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TV TECHNOLOGY

CORPORATE AND CABLE INDUSTRIES

PRODUCTION, POST PRODUCTION,

SERVING THE BROADCAST,

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IBC '94: Rise of New Technologies

Disk-Based Video Servers, Widescreen TV Take Center Stage

by Chris Dickinson

AMSTERDAM

Whether or not you considered this year's International Broadcasting Convention in Amsterdam the first annual show or the last bi-annual show, the event certainly yielded its share of surprises.

A host of new product launches, mostly concentrated around new computer technologies, and some interesting technology demonstrations were evident. But still, these could not cover up for the lack of any major breakthroughs to set either the show or the industry alight.

SHOWDOWN IN '95

So it was left to what was variously described as the last bi-annual IBC or the first annual event to add some drama to the show, as IBC organizers made some side-swipes at its rival Montreux while promising more and better in 1995.

Official attendance for the 1994 show stood at 26,500 from 96 countries, up from the 20,000-odd seen at IBC in 1992. There was widespread agreement that IBC '94 was a success, with many manufacturers enthusing about the interest they have received from attendees.

There was also satisfaction expressed at the organization of the show. Amsterdam seems well able to cater to a major convention like IBC, and the spaciousness of the RAI center allowed manufacturers to spread out a bit (providing they paid).

This and several odd gestures from the city, such as free tram rides between the RAI and downtown Amsterdam, gave the show a relaxed feel and set Montreux something to aim for.

The only immediate grumblings were over the high costs of exhibiting (a complaint previously directed at Montreux) and a seemingly unconscious bias in the organization toward the U.K., a charge denied by IBC officials.

Despite the lack of any major advance, there were a number of significant technology developments.

Chief among them was the rise of disk-based video server systems for storing video, audio, text, graphics and other data. A number of diverse companies, such as IBM, Hewlett-Packard, Silicon Graphics, Tektronix, BTS, Dynatech, Quantel, Abekas and Accom, all had systems on the floor, billing them as the replacement for tape for post production, news and video-on-demand applications.

TAPE VS. DISK

By general agreement this is likely to happen — although by further agreement tape is going to be around for a long time to come. At one panel discussion on the future of tape and disk recording, the conclusion was that tape had life in it yet, mainly through its cost advantage over any form of disk-based solution. But this will not stop disk systems from making huge inroads into post production and, to a lesser extent, acquisition via disk cameras expected next year from

(continued on page 19)

Hungary Struggles to Privatize. See page 8

Tektronix's Profile disk storage system drew crowds at IBC.

For show coverage, turn to page 19.

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Your Sony representative can provide you with details on Anton/Bauer InterActive Systems for all Sony products.

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NEWS WATCH

SATELLITES

RUSSIA JOINS EUTELSAT

PARIS

Russian Minister for Post and Telecommunications Vladimir Bulgak recently signed an operating agreement with the Eutelsat consortium, formally adding Russia to the list of member countries.

In so doing, Russia has become the 41st member of Eutelsat and will now be part of the group's decision-making process regarding new satellite purchases and launch services, including tariffs and coverage zones.

"Membership of Eutelsat gives Russia the opportunity to participate in the use and development of Europe's own regional satellite system," Bulgak said. "This will be an important step forward for Russia, as well as enhance our relationships with the other 40 member countries of the organization."

Eutelsat satellites, mainly I-F1 an II-F4, already cover most of Russia, and numerous private firms have access to the network.

Andorra, Belarus, Estonia, Kazakhstan and Latvia are also petitioning to become Eutelsat members.

BROADCAST

MALAYSIA EXPANDS TELEVISION NETWORK

SABAH, Malaysia

The Malaysian government-owned Radio Television Malaysia (RTM) has launched a major equipment upgrade of its terrestrial and satellite news gathering systems.

As part of the project, Harris Corp. has been selected to provide US$2 million worth of gear.

Harris will supply three mobile satellite systems and three electronic news gathering (ENG) units, with scheduled delivery set for November.

Harris will also provide transmission systems to 23 sites in the Peninsular and East Malaysia regions of the country. The entire package calls for 78 solid state VHF and UHF transmitters, antennas and related equipment to be installed over the next several months.

NETWORKS

BUSINESS CHANNEL LAUNCHES FOR EUROPE

LONDON

U.S. media organization Dow Jones and Co., publisher of The Wall Street Journal and owner of Asia Business News, is planning to launch an all-business channel for the European market in early 1995.

European Business News (EBN) will be 70 percent owned by Dow Jones and 30 percent owned by Flextech, a leading European broadcast group.

EBN will be a 24-hour cable and satellite channel concentrating on financial, corporate, business and consumer issues. Initial programming will be in English, although other languages will be added in the future.

In conjunction with EBN, Dow Jones will launch a digital television service delivered to desktop computers, similar to the Dow Jones Investor Network (DJIN) currently operating in the U.S.

Delivery of both services will be via the Eutelsat II-F6 (Hot Bird 1) satellite. EBN will begin with 18 hours of programming, increasing to 24 by the end of 1995.

TRADE SHOWS

INTERBEE TO OPEN THIS MONTH

TOKYO

Japan's premiere video technology show gets underway this month as the 30th International Broadcast Equipment Exhibition (InterBEE) opens its doors.

The show is scheduled to take place November 9–11 at the Nippon Convention Center and is set to draw some of the largest video and audio equipment manufacturers in the Asian region.

Product displays and new technology demonstrations will be provided by the home offices of Sony, Panasonic, Hitachi, Ikegami, as well as a host of other firms in the broadcast, post production and multimedia industries.

For further information, contact the Japan Electronics Show Association, Tokyo Chamber of Commerce and Industry Building, 3-2-2, Marunouchi, Chiyoda–ku, Tokyo 100, Japan; FAX: +81(3)-3284-0165.

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NEW MARKETS

VIDEO PLANNED FOR CHINA'S NEW HONG KONG

HAINAN ISLAND, China

Plans are underway for the telecommunications infrastructure for "New Hong Kong," a planned city on this island that is part of China's largest "special economic zone."

Known as the "Garden City of Tomorrow," New Hong Kong has selected Columbia Communications Corp. of Washington, D.C., to organize its communications systems, which include basic voice and data services, as well as interactive television and wireless broadcasting.

Construction is set to begin in early 1995.

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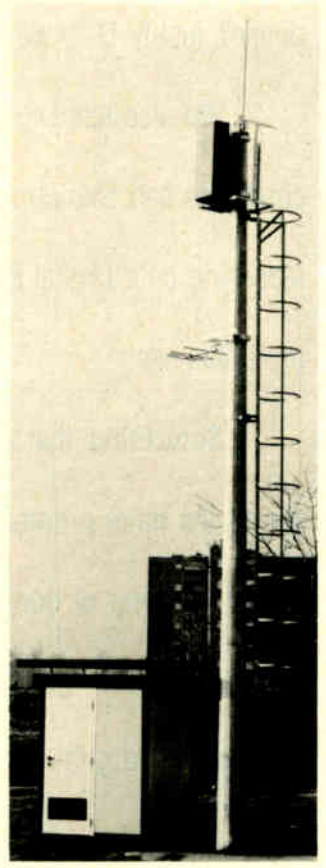

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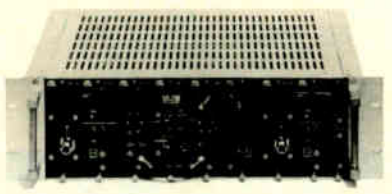

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Support Growing for PALplus

by Chris Dickinson

LONDON

A number of European broadcasters this winter are adopting the widescreen, PAL-compatible PALplus transmission system.

At the IBC show in Amsterdam, the PALplus consortium announced that 19 broadcasters in nine European countries will regularly transmit at least some programs in PALplus in 1995.

The countries in which broadcasters either already broadcast in PALplus or plan to start in the near future are: ORF in Austria; Canal +, TVCF, RTBF, RTVA and Canal Sur in Belgium; ARD, BR, MDR, Premier, ZDF and 3SAT in Germany; ERMIS in Greece; RTL-TV1 in Luxembourg; TV1 in Portugal; RTVE and TV3 Catalan in Spain; SRG in Switzerland; and Channel 4 and Granada TV in the UK.

WIDE LOAD

PALplus is a backward compatible, widescreen upgrade to the existing PAL system. Consumers with regular TV sets will automatically receive the PALplus signal as PAL in a letterbox format. But despite the apparent popularity of PALplus among broadcasters, there is widespread debate in Europe about how much of the schedule should be transmitted in PALplus, and whether it is not better to wait for a digital transmission system instead.

Theo Peek, vice chairman of the PALplus board, defends the analog system, saying it is a bridge with digital that allows consumers to start buying widescreen sets that will accept digital signals in the future. The important thing, he said, is to get widescreen sets into the market.

"The first sets will be equipped with programmable video signal processors," he said. "In the course of 1995, TVs with PALplus ICs will arrive. Our efforts will focus on ensuring that prices, after the initial phase, will be comparable with those of earlier improvements (in conventional television)."

The PALplus group's argument over waiting for digital is that PALplus is available now and it works. It maintains that terrestrial digital standards will not replace analog service overnight. Rather, analog and digital simulcasts are likely to continue for 20 years, no matter which widescreen standards are produced.

To help PALplus get started, the European Commission has established an ECU 228 million Action Plan, available over four years, to promote the development of advanced TV services. From mid-1994 to the end of 1995, more than 20,000 hours of widescreen programs are expected to be broadcast across the EU, the overwhelming majority of which will be in PALplus.

The first PALplus transmissions started on ARD in Germany at the beginning of 1994. ZDF, also in Germany, started in June, followed by Switzerland's SRG and then Channel 4 and Granada TV in the U.K. Granada, however, is the only station in the U.K.'s ITV Network to adopt PALplus. Its 14 counterparts have still to be persuaded.

Chris Hibbert, controller of engineering and operations at Carlton TV, said his company was monitoring the situation.

"We have already been making all network drama in widescreen, so we will be ready for widescreen when we need it," Hibbert said. "My personal belief is that when digital TV does start on terrestrial, it will have a much more powerful effect on business and revenues than PALplus.

"PALplus was developed as a combatant against HD-MAC," he added. "It is a super system and is very clever, but we have the problem that the bulk of our viewers do not like the letterbox picture they get from PALplus on a standard TV set."

Hibbert added that, in September, Carlton TV gave a week-long on-air demonstration of a digital TV transmission that showed various capabilities of digital TV, including the ability to send three or four different channels in the same bandwidth as a normal PAL channel.

Other ITV companies are also studying digital TV and PALplus.

George Johnson, deputy head of engineering services at the ITV Network's Technology Centre, said the ITV Network was a member of both the PALplus consortium and the European project setting a digital TV standard.

PROBLEM SOLVING

"If any of the ITV companies decide to transmit widescreen, we have to know all the problems and how to implement it," Johnson said. "At the moment, the opportunities for digital services vary around the country.

"PALplus also has one enormous advantage, in that every TV set will receive PALplus now, even though the picture will be in letterbox. So you've already got an audience for it. Digital TV is still two or three years away."

The BBC has decided to concentrate all its efforts on developing digital transmission standards, dropping older plans to start a widescreen PALplus service. Though the BBC was one of the leading proponents of PALplus for several years, and spent a lot of time researching the standard, it has decided the future now lies with digital TV, which can handle normal, widescreen or high definition television services.

Mick Gleave, engineering adviser at BBC Policy & Planning, has said the BBC's priority is to start a digital TV service by 1997.

"The BBC currently has no plans to introduce PALplus," Gleave said. "The BBC is looking at widescreen. But digital terrestrial television is where our emphasis on widescreen lies." ■

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Compression Decisions Loom

by Brian Flowers

GUEST COMMENTARY

When it comes to international, and even national, program distribution, compatibility is key. The easier it is for broadcasters using different formats and different processes to exchange video and audio, the better we are able to take advantage of the mass communications capabilities that technology offers.

With the rise of digital transmission, many of the old compatibility problems have been eased. But as with most advancements, a new set of challenges has arisen.

One of the challenges to broadcasters in the coming years will be to understand the options and make the right choice of digital compression systems for contribution circuits.

SETTING STANDARDS

CCIR 601 and 656 established a world standard for coding 525 and 625 line analog television signals into serial or parallel component digital signals. The analog component signals (Y, R–Y, B–Y) are sampled at 13.5 MHz for the luminance and at 6.75 MHz for the two chrominance signals, respectively, hence the label 4:2:2. After much debate about the need for 10 bits per sample for studio processing, the Sony 10–bit D–1 system prevailed for studio purposes, producing a serial bit rate of 270 Mbps. This may be reduced to 8 bits per sample for transmission purposes, preferably by rounding the last two digits rather than by truncating them.

In the digital world, there is a fundamental difference between contribution link and distribution link requirements. Successful manipulation of the signal in a studio environment demands a high–quality 4:2:2 signal, whereas a signal which is on its way to the public can be a 4:2:0 and compressed to a lower bit rate with very little visible degradation for the home viewer.

A 4:2:0 signal sends R–Y on one line and B–Y on the next line, analogous to SECAM in the analog world. This implies that the decoder must wait for two lines to arrive before it can decode the complete chrominance information. So the chrominance moves downwards two lines with each encode–decode operation (i.e., one line per field). Consequently, after several cascaded codecs, the footballers' colored shirts are around their ankles on a wide angle shot. This can be corrected in the decoder by delaying the luminance by two lines with respect to the chrominance. But as far as I know, this is not done in MPEG–2 codecs because they are not intended to be cascaded.

At present many contribution circuits in the U.S. utilize 45 Mbps composite digital coding, which is fine for transporting NTSC, PAL or SECAM but which ties the broadcaster to these composite analog standards with their well–known limitations.

Consequently, in Europe, ETSI, in collaboration with the EBU, produced the ETSI 300.174 transmission standard for compressing 4:2:2 signals to 34 Mbps, with virtually no loss of quality. Thissubsequently became the world standard for contribution links, namely CCIR–Rec. 723.

The EBU has specified analog interfaces for encoders and decoders conforming to this standard to ensure straightforward connection with existing analog sources and destinations, while keeping in mind that the long–term objective is the adoption of 4:2:2 signals throughout the broadcaster's production chain.

Hence with these codecs, the broadcaster can feed PAL, SECAM, NTSC, component analog or serial/parallel component digital signals to the encoder and deliver any of these signals from the decoder. Of course a distinction between 525 and 625 line signals remains, so a converter is still required to change line and field rate standards.

Widescreen 16:9 signals can be carried by the codecs using the 270 Mbps input and output connections, although 360/270 Mbps gearboxes are required if 360 Mbps is being used for widescreen signals in the studio. Note that the EBU has recommended the use of 270 Mbps for widescreen because this standard has inherently better horizontal resolution than existing analog systems anyway.

At present, three or four companies can supply correctly interworking CCIR 723 34 Mbps encoders and decoders, which have been successfully tested by the EBU.

GUARDED CONTROLS

MPEG–2 main level/main profile encoders and decoders utilize 4:2:0 coding with a bit rate of about 8 Mbps, which is fine for distribution circuits but not so good for contribution circuits. Moreover, each manufacturer utilizes a proprietary control protocol, so no interworking is possible. This is acceptable and may even be desirable for distribution purposes where the signal is distributed on a closed network. However, the generalization of such incompatible signals on contribution circuits would cause interface problems for the exchange of signals between broadcasters.

MPEG–2 encoders cost about twice as much as CCIR 723 encoders, but MPEG–2 decoders are slightly cheaper than CCIR 723 decoders. The MPEG–2 system aims to keep the expensive complexity in the encoder because one encoder normally feeds many decoders in a distribution network.

One result of the higher compression ratio of MPEG–2 codecs is a longer delay through the encoder/decoder. This is about 250 milliseconds for the simplest codecs, increasing to half a second or more when B–frames are used, compared with about 60 milliseconds for a CCIR 723 encoder/decoder. Try making a live interview via satellite with a total delay of half a second or more in the transmission path!

Another crucial difference between the two types of codecs is their performance when cascaded. Three MPEG–2 codecs in cascade produce poor results for signals with moving detail, whereas I have seen eight CCIR 723 codecs in cascade producing good pictures of a football match.

In practice, MPEG–2 codecs will be utilized for contribution purposes in the case of SNG reports. The lower bit rate permits the use of lower power HPAs and, consequently, smaller uplink dishes, because uplink dish size is determined by the requirement to limit the off–axis power, which could interfere with adjacent satellites.

Mindful of this SNG application, the EBU has now introduced 8 Mbps space segment slots on its leased Eutelsat transponders for SNG, with a lower per minute tariff. Broadcasters will provide their own encoders and decoders etc. It is expected that the main Eurovision channels will be changed from analog to CCIR 723 34 Mbps toward the end of 1995.

SPACE EQUIVALENT

The RF bandwidth occupied by a 34 Mbps signal in a satellite transponder is practically the same as that of a composite analog FM signal, but it is much more rugged than the analog signal.

The 34 Mbps signal interfaces without difficulty into the terrestrial circuit digital hierarchy in Europe, and it can be set to 45 Mbps for interfacing with terrestrial circuits in the U.S.

It is possible to encode two video signals into one 34 Mbps signal where this is appropriate, so the EBU is currently using this system on its leased trans–Atlantic satellite channel, thereby doubling its capacity with a slight loss of quality on critical video sequences. An encoder, which is equipped accordingly, can be switched between 34 Mbps and 2 x 17 Mbps, whereupon all decoders that are receiving the signal follow automatically. Codecs of 8 Mbps that are using a slowed down version of the CCIR 723 algorithm are available from one manufacturer, giving a performance similar to MPEG–2 8 Mbps codecs but having the advantage of transmitting 4:2:2 signals.

Various audio options can be adopted within the two 2 Mbps audio slots, which are available in the codecs. The EBU utilizes CCIR 724 2 Mbps two–channel audio in one slot only, but clearly there are options which provide several additional audio channels.

All these facilities have been successfully tested by the EBU, which is now in a position to implement CCIR 723 digital transmission on its satellite network. Several European PTTs have implemented, or intend to implement, CCIR 723 34 Mbps transmission, and the system is being tested in Australia and New Zealand.

