INTERNATIONAL EDITION

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

CORPORATE AND CABLE INDUSTRIES
PRODUCTION, POST PRODUCTION,
SERVING THE BROADCAST,
TV
TECHNOLOGY

VOL 13 NO 13, DECEMBER 1995

IN THIS ISSUE

ITN Taps Sony/Oracle News System

by Chris Dickinson

LONDON

Independent Television News (ITN), news service for the U.K.'s Independent Television network (ITV) and Channel 4 and the satellite-based NBC Super Channel, is slated to be the first European broadcaster to pilot the new Sony/Oracle server-based newsroom system.

The new generation newsroom will be installed at ITN's London headquarters in the first quarter of 1996 as part of a six-month trial. It will be used on ITN's World News programs, which are aired principally on NBC Super Channel.

OUT WITH VTRS

The pilot system will see current VTR post production and transmission systems replaced by a combination of video servers controlled by the new Sony/Oracle newsroom computer system. Connected to the system will be a number of multimedia workstations at which journalists will script, edit and caption stories for transmission.

Ted Taylor, ITN's director of technology, said the Sony newsroom system will allow the service to enter a new kind of newsgathering.

"At the moment, material for World News, like the rest of ITN, is recorded on analog VTR cassettes, and transmission is done manually," Taylor said. "Journalists access stories and prepare scripts and running orders on a standalone system. To recover material on-line means finding cassettes and waiting for a VTR and a technician to become available. The system works, but it has a number of limitations.

"Sony tells us that their 'brave new world' is going to change all this," he added. "Driven by the Sony/Oracle server system, incoming material will be recorded onto one of two mirrored servers, the Daily server and the Clip server.

"Material will be instantly and simultaneously available to journalists and their terminals. This means many journalists can simultaneously access the same material, even when it is still coming in. There should be no more squabbling about who has the video first. There will also be five more sophisticated edit workstations for editing more complex work."

Later on, a third server will be added to act as an on-line archive system, storing up to a month's news.

The newsroom computer, a joint development by Sony and Oracle Corp. of the U.S., allows the journalist or editor to view news wires and rushes, create scripts, captions and shot-lists, browse the archive and do simple editing. Producers and program editors can also prepare a bulletin from a single terminal, creating a rundown, as well as view completed work or stories in progress.

Once the finished stories are ready, they are automatically fed to the On-Air Buffer, which stores material until it is ready to play out.

MIX AND MATCH

While in the buffer, this material can be combined with other elements, including live feeds from the studio and stills and captions under the control of a computer-assisted news transmission system. The final signal is then sent to air for traditional network distribution.

The internal signal networking system being used in the newsroom is Sony's own Serial Digital Data Interface (SDDI), a variant of the more widely used Serial Digital Interface (SDI) scheme. Like SDI, SDDI is a 270 Mbps serial data stream that allows SDI routing hardware to be used for both types of signals. The advantage of SDDI, according to Sony, is that it allows faster-than-real-time transfer of compressed video data.

In addition to the newsroom system, ITN is assessing the new Betacam SX camcorder and videotape system, which records pictures using 4:2:2 studio profile compression and allows the use of conventional Betacam SP tape for digital recording. Lightweight,

(continued on page 10)

• • •

John Watkinson Explains the Advantages of Two's Complement Coding

PAGE 16

Game [Geim] adj. — ***resolute, dauntless, fearless, gallant, intrepid, plucky, heroic, valorous, bold.***
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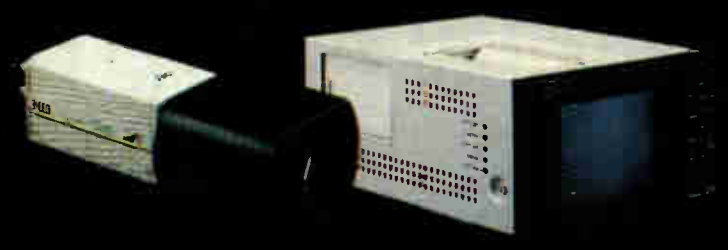

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DISK TECHNOLOGY

BTS ENTERS DISK DRIVE PARTNERSHIP

GRIESHEIM, Germany

BTS Broadcast Television Systems has entered into a multiyear contract with Micropolis Corp. to develop disk drive technology specifically designed for the broadcast industry.

Micropolis is a California manufacturer of data storage systems.

"The solution resulting from our partnership will revolutionize the way the (broadcast) industry edits and stores video," said Ruttger Keienburg, president and CEO of BTS.

BTS has already taken a leading role in the digital video storage market with the Media Pool server. Still as a relative newcomer to the digital data storage market compared to many firms in the computer industry, BTS is looking to improve storage capacity an access time of its server line.

"As a result of Micropolis' focus on developing disk drives for the video industry... the company has great experience with disk drives optimized for audio/video storage and playback," Keienburg said.

No word was given as to when BTS and Micropolis expect to introduce the results of the collaboration.

For further information, contact BTS in Germany at telephone: +49-6155-870-0; FAX: +49-6155-870-100, or circle ***Reader Service 53.***

BUSINESS

NTL SELLS PRODUCT DIVISION

WINCHESTER, U.K.

Broadcast and telecommunications giant NTL has sold its Advanced Products Division to News International, a unit of Rupert Murdoch's News Corporation, for an undisclosed sum.

At the same time, the two companies entered into a development partnership aimed at developing digital terrestrial television systems.

Under News International, the unit will be re-named Digi-Media Vision Ltd. (DMV) and will continue development on OFDM transmission technology begun under NTL.

Commenting on the decision to spin off the Advanced Products Group, NTL Chief Executive Andrew Sukawaty said it was important to give the group the backing needed for its products to be successful on the world market.

"We have made a strategic decision to focus on developing the many growth opportunities in our service business," he said. At the same time, we wanted to secure the best possible future for our highly successful products business...

"This (transaction) will keep Britain in the lead of the digital broadcasting revolution as NTL focuses on implementing the infrastructure and services and the News operation focuses on rolling out systems products for worldwide export."

Dr. Greg Clark, president of News Technology Group, the technology arm of The News Corporation, said Digi-Media Vision will complement other units within the company, namely News Digital Systems (NDS) and News Datacom (NDC).

"We are committed to accelerate the development of worldwide open standards and essential technologies in digital broadcasting," he said. "Bringing together these companies will further enhance the technological leadership Britain has in the area of digital broadcasting.

At the time of the transaction, the Advanced Products Group employed about 300 people. It is expected that The News Corporation will add up to 60 employees in 1996.

For further information, contact NTL in the U.K. at telephone: +44-1962-823-434; FAX: +44-1962-822-378, or circle ***Reader Service 76.***

BUSINESS

NEW SCITEX UNIT BEGINS OPERATIONS

REDWOOD CITY, California

The Scitex Corp. has formed Scitex Digital Video from the merger of Abekas Video Systems and ImMIX.

The new entity will develop and market digital video and multimedia products including digital non-linear editing workstations, DVEs, production switchers, character and graphics generators and digital disk recorders.

Scitex Digital Video will deliver ASIC technology through Abekas products like DVEous, Texus, Diskus and the 8100 switcher, said Randy Hood, the new company's president and CEO.

"With the Abekas product line combined with the ImMIX product line of fully real-time non-linear workstations, Scitex Digital Video is the new powerhouse for digital media creation tools," Hood said.

INTERACTIVITY

INTERACTIVE SETS RELEASED IN U.K.

LONDON

The first real-time interactive television system that works on analog PAL sets and is transmitted with the TV signals was unveiled in the U.K. at the recent Vision show.

Called Two Way TV, the system uses the vertical blanking interval to send data to special receiver boxes plugged into ordinary TV sets. Responses by the viewer at home are sent back to the company via a modem and a phone line.

Two Way TV has secured agreements with the three main terrestrial channels in the U.K. — the BBC, ITV and Channel 4 — to transmit alongside a number of programs.

By paying a monthly subscription, viewers will be able to play along with game shows or call up background information on soap stars or dramas. There will also be a real-time sports results service.

Pre-recorded shows will make questions and answers available to Two Way TV, which will then be able to transmit these to people's homes at the same time they are presented on the show. At the end of the show, a winner from the viewing audience will be selected by Two Way TV, and their name will be flashed on the screen.

Two Way TV is also working with Motorola's digital television division to integrate the interactive technology in future TV decoders.

MULTIMEDIA

GERMAN TESTS CANCELLED

BONN

Deutsche Telekom, the state-owned telephone giant, has decided to cancel its original plans for interactive multimedia trials in the near future.

The decision leaves only one small area with interactive capabilities, a group of 47 Berlin households that were part of an original trial, and another group of 100 households in Stuttgart that will come on-line in 1996.

The Stuttgart project was planned as the first in a series of several interactive tests around Germany, including a massive scheme that was to connect 1.2 million East German households with everything from video-on-demand (VOD) to high-speed ISDN. Most of the these projects envisioned the connection of between 4,000 and 10,000 households and were to have begun this year.

Willfried Seibel, DT's spokesman for multimedia, was only able to confirm the start of the Stuttgart project sometime in 1996. Just one year ago, Stuttgart's minister of economics, Horst Auzen, announced that once an initial phase to "test the economics of the system with just 4,000 households" has been completed, most of the state of Baden Württemberg was to be connected "within two years."

Since then IBM has pulled out of a consortium backing the project, and planned subsidies from the European Commission never materialized.

The Advanced Communications Technology Services (ACTS) and Research into Advanced Communications in Europe (RACE) both turned down repeated requests for subsidies for the trials.

Although DT maintains that its commitment to all the trials for their full period is to be DM100 million, its biggest problem remains a lack of interest in their schemes by both broadcasters and industry. Seibel confirmed that just 78 companies had "expressed their interest" in becoming content providers: a big difference to the "hundreds" that were originally "fully committed" to the trials.

Seibel was unable to confirm any content providers for video material or telebanking and refused to comment on reports of cancellations by potential content providers when faced with high server fees.

Other projects planned for Munich, Nuremberg, Düsseldorf, Essen, Cologne and Frankfurt in 1996 are officially "pending review," and projects in Leipzig and Nuremberg have been put on hold due to the "continued development of interactive technology." Seibel admitted that no German suppliers of Asymmetrical Digital Subscriber Line (ADSL) technology have been able to deliver the required 2 Mbps for a full-scale system.

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Editorial Director: Marlene Lane
Asst. Editorial Director: Richard Farrell
International Editor: Arthur Cole
U.S. Editor: Mary Ann Dorsie
U.S News Editor: Mark Hallinger
European Editor: Chris Dickinson
Phone/Fax: +44(71)249-5890
Latin American Editor: Rogelio Ocampo
Computer Video Editor: John Spofford
News Correspondents: *New York:* Frank Beacham, *Jakarta:* Mark Timpany; *Toronto:* James Careless; *Bonn:* Andrew von Gamm
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Lessons from the Desktop Past

by Leo Sturgess

GUEST COMMENTARY

Consider this: you have a great idea for a video program, You know there is an audience out there that will buy it and maybe make you rich. The problem is how to produce the program and how to get it to the audience.

THE STANDARD APPROACH

Fairly basic stuff, no? Not so long ago, you made the program on film or videotape and it was sold through movie theaters or network television. Seems simple and easy to follow, but in reality it was an expensive and arcane process, and most program producers really did not stand a chance.

But now there are camcorders; on-line, off-line and phone-line editing; computer video; computer animation; videocassettes, videodiscs and CD-ROM; hundreds of cable channels; DBS; telecoms; computer networks; video bulletin boards; interactivity; video-on-demand; low-power TV; deregulation. I mean, what's to stop you?

For many of us, confusion.

What follows is my attempt to see forward by looking back, to use precedents to understand what is going on, and to encourage everyone to take a chance in this emerging new world of communication.

I offer two examples. First there is the case of magazine publishing. Once upon a time, when my father was a young man and the dollar was worth gold, family members all looked forward to the arrival of the Weekly Magazine. It was a major event.

Some of you may remember the Saturday Evening Post, the old Life Magazine or Collier's. In those days — 50 years ago — we got to know about the world through either radio, which did not have pictures, and the magazines, which did. Advertisers got to us by the same two routes.

