,200 arrays later, we're still leading the way in high performance and low cost-per-megabyte.

Principal Member FIBRE CHANNEL ASSOCIATION

Today, we offer the world's widest range of standard real-time storage solutions. Including systems and engines for sustained SCSI data transfers up to 40 Mbyte per second and direct-to-disk data transfers up to 50 Mbyte per second. And, for the highest performance, the FibreRAID™ delivers an incredible 1 Gbit per second bandwidth.

For the fastest real-time storage products — including systems that work at the speed of light — see the RAID solutions we have in store for you by calling 714/852-8511 in the U.S. or +441 (494) 442-202 in Europe.

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Realtime / Everytime

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Circle 16 On Reader Service Card

DPS

PERCEPTION PVR

VIDEO RECORDER

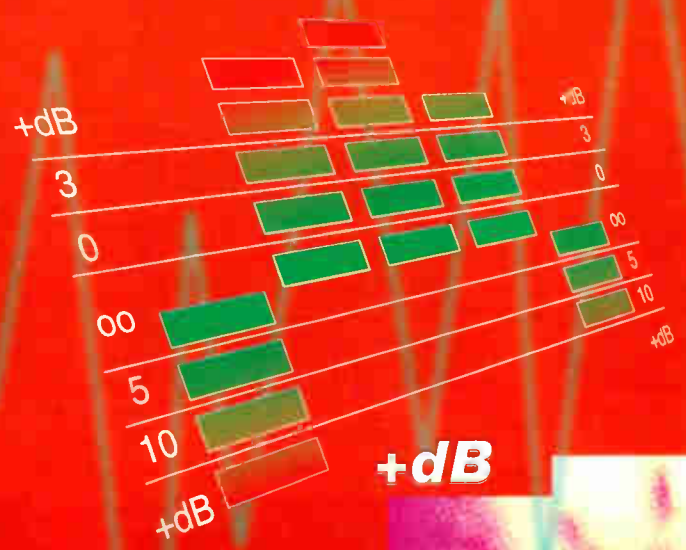
The Heart Of An Advanced Digital Audio/Video Workstation

PVR-3500
10 Bit 2X Oversampled Video Encoding
Integrated FAST SCSI-2 Hard Drive Controller
PCI Bus Card
Component, Composite and S-Video Outputs

FX-3500 (Effects Accelerator)
Accelerated rendering of transitions including cross fades, dissolves, wipes and border wipes
Instant cropping of video
Graphics Superimpose with alpha channel
Graphics Superimpose with chroma key
Picture-in-a-picture superimpose with 2-dimensional anti-alias filtering

DAR-3500 (Perception A4V)
Perfect audio/video synchronisation when used with the PVR-3500
True audio scrub
Non-linear, non-destructive audio editing
Simultaneous record and playback
Built-in LTC and VITC time code reader/generator/inserter
Mix four stereo source tracks down to two output channels in real time

01:18:22
01:18:23
01:18:24
01:18:25
01:18:26



PVR

Now Digital Processing Systems offers the complete audio and video workstation on the desktop. The PVR-3500 play back card with the optional real time capture card the AD-3500 turns the system into a broadcast quality disk recorder offering composite, component, and Y/C inputs and outputs. The DPS FX-3500 effects card is an optional accessory for the DPS Perception Video Recorder which reduces the time required to render complex non-linear editing transitions. This card will improve productivity in a non-linear editing system by speeding up rendering time for many transitions and effects by as much as 50 times. For audio post production DPS offers the DAR-3500 audio card for comprehensive audio post production tasks. The A4V audio card is designed to work with the Perception Video Disk Recorder and will give perfect audio and video synchronisation. With this DPS product range the heart of an advanced digital audio/video workstation is born.

DIGITAL
PROCESSING SYSTEMS Ltd.

Europe Riverside Business Park, Unit 2, Dogflud Way, Farnham, Surrey GU9 7SS United Kingdom **Telephone** +44 1252 718300 **Facsimile** +44 1252 718400 **E Mail.** sales.europe@dps.com
Asia-Pacific Unit 11/10 - 12 Woodville Street Hurstville NSW 2220 **Telephone** 61-2-586 0088 **Facsimile** 61-2-586 0988