I suggest that the world's broadcasters and carriers should seriously consider adopting this world standard contribution system. If incompatible systems are introduced on contribution circuits, there will be chaos in the important domain of international television program exchange. ■

Brian Flowers is Head of Service and Project Manager for the European Broadcasting Union's new Eurovision Control Center in Geneva. He studied engineering at the University of Southhampton and served for two years in the Royal Air Force before joining the BBC. In 1962, he was assigned to the EBU's control center in Brussels and has since worked at numerous levels of responsibility for the center. He is a member of the Royal Television Society.

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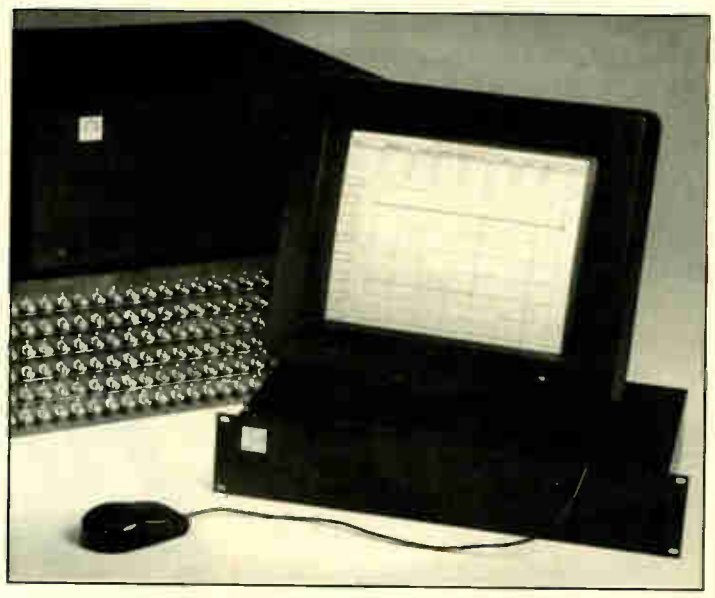

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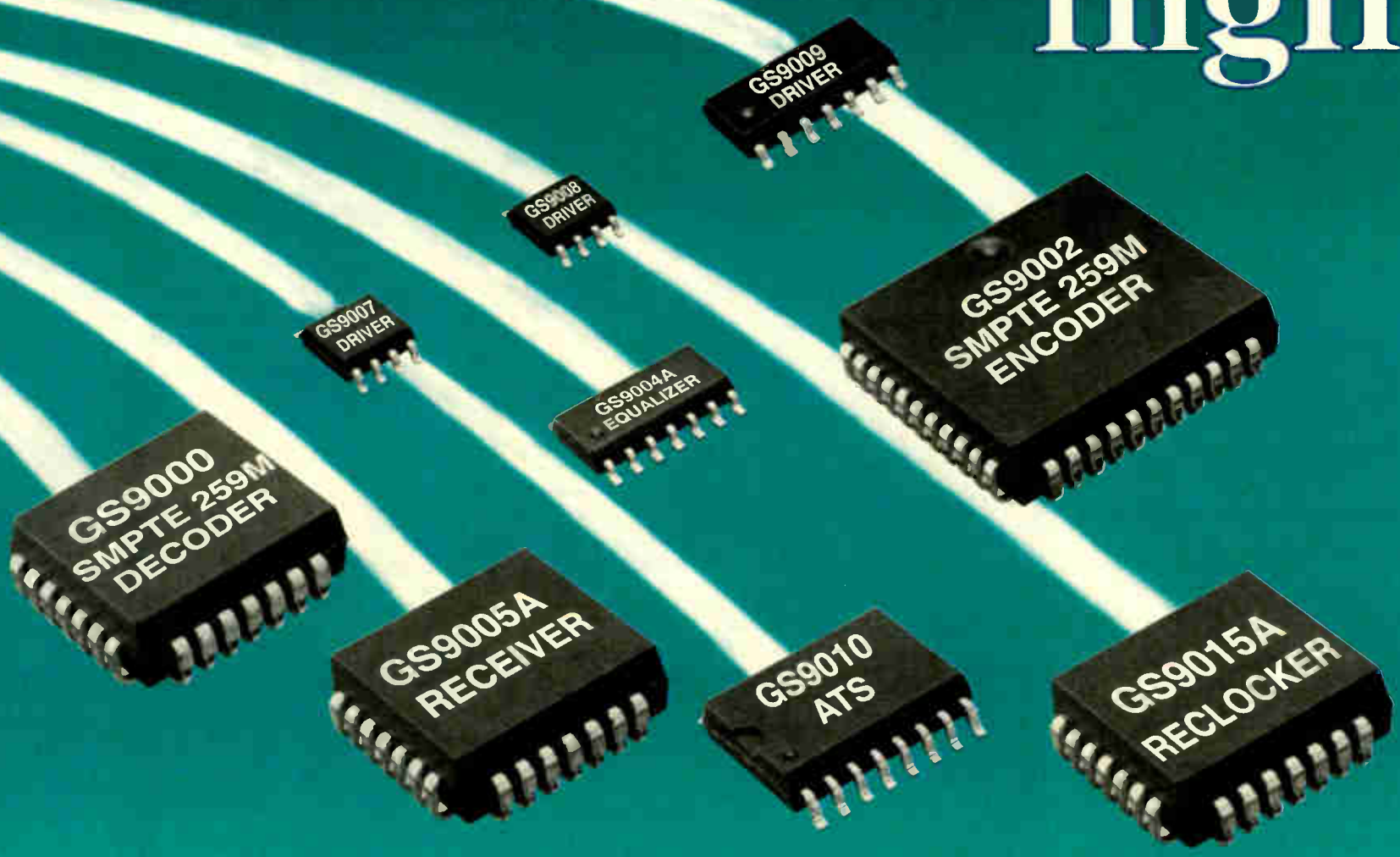

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Hungary Strives to Privatize

by Charles Recknagel

BUDAPEST, Hungary

Five years after the collapse of communism here, the Hungarian government is still debating when and how to privatize the country's three television frequencies. But some private entrepreneurs here have already managed to get on the airwaves and are now looking to satellite broadcasting to expand the window for Hungarian television.

An example of this new trend is NAP TV. The privately backed station has been broadcasting on a leased state-controlled channel since 1989 when communism ended in Hungary. Airing a two-hour morning show and a periodic one-hour evening talk show, it has had so much success luring advertisers from state television that it is now considering launching the country's first satellite channel as early as next year.

TURNING TO SPACE

"The privatization of state frequencies is moving so slowly here that private operators have to consider satellite broadcasting as the next step," said Tomas Gyafras, NAP TV's president.

Gyafras said that satellite technology could break the impasse of too few terrestrial channels in Eastern European countries and, using distribution by cable or dish, could become the preferred medium for the region's future private stations.

Driving NAP TV's present commercial success and its desire to move to satellite broadcasting, is the fact that Hungary has only two nationwide terrestrial channels and one regional channel originally intended for Hungarian-speaking populations in neighboring countries. In recent years, the number of television channels has grown with the introduction of a regional Budapest microwave channel, local cable networks and home satellite dishes.

Still, the number of available outlets remains too small for Hungarian advertisers, who are multiplying as the economy grows.

"Right now, NAP TV is the only private television station with a nationwide program," Gyafras said.

The station's unique position is due to a moratorium on privatizing television and radio frequencies that was declared by the government in 1990 as it awaited drafting of new post-communist media laws. However, the licensing of private broadcasters has since been pushed aside by other issues facing the government, and to date, the state has only granted licenses for regional broadcast areas of about 30 km.

This month, a newly elected government promised to make drafting of a new media law and the creation of the nation's first broadcast regulatory body top priorities. It has also predicted the break-up of the state monopoly by the end of next year.

GOOD WITH THE BAD

The licensing moratorium has frustrated NAP TV, but it has also been profitable. The company began as a test program by state television to help it cooperate with private operators. Initially, the station was allowed to broadcast four hours in the morning on the state channel, although this has dropped to two hours because, as Gyafras put it, "the state is uncertain about its own needs."

He noted that in Hungary's turbulent political climate, state television already has had five presidents during NAP TV's lifetime.

. . . Hungary has only two nationwide terrestrial channels and one regional channel . . .

But even NAP TV's limited air time brings enough advertising into Hungary's outlet-hungry economy to make the station successful. Viewers and advertisers prefer NAP TV's lively morning show format to state television's official government voice and traditionally bland programming.

"We usually sell all of our advertising time," Gyafras said, noting that by contract he is limited to 7.5 percent of all the state channel's airtime even though he pays half the state channel's total transmission cost.

The station is also expanding its production capabilities with a planned construction of a new studio for additional shows. Next spring, NAB plans to air a two-and-a-half hour Hungarian-language show on Budapest's microwave channel, which currently carries only foreign-language programs, such as CNN. At the same time, it is gearing up to be able to generate enough new programming to fill the anticipated satellite channel.

"The only difficult thing about launching a satellite channel is filling it with up to 24 hours of programming presented in Hungarian," Gyafras said.

But as long as Hungary's airwaves remain a state monopoly, he sees no other choice.

"The only way to compete with state television is to go outside it," he said. ■

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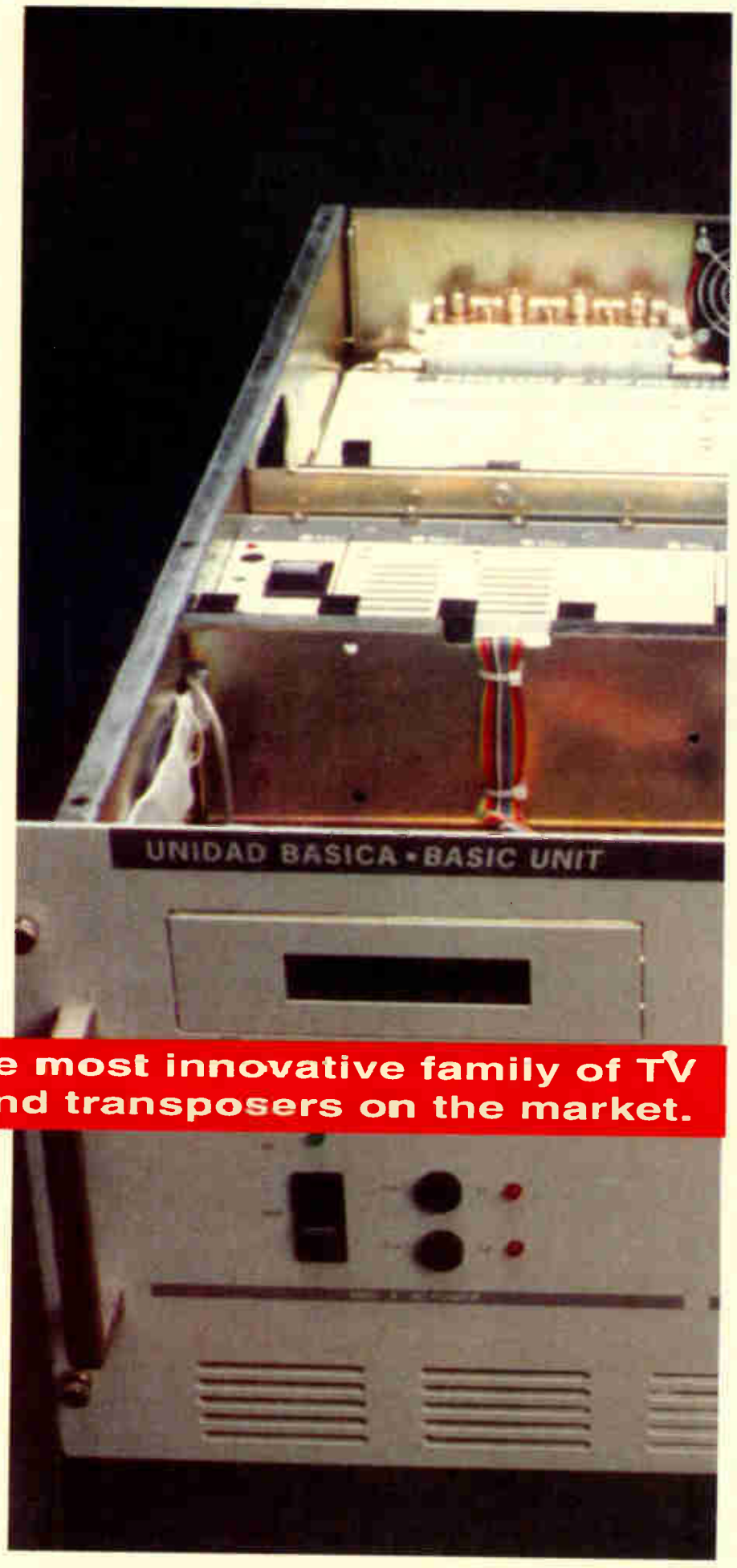

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ANIMATION SOFTWARE

CrystalGraphics Inc. has introduced Topas 5.1, an updated version of the company's PC-based software for creating 3-D animation. New features include over 1,400 predefined motion paths, a selection of preset bevels and Animated Match Perspective, which enables the user to integrate Topas-generated 3-D animation with existing video footage.

The bevel command allows the user to visually select from a collection of 15 predefined faceted and curved bevel styles.

For more information, contact the company in the U.S. at telephone +1-408-496-6175; FAX: +1-408-496-0970, or circle **Reader Service 75.**

DIGITAL AUDIO WORKSTATION

Studio Audio and Video Ltd. has released Version 2.1 software for the SADiE digital audio workstation. V2.1 features screen fader automation, nine-pin control autoconform to industry standard EDLs, background networking, PQ editor and CDR support.

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For more information, contact the company in the U.K. at telephone +44-372-728481; FAX: +44-372-724009, or circle **Reader Service 127.**

HEADSET STATIONS

The BP-1000 and BP-2000 belt pack headset stations by Telex feature an all-metal alloy housing with a mar-resistant matte black finishners and a shape that curves to fit the body.

These units also offer a one-touch talk button, a call indicator with programmable audible alert option, and sidetone level control.

For more information, contact the company in the U.S. at telephone +1-612-884-4051; FAX: +1-612-884-0043, or circle **Reader Service 135.**

REFLECTOMETER

Tektronix has introduced new capabilities for the FiberMaster optical time domain reflectometer (OTDR). These features include remote control, five language options and enhancements to FMTAP software.

With the new release, the user is able to connect the FiberMaster OTDR directly to a phone line via RS-232 and modem. A specialist in a support center can then control the instrument by remote, setting up acquisition parameters, uploading waveform traces to a computer and completing the analysis.

For more information, contact the company in the U.S. at telephone +1-503-627-5757; FAX: +1-503-627-5801, or in Europe at telephone: +44-628-486-000, or circle **Reader Service 54.**

CAMERA JIB

Panther GmbH has designed the new Super Jib II for the Super Panther. This jib can carry both camera operator and assistant on an adjustable platform.

The dolly's handset control now allows for programmed crane shots in a 360-degree range. The rear part can be taken off for shooting in tight locations.

For more information, contact the company in Germany at +49-89-613-10007; FAX: +49-89-613-000, or circle **Reader Service 109.**

UHF GRID TUBES

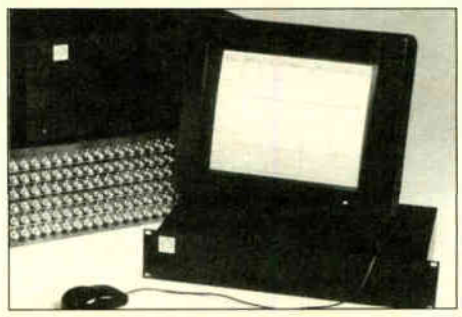
Thomson Tubes Electroniques has introduced two high-power grid tubes for UHF broadcast transmitters with power levels beyond 30 kW.

The TH 760 high-gain IOT delivers up to 60 kW in vision-only amplification. The TH 760 has a plug-in design, and its input circuit features a tetrode-like cavity that eliminates spurious resonances.

For more information, contact the company in France at +33-1-3070-3642; FAX: +33-1-3070-3650, or circle **Reader Service 9.**

SWITCHING MODULES

Lanetco International has introduced Autorouter, a product that combines a traditional routing switcher with computer power. The system contains rack-mountable analog audio and video switching modules with a control module loaded with Lanetco router control network software.



The system allows up to 32 switcher systems in different studios to be controlled from a single control module. Modules can be arranged to form YC (two units), component (three units), RGB (three units), RGBS (four units), and RGBHV (five units) systems.

For more information, contact the company in France at telephone +33-50-31-5820; FAX: +33-50-31-5265, or circle **Reader Service 98.**

AUTOMATION SYSTEM

The ADC-100 automation system from Louth Automation can control any device, regardless of manufacturer. Switchers, VTRs, multiple cart machines, still stores, satellite feeds and even custom devices and existing station applications can be incorporated into the system.

The ADC-100 can run as many as eight lists simultaneously, each with up to 100 events. Playlists can be edited on-the-fly, cut and paste, move or delete events within seconds of going on-air.

For more information, contact the company in the U.S. at telephone +1-415-329-9498; FAX: +1-415-329-9530, or circle **Reader Service 102.**

MICRO CAMERA

The Ikegami THD-100 1-CCD super micro camera is available in three versions: standard, medical and infrared.

With a length of 33mm, a diameter of 15.6mm, and a weight of 30 grams, the THD-100 is a miniature camera system designed for video productions, sporting events and teleconferencing.

The THD-100 features 10-bit signal processing and a 1/2-inch CCD with 440,000 pixels. Its horizontal resolution is 480 lines, with a signal-to-noise ratio of 48 dB.

For more information, contact the company's European office in Germany at telephone +49-21-31-1230; FAX: +49-21-31-102820, or contact Japan at telephone: +81-3-5700-1111; FAX: +1-81-3-5700-1137, circle **Reader Service 32.**

ANIMATION SOFTWARE

PowerAnimator V5 3-D animation software by Alias Research runs on SGI platforms. With PowerAnimator's open environment — the Open Digital Studio — the user

can share data with other digital media applications and create custom effects by programming to the system's open interfaces.