Then came television. Networks replaced magazines and radio with what, in retrospect, looks like indecent haste. Advertisers, of course, had found their heaven. Magazine readership shrank. Periodicals were difficult and costly to produce. Using the old typesetting and printing methods they were only profitable if produced and sold in long runs. Advertisers defrayed less of these costs as they abandoned print to get a much better value on TV.

Doldrums for the print industry ensued, which were survived only by a few stalwarts like the magazines for women, for car-lovers and for the analysis of news.

Then came "desktop publishing" and suddenly, there was proliferation. The needs of small groups of the populace, with a shared special interest, could be met at a manageable cost. Each group represents a limited market, but there is a profit to be made with print runs whose shortness would have made old-guard publishers wince. Advertisers returned to print for good reason: the character of advertisements changed from maintaining brand image in front of mass readership to fine-tuned advertising reaching well-defined demographic and special interest groups. This gave them a new flexibility unattainable on network TV.

CHOOSE A TOPIC

In my local grocery store, on extensive magazine racks, there are publications covering dozens of subjects in considerable detail. There are, for example, three periodicals on bow-hunting, two about mountain bikes, three on radio-controlled models and dozens of others on firearms, cars, boats, fishing, CB radio, survival tactics, computers, soap operas, cosmetics, travel, fitness, investment, teen angst, exploring the universe and so on.

No doubt some of these publishing ventures do not survive changes of taste or fashion, but where one disappears another appears and, overall, the magazine business is once again clearly very profitable.

What lesson is there in this for the would-be program maker? To me it is obvious. Broadcast television is analogous to those old family magazines. It is aimed at a mass audience that it has developed and tries to hold by restricting program content only to subjects of mass appeal what cynics might call the lowest common denominator.

To many, it is apparent that broadcast TV is withering and is being replaced by a range of services ...

There is little variety, and it is not consumer-friendly. It dictates your viewing schedule (though the VCR does bring limited freedom for time shifting). For the ecology, it is environmentally unsound: the energy consumed by one high power TV transmitter would probably drive the fiber optic networks of the entire U.S.

To many, it is apparent that broadcast TV is withering and is being replaced by a range of services whose combined power will be ultimately fatal to the networks. Why? To answer that, you have to follow the money.

It has been argued that broadcast television is, uniquely, free. So it is — but only to the few who are astute enough never to buy anything that is advertised on it or daring enough never to pay taxes. Broadcasting costs a lot of money, which comes from advertising or from government largess.

Advertisers are leaving network TV for the greater attractions of cable and satellite distribution and a growing market of programs on videocassette and videodisc. Network revenues have shrunk.

Cable and satellites, with discs and cassettes, offer a whole new series of paths for distribution. Generically they are being called "electronic publishing" and the parallel with print is close. This new world is growing rapidly. Cable, satellite and telecom companies may soon flood the market with video, computer and interactive services.

Interactivity gives advertisers the opportunity to use a brand new tool to measure impact. It brings the possibility of real-time tracking of how many households are watching which channels. This means that advertisers pay for actual results, not for statistical estimates based on ratings "sweeps weeks" waged a few times a year.

The magazine stand shows the way its electronic counterpart is heading. People will be able soon to see what they want to see, when they want to see it. Broadcast TV cannot do that.

TARGET AUDIENCE

Users will pay for this kind of programming just as they pay for magazines, the phone or other services. Advertisers will be able to focus in on their ideal markets. As cyberneticists say, variety is everything.

Now for my second example: after her tornado in the Wizard of Oz, Dorothy had initially only one yellow brick road to follow to her goal, but she and her pals soon arrived at a crossroads, a Multiple Choice Situation (MCS), if you will. In the midst of our whirlwind of advancing technology, we readers of TV Technology have been thrust right into our own MCS. Look at all the routes for production. Look at the multiple paths for distribution. The question for us now, as for Dorothy then, would appear to be, "Which way do we go for success?"

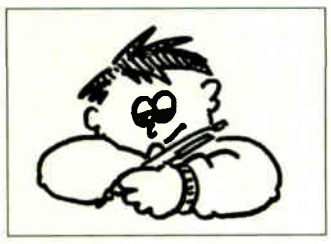
My answer is that the question is probably invalid. These widely different routes for production and distribution actually converge on a central market, where all providers meet all consumers. Perhaps worrying about coping with change and multiple choice is unnecessary.

Demand is there. It always has been there. Magazine publishing has learned how to meet it and how to make money. There are many yellow brick roads. Follow one ... one that matches your skills. Dorothy and her pals found their Wizard and had their wishes fulfilled and so will you.

And for those who yearn for the older, simpler ways: did you know you can get the Saturday Evening Post again? Yes, you can. There it is, on the magazine rack, top row, far right, behind the April issue of "Working with Exotic Woods." Good luck! ■

Leo Sturgess is a former BBC TV audio engineer who is now working as free-lancer producer of independent programs.

LETTERS TO THE EDITOR



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SHOW LISTINGS

6-8 DECEMBER — CABLE AND SATELLITE ASIA '95
Hong Kong. Reed Exhibition Companies will present this show at the Hong Kong Convention Centre. For information, contact Ms Chai Chui Lan at telephone: +65-371-0753; FAX: +65-276-7106.

13-16 FEBRUARY — WIRELESS TECHNOLOGIES MEXICO
Mexico City. The World Trade Center will be the site of this examination of the wireless technology industry. For information, contact organizers at E.J. Krause de Mexico, Rio Marnel No. 6, Col. Cuauhtemoc, 06500 Mexico, telephone: +525-592-3257; FAX: +525-592-6613.

22-25 FEBRUARY — MIDDLE EAST BROADCAST
Bahrain. The Bahrain International Exhibition Centre will house this event highlighting modern video and film transmission and production. For information, contact Philip McKean at Overseas Exhibitions Ltd., 11 Manchester Square, London, W1M 5AB, telephone: +44-171-486-1951; FAX: +44-171-935-8625.

27 FEBRUARY-1 MARCH — COMDEX MEXICO
Mexico City. The Interface Group brings its highly successful computer technology to The Sports Palace for an exhibition of everything from networking technology to mobile radio. For information, contact organizers at 300 First Avenue, Needham, MA 02194-2722, USA; telephone: +1-617-449-6600; FAX: +1-617-449-3434.

4-7 APRIL — BROADCAST THAILAND '96
Bangkok. The Queen Sirikit National Convention Center will play host to this gathering of audio and video specialists. For information, contact organizers at Reed Trudex House, 323 Bond Stree, Office Villa, Muang Thong Thani, Cheangwattana, Nonthaburi 11120, Thailand, telephone: +662-503-2199; FAX: +662-503-4100-1.

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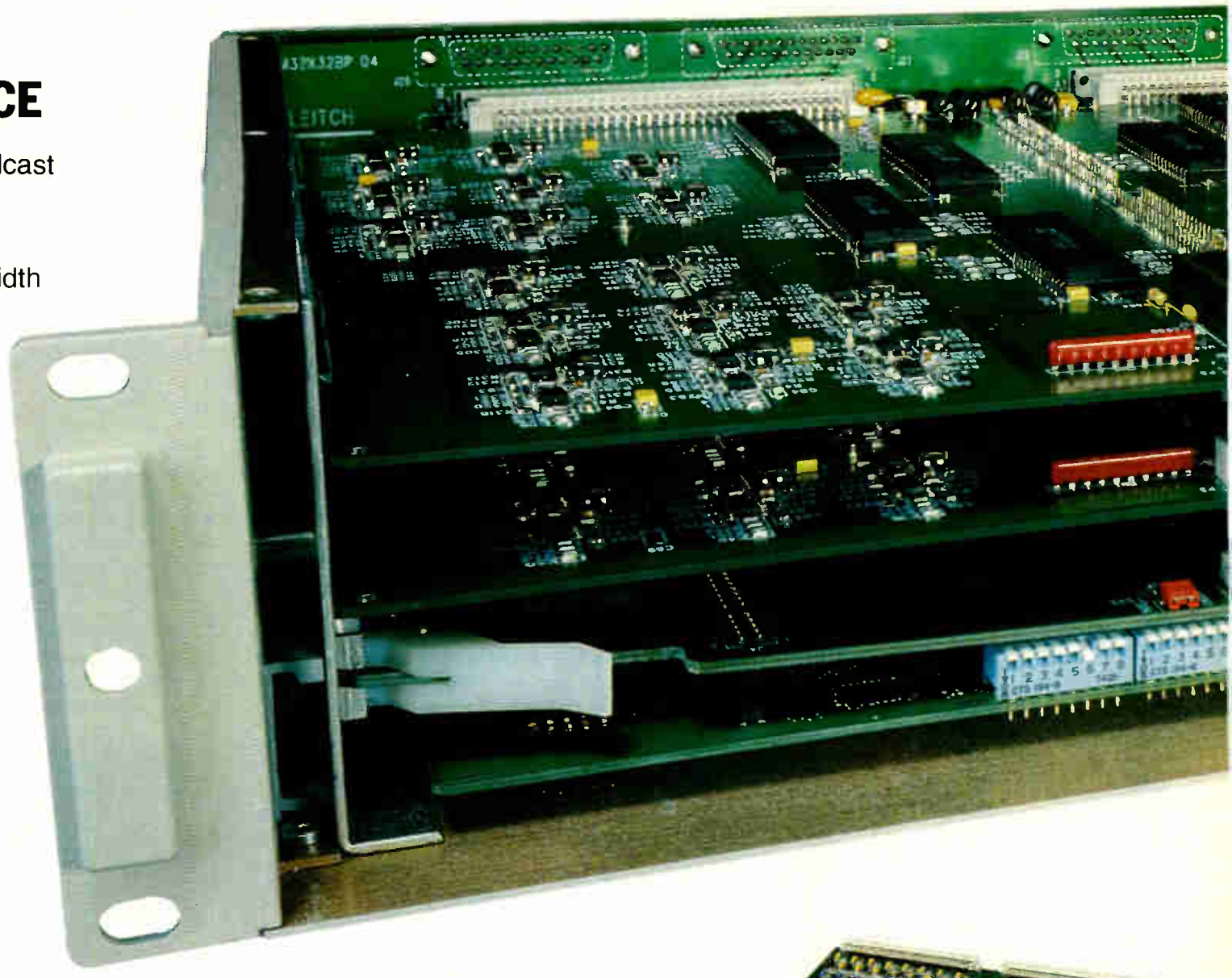

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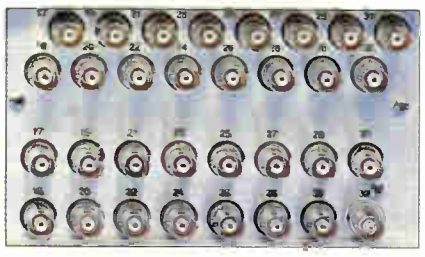

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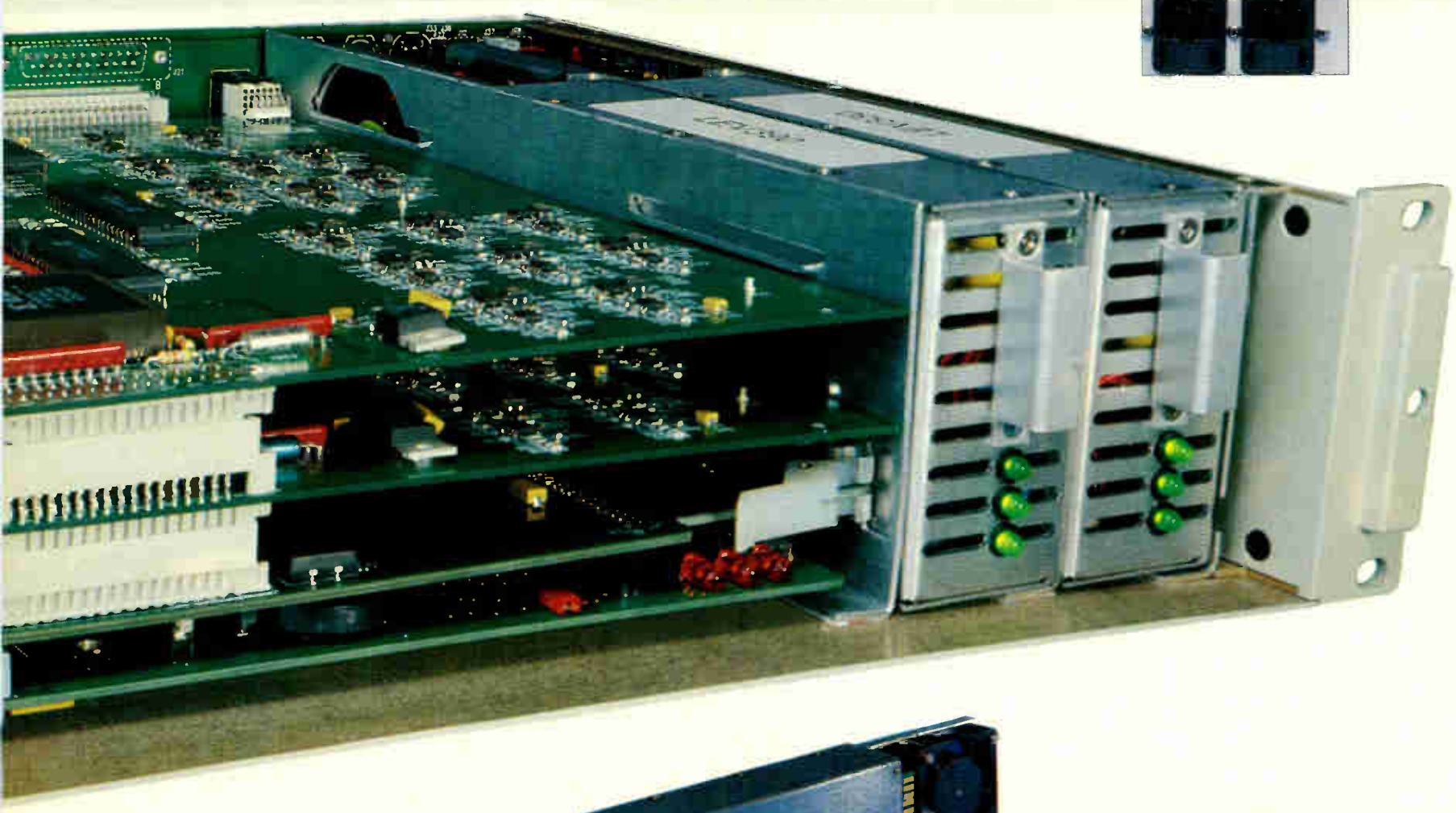

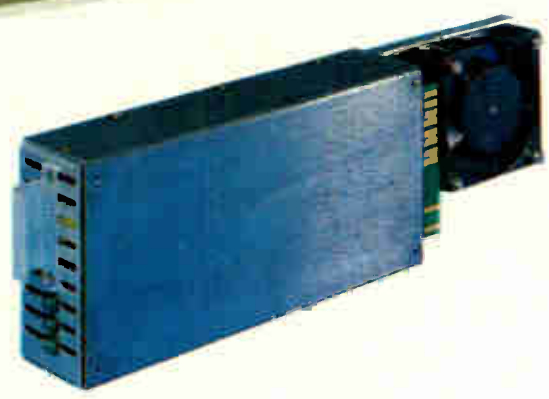

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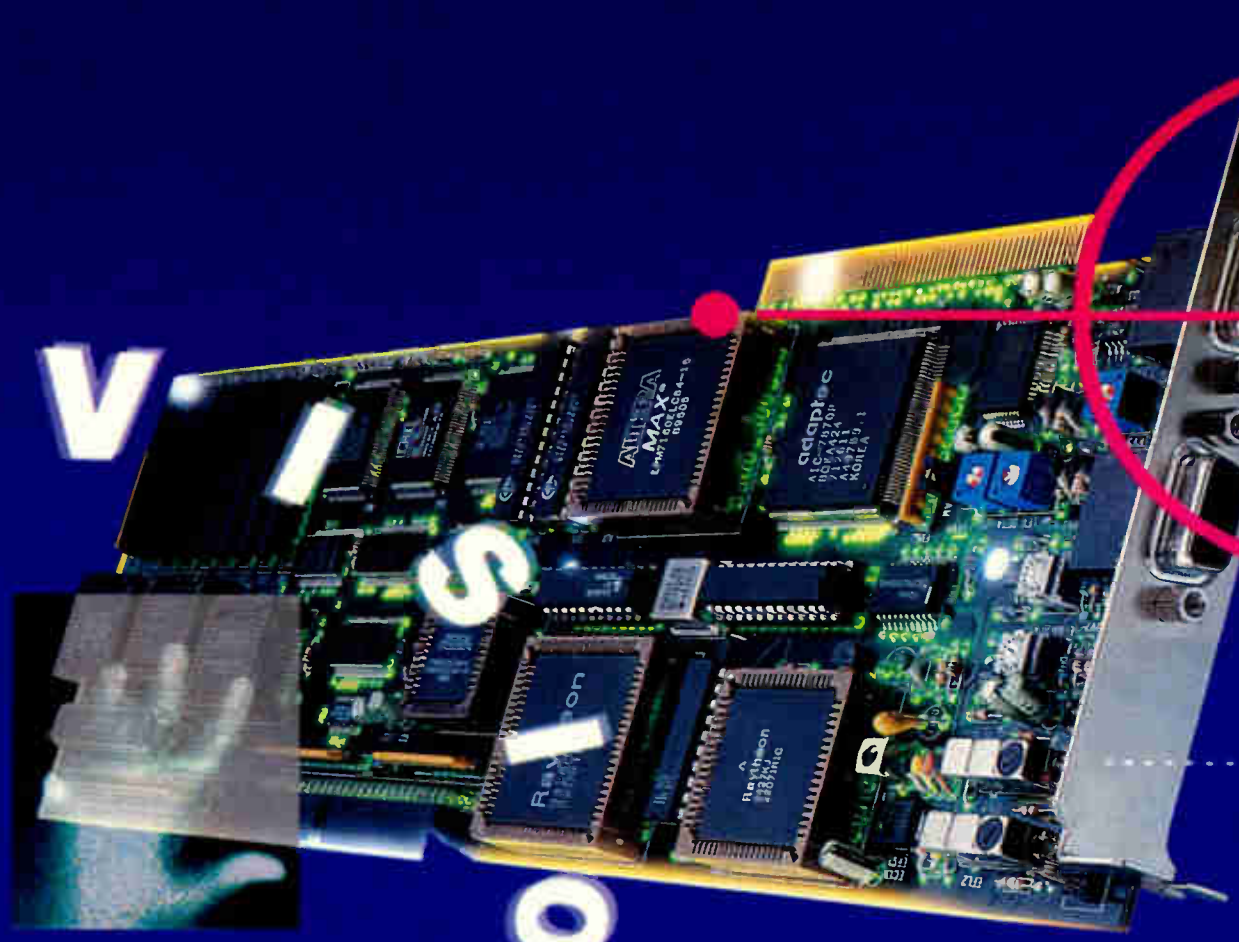

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Facsimile 44 1252 718400

Asia-Pacific
5 Old Forest Road
Lugarno NSW 2210
Australia
Telephone 61 2534 4602
Facsimile 61 2534 4163

Broadcasting Polynesian-Style

New Zealand and Cook Islands Offer A Study in Technological Contrast

by Jeremy Hoare

AVARUA, Cook Islands

In the South Pacific Ocean the Cook Islands comprise 15 islands that lie in virtually the center of the Polynesian triangle. Of all the island countries in this region, it is one of the most affluent. It has a total population of about 18,500, with 11,000 on the largest island, Rarotonga.

The physical spread of the Cook Islands means that television cannot be transmitted economically to the whole country and satellite links are not very efficient. So tapes of the entire 5-10 p.m. transmission from the only channel are flown to the outer islands and broadcast the next day.

RADIO AND TELEVISION

Here in Avarua, the capital city, the unassuming television and radio station is contained in a converted rambling wooden house. Cook Island Broadcasting Corp. (CIBC) began operations in 1990. Tim Arnold, a solicitor appointed to oversee its emergence, insists on a 25 percent quota of local programming. At the moment, local content hovers at about 20 percent, consisting of mostly current affairs and news programs.

All the equipment at CIBC is Panasonic S-VHS format. The station has just two cameras, which are brought into the field to shoot events or news and are then returned for use in the studio. Stories are cut by reporters in the facility's two edit suites, and routine maintenance for the equipment is done by a television and radio repair shop in the town.

For commercial production, I saw several commercials for supermarkets, stores, cars, etc. that were directed, shot and edited by the same man. In one, he did a handheld camera move over some foreground paint tins to one behind. Although he said it took about 20 takes to get it right, it still looked rough. I suggested he buy a wide-angle adapter.

Workers at the Selecon Lighting factory in Grey Lynn, New Zealand, assemble the latest 650W fixture.

Lighting for these spots was nil, the photography not very good and the locally produced content was outclassed by very slick New Zealand graphics. But everybody at the station gets to do voice-overs, whomever seems suitable for the product.

In the studio, five scaffold poles were in place as a grid holding 12 Arrilites running through a Theatrelight 12-channel board. In the news desk area, I was fascinated by quarter blue gels on the key, two fill lights and two backlights dimmed so low that they looked orange, all of which made an unpleasant color balance.

GOODBYE BLUES

My suggestion was to remove the blue gels, put spun on the backlights, add a light on the backing then do a correct white balance. In the two-handed interview situation, I suggested putting bottom half spun in the cross keys.

In an adventurous step for a small station, CIBC occasionally links up with the radio station to do stereo simulcasts of stage performances at the main performance venue, The Auditorium.

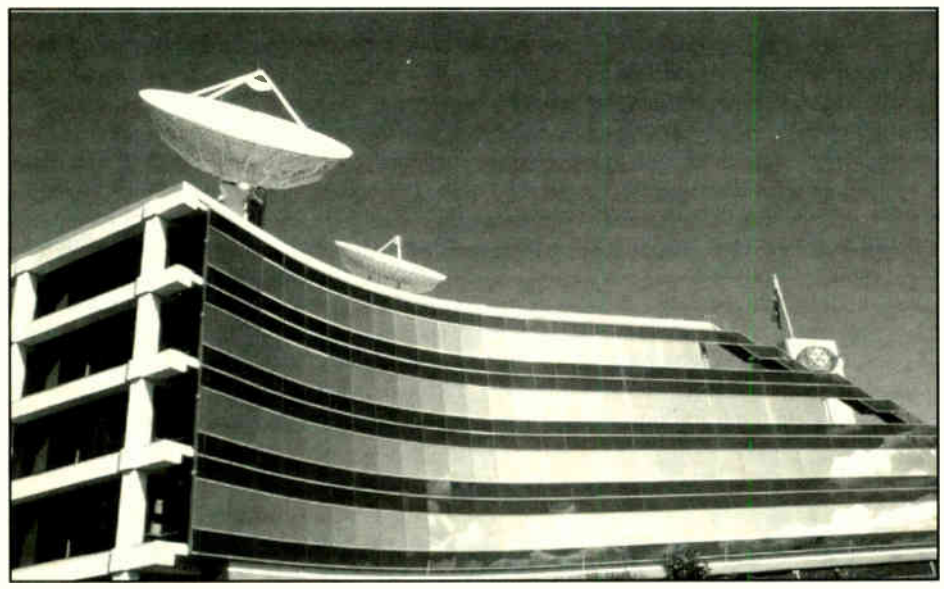
In general, the production staff at CIBC tries very hard to maintain professionalism, even though the only staff member to receive any training was a cameraman who was sent to Carrington University in New Zealand on a three-month course.

Yet, they jokingly talked about making a sitcom, a format that is one of the hardest to perfect. But it was good to see that they were ambitious.

In stark contrast to the Cook Islands, New Zealand television is the most advanced in Polynesia by far. Similar in look and feel to the U.K., there is a wealth of home-produced material shown amid numerous British ITV and BBC programs.

New Zealand has a population of about 3 million people and 60 million sheep. Years ago, airline pilots used to advise passengers before landing to set their watches back 20 years. Today it might be five.

There are three terrestrial channels. Television New Zealand (TVNZ) runs TV1 and TV2, which are both commercially funded, state-owned enterprises, although for the last two or three years, the government has been suggesting it might sell both of these channels to private enterprise. TV3 is purely commercial and run by Canadian broadcaster, CanWest.