Modeling features of the PowerAnimator include QuickShade, which models and animates shaded objects in real time. With Basic Metamorphosis, the PowerAnimator user can stretch, distort and transform objects.

For more information, contact the company in Canada at telephone +1-416-362-9181; FAX: +1-416-362-0630, or circle **Reader Service 67.**

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IBC Amid the Rain and Cheese

by John Watkinson

VIDEO WATCH

This year's IBC will go down as the software driven 16:9 computerized non–linear compressed digital video show with rain and cheese.

The RAI exhibition complex is large and, on the whole, well–equipped to handle a show, like IBC. However, there were a number of problems which need to be addressed for future shows.

Finding food was a problem. The lines stretched forever, and there was a bouncer to stop people going into the restaurant when it was full. Most of the eating places at RAI offered a choice of ham or cheese. The adventurous ones offered two types of cheese.

For the show itself, some of the popular sessions were in small rooms, so not everyone could get in. Conversely, obscure subjects were explored by tiny audiences in great halls.

RAINY DAYS

Amsterdam is beautiful, but the rain was almost continuous during the show, as if to illustrate what the canals are for. Getting a taxi after the show was a joke, with several hundred people in the line. Although the city has plenty of taxis, there seemed to be no mechanism to bring them to a bottomless source of customers.

The rain also helped fill the RAI center's lake, which was graced by a large basking Lightworks shark. An intrepid comedian put an Avid logo in the shark's teeth at one point. It remains to be seen whether there is a symbolic lesson to be learned, but the Heavyworks demonstration was stopping people dead with the picture quality. Avid/Basys showed desperately simplistic footage of poor souls without non–linear systems running down corridors clutching video cassettes.

This sort of anti–tape hype misses the point that tape is not going to go away. Disks offer rapid access, but they cost at least a hundred times as much as tape to store data. As disk capacity and speed goes up, so too does that of tape, maintaining the relationship.

Compression can be applied to tape equally as well as to disks. HDTV can now be compressed to D–1 or D–5, and the results are excellent. Meanwhile, the quarter–inch digital video format continues to make progress. My suspicions are that it is disturbingly similar to DAT, including the politics. As it will bury most other ENG formats alive, there will be those who want to see it stillborn as a professional product, or at least delayed for a while.

Disks are not better than tape; they are different applications of a common magnetic principle, and the intelligent solution is to combine them. There are signs that this is happening, with hybrid systems offering non–linear access from disk combined with mass storage on tape. As the tape drive does not need to edit, it can be much cheaper than a VTR.

COMPUTER INFLUX

Analog equipment was pretty thin on the ground and, not surprisingly, the number of exhibitors from the computer industry was larger than ever. Digital video is only data, and the computer industry is quite good at data. As the power of general purpose processors rises, so does the number of video–related tasks they can be programmed to perform, ousting the dedicated hardware of the traditional broadcast manufacturer. The writing has been on the wall for some time, and I for one have been drawing attention to it with decreasing subtlety, but it seems that traditional manufacturers are having trouble reading the message.

This was the first IBC I have attended where there was no Ampex equipment. As one of the many who helped to put the ex in Ampex, I felt a personal sadness at this loss. There have been numerous opinions about the demise of Ampex, but the real reason is glaringly simple: it is that the company lacked proper management for an extended period of time. Ampex has contributed enormously to the technical progress of television broadcasting but was brought to nothing by a lack of vision. It is particularly distressing when attending an IBC filled with non–linear disk–based systems to think that, as a manufacturer of disk drives, Ampex had all of the ingredients necessary to make their own non–linear editor, yet the opportunity was missed.

One of the things which I once looked forward to about shows like IBC was that invariably some new development would be unveiled which would improve picture quality. However, if I had to encapsulate IBC '94 in one phrase, it would be "lousy pictures." Everyone and his dog was demonstrating video compression systems, or, to be more accurate, compression artifacts.

There were a number of systems offering data rates up to 6 Mbps, and these were all primarily useful for illustrating when compression should not be used. While simple material like talking heads or cartoons work

(continued on next page)

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IBC: Video Technology Amid Rain and Cheese

fairly well, anything containing detail as well as motion was impaired. My favorite was a football pitch where the grass turned white with noise as the camera panned. The requantizing noise caused by an overcompressing coder rises and falls with picture content (rather like the breathing of audio compressors) which makes it particularly obtrusive as it is noticeable in peripheral vision. Too much of this could easily cause viewer fatigue.

Another truth which was brought out strongly by these demonstrations was the performance contrasts due to the nature of the source material. Compression coders cannot tell the difference between information and noise. Noise on the input is bad news for a coder because it puts apparent high spatial frequencies in the picture at the same time as causing differences between successive images.

One stand was demonstrating a wide variety of source material. Where the original material was studio–originated with low cameras noise and post produced in 4:2:2, the results with high compression factors were considerably better than if the source was analog video from a satellite. Paradoxically, if compression has to be used, the quality of the source has to be extremely good. Peopleare slowly (sometimes painfully) learning that compression often has to be preceded by noise reduction in the real world.

There were some demonstrations of compression using data rates of 34 Mbps, and these were much more convincing and harder to catch out. My conclusion is that video compression is like chocolate: a small amount is beneficial, but too much makes you sick.

The lousy pictures theme was carried on by the large number of exhibitors who were showing videowalls and large screens, or using them to demonstrate their wares. Many of these were poorly positioned and suffered from stray light, which destroyed their contrast. Others suffered from technical defects, such as shading or misregistration. Widescreen was very much in evidence, and a number of suppliers were offering aspect ratio converters to interchange with 4:3.

Sony had a simulator of a roller coaster ride with a high definition display, which illustrated that 60 Hz is not fast enough to portray the motion of a roller coaster. The motion judder was just too great, although the footage does show that HD equipment is getting smaller, as it is not long ago that such a shoot would have been impossible.

In contrast (literally) to this theme, the Snell & Wilcox stand was showing off the Supervisor display upconverter, which caused such a stir at NAB this year. This is a box that uses Snell's standards converter experience to upsample the number of lines in the image and increase the frame rate to drive a multisync display.

Needless to say, there was much debate about the merits of having an IBC in 1995 competing with the Montreux symposium. Montreux has many failings, but it has the asset that it is a small town where it is still possible to meet people after the show. Brighton had the same feel. In Amsterdam, once the show closes for the day, everyone disappears into a vast metropolis. In Montreux, it is easy to leave the show in order to eat, whereas this is difficult in Amsterdam. In a nutshell, Amsterdam has the better exhibition center, Montreux has the better environment. Alternating the two makes sense.

Of course, it makes more sense to have a single show in a single place every year, but to have two shows in different places competing next year makes no sense at all. There are already too many trade shows to the point that they are having a negative effect. The customer does not have time to attend them all, and most manufacturers cannot afford a presence at each show.

The cost of exhibiting at trade shows adds a significant fraction to the price of broadcast equipment. With the trend to smaller, cheaper digital equipment, the profit margin will not support two shows. The problem is that no one wants to be the first not to be at a show. The result is that a number of manufacturers have signed up for IBC '95 "just to see what happens." That just puts the decision off. ■

John Watkinson is an independent consultant in digital audio, video and data technology and is the author of seven books on the subject, including The Art of Digital Audio and The Art of DigitalVideo; acclaimed as definitive works. He is a Fellow of the Audio Engineering Society and is listed in Who's Who in the World. He regularly presents papers at conventions of learned societies and has presented training courses for students, broadcasters and facilities around the world. He is currently writing a book on video and audio data reduction.

An Editor By Any Other Name . . .

AMSTERDAM

A bunch of new products lost their names at IBC, sinking beneath the anonymous waves of engineers' codes, numbers and figures before even the first units were sold.

The move highlights the tricky business of naming equipment, where imagination and marketing clash with copyright and the law.

Destiny, the name Sony chose at NAB for its new non-linear editing system, has been dropped. Apparently consumer electronics company Thorn was already using it. So now the Sony device is just plain, old DES-500.

Can anyone imagine a producer or director requesting a DES-500 over an Avid or Lightworks? It just has no soul.

Panasonic's competitor for the new Sony machine is another to lose its name. Postbox, the Japanese manufacturer discovered sometime between NAB and IBC, is the name given to the receptacle in which mail is deposited in many countries. The only slot in the new WJ-MX1000, however, is for floppy disks.

The company could have saved itself a lot of time if it had asked Quantel first. Postbox is what its Editbox was to be called.

It was with Quantel that AVS Broadcast had a spat over the name of the new switcher and effects box it was showing. Apparently it slipped AVS's mind that Quantel was already using the name Encore for its own effects device, implemented in Harry. AVS agreed to find a new name, following the show.

Harry was the machine that really started it all back in the mid 1980s when humanity won the battle with engineering. It was a lucky accident. The project name stuck before Quantel could come up with an appropriately elaborate code.

But it successfully personified the then esoteric device in the minds of the creatives. In the early days, it is said, some directors even marched in post houses asking for some guy called Harry, because they had seen some of the great work he had done.

But it was not all bad news for names at IBC. A few brave companies did make the first break from incomprehensible codes.

One was Abekas. The switcher it launched at NAB — the ASWR8100 — was the end of the road. It had clearly run out of elegant combinations of the letter "A" and two figures (like its A53).

Its new products for IBC were instead to have names reminiscent of Roman noblemen or U.S. states. There are the new disk recorders, Hexus and Diskus, and a character generator to replace its old A72, called Texus. ■

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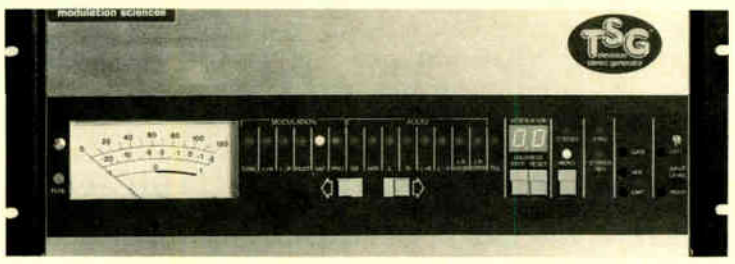

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COMPUTER VIDEO
BRIDGING THE GAP
NOVEMBER 1994

3-D Trends Evolve at SIGGRAPH 1994

by Walter Schoenknecht

ORLANDO, Florida

If you went to the 1994 annual SIGGRAPH conclave with high hopes of finding just the right matchup of 3-D animation software and computing platform muscle, you might have found yourself wishing for a return to a simpler time. It seems that it was not so long ago when little computers wore beige and big ones wore purple; little software came from catalogs, and big software cost over US$50,000.

SIGGRAPH's July conference at Orlando's Orange County Convention Center proved, once and for all, that the old ways are gone; the hard lines of large and small packages, platforms and price tags are blending and blurring evermore.

Notable among the top offerings: Alias Research demonstrated Version 6.0 of its Power Animator product, featuring new tools for creating animated characters. Now that technology can adequately support the mammoth task of 3-D-modeled character animation, major developers have been scrambling to provide faster and more useful tools for fine-tuning these "performances."

Among the front-runners is Alias (**Reader Service 74**), whose acclaimed modeler now adds routines that can wrap bulging muscles and tendons around joints, for example, or add webbing between fingers. Particularly impressive is a system that aids the chore of character lip sync with a library of mouth positions and facial expressions, running in concert with software that can help key mouth movements to phoneme changes in the imported audio track.

Similar attention to character animation was evident in Wavefront Technologies' long list of tweaks and upgrades to many of their product modules. Although modeling features like metaballs and surface deformations are certainly not unique to Wavefront (**Reader Service 101**), their elegant implementation rounds out an already first-class package. And additional muscle for the Explore module's IPR (Interactive Photorealistic Rendering) feature comes from a new, graphical shader editor called "ShaderMaker."

Elsewhere, Wavefront's Kinemation Version 2.0 adds the now-requisite capability for motion capture, 3-D collision modeling and a new ability to cut and paste skeletons, characters and even motion curves between characters.

While the newest products and features at SoftImage (**Reader Service 26**) related to game development and cell animation, crowds continued to show interest in Creative Environment, the company's trend-setting 3-D package, as well as in the newer Digital Studio suite, designed as a single solution for production environments.

MARKETPLACE TRENDS

Vertigo Technology's (**Reader Service 39**) showing at SIGGRAPH subtly underscored the popularity of a few marketplace trends: value-priced packages and third-party tools. The veteran 3-D developer from Vancouver touts a three-tiered menu of basic software plus enhancements, with an entry level offering priced under US$5,000.

Similar eye-catching low-end pricing was seen both at Alias and Wavefront, as were show specials that bundled software with Silicon Graphics hardware (typically, an Indy R4400 or R4600 machine) for under US$10,000. For Vertigo, as well as for some others, add-ons like Pixar's RenderMan (**Reader Service 28**) and Elastic Reality's wonderful morphing software (**Reader Service 36**) are available alongside the package's main modules, adding powerful and cost-effective animation extras.

On the "Hot-n-Trendy" side, Side Effects' Prisms (**Reader Service 48**) continues its reputation as a power-packed sleeper among high-end 3-D packages. Something visceral in Prisms seems to win animators' hearts, and users keep coming back to the small, Toronto-based Side Effects to buy more and more seats of the US$25,000 fully loaded product.

NEW TO U.S.

European innovator Electrogig B.V. (**Reader Service 51**) used the July SIGGRAPH to announce its high profile entry into the U.S. market for 3-D animation software. Featured 3-D entry GIG3-DGO, based on a high-precision NURBS modeler, joins other modules aimed at publishing and engineering markets. The US$8,995 package's core modeler is supplemented with flexible, advanced tools, like raytraced particles and flow-simulated action.

It should be noted that all of the big-ticket packages mentioned above require the big ticket muscle of serious workstations from Silicon Graphics or Sun Microsystems in order to run cost effectively. SGI's Indigo^2 Extreme (**Reader Service 72**), with a price tag somewhere over US$30,000, is often cited by software companies as the most practical standalone performer for these applications.

So, if you have rattled the piggy bank and found that less than US$30,000 has shaken itself loose, should you forget about 3-D animation? Not so, say the

(continued on page 16)

Circle 31 On Reader Service Card

PRODUCTION VALUES

A Look at Pinnacle's Alladin

The All-in-One Desktop Production System Is Seen by Some as Another Video Toaster

by Frank Kelly

In a meeting room, in the heart of Silicon Valley, a gathering of Video Toaster users sits anxiously awaiting a special demonstration. Lots of rumors have been circulating that yet another supposed "Toaster Killer" is about to be demonstrated. One posting on a computer bulletin board referred to this new "black box" as a "Toaster on steroids." No doubt there are those who are beginning to wonder if it is true.

Many others who do not yet own a Toaster are also in attendance, hoping to see a product that will convince them to finally take the plunge into computer-based independent video production. Past efforts by other manufacturers to pitch an alternative to the Toaster's legion of followers have fallen on deaf ears and closed pocketbooks.

Most of these products claimed major improvements worthy of a higher price tag, but fell short of the mark for various reasons. However, in the light of the recent failure of Commodore Business Machines (manufacturer of the Amiga, the host computer for the Video Toaster) there is now more than passing interest in a Toaster "work alike."

As the demonstration begins, skepticism gives way to excitement. Most of the Toaster-based video producers in the audience have wished for a "cleaner" DVE. They have also wished for a way to modify switcher effects so their productions would not be so easily recognizable as "Toaster produced." If you can afford its asking price, both wishes seem fulfilled with the Alladin Media Printer from Pinnacle Systems.

There is no denying that the DVE portion of the Alladin alone is nearly worth its price.

SHOW STOPPER

Price tag notwithstanding (just under US$10,000 without computer), the Alladin Media Printer contains a powerful DVE (digital video effects) that "outclasses" any other pretender to Toaster's previously undisputed leadership in the "all-in-one" desktop video product category. The Alladin's digital video effects include page turns with highlights, as well as shadows, warps and ripples that rival any dedicated high end DVE easily costing twice the price. This capability is impressive, and the switcher transitions are show stoppers here at the group.

Other features include many preset border options for "over-the-shoulder" effects, multicolored "lit frames" and beveled edges, along with true perspective axis rotation, which make it easy to create that polished look.

Image cropping and sizing, along with fully customizable path sequencing, allow for an unlimited variety of unique effects. The keyframes of any custom DVE effect are placed along a timeline that is designed with the option of future integration into popular non-linear editing systems, such as those from Avid. Support for machine-based edit systems is currently available through Alladin's Grass Valley emulation via RS-422, or direct support by other vendors for Alladin-specific features.

WHAT ELSE?

There is no denying that the DVE portion of the Alladin alone is nearly worth its price. However, it takes more than a great DVE to rival the Toaster. Alladin's integral video switcher sports four external video inputs that can be configured as either S-Video or composite. Each choice is mutually exclusive. (There is a component Betacam/M-II option for $1,500 that will be available by the time you read this, but unlike the original product, there is no choice between composite or component, although provisions are made for RGB camera input.) In addition to the four video inputs, there are two internal frame buffers for use as still stores, and one matte source (black at 7.5 IRE).

Additional software components include a fully featured paint package, Alladin Paint, which imports and saves several file formats, and a still file and graphics manager that shows thumbnail picture icons of images. The character generator (Inscriber CG from Image North) and a bundled 3-D package (CrystalGraphics' Crystal TOPAS) each have impressive features and are developed separately by other vendors. This is an attractive option for those who are already using these packages.

Inscriber CG includes full support and import of Adobe TrueType fonts, as well as a very well thought out interface for modifying color and shadow options. Rendered quality of overlay type is quite good, but in practice looks better when composited over still image graphics imported into the Inscriber program itself, as opposed to being composited in Alladin Paint.

CRYSTALIZED INTEREST

The Crystal Topas 3D demonstration has now begun, and the interest level of certain members of the group is beginning to rise sharply. Those familiar with the package will no doubt understand why. Topas is well known for its "high-gloss" superrealism, and is a popular choice for those working in video.

Impressive results are easily accomplished with the help of a CD-ROM included with the Alladin package that contains objects, textures and sample files. This is not a "demo" or "crippled" version of the 3D program; the bundled copy of Topas is identical to the commercial version, except for the absence of the omnipresent copy protection "dongle," because Topas looks directly at the Alladin hardware for verification before it loads.