TVNZ's headquarters fills the New Zealand skyline.

LOCAL FLAVOR

Local TV stations are now operating in some main cities, and satellite TV is available. A planned indigenous Maori channel has not yet materialized due to lack of funding and the fact that only three percent of the population speaks the Maori language.

Viewed from outside, the architecture of the TVNZ building is futuristic and elegant, but inside the illusion disappears to a more dated and mundane look.

The facility houses two medium-sized studios designed for small programs, news and current affairs. Still, enterprising producers have used one studio for large-scale shows by incorporating the scene dock to accommodate both band and audience.

On my tour around the inevitable television station rabbit warren of bright corridors and dark rooms, I saw satellite downlinks being recorded off BBC South East News from Britain and Channel Nine News from Australia.

About eight years ago, TVNZ re-equipped its studios and opted for the most advanced systems available at the time. So the studios have tube-based Ikegami HK-323 cameras with Canon 18X lenses and Autocues. The main tape format is one-inch, apart from Beta SP for news acquisition.

In each of the two studios, the lighting consisted of 52 Telestage hoists fitted with Ianire lamps running through a 180-channel New Zealand-made lightboard to light at a key level of 1000 lux.

LIGHT SOURCE

Although New Zealand is not known as a major exporter of broadcast-related products, there are some surprising success stories. One of them is Selecon. It may seem incongruous that a range of theater lamps should come out of a country with little background in performance arts. But after meeting Jeremy Collins, managing director of Selecon, I could understand why. It is due to his enthusiasm and drive, as well as diligent research into optical design, that the company is successful internationally.

The factory in Grey Lynn, a suburb of Auckland, is a medium-sized, well-organized and surprisingly quiet building. During my visit, the crew was assembling the first production batch of 650 W profiles made of extrusions and castings. A lot of care was being put into the product, which was progressing at a leisurely pace in a good atmosphere. The staff of 34 mostly Polynesian islanders have proved very adaptable to this work.

If any conclusions can be drawn from the television industry in Polynesia, it would have to be that tape formats like S-VHS and Hi8 that are considered "unprofessional" in the West seem highly appropriate for the emerging broadcasters of this region. They are a perfectly adequate solution to the problem of providing television to the public at reasonable cost.

Television itself is still in its infancy in this area of the Pacific. It is usually underfunded and invariably lacking professional expertise. What I saw would be very easy to ridicule, yet the willingness and enthusiasm to use the medium to its full potential was frustrated by a lack of knowledge wherever I visited.

Still, television here is certainly prone to use and misuse for benevolent motives. So in this way it is not unlike the rest of the world after all, just a bit behind the times and seemingly a little more naive. ■

A native of London, Jeremy Hoare is a free-lance lighting designer who frequently travels to Asia.

BUSINESS BRIEF

HONG KONG DISTRIBUTORS UNITE

HONG KONG

Two of Hong Kong's leading broadcast products distributors have joined forces, bringing Asian representation of a wide range of manufacturers under one roof.

Digital Precision Systems Ltd. (DPS) has acquired Astel Communications Ltd. for an undisclosed sum. The agreement was reached in October between Simon Li of DPS and Eddie Leung of Astel.

Astel distributed numerous product lines in Hong Kong, Macau and mainland China. Among its major clients were Miller Fluid Heads, Lowell Lighting and transmitter manufacturer Elenos.

DPS clients include Barco, BDL-Autoscript, Blonder-Tongue, Electronic Visuals, Esser Test Charts, PAG and Vinten.

For further information, contact DPS in Hong Kong at telephone: +852-2602-3278; FAX: +852-2693-4214.

BTS Outfits Australian Pay-TV

by Barrie Smith

SYDNEY

After 20 years of government doodling and dabbling, the Australian Pay-TV industry is now a reality, with three operators currently on cable or MDS. The operators will most likely have to endure years of low cash flow, while the wary public ponders whether to buy the new technology.

However, equipment suppliers are enjoying a booming business, with Philips/BTS leading the charge.

As this story is written, the Foxtel system from Rupert Murdoch and Telstra, which was due to launch in late October, seems likely to swallow pioneering MDS operator Australis, which launched in May. The second service on the air, Optus Vision, which launched in September, will then have to face the redoubtable Murdoch alone.

MONEY TALKS

For a country of 16 million, the total investment by the three players is enormous. Telstra's cable network alone is expected to cost $A4 billion.

As recently as 1993, many in the population had the belief that Pay-TV would be a ramshackle affair relying on banks of VHS players pumping out endless programming at low quality. However, there has always been a culture in the country, both in the radio and TV broadcast industries, of over-engineering origination and transmission facilities. The long wait for PAL transmissions to arrive in 1956, then color in 1975, saw broadcast facilities and post production companies installing high-end equipment across the country.

Philips and its business unit BTS were the first suppliers of camera and ancillary hardware in the 1950s. Over the last 12 months, they have now secured contracts to install systems at most of the major Pay-TV players. Only months before Optus Vision launched, BTS secured an order believed to be the largest by a any Australian studio and production equipment supplier.

At the outset, Optus Vision declared that only the highest quality video and audio systems would be purchased, ensuring the highest level of signal delivery to subscribers. Another aspect was Optus' requirement that all equipment be capable of handling technology upgrades likely to be needed in the future, such as widescreen transmission.

BIG PLANS

BTS Australia manager Andrew Sedek says the Optus Vision set-up will be the country's most comprehensive transmission center. All Pay-TV operators are tight-lipped about their installations, however some details of the BTS hardware supplied to Optus Vision are known.

At the project's core is a Philips BTS Venus digital routing system, certainly the biggest such system in the southern hemisphere. This device is the backbone of the installation and is "future-proofed" for emerging technology. The router is controlled by a Philips BTS Jupiter computer-based control system that takes care of all administrative and supervisory functions within the routing system.

Philips BTS LDK 93 cameras have been chosen for newsroom origination, and a Diamond Digital DD 30 production switcher is the main switching unit. This mixer can take direct source assignments from the routing system for use with live feeds and local sources. Master control switching is run by Philips BTS Saturn presentation switchers, all digitally interfaced, and controlled by Alamar automation.

Sedek reports that the client was very appreciative that all core requirements could be satisfied by one supplier.

"This considerably eased the discussions, as all our equipment is known to be complementary and to integrate seamlessly so that the installation becomes straight-forward," Sedek said.

Meanwhile, Foxtel is relying on Telstra for its cable-delivered service, expected to pass one million homes by the end of 1995 and more than four million by late 1999. A roll out of 25,000 miles of cable is forecast, and this structure will also carry Telstra's Broadband Services network, with digital superhighway capabilities.

Telstra chose Philips as its systems integrator and core network supplier after scanning the tenders of seven companies. The eventual Philips contract is known to be worth several hundred million dollars and requires that the company deliver cable and cable transmission equipment from the service suppliers head end to the subscriber's wall plate in the home.

A total of 35 subcontractors are providing equipment, including coax and connectors, computers, transmission equipment, racks and other systems. Local manufacturing content is expected to reach 50 percent.

Telstra executive Gerry Moriarty stresses that the project is not entirely a cable TV roll out. Over the next decade the broadband services will bring for the first time a medley of video-on-demand, home shopping and banking and other services to consumers. However, the network's initial usage will be for Pay-TV.

ANALOG TO DIGITAL

The early days of cable TV will be in analog, to be followed by digital when decoders reach commercial quantities and prices. In terms of the hardware supplied by Philips, transmission equipment constitutes 60 percent to 70 percent of the network installation. Cable amplifiers are being manufactured at Philips Sydney, with PCBs also being manufactured by a local subcontractor.

Coaxial cable represents about 25 percent of the network equipment, with local manufacture expected to commence in 1996. Coax connectors, currently supplied by U.S. company PPC, are likely to be manufactured locally in the near future. Optical Fibre Research Australia is responsible for the optical fiber components, while wall plates are in the hands of Australian company, HPM. Playout center racks are being made by local specialist Argent.

Gerry McCracken, another Telstra executive, expects digital set-top devices to arrive by the end of the year, with advanced models due in late 1996.

"The latter will have a higher level of chip integration, therefore will be cheaper and more powerful," McCracken said.

McCracken added that any set-top model is "unlikely to have a new model life of any more than a year." ■

U.K.'s Vision '95 Touts New Editing Systems

by Chris Dickinson

LONDON

The U.K.'s Vision 95 show drew a fair number of people eager to see systems they might have missed at Montreux or IBC, including two editing systems that are now ready for shipment.

Panasonic broaght out its new non-linear production system, the MX1000. The system is a Windows-based non-linear video production system incorporating digital effects, a character generator, a paint system and editing functions.

Effects can be rendered in real-time, which Panasonic claims is a first for similarly priced non-linear systems.

Norman Rouse, product manager for the MX1000, said the unit forms a vital link in the company's development of professional video systems.

"We believe there are many customers in the professional and corporate marketplace wanting to move into non-linear editing but confused by all the upgrades and additional software required with many competitive systems," Rouse said. "We believe the Panasonic name and support infrastructure will be an important element in developing the corporate and professional markets for non-linear production."

Panasonic also used Vision 95 to unveil its strategy for the DVCPRO tape systems.

Martin Holland, director of Panasonic Video Systems, said the company's strategy is to expand the use of video in the home and the office, as well as the TV station.

"DVC, the consumer format, and DVCPRO, the professional and broadcast format, will provide operators and customers with a universal digital format that stretches from the home to the professional and broadcast markets," Holland said.

Panasonic showed the small DVC palm-corder, the VJ-CAM, which is aimed at documentary-makers and news organizations. Also shown was the AJ-D700 digital camcorder and the AJ-D750 studio editing VTR, both of which take 63-minute DVCPRO tapes.

BTS showed its new Windows-based hybrid editing system, Bravo VE. The system comes in three configurations: a linear editing system, a non-linear editor or a combination of the two.

Bravo VE has been developed in collaboration with media control system pioneer Advanced Remote Technologies (ARTI) and non-linear specialist the Montage Group. It is comprised of a 19-inch, rack-mounted Pentium PC with a device control station.

The system can control external devices, such as VTRs, and in its basic configuration stores up to 63 minutes of compressed video on a hard disk.

There is a choice of control systems, including a mouse and a standard PC keyboard, and optional edit control station and a jog and shuttle knob with dedicated push-buttons for editing. ■

For further information:

Panasonic Broadcast Europe
Panasonic House, Willoughby Road
Berks, RG12 8FB, U.K.
Telephone: +44-1344-853-105
FAX: +44-1344-853-871
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BTS
Im Lenschnerpark 1
D-64347 Griesheim, Germany
Telephone: +49-6155-870-539
FAX: +49-6155-870-359
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CONTINUED FROM PAGE 1

ITN Eyes News System

one-piece camcorders, field editing equipment and digital satellite modems will also be available.

Taylor said there are a number of objectives he hopes to accomplish during the pilot.

"(We want) to see if there are any limitations in using digital compression, to see how good the SX camcorder performs; to evaluate post production issues, such as how many edit suites are needed; to assess the practicalities of the workstation; multiskilling issues; and the effectiveness of the newsroom system and the archive system and how rugged they are," he said.

FIRST IMPRESSIONS

But already, Taylor said he is impressed by the design of the system because it allows him to choose individual modules and build up a system as he likes, even while maintaining his existing technology. This allows a gradual move to the new mode of working.

Beyond the newsroom, ITN plans to keep using tape for archiving and, with the Betacam SX, for acquisition.

"Tape, for the foreseeable future, will reign supreme because it costs something like 1,000th the cost of disk," he said.

Philip Mater, director of operations and engineering at NBC Super Channel, said he was eager to see the results of the ITN trial.

"We are very excited at the prospect of being the first international broadcaster to benefit from the excellent picture quality and even greater immediacy that this new technology will bring."