The Alladin runs under the control of Windows on any IBM compatible 486 DX 66 MHz or better machine with the following: DOS 5.0 or better, Windows 3.1 or higher, 16MB of memory, 250MB or larger hard drive, a 16-bit or better video card capable of 800 x 600 pixel hi-color display with SVGA monitor, and an Adaptec SCSI interface. The Alladin unit is actually a separate box connected via SCSI cable to the host computer.

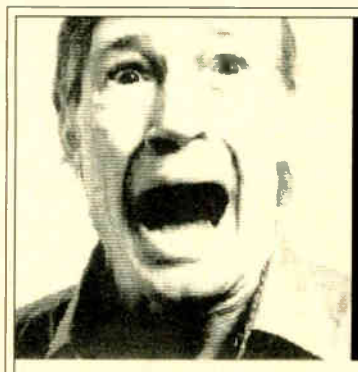
This separate design presumably allows for future development on other platforms. More importantly, it minimizes hardware configuration conflicts (the PC platform is notorious for its less than friendly IRQ hardware interrupts), not to mention it excludes the Alladin's hardware from the "battle of the busses" between ISA, EISA, VL Bus or PCI. Pinnacle offers "turnkey" PC/Alladin packages but allows for the fact that there will be potential customers who already own PC systems that meet the minimum requirements. Today, 66 MHz PCs are rapidly becoming entry level systems.

As the meeting ends, there are those faithful Toaster owners who remain unconvinced, holding out hope that Amiga will rise from the ashes with a new owner. At the time of this writing, there are still unconfirmed reports that a consortium of investors has bought the rights to restart manufacture of Amiga 4000s to fill orders that were left on the books at the demise of Commodore.

Still others in the group have renewed hope that the Alladin Media Printer will answer the needs they have for the immediate future, filling gaps in the Toaster's arsenal. More importantly, it has been introduced on a platform that shows no signs of disappearing anytime soon. ■

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

For further information, contact Pinnacle Systems, in the U.S. (Telephone: +1-408-720-9669; FAX: +1-408-720-9674), or circle ***Reader Service 128****.*



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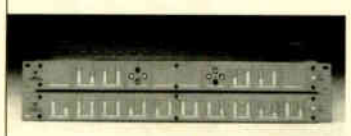

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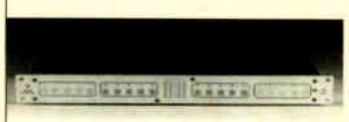

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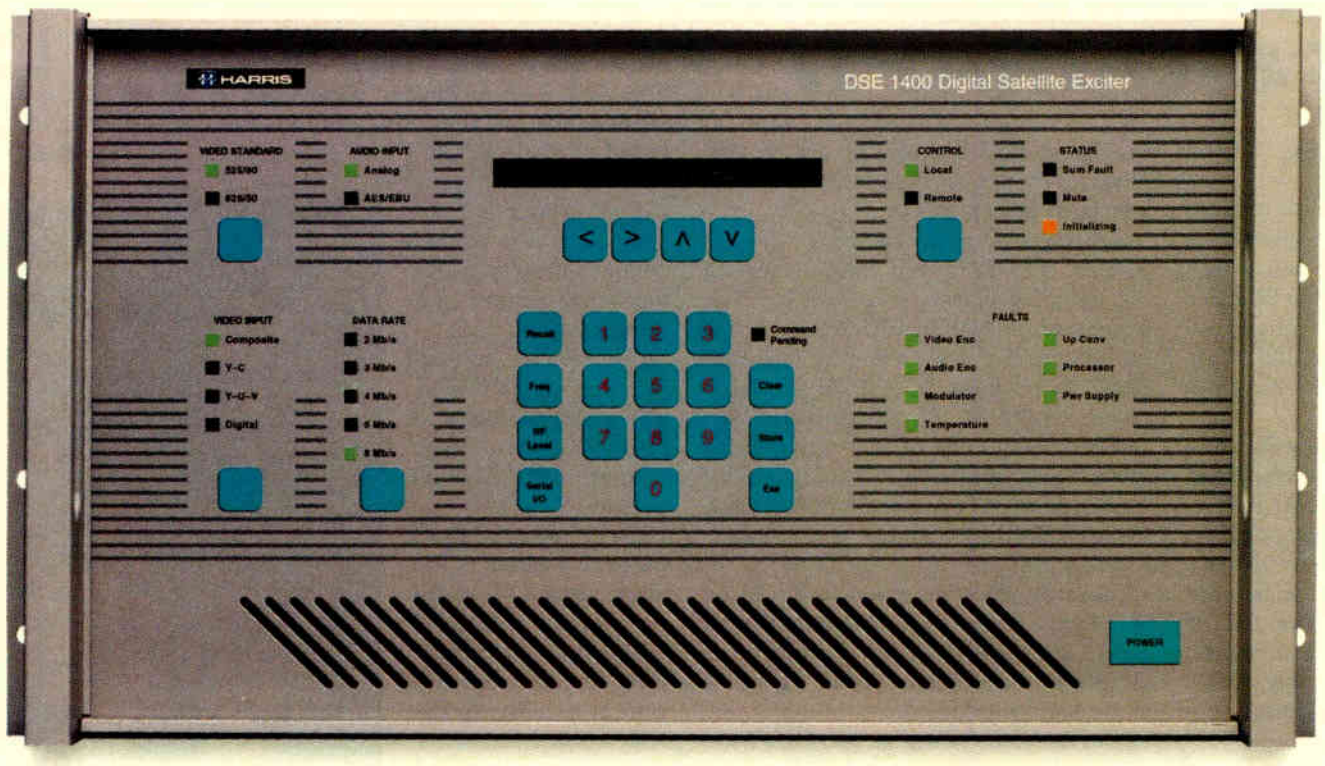

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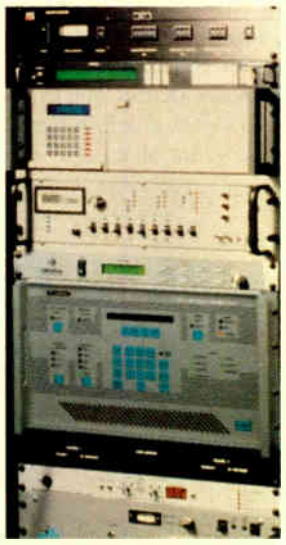

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CONTINUED FROM PAGE 13

3-D Systems Improve During SIGGRAPH

dozens of companies showing 3-D on smaller platforms.

SIGGRAPH '94 showcased a bevy of strong performers, offered primarily on three processors: the Apple Macintosh Quadra or PowerMac; Intel's 486 PC-clone chips or (preferably) P60/P90 Pentium; and RISC-based "junior workstations" from Sun (SparcStation 5) or Silicon Graphics (Indy PC or SC).

Electric Image (**Reader Service 79**) debuted its 2.0 release of ElectricImage Animation, further refining perhaps the premier Mac-based 3-D animation package. The serious price tag (US$7,495) is a reminder of that ever-blurring line between big and small packages. The list of ElectricImage Version 2.0 enhancements, though, reads like any of the "big boys": deformations, motion blur, audio track support and particle systems.

NOTABLE DEBUT

A new entry called Movieola debuted at SIGGRAPH '94, shown by developer Radiance Software (**Reader Service 129**). A fully-featured, US$3,995 NURBS-based package, Movieola features a hands-on "artist-friendly" user interface bolstered by the real-time rendered interactive manipulation of models. A "mold tool" that kneads the model's surface like a finger on clay is a particularly clever feature.

At US$2,995, Autodesk's 3-D Studio (**Reader Service 35**) holds court as the reigning king of DOS-based 3-D animators. As a mature product from a recognized leader, 3-D Studio leads the way with image-processing plug-ins from some of the top names, and a full range of pre-made models are available from several sources. As a result, it may be easier to get a new installation of 3-D Studio up and running productively in a short period of time than with many other products.

Similarly, CrystalGraphics' Crystal TOPAS Pro (US$2,495) (**Reader Service 37**) reaches maturity in version 5.1, announced at SIGGRAPH. Probably the most impressive new feature for this well-muscled package is Animated Match Perspective, a set of routines that allows flawless integration of live-action backgrounds with animated models. This is easy enough to do in Wavefront or SoftImage, but an unheard of feature in the under-$3,000 arena.

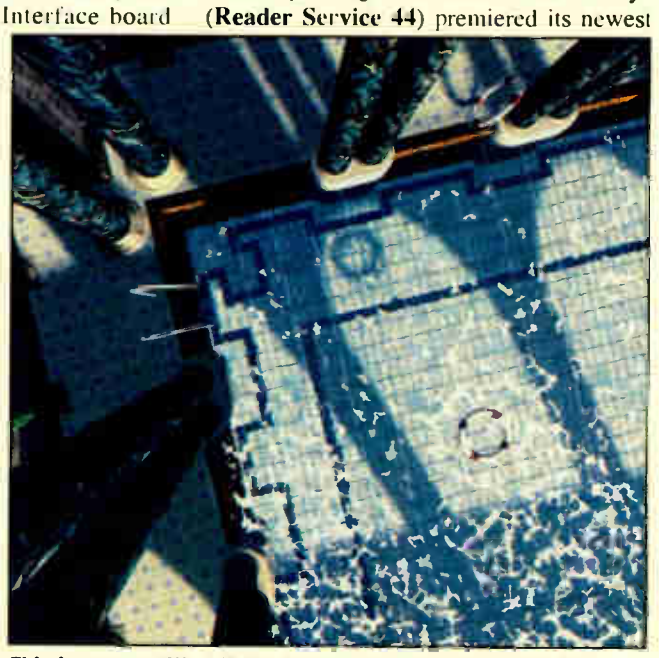
CrystalGraphics also previewed a 32-bit Windows version of its popular "Flying Fonts," and the render speed as shown on an inexpensive Pentium proved that "Flying" is an apt description indeed.

From the Video Toaster people: LightWave 3-D, the popular and inexpensive 3-D animation package (**Reader Service 40**), is finally available for both Silicon Graphics and PC compatible platforms. LightWave 3-D users presumably swallowed hard when Commodore formally met its end in April, and NewTek's multiplatform announcement is sure to have brought a smile to some Hollywood faces as the US$995 package reportedly sees a lot of use in some very high profile effects shops. A new modeling tool, Metaform, uses primitives to create organic models; and the product's traditional selling point, simplicity, is enhanced by optimal use of plug-ins from Xaos Tools.

Another popular Amiga-based offering, Aladdin 4D from Adspec Programming (**Reader Service 5**), was on hand at the Cybernetics Distribution Corp. (CDC) booth. This US$499 program has benefitted from several years of intense competition with LightWave and other Amiga fare. It features a spline-based modeler, time-line animation with object flocking, particle systems, procedural gases with turbidity and many more features seen on "big computers."

Equally interesting was the hardware Aladdin 4D ran on. CDC is the U.S. distributor of U.S. Cybernetics, which introduced The Warp System (**Reader Service 43**), a super-scalar, parallel processing system based on the INMOS T-805 Transputer chip. A Warp-1 System Interface board ($1,995) connects to the Amiga's system bus and communicates with any number of external processing cards.

Also seen on the small platforms: Visual Reality, a Windows 3-D animation program from Visual Systems Inc. (**Reader Service 33**). This is a US$595 polygonal-based package which, like Macromedia's 3-D modelers, is a good desktop 3-D companion. And Caligari's US$795 trueSpace 3-D product (**Reader Service 130**) provides similar service as a modeler for multimedia, print and animation, but with a more "artsy" look and feel. It is full of creative touches like 3-D paint and clay-like modeling tools.



This image, entitled 'Bath House,' was created using the ElectricImage package.

BE WISE; ACCESSORIZE

Since the days of the first large, stand-alone animation packages, WYSIWYG (what-you-see-is-what-you-get) has probably referred less to your word processor than to the software package you bought — you were never able to use a single outside program that the company did not sell you.

At SIGGRAPH '94, much to the delight of all who noticed, that way of thinking was dead. On both the high and low ends, clever third-party offerings promised to improve, or at least enliven, everyone's 3-D experience.

For users of high end packages, triple-i Digital Media Group (**Reader Service 14**) demonstrated its spruced-up ARKGeometry, a 3-D modeler based on the now defunct but highly regarded Symbolics system. Granted, a high priced modeling module barely qualifies as an accessory, but for elaborate, detailed mega-models, simply eliminating such anomalies as cracks, overlaps and reverse-facing polygons could potentially save more than a few dollars in re-rending.

And speaking of modelers, auto.des.sys (**Reader Service 44**) premiered its newest version of form.Z, a powerful 3-D modeler for US$1,495. With import/export to and from most small and medium packages, form.Z's appeal lies not only in its overall power, but in its stunning ability to do quick, accurate terrain mapping. form.Z is currently available for Mac and PowerMac.

For the smaller operators as well as the big-ticket set, there are pre-built models of everything from Ferraris to femurs courtesy of Viewpoint Datalabs (**Reader Service 58**). And they are available for less money than it would likely cost you to model them yourself. With a new minority investor (Motorola), Viewpoint is sure to expand its already extensive library of squeaky-clean datasets.

Elastic Reality (**Reader Service 1**) announced that its unique collection of special effects and image processors is now available for Silicon Graphics platforms at US$3,995. This should be hot news to both video users and film people, where Elastic Reality effects seem to be sneaking into major projects with increasing regularity.

More good news from SIGGRAPH: Elastic Reality for Windows is here (US$495), and the traditional Macintosh version has gone native. PowerMac users can get a six-fold increase in performance with the updated version (US$395).

Finally, after you have bought all the hardware and software, you sit before the glowing screen, scratching your head. The manuals are OK, but if only you could watch how it is done.

Well, now you can. For only US$69.95, 3-D Tutor from Zelos! (**Reader Service 90**) holds your hand through those traumatic first weeks. Pop the CD-ROM into your Windows-based multimedia computer, and let the thorough but fun tutorial teach you all the concepts and vocabulary — including some that veteran animators consistently fall down on. ■

Walter Schoenknecht is a partner in Midnight Media Group, a New York-area production company. He can be reached via CompuServe at 73730,2113.

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DIGITIPS

Some Tips on Digitizing Video

by Bob Currier

Give three different people access to the same video capture hardware and software and ask them to digitize the same original video, and you will probably end up with wildly varying results. Despite what some salespeople would like us to believe, there is more to digitizing video then simply plugging in a board and pressing a button on the screen.

The manufacturers and software developers have given us marvelous tools to work with, but just as important as the tools themselves is understanding how to use them. And the final use of the digital video, whether as small clips for CD-ROM production or full screen for non-linear editing, influences the techniques that should be used.

This article covers some of the tricks and techniques I have learned while doing video capture. Some of these were learned from others, some I have read, but most were learned the hard way — by experimenting until the results looked right. There is a lot of value in that last technique, so please do experiment. But I hope some of these ideas may help save you some time.

I work in a Macintosh environment, so most of my references are to Mac-based tools. However, the techniques are platform- and software-independent and apply equally well to QuickTime or Video for Windows use.

EVEN THE LONGEST JOURNEY...

The best place to start any process is at the beginning. So it is with digitizing video: You need to start by getting the very best source material to work with. While you might think that the quality of the original video material would not matter by the time you reduce the image to a small window on the screen, reduce its frame rate and limit the color resolution, exactly the opposite is true: The quality of the original video can make or break the final product.

You should start with the best video source available. You may not always have a choice if someone is handing you the video to be digitized, but you should always at least request the best format. Common video formats you are likely to deal with vary in quality. At the lowest end are the consumer formats VHS and 8mm. Other formats, such as 3/4-inch U-Matic, U-Matic SP and high band S-VHS and Hi-8 offer better pictures. Laser Disc, M-II and Betacam SP are higher quality formats; the latter two component formats are commonly used for television broadcast. Be sure you can handle the tape format, and that your digitizing hardware can handle the video signal format: composite, S-Video (Y/C) or component.

If the original video is destined for a QuickTime or Video for Windows clip it will be greatly reduced in size, and because of the wide differences in computer monitors that will be used for playback, the original video should be well lit, with good contrast ratios. A muddy original will only get more so after digitizing.

One of the great promises of digital video — as with digital audio — is the prospect of limitless generations without degradation. Strictly speaking, this is true, but only when making an exact copy. As soon as you throw some image processing into the equation, you quickly get coding/decoding errors that are at least equivalent in degradation to an analog tape generation loss. only with compressed digital video your image quality can degrade much more quickly if you are not careful.

The culprits are the compression algorithms used to reduce the size of the video data, starting with the video capture hardware. Most of the common hardware makes use of compression during capture. Typically it is motion JPEG or a proprietary scheme. This is most likely not the compression scheme that the final product will use. Thus you are virtually guaranteed that at least one stage of coding/decoding errors will result when you convert from the original compression method to the final.

KEEP IT SIMPLE

To reduce this problem (we cannot entirely eliminate it until our tools are up to dealing with uncompressed video at every step), switch to uncompressed video at the earliest opportunity. When capturing original video using motion JPEG-based hardware, immediately create a "sub-master" without any compression at all. This can be accomplished using any of the standard tools: Adobe Premiere, ConvertToMovie, etc. by specifying the codec to be "None."

Use this uncompressed sub-master file for all subsequent editing steps, and do not use any further compression until you are ready to generate the final output file. Uncompressed video takes a lot of disk space and processing time, but the elimination of repetitive coding/decoding significantly improves the quality of the final product.

You can further improve the quality of this uncompressed sub-master by capturing the original video at twice the size you want for the final product, and scaling the size when you convert it to uncompressed format. This helps hide some of the original compression artifacts by averaging them out during the scaling process.

For example, if you plan on delivering the

(continued on page 18)

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Circle 82 On Reader Service Card

Apple's New System Broadens the Desktop

by Tony Reveaux

SAN FRANCISCO

Software applications may come and go, but it is the operating system that supports it all. Apple's new Version 7.5, announced at MACWORLD Expo in Boston August 2-5, is not a major revision like System 7. But it is a lively package of over 50 added features that play upon the strengths of the Macintosh Graphical User Interface (GUI). It reaches up to meet and support the talents of the PowerPC RISC architecture while providing compatibility downward to a 68020 processor with 4MB of RAM.