ITN World News goes out eight times a day in Europe on NBC Super Channel, and can also be seen in the U.S. on PBS, in Australia on the Nine Network, Japan on NHK and in several countries in Asia and the Pacific. ■

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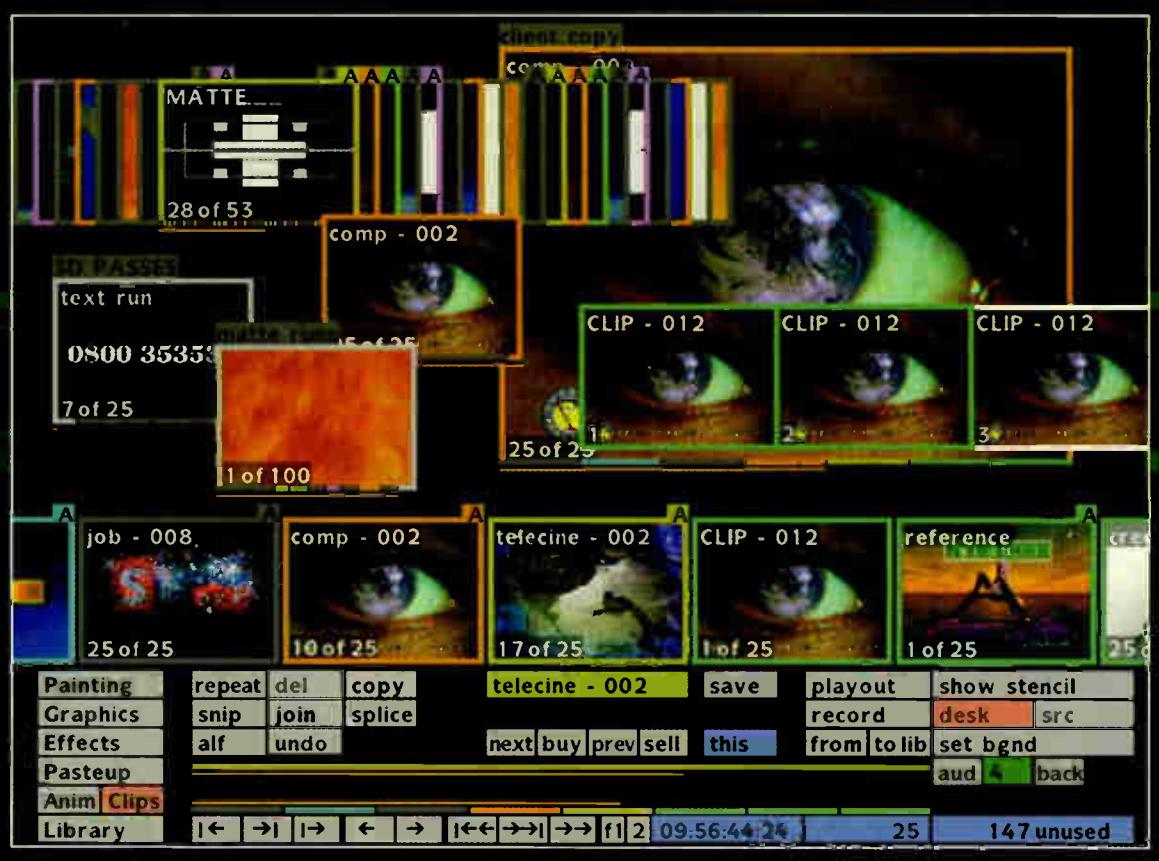

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Continental Buys Telefunken

by Alexa Scanziani

BERLIN

After approximately 30 years without a TV transmitter in its product line, Continental Electronics Corp. will be back in the business with the purchase of German transmitter manufacturer Telefunken Sendertechnik GmbH, effective December 31.

The acquisition follows Continental's purchase last year of radio transmitter manufacturer Lensa of Santiago, Chile.

Financial terms of the agreement between Tech-Sym Corp. of Houston, parent company of Continental that is known for its radio transmitter business, and Daimler-Benz Aerospace AG, owner of Telefunken, were not disclosed.

Some industry observers were surprised at the announcement, noting Telefunken was sought by such companies as Thomcast.

COMING CHANGES

The transaction is subject to an existing restructuring plan of Telefunken started by Daimler-Benz at the beginning of the year. It calls for a company reorganization featuring a drastic personnel reduction that will slash its work force in half.

"We must create synergies simply because the cost of development is too high..."

Jurgen Graff
Telefunken
Managing Director

"We do not know exactly how far it will go," said Bernd Sturzl, Daimler-Benz's spokesperson in Ulm, Germany, referring to personnel reductions. "All I can say is that out of 300 employees, we will not reduce more than 150."

Telefunken has been a leading European manufacturer of broadcast transmitting equipment for more than 90 years. In 1994, sales totaled about US$40 million. After its consolidation with Continental, Telefunken will retain its name.

"It will remain a German company," said Jurgen Graaff, Telefunken managing director in Berlin. "Only the share ownership is changing. It will be Telefunken Sendertechnik, a member of the Continental Group."

Commenting on this major consolidation, Graaff said, "Today, the broadcast transmitting market is a very difficult one. Other companies have merged together, such as Thomcast (formed when Thomson took over ABB). We must create synergies simply because the cost of development is too high and not all companies can spend this money or will spend this money any more."

Continental Marketing Vice President Ross Faulkner, based in Dallas, reiterated Graaff's comments.

"Telefunken will be known exactly as it is today," Faulkner said. "The idea is that the three companies will operate in concert. There is no effort to diminish anyone or lose their identity."

There will be some consolidation of distribution, Faulkner noted, with products from the three operations available from each respective company.

In addition to radio transmitters and antennas, Telefunken brings a line of TV transmitters and shortwave antennas to the range of Continental product. Continental offered FM antennas but has not made TV transmitters in more than 30 years.

Telefunken also puts Continental in the business of Digital Audio Broadcasting with a transmitter for Eureka-147.

Also expect to see a high-power digital radio transmitter, a unit that would compete with the new Harris DX series, Faulkner said. Telefunken and Continental already make a 500 kW shortwave transmitter.

Wendell W. Gamel, chairman and president of Continental's parent company Tech-Sym Corp., praised the broadcast range of products Telefunken brings to his company. "The markets and products provided by Telefunken Sendertechnik will more than double our presence in the broadcast industry," he said in a prepared statement.

Gamel also noted that the combination of products from Continental, Telefunken and Lensa gives the operation the ability to offer complete system engineering and turnkey services worldwide.

The players in the high-power business narrowed down to Thomcast, formed several years ago when Thomson of France bought ABB of Switzerland; Harris, based in the U.S.; Continental/Telefunken; and Riz based in Croatia. ■

Alexa Scanziani is European editor of sister publication ***Radio World International****. Alan Carter, RWI editor-in-chief, contributed to this report.*

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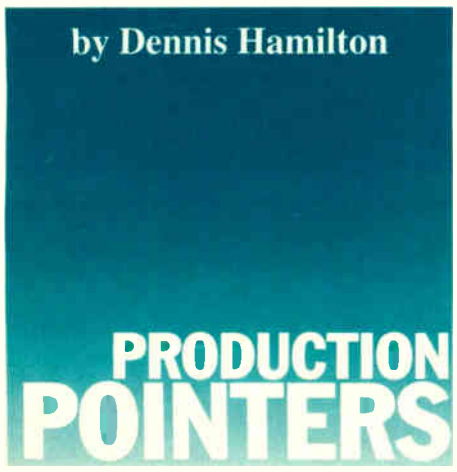
Building Studios on a Low Budget



The world of television is a world of illusion." Who is responsible for this astute quotation? I am. And I think those of you in the business will be quick to agree that this is one business in which the norm often dictates a "quick fix" as "standard practice." I learned years ago that what you see is not even close to what you get.

I recently had the opportunity to do some minor work with a producer of a television news magazine. As I walked through the set, I was struck with a sense of "temporary existence." And no, it was not I who was the temporary one, it was the sets in the studio.

AMAZING DISCOVERIES

I was amazed that this station, with its big budget image, had sets that were literally stapled together, propped up and weighted down with cinder blocks. Even more amazing was the fact that it looked fabulous on TV. And that was the secret — build it cheap and temporary but make it look expensive and permanent.

I came back to my studio with a sense of enthusiasm. I was ready to tear apart all my sets and begin new construction. I was going to give my facility a whole new look. And you know what? I did.

Take a look around you. As with any project, make some decisions on exactly what you would like to have. What do you need for the types of things you do in your work? Let's come to agreement from the start.

If you want a set made of cherry and trimmed in brass with rounded corners, indirect lighting and a giant enlargement of your city behind the anchor ... then you will probably be forced to call a professional set designer. Be realistic in your expectations as to what you honestly can do on your own and what you may have to hire out to accomplish. In many cases, you may combine the two and contract out only for some of the work that requires a carpenter or electrician.

Once you have decided on your needs, do some reading. Leaf through some trade journals, taking "mental notes" on any sets or portions of sets you might be able to use. Remember, you need ideas if you have never done this before or if you are limited in your set-building experiences. What better place to gather ideas than a trade journal showcasing some of the top sets and set designers in the country. In addition, looking at the advertisements for ideas helps. In many cases, the ads can give the prospective set builder some very useful ideas.

Now that you have your needs assessed and ideas together, you are ready to take a look at your set construction and materials. One of the most simple materials to work with is 1/4-inch plywood. This material comes in four-foot by eight-foot sheets and is easy to combine for the proper aspect ratio.

(A note on aspect ratio: Remember for most of us it is still 4:3. That means for every three units high you build your set, you will need to build it four of those same units wide. A set nine feet high should be built 12 feet long.)

Aspect ratio allows the camera to frame the set, and thus your construction is more efficient. What you build is what you will see. Fasten one-inch by two-inch framing boards to the sheets of plywood for stability, and then frame them around the outside so they can stand without bending.

... build it cheap and temporary but make it look expensive and permanent.

CONSIDER THE FABRIC

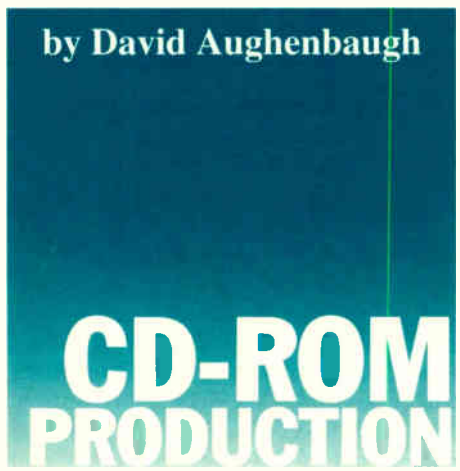
Take a trip to your local fabric store and find a color you like. Felt or any fabric that does not reflect light is the best set material. Because you will be stapling this material to your plywood and pulling it tight, you should look for the broadest bolts of fabric you can find. You might even take some fabric samples back to your facility and see what they look like with studio lighting on camera. You will be amazed at which colors and fabrics look great and which ones look terrible. Remember, stay away from red.

Once you have stapled the fabric behind the reinforced plywood sheet, you will need to stand the sheets up. Take some simple hinges from the hardware store and screw them into the plywood sheets. By taking several of them and fastening them together with the hinges, you now have a flexible, free-standing set that absorbs light and boasts of being non-reflective, sound absorbent and a perfect neutral background for props, logos or whatever your creative desires may require.

The set is inexpensive, rich in appearance (both on camera and off) and can easily be moved by several of your personnel. The possibilities are endless with just this one idea, and best of all, it requires no cinder blocks or gaffer's tape. ■

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

CD-ROM: The Next Big Market



Editor's note: TV Technology introduces a new columnist in this issue. David Aughenbaugh's "CD-ROM Production" feature will show the video production community how it can take advantage of the growing demand for CD-ROM material. Aughenbaugh is a computer artist who is trained in video, graphics and fine arts. He has worked in digital video for seven years and in computer games for four. His computer game titles include: "Metaltech EarthSiege" and "Front Page Sports: Football and Baseball."

The CD-ROM industry is a new and rapidly growing area of business for video production and post production houses. It is fairly easy for traditional facilities to ramp up support for multimedia clients, and the payoff can be substantial. If you do not look into it, you could be missing an opportunity.

CD-ROM production has already become a specialized field, with some companies servicing the multimedia industry almost exclusively. But there is also a lot of room for existing video houses to pick up work.

However, an important point is that the needs of a multimedia developer are different from most other video customers. To do a good job supporting these clients, a post house will need some equipment and skills that it may not now possess. The good news is that the investment is relatively small, especially compared to the costs normally associated with video gear.

First, if you only do one thing, invest in a video capture system. Whether you want to get heavily into computers and work with video at that level or you just want to pick up "computer people" as clients, you will need some way to deliver your work. Videotape will work, but it relies on your customer, the multimedia developer, having the ability to capture it into computer files, and there are some inherent problems with that scenario.

COST CONCERNS

The most basic problem is that most multimedia developers cannot afford professional-quality video equipment. Most have Hi8 gear, and while that might be good enough for the local news team, it is not good enough for CD-ROM development.

Therefore, quality source material is essential to getting good results on CD-ROM. Video on a CD-ROM is dramatically compressed. Compressing poor-quality video has three negative consequences. First, it looks even worse once it is compressed. Second, the resulting file is larger because the compressor thinks all that noise is important information. And third, because the file is larger, it is more of a challenge to the playback machine and is less likely to play back smoothly.

A better scenario is to capture your video into AVI or QuickTime files and deliver it in that form. This ensures that the video is captured from the best tape format in the fewest generations.

The standard file formats for video on computers are AVI and QuickTime. AVI or "Audio Video Interleave" is the format used by Microsoft's Video for Windows on PC computers. QuickTime was developed by Apple and can be used on either PC or Mac machines. I will get into more detail on working with AVI and QuickTime in future columns, but for now I will focus on video capture and the delivery process itself.

What format you convert to, and on what medium you will deliver it depends on the kind of equipment your customer has. By far the most universal medium is CD-ROM. If you invest in a CD burner, you will be compatible with the vast majority of potential clients. CDs are easy to work with, durable and permanent. You can hand them directly to your client or deliver them by mail. The blank disks cost US$10 to US$20 each, but you will have very few complaints or problems with compatibility.

Another good option is for your client to bring a SCSI external hard drive and plug it into your machine. (The Small Computer Systems Interface is a common drive format.) This is the fastest and most direct method, but it only works if your client is local. Furthermore, while it is a simple and efficient process on the Mac it can get tricky on PCs.

The last option involves various tape and disk formats like Exabyte, DAT, Bernoulli and Syquest. These can all do the job, but there is no guarantee that your client will have the same formats.

CAPTURE AND CONVERSION

Video capture can be accomplished in a number of ways. Many video post houses have DDRs (Digital Disk Recorders) such as the Abekas A60, A66 or Diskus. If your facility already has one, you have the beginnings of a CD-ROM suite. However, I am surprised by how many shops have a DDR but cannot convert their files to a form I can use.

Likewise, if you have a non-linear system, your work may need to be converted before a software developer can use it. All of the leading non-linear systems claim QuickTime support, but some are definitely better at it than others. Avid, probably the most common, is unfortunately the least compatible.

Converting to and from QuickTime is a painful time-consuming process. I consider Data Translation's Media 100 the best system for multimedia work because of its easy conversions and image quality. The Radius Telecast and Targa 2000 systems are QuickTime native, so no conversion is necessary, but I do not see these systems in post houses very often.

The last approach to video capture is frequently overlooked, but it is the best for many situations. Animation controllers, also

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Looking Into Two's Complement

by John Watkinson

VIDEO WATCH

Digital audio and video systems rely heavily on two's complement coding schemes, which are usually taken for granted and not widely understood. But the fact is that two's complement is an elegant technique which, despite its power, is really quite simple.

Digital audio and video are really just alternative ways of carrying the same information. We have quite a few alternatives, as Figure 1 shows. In analog video, the brightness of some point on the picture is conveyed by the voltage of the signal. Blanking, or 0 IRE, should represent black and peak voltage, or 100 IRE, should represent white. The voltage is an analog of the brightness.

VIDEO BRIGHTNESS

However, when we come to an analog video recorder, there is a frequency modulator on the record side. If we look on the tape, black is represented by a low frequency and white is represented by a high frequency. Now the frequency is an analog of the brightness.

In digital systems, we represent the brightness by the size of a number. It is as if we sent the video signal by transmitting IRE units instead of the voltage. In practice the IRE is too large a step and we need to use smaller steps. In digital NTSC, for example, 140 steps represent 100 IRE, and in principle we could transmit the numbers in decimal, just as we write them. We would need 10 different voltages on each wire to represent 0-9, and we would need 10 different magnetizations on tape.

While this is possible, it is just too complicated. Instead we convert decimal to binary so we only need two voltages, on or off, and two magnetic states, northern exposure or due south. With only two states, our symbols are more rugged and everything gets easier.

As a practical matter we need more steps. Sync pulses go below blanking, and chroma goes above peak white. Figure 1 shows how NTSC is converted into the 256 steps that an eight-bit binary number allows. If we use 10 bits then 1,024 steps are possible. Note that blanking is no longer a code of zero; an offset has been introduced.

In component systems we have color difference signals that can be positive or negative. To fit these into a binary scale, it is necessary to use a large offset that puts blanking half way up the scale. Audio is the same: it is bipolar and needs a half-scale offset.

DIGITAL DILEMMA

All of these offset binary coding schemes work fine unless we want to process the signals. Think of the most common video process: a fade to black. The audio equivalent is a fade-out to silence. In digital systems fading has to be done by multiplying the numbers. If we want to pass a signal unchanged, the equivalent of an open fader, we multiply by one. The value we multiply by is called a coefficient. Multiply anything by one and it remains unchanged. If we want a fade-out, we gradually reduce the coefficient to zero. Multiply anything by zero and you get zero. It is a fundamental characteristic of math and binary multipliers.

Unfortunately with the offset schemes that we have used in coding video and audio into binary, fading to zero gives the wrong result because we fade out the offset as well. In video we are supposed to fade to black. Who wants a fade-to-sync tip? In audio who wants a fade that pushes the loudspeaker grill off? It is obvious that some change is necessary to the coding scheme before any signal processing can be done.

The problem is in the offsets. The fade should only fade the signal, not the offset. But a simple multiplier cannot make that distinction. The solution is to use two's complement coding instead of offsets.

All digital systems have a word length limit. In video it is eight or 10 bits. In audio it could go as high as 20 bits. In a limited word length system it is impossible to get beyond the largest number in the scale. Take a four-bit example for simplicity. Here the largest number is 1111 or 15 decimal. Adding 1 gives 16 decimal, which is 10000. That is five bits and we can only handle the bottom four, so the left-hand bit is lost. Consequently 1111 plus one is 0000.

This is called an overflow and it brings us back to the beginning of the scale. Effectively the top of the scale is joined to the bottom and the scale becomes an endless ring. Adding one simply indexes one place around the ring indefinitely. Figure 2 shows a four-bit number ring. On the left-hand side there is the overflow point from 1111 to 0000. In a pure binary system, the ring is cut at the overflow point and straightened into a scale, as in Figure 2a. With symmetrical color difference or audio signals, blanking or muting is half way up the scale. This corresponds to an offset of half a turn around the ring.

There is a neat way of moving exactly half a turn around the ring. Pick any four-bit code and invert the left-hand bit. The resulting code will be found exactly 180 degrees around the ring. This is a fundamental characteristic of binary number rings. Inverting the most significant bit causes a shift of exactly half scale.

A CUT ABOVE

Figure 2b shows that in two's complement, the number ring is cut on the right-hand side and straightened into a scale with zero in the center. This is great for bipolar signals because a fade to zero now becomes a fade to silence/blanking. All numbers with the MSB (most significant bit) set are considered negative. The MSB is thus the equivalent of a sign bit where 1=minus. The only remaining question is how we get our signals into the two's complement form.

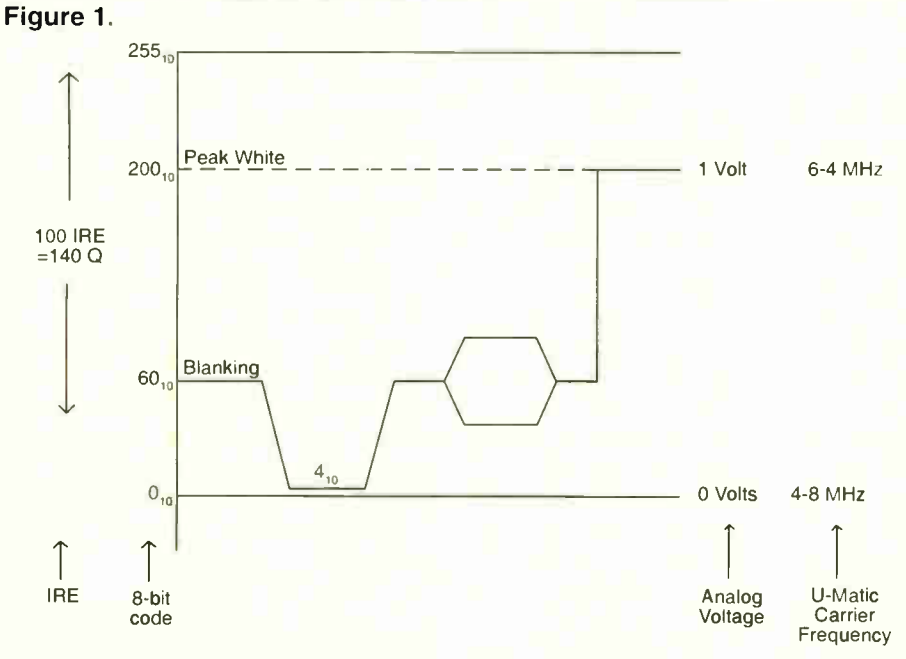
Figure 3 shows how it is done for audio. The analog input has a half-scale offset added so that the bipolar signal is now unipolar. A pure binary conversion is performed to give an output with a half-scale offset. The offset is removed by inverting the left-hand bit. The AES/EBU audio interface works like this.

In the digital video interface standards, two's complement cannot be used because the codes of all zeros and all ones are reserved for synchronizing. Video waveforms cannot use those values. Offset binary must be used on the interface cables for composite and component video. In the case of color difference signals, there is a half-scale offset, and a digital vision mixer simply inverts the MSB of each color difference sample to convert it to two's complement. In the case of luminance or composite, the offset is not half-scale and it has to be removed by subtracting a constant. All values below blanking then become negative codes on the two's complement scale.

The two's complement system allows two sample values to be added, or mixed in video/audio parlance, and the result will be referred to the system mid-range. This is analogous to adding analog signals in an operational amplifier.

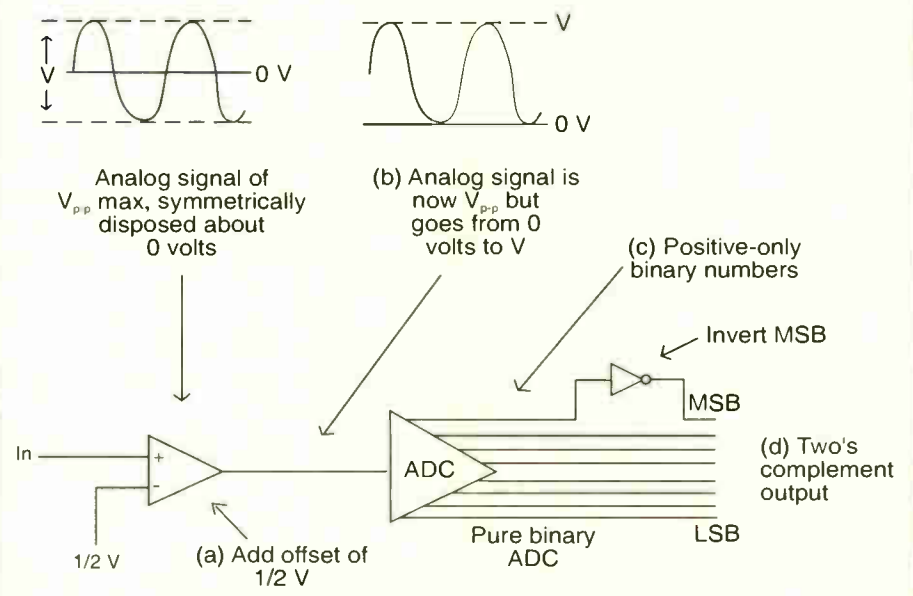
(continued on page 17)

Figure 1.