For multimedia producers, Version 7.5 will provide many welcome benefits, from overall operational flexibilities to tool-specific enhancements. Drag and drop has evolved to a "drag and show," where a drag-to-select will reveal the target document's status, and then be able to drop-transfer data. Hierarchical menus display sub-menus of documents and applications that have been used recently. There is an improved Find File. WindowShade lets you collapse windows without closing documents. Macintosh PC Exchange 2.0 allows the user to view the contents of an MS-DOS or Windows disk, and SCSI hard disks and Bernoullis.

A new scriptable Finder can use AppleScript to automate system tasks, with the potential for device monitoring and control. QuickDraw GX lets you create portable "print and view" documents from any application, lets you easily check print queues, incorporates ColorSync, supports Apple TrueType and ATM GX, includes seven QuickDraw fonts, and is optimized for PowerPC.

MacTCP readies your Mac to connect with other systems using TCP/IP. Now QuickTime is optimized for PowerPC.

Third-party vendors such as WordPerfect Corp., Microsoft, Aldus and Adobe have announced their intentions to support 7.5 features in upcoming releases. But if imitation is the sincerest form of flattery, then Microsoft's new revision of Windows, code-named Chicago, should make Apple's cheeks glow. Due to arrive next year by second quarter, Chicago will mirror such Mac attributes as hiking up from 16-bit to 32-bit processing, a single on-screen desktop, plug and play, and full file names.

However, do not expect Apple to stay put on the OS front. System 7.5 is but one step in a long-term strategy to make it easier to run Mac, MS-DOS and Windows on the same system; run Mac applications on UNIX; improve compatibility with major networking and enterprise systems; CISC to RISC; and continuing to push the OpenDoc component software architecture. ■

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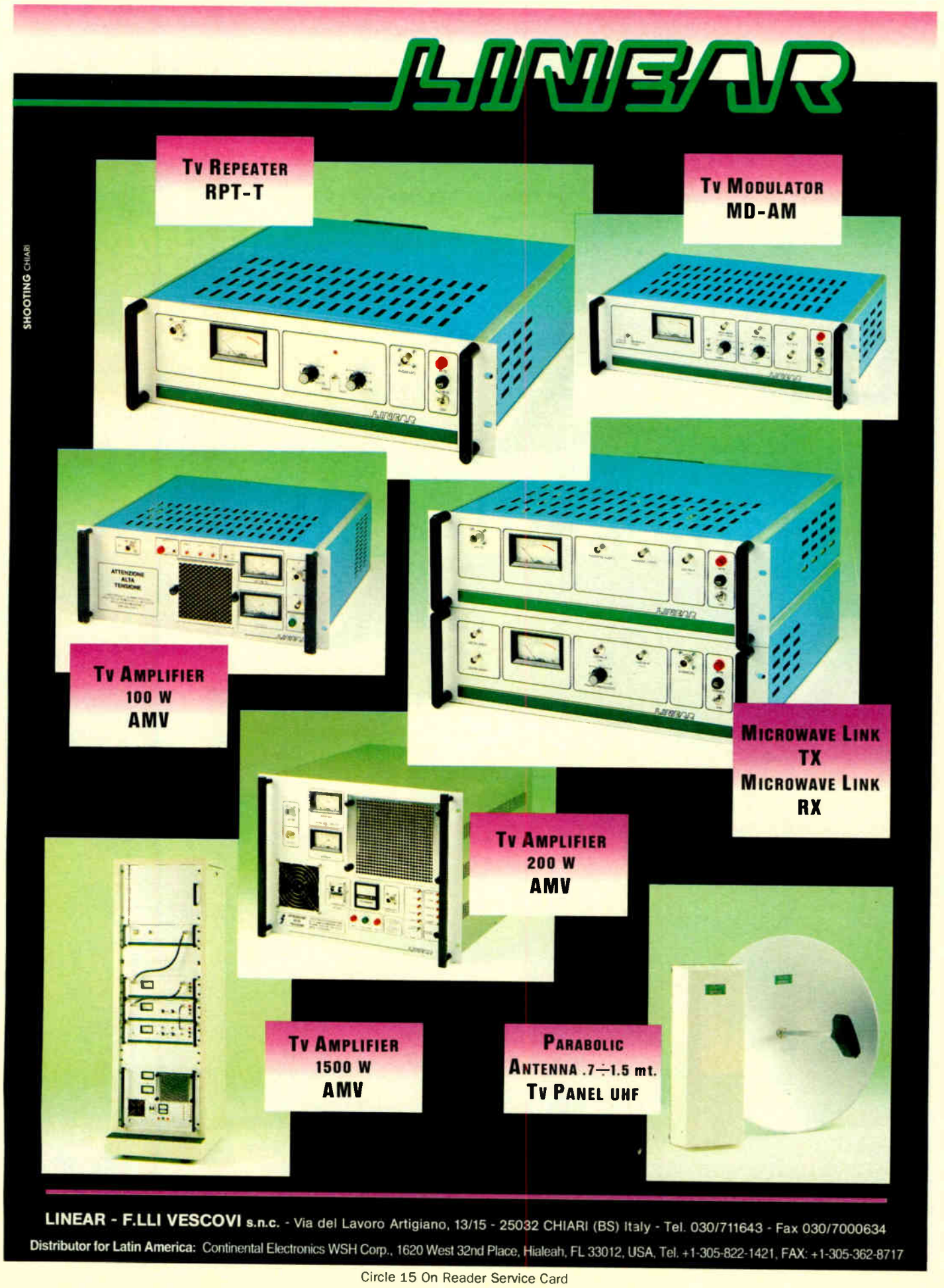

Circle 15 On Reader Service Card

CONTINUED FROM PAGE 17

Tricks of Digitizing

final product at 160 x 120 pixels, then capture the video at 320 x 240. Then create an uncompressed sub-master at the 160 x 120 size. The quality is improved over simply capturing at 160 x 120 and then converting to uncompressed.

KEEP YOUR FRAMES CLEAN

Video capture hardware will digitize the entire video frame, including those parts of the picture that would normally be hidden on a conventional, overscanned display. This is particularly important when the source material is on consumer level formats, such as VHS and Hi-8, where the simplifications of recording are mostly hidden by the overscanned display.

If you simply digitize and display the full frame, you will see head switch noise and other artifacts. Using a TBC to clean up the signal will certainly reduce the problem by eliminating flagging and other timing-related problems, but, most likely, some cropping of the video image will be necessary. Doing this not only results in giving you better-looking video, but stops the compressor from spending its bandwidth compressing noise instead of the desired image.

In order to allow for cropping, you should digitize the original image at a slightly larger size than the final product. Depending on the size of the final image, the amount you will want to crop will be anything from a few pixels to 10 or more. Whatever software you use to render the final video should have cropping capability.

If you are used to viewing D-1 video on studio monitors, you are going to be just a bit disappointed by even the best computer-based video. But if you use care in your choice of techniques, you can create results that are the best that the current state-of-the-art allows. ■

Bob Currier is Vice President of Aclys Inc., a multimedia production company. He also serves as QuickTime manager in the Macintosh MultiMedia forum on CompuServe. His recent projects include the digitization of video clips from current movies, including The Lion King, The Mask, Wyatt Earp and The Shadow, which are available on-line in the CompuServe MACMEDIA and EDRIVE forums. He may be reached on CompuServe at 73210,1403 or via the Internet at 73210.1403@compuserve.com.

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Video Server Developments Unfold

AMSTERDAM

The broadcast industry is going digital and appears to be liking it. It has moved to nonlinear disk storage and is now taking another leaf from the computer industry's book and, if recent introductions at IBC '94 are any indication, is looking to adopt the client-server model.

Like users on a computer network, operators of video production and broadcast equipment can access data (digital video in this case) instantly from a centralized store of hard disks.

At this early stage, the technology is being touted as a panacea for a myriad of applications: station automation, post production, news and presentation, video-on-demand (VOD) and so on.

Avid's media server (**Reader Service 24**), based on a Silicon Graphics Challenge computer, is nearest to the computer model. Unlike other video server systems at the show, Avid's was carrying video on a computer network rather than serial digital video routing. An advanced high-speed ATM network carried Avid's AVR26 video (JPEG compressed at around 8:1) as OMF data files.

DIGISTORE IN PAL

A more established model is Dynatech's DigiStore (**Reader Service 50**). Dynatech announced the availability of a PAL system at IBC, currently beta-testing at Russian and Swedish broadcasters. The system stores up to 42 hours on a network of 18 nodes. All its video is compressed, at around 8:1, using JPEG. Video can be accessed by three simultaneous channels per node.

Enhancing existing cart systems is one application for the new Profile hard disk recorder from Tektronix (**Reader Service 22**), with Odetics now integrating it into its cart systems.

All video on the Profile is JPEG compressed, but video compressed to a greater or lesser degree can be mixed and compression can go as mild as 4:1. Compressed that low, video looks better than Beta SP, Tektronix claims, and it was challenging IBC attendees to bring in their own material and compare.

Each Profile has up to four channels and can store up to eight hours of 4:1 compressed video. A basic two channel system starts at around US$75,000.

"We want Profile to become a de facto standard," said GVG's European chief Tony O'Connell, "and be to disk recording what Betacam is to tape."

Meanwhile, a major advantage of BTS's new Media Pool (**Reader Service 117**), shown in public for the first time, is that it too can mix video compressed to varying degrees. But it also handles uncompressed video. The system is expandable from 10 minutes to over 100 hours, and material can be accessed simultaneously from as many as 16 channels.

Like the Media Pool, Clipbox from Quantel (**Reader Service 61**) stores uncompressed and compressed video (at just one level, around 5:1) together in the same system. But it is the only system, Quantel officials claim, that allows simultaneous access to the same uncompressed material.

Clipbox serves up to 14 terminals — special versions of its Editbox and Newsbox editing systems. It can store up to eight hours of uncompressed video (or 40 hours compressed).

POST DREAMS

It is post production that is the key application for Hexus, the new video server displayed on the Abekas booth (**Reader Service**

(continued on page 22)

CONTINUED FROM PAGE 1

Technology on the Rise

Ikegami (working with Avid) and from Panasonic in 1996.

Panasonic and Sony were also on the floor promoting hybrid disk and tape editing solutions, with the WJ-MX1000 (formerly Postbox) and DES-500 (formerly Destiny). Other forms of the hybrid solution came from Grass Valley, with Sabre, and the continually improving Fast Electronics and Matrox systems.

But in case you thought the industry was getting away from tape, a backroom Panasonic demonstration had camcorders, VTRs and field editors based around the forthcoming 1/4-inch DVC digital component format, which the company intends to be the future acquisition media for D-5.

Video compression also showed a stronger following this year. In a private suite, Sony demonstrated its SX compressed routing standard (formerly S-PEG), which is based on the MPEG standard and is designed to allow data to be moved around a studio or facility without degradation.

A similar standard was also shown secretly by Tektronix. The U.S. company said it is actively trying to build an industry consensus around its work, and it hopes the MPEG 2 committee will consider adopting the standard into its protocol.

BTS MOVES

At BTS, a major shake-up in the management over the last year sees the company dropping plans for OEM D-5 or Digital Betacam. It also intends to scrap its Betacam SP production line and concentrate its efforts on becoming "customer-oriented" like never before.

The other big European company, Thomson, an early pioneer in digital component equipment, continued this year with improved cameras and switchers.

In non-linear editing, Lightworks showed off Heavyworks and promised big things for next year. Avid, which in many minds has replaced Ampex as one of the "big three" next to Sony and Panasonic, proved well able to handle itself in the limelight. The strategic acquisition of Basys, a leading newsroom automation supplier, further enhanced Avid's standing. It also pointed the way to another area of increasing competition, with the likes of Sony, BTS, Quantel and Dynatech NewStar targeting the news market.

Another general theme at the show was the range and diversity of upgrades and new systems for widescreen production. With the PALplus consortium announcing at the show that 19 European broadcasters intend to transmit a total of over 20,000 hours of PALplus programming by the end of 1995, widescreen is taking off.

Kodak is quick to point out that film is still the primary medium for widescreen acquisition, but camera and tape manufacturers stress their products' widescreen capabilities, and there was no end of widescreen capable switchers, still stores and character generators on the show floor.

The Conference side of IBC also witnessed updates on how the major widescreen and digital television schemes are coming along. In Europe, this centered around the Digital Video Broadcasting (DVB) project, which is planning to set a terrestrial digital standard by the end of the year, and MPEG, with a lively debate on where MPEG 2 is going and whether it is necessary at all.

For the studio presenter, two small software companies showed fascinating virtual studios, which allow a newscaster — or presenter of any program, for that matter — to walk around computer generated objects as if they were real. Computer Sport Service's Platform Virtual Studio and VAP's ELSET attracted some of the biggest crowds of the show.

As for next year, IBC's organizers say more than 185 manufacturers have signed up already, though big names such as Sony, Panasonic and Quantel look set to boycott in favor of Montreux. ■

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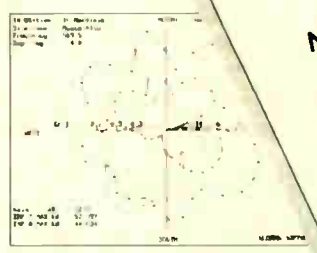

A printout example of the famous ALDENA antenna system design software.

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Circle 123 On Reader Service Card

Cameras Embrace Widescreen Future

AMSTERDAM

Camera innovations were numerous at IBC '94, despite a shadow over the industry in the form of the European Union's new anti-dumping levy, imposed on cameras made outside Europe.

The levy, which pushes up the cost of some models by as much as 80 percent, was drawn up by the EU this year in response to complaints by European camera manufacturers who claimed Japanese manufacturers were flooding European markets with hardware priced too low.

Sony, Ikegami and Panasonic admitted to suffering at the show.

"It has imposed a grave distortion on the market," said Gordon Rafferty, managing director for Panasonic Broadcast Europe, "and will impede future services, like widescreen."

HIGH SPIRITS

By contrast, spirits among European manufacturers were high. Thomson, claimed to be selling more cameras than anyone in Europe now and announced at the show its latest orders: six cameras to MTV's UK-based VH-1 channel and 18 to Canal+ in Spain.

"Dumping was a reality," said Thomson Broadcast Chairman Francis Hericourt. "The levy has re-established a fair competition."

To avoid the levy Sony revealed that it is considering moving production of its cameras to the UK. Panasonic dismissed such a move for itself.

While European manufacture is one option for Ikegami (**Reader Service 88**), it seems to have found another, unique way to dodge the levy. The company claims that its new HK-466 camera, unveiled at the show, is not liable because the levy only affects cameras with three 2/3-inch chips. The HK-466 has four — using a technology Ikegami has developed for HDTV. UK hire outfit Cine Video put in an order for 30 at the show.

Ikegami officials claim the four-chip design boosts resolution and virtually eliminates aliasing. However, Ikegami has no plans to market the four-chip camera in Japan, leading some industry watchers to speculate that the technology is only being implemented to avoid the levies, and that it really does not affect picture quality.

> **. . . "(The EU tariff) has imposed a grave distortion on the market, and will impede future services, like widescreen."**
>
> ***— Gordon Rafferty***
> ***Managing Director for Panasonic Broadcast Europe***

Sweetening the pill for Sony (**Reader Service 46**) is the success it is having with single-piece camcorders (unaffected by the levy). As promised, its new camcorder is more than a BVW-400 analog Beta SP machine with a Digital Betacam back-end. Other improvements for the new DVW-700 are digital processing, high-resolution chips and color playout. New lithium batteries give it a two-hour playing time and it is as small and light as the old BVW-400.

But the innovation Sony was shouting about loudest was the widescreen version of the camcorder unveiled at the show. It can be switched from shooting in a standard 4:3 ratio to 16:9, and Sony is lining it up to take on Super16 for widescreen acquisition. It claimed that was part of the appeal for German broadcaster Bayerischer Rundfunk, which has ordered 22.

MAKING THE SWITCH

A myriad of switchable widescreen cameras were launched at the show. Ikegami's new HL-55AW is one of them, as is its four chip HK-466. Delivery of the first switchable version of BTS's LDK10 camera was announced, appropriately enough to neighboring Dutch broadcaster NOB. And Thomson's first sales of its switchable camera — the 1657 Wide FX — are to the UK's BBC.

Other widescreen cameras making their first appearance included the Hitachi's SK-2000PW (**Reader Service 2**) and Panasonic's AQ-235W.

Hand-in-hand with new switchable cameras were new lens products designed to provide either 16:9 or 4:3 images.

Among this group was the new J15ax8b IRS ENG lens from Canon (**Reader Service 99**), part of the company's Internal Focusing (IF) family. The lens features ultra-dispersion glass to provide low dispersion and low chroma abberation. Also new from Canon is the J20x Super lens for the studio, one of Canon's new "Crossover" lenses. The J20 will be available in ENG units by early 1995.

Fujinon (**Reader Service 120**) was also out in force with its aspheric technology lenses that improves corner resolution at wide angles. For 16:9 use, aspheric technology has been incorporated into the new A16x9 ENG lens. European broadcasters appear far more interested in widescreen TV than their American counterparts, to whom this technology was first offered at NAB in March. For a premium of around 15 percent to 20 percent over their fixed 4:3 counterparts, widescreen switchable cameras offer a little bit of future-proofing, manufacturers contend.

While the HDTV broadcasting issue in Europe has become less urgent — absorbed now into a wider, integrated policy on the future of TV under the EU's DVB (Digital Video Broadcast) initiative — many advancements were quietly introduced at IBC to make HD production much easier.

There is now a choice of manageable lightweight, portable CCD cameras for shooting HDTV. Thomson (**Reader Service 55**) unveiled its new camera which, like BTS's HD camera, is a portable chip-camera for the European 1250/50 standard. And for the 1125/60 standard, Ikegami now provides an alternative to Sony's HDVS CCD camera, with its new four-chip HDL-70A.

BTS (**Reader Service 18**) showed its new

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DCR6000 for the first time. The VTR uses the D-6 format BTS announced last year with Toshiba to record 1250 and 1125 HDTV standards, digitally and uncompressed, on D-2-sized cassettes.

In a private suite, Panasonic (**Reader Service 113**) demonstrated its promised black box to squeeze HDTV pictures onto a D-5 VTR. The size of a large refrigerator, the prototype hardware was using DCT compression at a ratio of 4:1. It will not be available until 1996, when the hardware will have been itself compressed into a 3RU box.

COMPRESSION BATTLES

BTS unveiled an HD compression box of its own at the show. The LDK4062 can compress both HDTV video standards onto D-1 or D-5 VTRs. Played back on standard-resolution equipment, miniatures of the HD images are displayed to allow material to be cut outside dedicated HDTV post-production suites.

Thomson too announced a unit to enable the recording of HDTV on a single D-1 VTR. Its previous system needed two.

In the absence of a broadcast market, manufactures are targeting movie production, designing HD cameras that are interchangeable with movie cameras and use the same lenses and accessories.

It looks like that might be paying off, especially for Sony. In January, U.S. network NBC shot a World War II production on location in Prague with Sony's HDVS. And Bob Hoskins, who starred in it alongside Michael Caine, must have been impressed by the technology. It was announce at the show that his directorial debut movie, Rainbow, will also be shot on HDVS.

But for standard resolution, video production 1994 is Digital Betacam's. Sony told IBC attendees that installations of the VTR, launched just last year, had now reached 6,000, claiming it to be the fastest selling professional format ever.

Panasonic declined to announce D-5 sales figures at IBC, indicating they may fall well short of Digital Betacam. And Ampex — inventor of the VTR — was sadly absent from its first European show in many years.

But respite from the tape format war, declared by Sony, Panasonic and Ampex three years ago at the Montreux ITS, looks to be short lived.

Sony's new DVW-700P includes a switchable widescreen model.

Professional equipment based on the new digital 1/4-inch DVC tape format could be introduced as early as the end of 1995, Panasonic said at IBC. Privileged customers were ushered into a private room on its booth to witness demos of DVC compressed video and mock-ups of the range. It includes an ENG camcorder, the size of a pro Hi8 machine, a slightly larger EFP model and a tiny hand-held version — the size of a brick — which stringers can surrender to angry officials, forgetting the expense.

The company also revealed that the professional version of the DVC format will be ruggedized and have a wider track-width than the consumer version. Its two tape sizes will record around two hours and 45 minutes respectively, instead of the four and one hours of the consumer format's tapes.

Another threat to Digital Betacam is the disk camcorder, announced by Avid and Ikegami. It will be unveiled next year, Avid said at IBC. And Panasonic said it will introduce a lightweight, low-power, widescreen switchable D-3 camcorder next year, prior to unveiling a D-5 version. ■

Snell Launches 30 New Products

AMSTERDAM

Taking the prize as IBC's most prolific technology developer this year is Snell and Wilcox (**Reader Service 68**), which launched 30 new products at the show.

Included in the new offerings were numerous products developed for widescreen markets in anticipation of the rollout of 16:9 services such as PALplus. Among the new widescreen products were the COM ^{3} system that allows near–component PAL production, the TPG20 test generator and new versions of the Magus DVE/switcher and the DVS 1000 switcher/keyer.

In the Kudos line, 19 new products were introduced at the show under the Kudos IQ banner. Among the IQ products are analog composite-to-component encoders and decoders, analog composite-to-digital component decoders, SDI component-to-analog composite encoders, error detection and handling devices and component analog-to-digital and component digital-to-analog converters.

Also new in the IQ line are a digital black burst generator, a component sync pulse generator, the Logostore PROM–based stillstore and a digital distributor that performs parallel-to-serial conversions.

Desktop Graphics On the Rise

by Andrew von Gamm

AMSTERDAM

While the pundits are pontificating what multimedia might be, the makers of computer animation packages are doing it and displaying their wares around the world.

With the SIGGRAPH convention in Orlando still warm, those who exhibited at both fairs were hardly likely to have something new at the IBC. However, IBC was the first chance for most European broadcasters to check out all the latest animation goodies.

Germany is discovering Silicon Graphics (**Reader Service 4**) in a big way, and those who had not seen them at the giant CBit computer fair in Hannover in the Spring, made their way to Amsterdam to marvel. IBC saw the launch announcement of SGI's Silicon Studio by newly appointed director of marketing Dave Larsen.

SILICON STUDIO

The Silicon Studio is based upon a Sprint-network of SGI users around the U.S., a system that would be hard to introduce in Europe because of the lack of communications infrastructure and the very high cost of high speed data networking.

"The future market will compete on creativity, not technology," Larsen said. "The defense industry was the technology driver in the past, but that role is now with film and video. Everyone can get in on this market, but if you do, do it now."

The big three — SoftImage, Wavefront and Alias — had stands within the SGI area and display areas of their own. The biggest hit was Wavefront's Dynamation (**Reader Service 49**) that creates smoke, water, fire and skin by linking moving objects to vectors that can be influenced by forces designed to emulate wind, gravity or collisions with other objects.

What set Dynamation apart from the other software packages at the IBC was the degree of realism that could be achieved. This was particularly true of those scenes using motion capture and such effects as soft shadowing and haze.

Several companies were claiming credit for the animations performed on Jim Carrey in 'The Mask,' but it was actually a joint effort of modelling on Alias PowerAnimator, animation on SoftImage and composites and final paints on Parallax Matador.

Alias, of Toronto (**Reader Service 78**), backed its claims by bringing Steve Williams of U.S. effects house Industrial Light and Magic (ILM), to the show. ILM was where the graphics pyrotechnics of 'The Mask' were created.

"With 3D-tools, we have been able to enter the world of digital prosthetics, for example Carrey's heart pounding through his chest in 'The Mask,'" Williams said. "We call it digital putty."

At the show, Alias launched PowerAnimator 6.0, which incorporates a set of tools called CharactureBuilder designed to give life-like behavior to digital characters and a user–defined library of facial expressions that are cued to dialogue via a digital audio track. PowerAnimator also has a new range of tools for muscle and skin squash and stretch and the latest version of MotionSampler, which allows real-time display of shaded line models. This allows the animator to see the computer model move while directing the live actor.

For those who still have to earn their living in the real world, PowerAnimator provides a tool called Real-World Camera Lens which gives the virtual director complete control over basic camera settings such as f-stop, lens-focus, focal length, field of view and even film format, e.g. '35mm Academy.'

NETWORKED RENDERING

For its part, SoftImage (**Reader Service 8**) demonstrated its "mental ray" rendering tool capable of working with multiprocessor or networked systems. Designed for SoftImage's Creative Environment, mental ray provides user–definable shaders, motion blur, depth of field, lens effects, as well as area light sources, multiple textures and displacement mapping on one, two or three dimensions. With its networking capability, even difficult scenes can be rendered in significantly less time than normal.

SoftImage also brought out Eddie Ver. 3.2, a 16–bit digital compositing, processing, morph and paint package. Like mental ray, Eddie is also network–compatible, but it includes a cache mechanism that allows artists to save a few frames in memory while working within a tool. Sequences can be rendered and played back within a tool, eliminating the need for a flipbook to view the results.

Broadcasters were intrigued by the VAP Video Art virtual studio display (**Reader Service 95**). VAP is based in Hamburg, Germany, and was showing the new set being used by pay-TV station Premiere. The virtual studio as a concept is nothing new. What is new is the use of computer animation in real time to create the studio, rather than rely on stills and pre-recorded pieces.

Called ElSet, the new package from VAP Video Art combines a virtual construction stored within an SGI Onyx with camera tracking to allow actors and announcers to move about within a virtual studio set. When the person has to interact with a piece of the set (sit at a desk or walk behind a prop) the object is replaced by a blue-painted object and the virtual studio is blue- screened around the real actor in the usual way.

The biggest difference is the automatic animation control module that performs real-time conversion of camera parameters in the real world into virtual movement in the virtual studio.

For the two-dimensional animator producing traditional line-and-ink drawings, the small English company Cambridge Animation Systems (**Reader Service 11**) had a package called Animo that was hard to beat for its 'traditional' feel and low price. It also had the added advantage that it runs on a 486 or Pentium PC using the NeXTSTEP operating system, as well as on the inevitable Silicon Graphics workstation.

Animo is designed for users who just want to automate animations, so that routine tasks like inking, moving and previewing are taken care of by the computer. Using Animo is very similar to CorelDraw and therefore provides a familiar environment to the next generation of illustrators who have spent their childhood years trying to animate pictures of the family dog on father's PC.

PENCIL DRAWINGS

Possibly the biggest strength of this budget-priced package is the fact that the basic key-frame line drawings are still performed using a 2B pencil and a sheet of paper. In this way, that special feeling that only a real drawing can capture is maintained. The animator scans his line-drawings into the PC where they are vectorized for the creation of in-between frames for perfectly smooth motion. The original lines can be bent with the motion to help maintain 'feel'. If the system is networked, big number-crunching tasks like rendering can be farmed out to computers with capacity to spare while low-grade tasks can be performed on a 486.

Also out with a new graphics system was Getris Images (**Reader Service 122**), a member of the European Animation 2000 group. Getris' new Digitoon is an automatic scan module, as well as a paint module controlled via a Windows interface.

With Digitoon, artists can digitize hand–drawn cells and then paint them with both preview and paint windows displayed simultaneously on the screen. Finally, individual cells and be called up and arranged in a final shooting order.

Digitoon cells can then be easily integrated with Getris' Eclipse, Venice and Hurricane systems where they can be integrated into graphics presentations.

As well, Hurricane made its European debut at IBC, introducing the concept of multi–DVE layers to the videographics industry. The hardware–based system provides real–time rendering and sub–pixel precision in which each pixel is divided into 32 sub–pixels for smoother movement.

The degree of realism, the low starting prices for hardware, and some of the software, had some visitors to IBC speculating that more and more material will be made on the desktop. ■

CONTINUED FROM PAGE 19

Server Technology

64). It deals in uncompressed video only, via up to six channels. Abekas has also teamed up with Logica, combining its disk technology with Logica's established Galley 2000 stills database.

Accom's Brontostore (**Reader Service 17**) server also only handles uncompressed video. Like Quantel's server it is initially being targeted at news and presentation.

Brontostore comprises a network of up to 32 nodes to store up to 53 hours of video. Each node stores between 15 and 100 minutes of video, and costs US$85,000 up.

Hewlett Packard (**Reader Service 30**) introduced PAL versions of its disk recorders, designed to take on Abekas and Accom in the edit suite, storing between three and 80 minutes of uncompressed video.

HP's video servers, however, use compression, namely MPEG, unlike others on the show floor. The servers store between six and 51 hours of "broadcast quality" video, accessed via three channels.

HP also showed a server on its booth being used in a VOD demonstration with its new set-top decoder box.

And it is VOD that disk manufacturer Micropolis (**Reader Service 7**) is focusing on with its new AV Server 100, demonstrated in a private suite at a local Amsterdam hotel. It also uses MPEG compression, to provide access to 40 hours of video via up to 32 channels.

Sony (**Reader Service 21**) was another to demonstrate a prototype VOD system at the show, with an optical-disk based server supplying eight channels of compressed video.

While most attendees at IBC '94 agreed that the video server is the way to go, the profusion of implementations caused confusion. Many attendees wondered what sort of compression is appropriate, if any at all. Should it have a single pool of data or be modular? Does it need lots of channels or just a few?

Even the manufactures do not seem to have a clear idea of what applications their technology is best suited to and are teaming up with others to help sort it out. For potential customers, at IBC it all amounted to a very confusing array of disk arrays. ■

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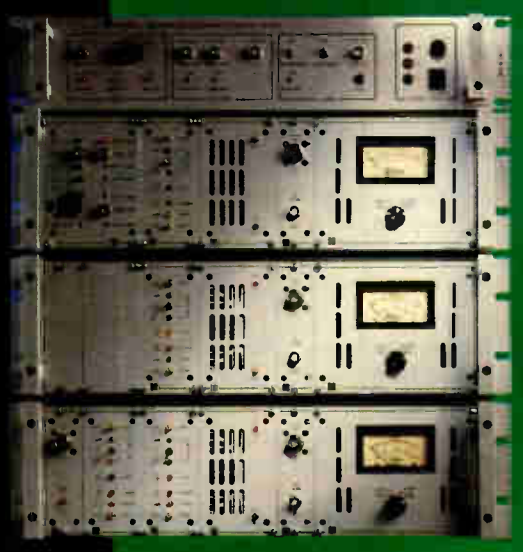

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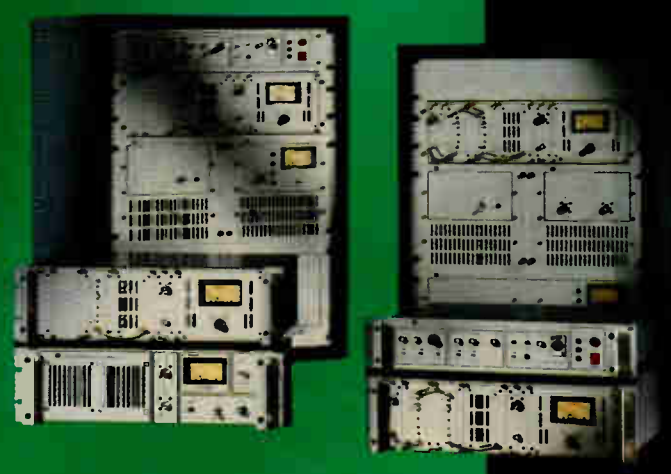

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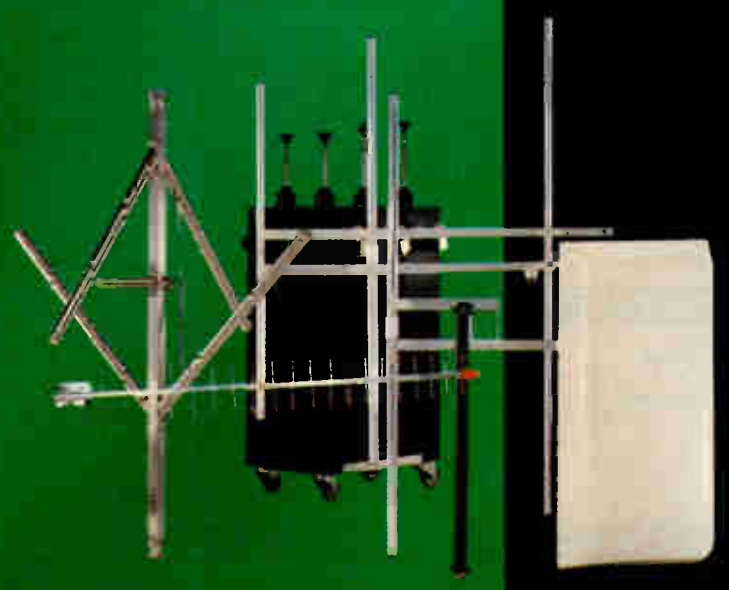

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USER REPORT

Voss Stays on Track with SSL

by Frank Schmitz
Sound Engineer
Voss AG TV Ateliers

DUSSELDORF, Germany

Voss post production specializes in trailers and on-air promotions for broadcasters, TV commercials and corporate videos. We are one of the largest post production facilities in Germany, featuring 3-D computer animation. Henry, Flash-Harry, Hal and Quantel Paintbox suites, as well as digital and analog edit rooms.

At the end of 1992, we were proud to have the first Solid State Logic Scenaria in Europe.

The investment in digital audio was prompted by client wishes, as well as today's technical developments in the audio post production market.

TELEVISION AUDIO

Our clients are advertising agencies, corporate video producers and broadcasters. We do not have very long audio production sessions like in the music production industry. To produce and mix a TV commercial, we spend several hours to a day.

But before we can put a commercial on TV, we spend a lot of time changing the voiceover, for example, or adjusting the music or sound effects or the length of the ad, all in the name of the client.

So we must be very flexible and quick, which is why we decided to invest in digital audio.

I tested several traditional audio systems before I asked myself: "Wouldn't it be better to have an all-in-one project-oriented system that can store audio, mixing data and picture, instead of having a standalone hard disk system where I would need external mixing desks, outboard equipment (all in digital, of course) and slow VTR machines that do not lock when they should?

So I saw the first SSL Scenaria demonstration at NAB in 1992 and was impressed. The device seemed to work well, and it fit 100 percent with my plans.

After convincing our general manager to install the system, we ordered the first Scenaria in Europe, the seventh installation worldwide.

Some people might think that this was too risky, but we wanted something totally different, something that made our work easier and more flexible in comparison to competitive studios.

The use of the Scenaria is completely different compared to a conventional 24-track analog studio.

INS AND OUTS

Scenaria only has ins and outs, a maximum of 24 digital I/O's and 32 analog. What you do with them is your choice. They can be used as aux-send/returns, main-outs, direct-outs, whatever you need.

It also has 24 tracks of digital hard disk recording and a fully dynamic automated digital mixing desk that stores every fader move, every EQ setting and every change during the mix. For each channel, it has a complete on-board dynamic section where changes and settings can also be stored.

The audio storage capacity depends on the number of hard disks that you can afford. Every hard disk has three hours of 48 kHz sampled audio capacity and can feed eight tracks. We use three hard disks, so we have a 24-track system running with a maximum of nine hours of audio capacity.

But this is not enough. The great advance of the Scenaria is the ability to store pictures. I can save, for example, 120 different commercials with a length of 30 seconds from any VTR that has a component video output and a serial interface (RS-422).

So I can store one hour of video on a disk, enough for the next day's work with recordings, cuts, pastes, crossfades, copies of different sound files and other tasks that can be done in SSL's ScreenSound editor.

That's right. The standalone ScreenSound editor is implemented within the Scenaria system. The limitation in having only eight tracks to edit simultaneously is solved by handing over those eight edited tracks to the Scenaria, grabbing another hard disk to connect with ScreenSound, and you have eight empty reels to fill with sound effects, music or whatever. If this sounds complicated, don't panic. It is all done by the push of a button.

The Scenaria has 24 digital I/O's and 32 analog.