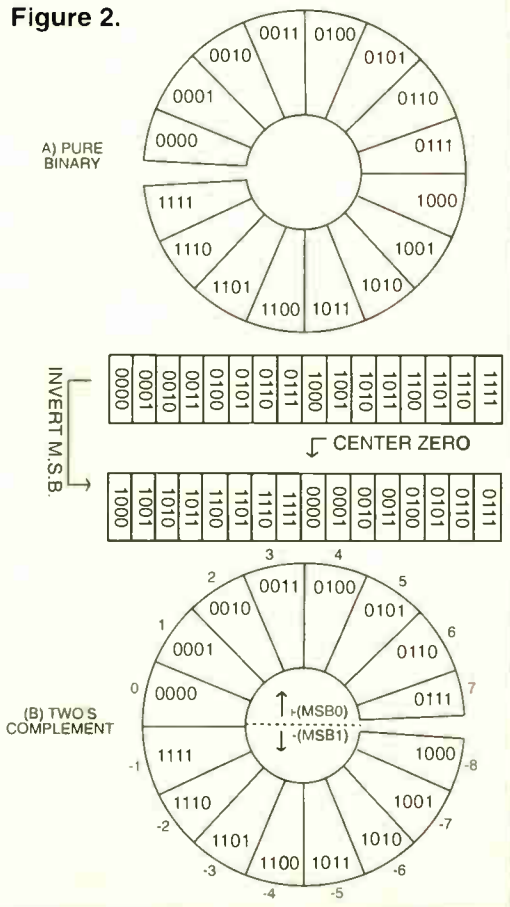
Video can be represented by voltage, frequency, IRE units or a binary code. All are equivalent.

Figure 3.



A two's complement ADC. At (a) an analog offset voltage equal to one-half the quantizing range is added to the bipolar analog signal in order to make it unipolar as at (b). The ADC produces positive only numbers at (c), but the MSB is then inverted at (d) to give a two's complement output.

Figure 2.



Clean Trucks Get Clean Shots

by Jon Hazell

MOBILE TELEVISION

As I travel about working on different mobile shoots, I encounter many different trucks and engineers and many fresh and creative ideas to make life easier while on the road.

One of the most important duties of the engineer-in-charge (EIC) comes as a surprise to many people. This highly paid jack-of-all-technical-trades is not only responsible for the technical operation of the entire show but must empty the garbage and vacuum the carpet. And this person does windows!

The EIC is the truck company's representative in the field. If the client comes into a dirty truck, the show starts off with a bad impression. If there are sunflower seed hulls all over the floor, the monitor faces are dirty and the trash has not been emptied, perhaps the cameras and the switcher have not been properly maintained either. It is very important for the director and producer to have confidence in the truck and its crew.

Problems in one area tend to lead to problems in other areas. An overflowing wastebasket or an annoying, sticky soda can ring on the console can develop into perceived switcher or DVE problems. If there are too many problems, your customers will look elsewhere when it comes time to do another show.

CLEANING CREW

A well-equipped mobile truck will have a good selection of cleaning supplies, including window cleaner, a more-powerful surface cleaner, carpet spot remover and furniture polish for the woodwork. Rags, paper towels, trash bags, a broom and an onboard vacuum cleaner are requirements. Some trucks have a built-in vacuum cleaner system with outlets in each compartment. Waterless hand cleaner, soap and a supply of water are nice to have on board for cleaning up dirty engineers.

One of the more frustrating problems on the road is disappearing tools. A hand tool is frequently needed to adjust tripod screws or swap camera wedge plates. Crew members borrow tools from the truck crew. Many precision screw drivers and wrenches have accidentally gone home in someone's pocket. The engineer usually carries a well-equipped and expensive tool box, and it is very frustrating when an important tool is missing.

One easy solution is to carry a second set of cheap tools. A tool box with a variety of screwdrivers, pliers and wrenches can be put together for little money. The box can be made easily accessible to the crew, and if something disappears it will not ruin the show.

The cheap tool box can also be easily replenished by making a trip to a discount hardware store. In addition (and this may only be my imagination), it seems that the cheap tools do not disappear quite as often as expensive ones ...

One area that tends to get overlooked when stocking a mobile truck with tools and equipment is the telephone system. Most shows require telephone connections, and connecting to the phone system is usually as easy as attaching wires supplied by the telephone company to terminals on the side of the truck. Unfortunately, there are often problems with the phone connections. It is very useful to carry a variety of tools and parts for troubleshooting telephone systems.

One of the more frustrating problems on the road is disappearing tools.

One of the basic telephone tools is an impact-type punch-down tool. This tool makes connections to standard telephone-type 66 blocks. When you arrive at the stadium and cannot find your phone wires, you can often find your phone numbers in a punch block and connect directly to them with your punch-down tool. Higher-end punch-down tools have exchangeable blades and can be used for other types of punch-down connections. An additional blade for ADC Q-type audio punch downs is especially useful because most ADC audio patch panels use these connections.

ELECTRONIC WARBLE

Also useful for telephone work is a telecom test set. These look like regular telephone handsets with clip leads attached. You can easily connect to telephone company lines to detect a dial tone, verify a line or check a phone number.

Telecom test sets are particularly useful when the producer cannot get the computer modem to work and is blaming the phone line. The problem is actually in his computer.

Another set of telephone test tools is very useful for many other purposes in the mobile truck. This tool has two parts: a signal generator and an inductive amplifier.

The signal generator produces a distinctive electronic warble. It has a set of built-in clip leads that can be connected to a pair of wires to be tested. At the other end of the wires, a probe on the inductive amplifier can be touched to the bare wire or even the insulation. If you hear warbling, you have found the right pair. This can dramatically shorten troubleshooting time. The inductive amplifier is also excellent for identifying which wire in a bundle has video or audio on it.

One of the most useful mobile television tools is rarely found on trucks because it is somewhat expensive and perhaps not as appealing as new cameras, a new switcher or lots of oak trim. Despite this, there are very few tools as useful. In a way, it is a heightened version of the tone generator/inductive amplifier. I am referring to the Tektronix WFM-90 handheld waveform/vector/audio/picture monitor.

Every show has mystery cables and mystery signals. The announce booth monitor feed is led into the truck end of a cable, but it is not showing up on the monitor. Where has it gone? The technician at the satellite uplink across town insists your transmission video level is low feeding his remote equipment. It looks OK in the truck, but what does it look like at the other end of the wire?

You can pull a waveform monitor or color monitor out of the truck and take it to the end of the cable to check the signal, but will there be a power connection? If you have a waveform monitor, how will you know if you are looking at the right signal? If you only have a color monitor, how can you check levels? The whole troubleshooting process is cumbersome and awkward.

Enter the WFM-90.

It combines a waveform monitor, vectorscope, color monitor and audio monitor into one small, handheld, battery-operated package. Carry it up to the booth with you and quickly find which one of 10 unmarked cables has your monitor feed. Do not get into an argument with the satellite technician; go to the end of your transmission cable and measure your signal, then you have solid ground to stand on when you say the problem is the technician's and not yours.

Creature comforts become especially important when you are spending many days on the road. A microwave oven and a coffee maker are great items to have on board. Some trucks have a refrigerator, and I have even seen a Nintendo Gameboy or two. The on-board, off-air demodulator is frequently used for watching programs other than the one being made in the truck.

Truck crews have to be creative to solve the unique problems of making television in remote locations. Their creativity extends to the tools they choose. ■

Jon Hazell is a contract engineer and may be reached c/o TV Technology.

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Many Advantages of Two's Complement Coding

Figure 4 illustrates how adding two's complement samples simulates a bipolar mixing process. The waveform of input A is depicted by solid black samples, and that of B by samples with a solid outline. The result of mixing is the linear sum of the two waveforms obtained by adding pairs of sample values. The dashed lines depict the output values. Beneath each set of samples is the calculation that will be seen to give the correct result. Note that the calculations are pure binary. No special arithmetic is needed to handle two's complement numbers.

PHASE REVERSAL

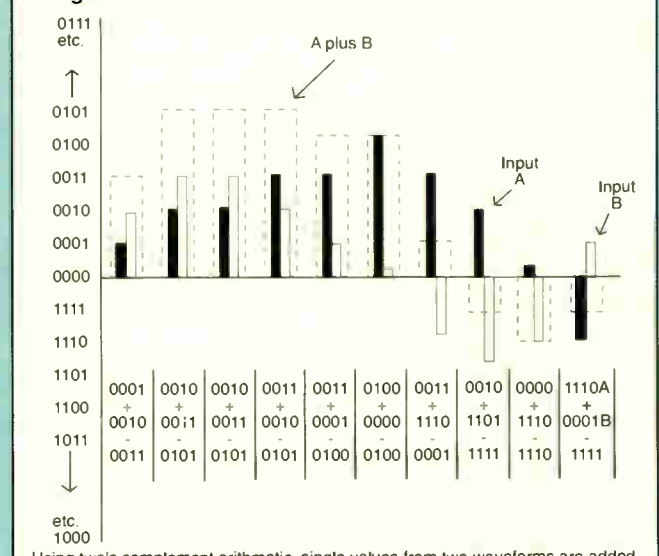
It is sometimes necessary to phase-reverse or invert a digital signal. The process of inversion in two's complement is simple. All bits of the sample value are inverted to form the one's complement, and one is added. This can be checked by mentally inverting some of the values in Figure 2b. The inversion is transparent and performing a second inversion gives the original sample values.

Using inversion, signal subtraction can be performed using only adding logic. The inverted input is added to perform a subtraction, just as in the analog domain. This permits a significant saving in hardware complexity.

Two's complement notation is the most appropriate scheme for bipolar signals, and allows sample mixing in conventional binary adders. It is in virtually universal use in digital video and audio processing. ■

John Watkinson is an independent consultant on digital audio, video and data technology and is the author of seven books on the subject, including the Art of Digital Video and the Art of Digital Audio. He is a fellow of the Audio Engineering Society, a member of the British Computer Society and is listed in Who's Who in the World. Based in England, he regularly presents papers at conventions of learned societies and has presented training courses for studios, broadcasters and facilities around the world. He is currently working on a video fundamentals book. John can be reached at +44-1734-834-285, or c/o ***TV Technology.***

Figure 4.



Using two's complement arithmetic, single values from two waveforms are added together with respect to midrange to give a correct mixing function.

THE BIG PICTURE

Prepare for Impact of DVC

by Frank Beacham

The chief engineer of a major network affiliate sternly told me back in 1974 that over his dead body would Sony's 3/4-inch U-matic cassette format ever air on his station. This is an "industrial format," he said, and absolutely not broadcast quality.

A year later, with great fanfare, this engineer's very alive body ushered in the era of Outside Broadcast at the same station, proclaiming it a visionary move away from 16mm film to instant electronic images from portable video cameras.

Fast forward to 1981, when Sony demonstrated the prototypes of its one-piece Betacam camcorder. The manufacturer told the video community that this was no more than a convenient tool for news gathering. Betacam, we were assured, was no threat to the much pricier Type C one-inch format with its finicky concrete-block-sized portable field recorder costing more than US$40,000.

Of course, Betacam's eventual cannibalization of the one-inch format is the stuff of video history. It was the video users, not the manufacturer, who brought about the quick demise of one-inch field production and elevated Betacam (later Betacam SP) to an all-purpose production format.

So it was with a sense of *déjà vu* that I sat in Sony's New York City headquarters recently to watch the executives of Sony Electronics try to position the company's amazing new DVC camcorder as a consumer product. While they tried to convince the press that the wedding and bar mitzvah crowd is going to jump at spending more than US$4,000 for a camcorder, the real story is in what Sony could never say — that DVC is most probably going to be a Betacam killer.

This refers to analog Betacam SP, of course, not Digital Betacam. DVC is cheaper, smaller and makes better pictures than any of the current professional analog formats, whether component or composite. One does not have to go out on a limb to safely predict that DVC is going to dramatically lower the cost of entry into the world of professional video.

As they have in the past, it will be the video users who will tell the manufacturers that DVC is more than a consumer product. When they discover the image quality packed into a 2.5 pound camcorder and get a taste of the new era of personal digital editing that is about to begin, watch out.