This can be done because of SoundNet. This 19-inch, 4RU unit is an ethernet routing system that connects your hard disk with the device of your choosing.

If you have different production rooms, each outfitted with a standalone ScreenSound using a different hard disk for a different production task, it all comes

(continued on next page)

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USER REPORT

France Telecom Relies on AAVS

by Gerard Gay
Technical Inspector
France Telecom

PARIS

One of the areas in which France Telecom's space telecommunications division is active is the transmission and broadcast of audiovisual programs to cable network heads.

For this, audiovisual signal transmission equipment has to be installed. This equipment links the production control rooms (where the signals are stored and forwarded) to the satellite program sites.

In 1993, one of our centers moved its technical premises to a new address. As much of the equipment as possible had to be duplicated, so that the activity could be transferred without disturbing the traffic.

The design of the technical equipment and the engineering approach were fundamental to the know-how used and to the success of the whole operation. They had to be well-designed and properly implemented from the outset. Consequently, only outside companies with proven skills in the audiovisual area were consulted.

AAVS was one of the companies selected. They were asked to install and wire the equipment bays and to supply various types of equipment, such as cable corrector amplifiers, distributor amplifiers, an ONYX 64x64 routing switcher, test signal generators and a timing station to synchronize all the equipment.

Working from a standard diagram provided by France Telecom, AAVS produced the wiring plans and did the pre-wiring of the bays in-house.

Once the new premises became available, the bays were installed on the site, and the wiring was completed and connected to a patch panel. The installation took place over a period of approximately two months.

The cables were then checked and various tests carried out before the decision was made to switch over at the beginning of 1994. The 30 or so bays had to be built according to specific requirements adapted to our operating system. The move was made without difficulty.

The center has now attained an excellent quality of service, based on an operating system that is simple, reliable and easy to use. ■

Editor's note: Gerard Gay is the technical inspector at France Telecom's Spatial Telecom Department of the Centre Poncelet in Paris.

The opinions expressed above are the author's alone. For further information, contact AAVS (Telephone: +33(1)-4857-2164; FAX: +33(1)-4857-3358), or circle ***Reader Service 71.***

CONTINUED FROM PAGE 24

SSL Scenaria Boosts Voss

together via SoundNet to the mixing stage in your Scenaria suite. Wouldn't that be the ideal process for a production?

This is realized in big audio post production houses that mix feature films or the famous box office movies. In a post house that mostly does commercials or trailers, you can also use a Scenaria as a "one-room complete production unit," like we do.

When it comes to the everyday work of the system, I must declare that the Scenaria has been quite a success.

FULL STORAGE

The great advantage is the possibility to store everything (audio-, video- and mixing-data) under a certain project, so that even operators who did not start the job can continue it, change it or do the mastering with the touch of a button.

The ability to have automation during the mix nowadays is widespread among high end studios. But having this in combination with a hard disk recording system and digitized video all in sync at any time... I can't imagine what can come after that.

It is natural that every software has its bugs, and so did the Scenaria software in the beginning. But the software and hardware continues to evolve, as the SSL development department has demonstrated. In the first days, we had some trouble with it. But today, it works very reliably. As long as you save your work correctly, what could happen?

We are thinking about installing a second system soon. And the coming needs of surround sound should be taken very seriously. I am thinking about an "Omnimix" solution in the next few years.

But these days, I am happy to be able to work with a system that fulfills the demands of a high-end production facility and keeps our clients happy. And that is important, if it makes them come back again and again. ■

Editor's note: As the digital audio engineer at Voss, Frank Schmitz records and mixes most of the facility's audio projects. He is a graduate in engineering from the Fachhochschule Aachen in Germany.

The opinions expressed above are the author's alone. For further information, contact Solid State Logic (Telephone: +44-865-842300; FAX: +44-865-842118), or circle ***Reader Service 25.***

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USER REPORT

The Mill Taps Graham-Patten

by Julian Bryant
On-line Editor
The Mill

LONDON

The Mill is a commercial video facility based in Soho, London. Its primary source of work is for the British commercial network. About 99 percent of all our work is commercials, with the other one percent given over to title sequences and a few promos.

The Mill has three digital edit suites based around the Sony 9100 edit controller, which constitutes an integral control panel for most of the equipment in the suites.

Each suite has its own fixed features, such as an Abekas A84 vision mixer, A66 disk recorders and A57 DVEs. All other items that may be required for an edit session can be accessed via the facility's serial digital router and an AES/EBU digital audio router. This makes the suites very flexible, being able to use as many VTRs as required.

The audio requirements for suites such as these also need to be very flexible. Something that Graham-Patten Systems has accomplished in the D/ESAM 800 series. It also works on the basis of a matrix router allowing variable amounts of physical inputs, either analog or digital, to be grouped together internally and called a specific name.

FAST ACCESS

This means that machines such as a digital VTR with four audio tracks and an analog queue track can be accessed quickly without the need to route, patch or assign each audio channel separately.

To understand the principle behind the 800 series mixer, we need to break it down into the three main parts: the physical inputs, the virtual machines and the logical machines.

The 800 series has 56 physical inputs, which can be either serial digital or analog. Once the audio signal has entered the mixer (converted to digital if analog), it goes through a matrix that, at an engineering level, allows the grouping of multiple audio inputs.

When combined, these groups can be given a name (DVRT1, DAT1, ATR1, etc.). Each one of these groups is known as a virtual machine and can be controlled via a dedicated assignment panel. It is possible to connect up to three panels.

Each panel can control up to 16 virtual machines for fast access to the most frequently used audio inputs.

The third part of the mixer's audio control is the logical machines. These are labelled A through H and Aux and provide a means of identifying audio assignments in relationship to the edit controller.

At The Mill, we run the logical machines

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BUYERS BRIEFS

Digigram has released Version 3.30 of its Xtrack track management system.

The system provides control of 32 virtual audio tracks and is based on four PCX boards to play back 24 independent tracks from a hard disk mixed to eight audio outputs in real time.

The system also controls VTRS and provides digital equalization.

For further information, circle **Reader Service 47.**

Orban has introduced the Optimod-TV 8282 digital audio processor.

The unit controls dynamic range and peak subjective loudness to prevent highly processed commercials from becoming obtrusive. It also controls peak modulation and bandwidth to prevent over-modulation of a transmitter.

For further information, circle **Reader Service 42.**

Telex Communications' new BP-1000 single-channel and BP-2000 two-channel beltpack headset stations are the latest addition to the company's Audiocom series.

The units feature all-metal housings, rounded corners and a scultped shape for a more comfortable wear. Features include a one-touch talk button, a call indicator with programmable audible alert and recessed headset volume control.

For further information, circle **Reader Service 56.**

Trident Audio has available the Trident Vector 432 console.

The unit is a 48-frame system fitted with 44 i/o modules, four stereo input modules, VCA grouping and customized metering.

For further information, circle **Reader Service 115.**

so that parts A through H on the 9100 edit controller will pull up logical machines A through H on the D/ESAM, giving a familiar relationship between the two. This does not change, although the machines that are connected to the ports of the edit controller do. This is where the D/ESAM comes into its own.

EASY ASSIGNMENTS

Because of the audio matrix contained within the 800 series, it is possible to reassign an audio source quickly and easily. Quite often at the beginning of an edit, I will run in a Beta SP that will contain an Avid cut and some guide audio. Control of the Beta is gained via an RS-422 router and assigned to one of the floating ports on the 9100.

This will in turn pull up a logical machine on the D/ESAM. All that is then required to record audio from this deck is to assign using the audio from the Beta SP. The D/ESAM will sort out any preview switching when playing in from a digital VTR.

At a later stage in the edit, I may need to pull in another audio source using the same control port on the edit controller. Again, access is gained via the RS-422 control router. But because the audio input to the suite has changed, it would mean patching the machine instead of just assigning it to the valid logical machine. The D/ESAM makes the change-over very fast and stress-free.

Other nice features about the D/ESAM are the audio delay, video display and register management functions. Because all of the video signals travelling through the edit suites are delayed by 1/25th of second due to the digital vision mixer's front end frame stores, the audio signals obviously need to be delayed as well. On the D/ESAM, a function button offers the option to set a level of delay. It increments in the PAL version at 1/25th of a second at a time.

This is normally set to 1, but occasionally it becomes very useful to be able to reset the audio mixer's delay to two frames (1/50sec). This is particularly handy when running in a one-inch, for example, which has to be coded to 601 digital. In this way, we add another video frame delay instead of running the pictures and audio in separately using two edits to re-sync them.

The register management system is also very useful. It allows a flash frame to be taken of the entire mixer for fast recall of level setups. We run register 0 as the default setup register. It has a write disable/enable function that stops it from being accidentally over-written. And unlike the other registers, it can store all the information concerning not only the mixer, but also the default values for the logical and virtual machine assignments, as well as the level monitor status and the editor enable functions.

There is also a video input that can display several menus: a crosspoint menu, an effects menu, a virtual machine assignment menu, a maintenance/setup menu and an audio delay status menu. These menus are quite easily accessed via the front panel and provide at a glance a much more detailed view of how the mixer is actually set up.

Overall, once set up, the D/ESAM mixers will perform most of our tasks without the need to touch the front panel. Only when adjusting levels do we need to alter anything. As an edit controllable audio mixer for a digital edit suite, it performs very well. ■

Editor's note: Julian Bryant joined The Mill several years ago as one of the facility's five on-line editors.

The opinions expressed above are the author's alone. For further information, contact Graham-Patten in the U.S. (Telephone: +1-916-273-8412; FAX: +1-916-273-7458), or circle ***Reader Service 104****.*

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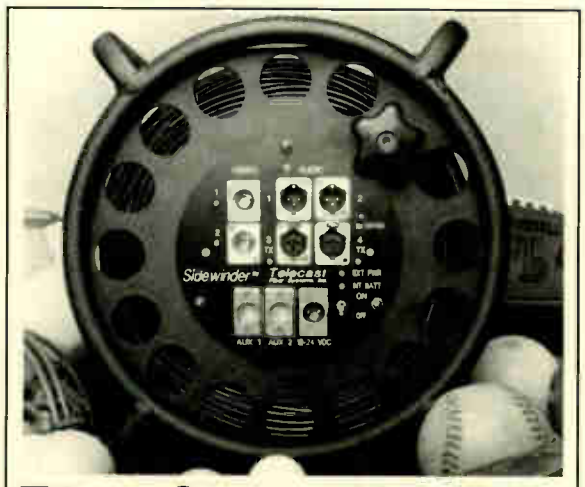

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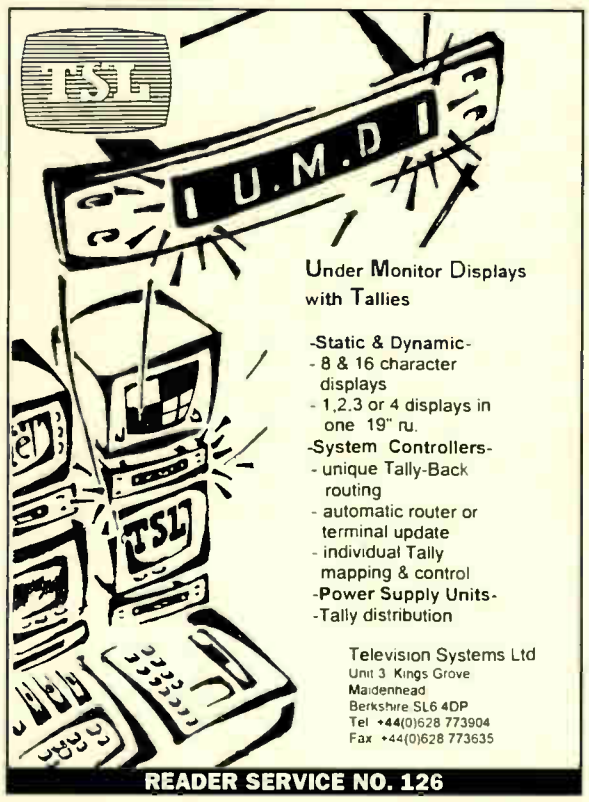

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USER REPORT

Avid Brings TVP To a Higher Level

by Paul Killam
Producer/Sound Engineer
TVP Sound Design

HOUSTON, Texas

When I moved to Houston in 1977 to work as an audio engineer, there were only three independent audio studios specializing in radio and television sound production and a handful of independent film/video production facilities.

Working with one of my first clients, I began my audio career by performing dialogue and sound effects editing on specials for artists such as Kenny Rogers, Kansas and Crystal Gayle.

Tastes in music have changed since the days of these pop stars and so has the video and audio post production business. Today's technology-empowered producers, writers, artists and editors still need to make the same basic creative decisions they always have made.

And as facility operators, we need to make every effort to keep technology from getting in the way of creative ideas. A large part of that is choosing and using the right equipment, because if something is difficult to operate, the creative process can go stale in a hurry.

The Avid AudioVision

EXPANDING ROSTER

With Texas Video & Post's success with the Media Composer, Avid's digital non-linear video editing system, I became interested in the company's development of an audio-for-video workstation. In the spring of 1993, TVP decided to expand its roster of services to include full audio post production, and I was commissioned with designing and outfitting the new division, TVP Sound Design.

After a trip to NAB, there was no doubt the Avid AudioVision, combined with the Yamaha DMC-1000 digital mixing console, was the technical and cost effective solution we sought. Avid's full motion digital video, sync-locked with multi-track digital audio in a random access/non-linear system, is a powerful and creative tool.

AudioVision provides eight channels of hard disk recording and playback, internally sync-locked to its integrated digital picture. In addition, it also controls the DMC-1000's automation by way of TimeLine's Micro Lynx synchronizer.

Through AudioVision, I also have EDL compatibility with many industry-standard on-line editing systems, as well as file compatibility with Avid Media Composer systems and other Open Media Framework Interchange (OMF) compliant products.

With features such as Automated Dialogue Replacement (ADR) Loop/Record, time compression/expansion and pitch shift, selectable frame, millisecond, or sample-accurate step automation for audio video adjustments and editing, AudioVision was clearly designed for television audio production people with a lot of experience working in the industry.

The ability to record live inputs while monitoring sync material, perform punch-in/punch-out recording of audio and video, and database source material in an organized fashion demonstrates Avid's approach.

NEW IDEAS

What does all this mean to a video facility looking to improve audio services? Instant random access to source material during audio sessions, with recorded (digitized) audio and video that will remain locked in sync without slaving an external video deck for each audio edit.

AudioVision's non-destructive editing allows users and clients to explore new ideas without losing the integrity of the original edit/mix. You can quickly execute multiple versions of a project and even perform cuts-only video edits to visualize options and revisions.

Avid's customer service has been among the best I have seen in the industry, with software improvements and new features driven by an excellent beta test program.

The TVP Sound Design AudioVision system serves as the focal point of a room designed to handle everything from voice-over recording to complex music editing and sound design. In addition to the AudioVision system and the DMC-1000 digital mixing console, the facility employs Genelec monitors, a Lexicon 480L, Summit tube compressors, and Microtech tube microphones.

External deck control is accessed in AudioVision's user-friendly software, allowing control of D-2, Digital Betacam, and one-inch video machines for audio layover/layback operations and time code audio decks for source material.

The first project edited at TVP Sound Design on Avid's AudioVision won a gold Addy Award for Reebok. Since then, the production book has been full of projects for Exxon, Texaco, Builders Square, The Mississippi Department of Economic and Community Development and even an animated Japanese feature film. Avid AudioVision has given TVP Sound Design a distinct advantage in digital audio post production. ■

Editor's note: Paul Killam has worked as a free-lance audio engineer and design consultant for numerous studios in Houston and Dallas. He has also served as a radio and television director in the advertising industry. He has worked at TVP for one year.

The opinions expressed above are the author's alone. For further information, contact Avid (Telephone: +617-221-6789; FAX: +508-640-1366), or circle ***Reader Service 118.***

USER REPORT

Henninger Grows With Sony

by Dave Pries
Chief Engineer
Henninger Video Inc.

ARLINGTON, Virginia

Henninger Video Inc., a division of Henninger Media Services, is a full-service digital video and audio post production facility. Henninger Media Services coordinates and supports a network of post production companies, with projects ranging from spot work for agencies to episodic work for network broadcast.

By interweaving a network of capabilities starting at the studio level and moving through off-line and on-line editing, graphics, audio sweetening, original music composing, video sweetening, film transfer, captioning, duplication and distribution, Henninger Media Services can take a project from concept through delivery all within the digital domain.

AUDIO SWEETENING

The DMX-E3000s . . . streamline our audio previewing, which now takes place in the mixers.

In an effort to provide the most advanced services for our clients, we like to stay on the cutting edge of technology. We have recently made a move to offer digital audio-for-video production capabilities to our client base and to link control of multiple digital audio signals — traditional audio sweetening — to the editing process.

Our Henninger Digital Audio facility has been working at the forefront of digital audio implementation with various audio equipment manufacturers over the last six years. In recognition of the quality of the audio we have achieved there, we realized the importance of having the appropriate digital mixer in our on-line editing environment.

As part of our continually evolving engineering environment, we recently installed six Sony DMX-E3000 digital audio mixers in our various facilities. They are turning out to be a very effective way to provide our clients with a digital audio for video mixing environment.

Digital offers a significant difference in the audio quality of our work. In addition, the Sony mixers are controllable through ESAM protocol, a feature our editors wanted very much.

ESAM control provides a very effective way of controlling the audio mixer from the BVE-9100 editing controller, enabling an editor to build precision audio transitions into the edit list. The time savings and quality improvements from this feature alone have made the mixers a worthwhile addition to the total packages we offer our clients.

The DMX-E3000s have also enabled us to streamline our audio previewing, which now takes place in the mixers. This gives us a shorter signal path to the audio monitor, and consequently, a more concise and precise working sound. In addition, the small footprint of the mixers allows for seamless integration into our existing suites — not a major consideration, but a nice feature, especially when installing a digital audio mixer in an already crowded edit suite.

JOB CONTINUITY

The snapshot capability of the DMX-E3000 is also a very popular feature. We can store up to 99 snapshot memories of the mixer control panel settings, including the EQ parameters. In a large facility like ours, this function is extremely useful, especially when we have a lot of equipment-swapping between rooms and we want to maintain the continuity of the job.

Two of our DMX-E3000s were installed as part of the edit suites provided by Sony Systems Integration. We are very happy with the company's installation and setup with the equipment, both because it saved our own staff from having to take time out from other jobs, and because it all worked perfectly the first time we used it.

Overall, the audio mixers are working quite well for Henninger. The reputation of reliability of Sony equipment was one of the reasons we were attracted to the DMX-E3000s. We found that you bring them in, turn them on, and they work — no problem. In our installation, we never have to think about the audio mixer in the context of the session. We have a high level of confidence in the DMX-E3000, and our experience to date has shown that confidence to be justified. ■

Editor's note: Dave Pries has been chief engineer at Henninger Video for about a year. He was previously employed by Western New York Public Broadcasting and the Cable Satellite Public Affairs Network.

The opinions expressed above are the author's alone. For further information, contact your regional Sony sales office.

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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Sony M3A w/15:1, focus/zoom cntrls, shotgun, ENG, 2 meter & 30 meter 14-pin cables, 200 hrs, VO-6800 w/PortaBrace, 450 hrs, $2500/both or BO. Joe, 713-981-9803.

Sony 1820 camera w/case & 10:1 lens, $400. W Reed, 503-386-3831.

Ampex CVC-5 same as Sony BVP-5, 3-CCD dockable camera head w/Fujinon 14x9 lens, both in mint cond, $7000. FS-X Video, NYC. 212-517-1566.

Sony DX-1200 trinicon video camera w/Sampson 7301 tripod & matching head, complete w/Sampson dolly, excl cond, $650. W Mason, Eden Electronics, Rt 2 Box 8260, FL. 904-231-4828.

Sony EDP10F & EDW-10F 2-CCD camera w/dockable ED Beta deck, incl Fujinon 13x1 lens, camera adapter, PortaBrace case & chrgr, $3000. N Apuzzo, Apuzzo Video, 206 E 25th #2B, NY NY 10010. 212-213-2646.

Panasonic WV-F300 camera head only w/manual, never used, $4000/BO. L Leon, 602-889-3411.

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Sony EVV-9000 Hi-8mm dockable, less than 300 hrs, vg to excl cond, $1700/BO. M Darrah, IFV, 503-223-8689.

Sony M-7s in full studio config w/CCU-M7, Sony SEG 2000, VTRs, audio brd, lighting pkg, consultation, installation & training avail; Sony BVP-507; Ike HL-79-DAL excl cond, $2500; BVU-110, BO. Joe, FAX 404-350-0302; PH 404-355-3398.

Hitachi Z-One-B 3-chip camera, stand only, must see, brand new, $8500. T Bevilacqua, A B Video, 1711 65th St, Brooklyn NY 11204. 718-259-4442.

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Sony BVP-3A, lens/vf & Sony BVV-1 Betacam VCR & accs, camera & VCR privately owned by prod shooter & prof maintained, $3800. R Burks, 908-287-3626.

Panasonic CLE 200 (3) 2/3" color cameras with Canon J12x10B lens, tripod adapter, AC power adapter/battery charger with 4 PS60 rechrgble batts, camera mic & carry case, excellent condition, $3750. Iris Multimedia & TV Co, 802-865-9560.

Ikegami 730A with 12x1 zoom lens, PortaBrace camera bag, 2 rain covers, multi-pin camera cable, 5 Anton Bauer Pro-Pac 14 camera batteries, Anton Bauer Lifesaver battery charger, Ikegami power supply, 3 Ikegami hard shell shpg cases, excellent condition, $2500; Sony BVU 110 field recorder/player, PortaBrace bag with side puch, 3 Sony BP-90 deck batteries, AC power supply, BP-90 battery charger, excellent condition, $1200; Sony VO editing system including Sony VO 5800 paleyr/recorder, Sony VO 5850 edit deck, Sony VO 5600 player/recorder, 2 Panasonic BT-1300N color monitors, excellent condition, $6500; 1" & 3/4" tape stock, over 250 1" & 3/4" new & 1 pass with cases, $14/ea 1" & $5/ea 3/4", will consider selling all as package, including tape, $10500. C Vieira, Total Video Productions, 11 Prince St, Fairhaven MA 02719. 508-990-3677.

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Angenieux 14x9D zoom lens, focal length of 9-126mm, 2X extender, macro 1:5.4, maximum relative aperture of 1:1.6, variable zoom speed control, lens shade, Ikegami mount, very good condition, $3000. Peter, 603-434-8850.

JVC KA-20 camera adapter for KY-25/KY-17 camera head, $400; JVC 12' 26-pin to 14-pin camera cable, never used, $75. L Kaltenbach, 201-224-6063.

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Sennheiser MKE-300 mic, like new in box, $135. B Jenson, 123 S Plum, Vermillion SD 57069. 605-624-9551.

Ikegami to Sony cable, 3 meter, $75. W Reed, 503-386-3831.

Sony CA-30 multicore Betacam BV-3/30/5/70 camera adapter for CCU with manual, $650; Schwem FP-1 Gyrozoom lens for Ikegami type lens mount, system including fitted case, HL-95/55 cable, Anton Bauer power adapter & instruction/promo tape, $6500; 2 triax cables, 100' & 50', $125/both. R Burks, 908-287-3626.

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EDITING EQUIPMENT

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Videomedia Z6000-D computer editor, pwrfl user-friendly software capable of A/B roll edit, split edits, sync rolls, animation & switcher cntrl, event memory & printer output, ops manual incld, excl cond, $1000 BO. Peter, 603-434-8850.

Paltex Abner A/B edit cntrlr w/cables for Sony type 5 machines, $1500/BO or trade for Canon L1. R Schroder, AM Odyssey, 2500 S 370th #164, Federal Way WA 98003. 206-838-8338.

A/B edit suite w/Paltex Abner w/cables & monitor, $3000; Alta Pixis dual chnl TBC, $2000; Panasonic NV 9600 & (2) Panasonic NV9240 w/cables, ops manual, $3000; $7500 takes all, all in excl cond. Video, Photo, Slide Inc, 101 W Plume St, Norfolk VA 23510. 804-623-9440.

JVC RMG-810 cntrlr, excl cond, $750. 215-576-6268.

JVC 8600 M, 6400U, RM 86U cntrlr, VHS, 1 frame complete edit syst, all cables, 2 color monitors, Sony PVM8000, $2500/you pay shpg or trade on 3-chip S-VHS camera. E Kassler, KAS Photo, 11320 Larimore Rd, St Louis MO 63138. 314-869-7002.

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Paltex Abner II A/B edit cntrlr w/TC & (3) Sony Type V parallel interface cables, $2500. J Smith, UCSD, 9500 Gilman Dr, La Jolla CA 92093. 619-534-4869.

LIGHTING

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Newsmatte g/c, $2000 or trade for equipment. E Ulloa, Drexus Video, 514-727-3518.

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JVC KM-2000 FX/switcher, excl cond, $775. W Whitney, 2232 Wengler, Overland MO 53114. 314-428-8430.

Crosspoint Latch 6118 5 input switcher w/gen-lock mod, $475. R Burks, 908-287-3626.

Panasonic WJ-MX10 A/V switcher, like new, w/char gen, $900. J Hamon, 502-839-9388.

Panasonic WJ5500A SEG, w/gen sync intercom, excl cond, $1800. T Moran, Reinwalker Prod, 102-14 87th Ave, Richmond Hill NY 11418. 718-846-2624.

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Hitachi VLS-100 port S-VHS 1/2" deck with 3 NP1 batteries & PortaBrace case, $1800. T Bevilacqua, A B Video, 1711 65th St, Brooklyn NY 11204. 718-259-4442.

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Future Video EC1000 Pro edit controller for Panasonic AG-1970 or 1960 or Sony control L, hardly used, $400. B Clancey, Best Shot Video, 322 Park Dr, Aptos CA 95003. 408-685-9424.

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Sony VO 5600 3/4" player, manual, low hours, $1290; Sony VO 4800 3/4" field recorder with manual, low hours, $300. W Reed, 503-386-3831.

Panasonic AG-2400 port recorder, very low hours, $450. 215-576-6268.

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Sony EV-S3000 (2), $800/ea; Sony EV-S800 (2), $700/ea; Sony EV-S700U, $400. Pete, 908-602-0777.

Panasonic AG-7110 S-VHS edit syst feeder/player modified for audio in all search speeds, excellent condition, 2 yrs old, $1600; Sanyo GVR-S950 S-VHS single frame recording VCRs (6) with built-in TCGs, cntrl cable & software, new with 1 year factory warranty, $2600/ea; Sony AV-3400 & Sony AV-DV2400 1/2" EIAJ Porta pack VTRs, $50/ea or $75/both. R Burks, 908-287-3626.

Ampex CVR-10 Betacam/Betacam SP source decks (2), excellent condition, $4000/ea. M Levin, Quark Video, 109 W 27th St, NY NY 10001. 212-807-7711.

Sony 5850 edit/recorder, low headwear, $2260. PEM, 734 Rte 110, Melville NY 11747. 516-421-4800.

Sony DTR-1100 Dynamic motion controller for slow & fast motion PB control of Sony BVH-1100 series 1" machines, features both variable & fixed speed PB From 1/5 reverse to 2 times forward, 3 timers, 4 random access cue markers, programmable preroll, on-air tally, built-in diagnostics, including remote cable & ops/main manual, excellent condition, $5500/Best Offer. Peter, 603-434-8850.

Panasonic AG-7750 S-VHS w/TC & Personal sgl frame controller for Amiga computer, less than 80 hrs of use, still in box w/manual, $3950. Sonny, 407-661-5608.

Panasonic NV9400 3/4" field recorder with batteries & charger, low hours, excellent conditionwith PortaBrace case, $900/BO. R Schroder, AM Odyssey, 2500 S 370th #164, Federal Way WA 98003. 206-838-8338.

Sony EVV-9000 with VA-90, dockable Hi8 VTR with adaptor that allows S-video, composite, or 14p inputs, lw hrs, including maintenance manuals & original package, $3000. Nick, 215-238-5070.

Sony 5600 3/4", like new, low hours, $900/BO; Panasonic 930 B/W monitors (2), $150; Panasonic AVE 5 SEG, $800. Angelo, NJ. 908-289-4173.

Panasonic AGDS850 S-VHS edit VCR, digital slo-motion, TBC, time code generator/reader, Best Offer. 607-687-0545.

Panasonic AG-1960 S-VHS, like new, $795; AG-96 edit controller, like new, $275; Nec PC-VCR serial control, S-VHS, $1100, all like new in box with manuals. B Jenson, 123 S Plum, Vermillion SD 57069. 605-624-9551.

Panasonic AG-7300, like new, lw hrs, $1800/BO. B Anderson, Tracon Video, 3657 Eureka Way, Redding CA 96001. 916-241-3468.

JVC CR-4700U port 3/4" VCR, including carrying handle, battery, ops manual & brand new head, good condition, $500. Peter, 603-434-8850.

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Brokers, dealers, manufacturers and other organizations who are not legitimate end users can participate in the TVT Equipment Exchange on a paid basis. Listings are available on a $1.75/word basis. Call 1-703-998-7600 for details and complete display rates.

I would like to receive or continue receiving TV Technology FREE each month. ❑ Yes ❑ No

Signature _____ Date _____

Please Circle only one enty for each category:

I. Type of Firm

A. VHF-TV station
B. UHF-TV station
D. Prod/post-prod studio
E. CATV company
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): _____

II. Job Function

A. Corporate mgt
B. Engineering/tech mgt
C. Engineering/tech staff
D. Prod/oper mgt or staff
E. News mgt or staff
G. Training
F. Other (specify): _____

WTS: ❑ Category: _____
Make: _____ Model: _____
Brief Description: _____
_____
_____
Price: _____

WTS: ❑ Category: _____
Make: _____ Model: _____
Brief Description: _____
_____
_____
Price: _____

WTS: ❑ Category: _____
Make: _____ Model: _____
Brief Description: _____
_____
_____
Price: _____

***TV Technology* Equipment Exchange**
PO Box 1214, Falls Church, VA USA 22041
Phone: +1-703-998-7600 FAX: +1-703-998-2966

ADVERTISERS INDEX

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TV TECHNOLOGY

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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
☐ D. Prod/oper mgt or staff
☐ E. News mgt or staff
☐ G. Training
☐ F. Other (specify): _____

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November 1994 Issue Use Until April 1995

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
002	017	032	047	062	077	092	107	122
003	018	033	048	063	078	093	108	123
004	019	034	049	064	079	094	109	124
005	020	035	050	065	080	095	110	125
006	021	036	051	066	081	096	111	126
007	022	037	052	067	082	097	112	127
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010	025	040	055	070	085	100	115	130
011	026	041	056	071	086	101	116	131
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013	028	043	058	073	088	103	118	133
014	029	044	059	074	089	104	119	134
015	030	045	060	075	090	105	120	135

Telephone _____
FAX _____

Send to: TV Technology, PO Box 1214
Falls Church, VA 22041 USA
or FAX: +1-703-998-2966

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RADIO O.M.B.® T. V.

Why settle for less ?

AMPLIFIERS

TRANSMITTERS

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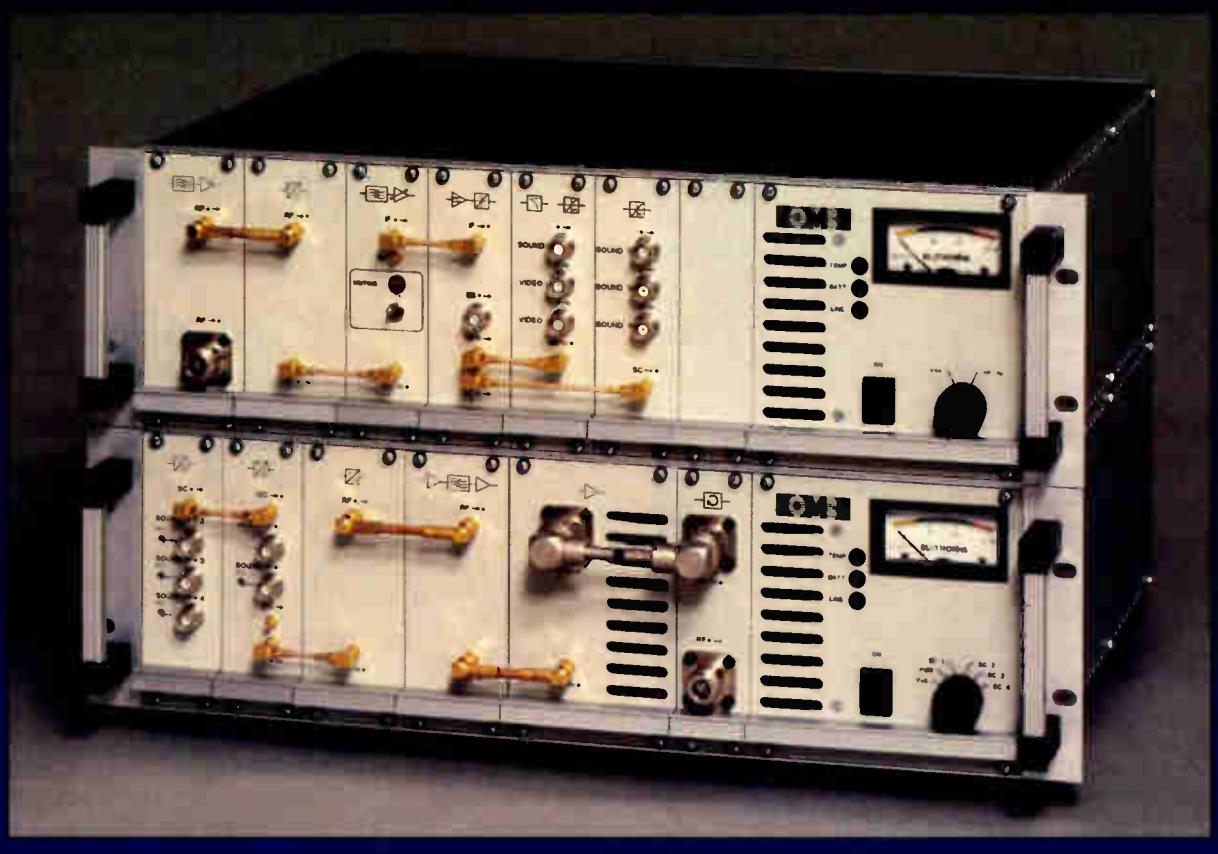
REPEATERS

PORTABLES



AMPLIFIERS
I - III - UHF BANDS
DE 30 W. - 5 K.W.

TRANSMITTERS
BANDS I - III - UHF
2 Watts - 5 K.W.

MICROWAVE
LINKS
2 - 14 Ghz.

REPEATERS

PORTABLES

STEREO
GENERATORS

MIXERS

ANTENNAS

CABLES

CONNECTORS

MIC-5-2N

- Modular concept with frontal extraction
- Capacity for 1 Video and 4 Audios
- 5 Watts +/- 0.2 dB output power *
- High frequency stability
- AGC at receiver input
- Synthetized
- 30 µ Silver-plated galvanized passive filters
- All parameter controls
- Power requirements: 110/220 V AC, 24 V DC, 50/60 Hz

PARABOLIC
ANTENNAS

VHF - UHF
ANTENNA PANELS

DIPLEXERS

PASSIVE FILTERS

RACKS

* 5 Watts in the 2 and 3 GHz. versión.

O.M.B. has microwave links available in the following bands: 2 - 3 - 7 - 10 - 14 GHz.

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50007 Zaragoza - SPAIN
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Fax: (76) 372336

Circle 65 On Reader Service Card

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SYNCHRONIZERS

STILL STORES

CLOCK SYSTEMS

DISTRIBUTION AMPs

"DIGITAL GLUE"

TEST GENERATORS

SCRAMBLING SYSTEMS

AND

PROC AMPS

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LEITCH

Contact us for a free 1994-1995 Catalog

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Leitch Incorporated
920 Corporate Lane, Chesapeake, VA 23320, U.S.A.
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Circle 53 On Reader Service Card