I predict that DVC will do for video what a new generation of cheap and easy-to-use page layout programs did for desktop publishing a decade ago. In fact, DVC could be the format that truly ushers in the era of inexpensive, high-quality desktop video "for the rest of us."

One reason is FireWire, a new serial bus technology developed by Apple Computer and now backed by a coalition of computer and video manufacturers as the IEEE 1394 standard. Sony's first DVC camcorders have FireWire digital I/Os built in and Panasonic, part of the coalition, is expected to include a FireWire port on future models.

FireWire, which supports data speeds up to 50 MBps, is especially video-friendly because its isochronous transfer capability is time-dependent, allowing the easy movement of real-time, full-motion video between devices. Those devices can include a camcorder and a standard personal computer equipped with software for non-linear video editing.

Now that Sony has committed to FireWire, watch for the first 1394-compliant PCI cards for personal computers to become available soon. With backers like Apple, IBM, Microsoft and AT&T, FireWire could become a key factor in moving professional video production from the edit suite to the living room.

An irony of the DVC introduction is the fact that serious videographers who want to edit to a professional digital format from a DVC master tape will have to, at least for the time being, use a Panasonic product.

Panasonic's AJ-D750 DVCPRO studio editing deck is currently the only way a standard DVC tape can be dubbed or edited digitally to a professional component digital format like D-1, D-5 or Digital Betacam. Though designed for Panasonic's DVCPRO format, the D750 can digitally play any standard DVC cassette recorded in the 16-bit, 48 KHz stereo audio mode. Time code from DVC source tapes is converted to SMPTE code by the D750 during the playback process.

With FireWire not quite here on the PC side, users of Sony's Digital Handycam can only edit to another Digital Handycam or to an analog format. Sony's DVC team did not seem amused to find themselves locked into such awkward limitations on the post production side.

Panasonic, by the way, is not so picky about the target market for its new 2.5 pound DVCam camcorder. The unit is being sold in the Panasonic consumer line as PV-DV1000 and in the pro line as AC-EZ1. The difference between the camcorders: none, except for the accessories included in the package. ■

Frank Beacham is a New York-based writer and producer. Visit his Internet web site at: http://www.beacham.com. Mail: 163 Amsterdam Ave. #361, New York, NY 10023. E-Mail: beacham@radiomail.net

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Tapping Into the CD-ROM Wave

called "single-frame" systems, control one or more tape decks and use multiple passes to capture series of video frames. (The term "single frame" can be misleading since these systems are designed to capture whole sequences of video.) These systems are the only way, short of a DDR, to capture video with absolutely no compression. That can be important in digital desktop video where quality is everything, especially for bluescreen work. Also, these systems cost next to nothing compared to DDRs and non-linear systems.

Animation controllers were developed as a means for animators to record their work to videotape. The ability to go in the other direction — capturing from video into the computer — was considered a secondary function. But for our purposes, it is the part that interests us most.

The Macintosh "Mac Animator Pro," from McQ Productions, is an excellent choice for both capturing and recording. It comes bundled with a Videomedia V-Lan system, or it can be purchased separately and used to control a single deck. The list of compatible decks is impressive, and it supports both RS-422 and RS-232 protocol. Capturing can be done to numbered Pict sequences or to QuickTime using all the standard compression formats, including the lossless "Component Video" compressor (2:1 ratio) and fully uncompressed 24-bit.

If you are exploring video capture as a way to support multimedia and you do not need video capture for other purposes such as Quantel Paintbox processing or non-linear editing, an animation controller can be a very attractive and cost-effective solution. Because the machine must roll the same stretch of tape several times to capture all the frames, the disadvantages to this solution are a longer capture-time and wear-and-tear on the tape deck. However, the extra capture time is usually recovered when you realize the resulting file does not need to be converted.

If you do need to convert files, there are several utilities to choose from, but my favorite is DeBabelizer from Equilibrium. It runs on the Mac and SGI (with a Windows version in the works) and it handles nearly every file format in use. It allows batching and scripting and has many powerful image processing tools built-in.

Remember: The goal is to get your work into the software developer's hands in a usable form and in the best possible condition. What that entails depends on the current situation at your facility and on how deeply you want to get into computers. To the extent that you can move into this business, the opportunity is almost surely worth the effort. ■

David Aughenbaugh may be reached at 503-334-3350, or at internet:davida@Sierra.com

Put People on a Higher Plane

SOMEWHERE OUT THERE *You might not have noticed* that there is no daily plane crash at Chicago's O'Hare Airport. Believe me — as one who fervently hopes Bernoulli was right each time I take the dreaded march down a jetway — it is the sort of thing I have noticed, and I think it has something to do with the baseball strike in the U.S. Oh, yeah — somewhere along the way, I plan to explain what makes TV technology tick.

If you have ever had the pleasure of flying over the U.S. Midwest, you probably have noticed that Chicago's air traffic control computers have, shall we say, gone south quite a few times recently. I am all in favor of education, but this is one of the things I would really prefer not to learn about while flying. (I, for one, applaud the decision not to show the "Airport" movies in flight.)

So I am reading a paper to avoid staring at the void beneath the wings one day, and I meet a man who attempts to restore my faith in the aviation industry following one such computer failure. "The system is 99.9 percent safe," quoth he.

It took less than a femtosecond for my life to start flashing before my eyes (or was that some fool's laser pointer in the row behind me?). I do not know how many flights go in and out of O'Hare each day, but let me do some quick math. One hundred percent minus 99.9 is 0.1 percent, or one-in-a-thousand. So this "99.9 percent safe" system should be cleaning blood off the runways an average of once every 24 hours.

Numerology is my favorite topic. Have you ever been on a diet? If you drink milk, you must have that watery "skim" stuff because whole, fattening milk contains 4 percent fat. Remember the arithmetic from three paragraphs ago? A hundred percent minus 4 percent is what? This is why you see all those "diet foods" in packages proclaiming "96 percent fat-free!"

We surely do love numbers here in TV land. You cannot buy something without a spec sheet, even if everyone has a sheet that says RS-170A or EIA-170A on it despite the fact that there are no such things.

And the bigger the number, the better. That is why I have had producers grumble to me about D-1 picture quality when someone else was using D-2. Higher number — must be better.

Ikegami has attached a fine camera to Avid's disk-recording back — too fine a camera for the recorder, in my opinion. But I am not sure the Avid people want my opinion, especially when they are trying to sell a package.

A camera with a 12 dB signal-to-noise ratio (S/N) is a lot better than one with a 6 dB S/N. One with a 24 dB S/N is better still, and one with 48 dB is even better. But is it worth paying more money for a camera with a 200 dB S/N over one with only 100 dB? You will not see me doing it.

Specs are meaningless if you do not understand what they mean, and in this age of bit-rate reduction, most of us do not understand. I think I once ranted about some old TDK ad many years ago that talked about how its high BET number made the tapes a good "bet." Not even the TDK people I asked had a notion about what BET was. I think it turned out to be someone's initials.

I would just like to point out that the most important element of TV technology is people.

IN PURSUIT OF NUMBERS

But you do not even need specs that no one has ever heard of to illustrate the ridiculous pursuit of numerology. How about that camera S/N — do you know under what conditions it was measured? What the gain structure of the camera was? Heck, give me a tweaker and an adjustable camera, and in a few minutes I will give you unbelievably good S/N numbers. You might not be able to make out the pictures, but those numbers will be excellent.

It is a lot like golf. Someone was explaining how golf scoring works. "So," asked the student, "the fewer times you hit the ball the better?" The instructor agreed that was, sure enough, the goal of golf. "Then why hit the ball at all?" asked the student.

And that, to me, seems to be the problem we have with all these numbers floating around. The goal seems to be the pursuit of better numbers, not better television.

Here is a simple puzzle: One person has a big, clunky, transportable cellular phone with a full three watts of power. Another has a typical handheld with a few hundred milliwatts. They stand in the exact same spot and try to get through. Only one person is successful, and it turns out to be the one with the weaker phone. Why? I will give you a hint: It is the same reason there isn't a plane crash every day at O'Hare, even though the ATC system is "99.9 percent safe."

Have you figured it out yet? I will give you a few more minutes while I dump out whatever else has been rattling around in the cavity between my ears this last lunar cycle.

I read an interesting study conducted at some university somewhere about editing on linear and non-linear systems. They had a bunch of editing students work on some material from Hollywood and then judged the results. Everyone had to use both systems at different times, and everything got reversed and inverted and perverted (hey — that is a genuine optical term) and all that other good stuff to remove biases.

Lo and behold, the stuff edited on the non-linear system scored higher in every category. Conclusion: if your goal is to edit better, non-linear is a good solution. But, wait — there was another finding: the non-linear editing took longer.

I am not saying this study was the final word on editing, and neither did the people who conducted it. And one good reason the editing took longer could have been that the editors were happier with the non-linear system — they were given as much time as they wanted. So it does not necessarily mean non-linear is slower than linear. But, if your goal is speed, maybe you need to do some more checking around.

INCHES VS. FEET

OK, time is up on the puzzler. The reason the low-power phone got through and the high-power one did not is that the antenna of the low-power phone was about six feet off the ground, and the antenna of the transportable was about six inches off the ground. Geostationary satellites are a lot less powerful than terrestrial TV stations, but they transmit signals a lot farther. More power is not necessarily better than a higher antenna.

The high-power phone's antenna was on the ground because it was too heavy. But why was the low-power cell-phone's antenna about six feet up? Because of the person holding it. And that is why the "99.9 percent" safe ATC system does not cause a crash a day at O'Hare: There are persons flying the plane and persons in the control centers. When the "good" computer crashes, they have some rotten old technology to fall back on, like, eyes, ears, hands and brains.

Non-linear edit systems are not faster than linear. The people using them may find one or the other faster, but by themselves, they are electronic piles of nothing.

It always galls me when a chief executive of some conglomerate has a sit-down with a salesperson to decide what will make both organizations richer, and they pretend it has something to do with improving TV. One way to make a company look good is to cut expenses, and what is more expensive than people?

I think it is rather like golf: You have the least employee expenses if you do not have any employees at all.

I am not here to defend lazy slobs (myself included) or contract abusers who demand extra pay if they get a meal break when they were expecting to miss it (psychological damage). I would just like to point out that the most important element of TV technology is people.

If technology can make the people more efficient, well, that's an improvement. And sometimes that does mean laying off employees. But installing equipment for which the interest payments will exceed the savings in salaries and benefits is not exactly a wonderful idea, especially if the resulting TV programming looks worse than the human-produced kind.

I remember an old BBC radio show with a verbal volley that went like this:

"I have here a machine that will do the work of four men."

"That's fantastic! Let's put it to work at once!"

"All right. You will have to give us a hand. It takes five men to operate it."

Sometimes I wonder whether every local cable TV access channel really needs a labor-saving million-dollar video server. I wonder whether a torroidal multisatellite earth station really takes the place of a local news crew. And I wonder about a one-person tape operation that installs a robotic library and keeps the operator around just to load it once every eight hours. But what do I know?

I once toured a spectacular, semi-automated facility outside the U.S. A fellow tourer asked how come it wasn't 100 percent automated. The touree responded that, as long as there were going to be people there, it might be nice for them to have something to do, so they would be alert instead of bored.

Amen. ■

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

Multimedia Emerges at TELECOM

by Brian Flowers

ENGINEERING CORNER

TELECOM 95 at the PALEXPO in Geneva was a big success. There were 130,000 visitors to the exhibition and 30,000 staff from the participating companies.

A major topic of discussion was the time scale over which the proposed multimedia services will achieve widespread implementation. As can be expected, there were numerous opinions on this subject.

WORK AT HOME

One theory is that when we run out of oil some time in the next century, the lack of transportation will obligate most people to work at home using advanced datacom systems. On the other hand, alternative energy sources will undoubtedly be adapted to meet the transport requirements as soon as there is an economic incentive to do so. Moreover, face-to-face discussions at places of work permit a far wider and deeper exchange of ideas than communication via e-mail.

Nevertheless, the linking of LANs to WANs clearly provides a speedy and effective means of communication to link up the various sites of a company or to enable an organization such as the EBU to exchange information with its members in 48 countries. Therefore, the EBU's VSAT voice conference project will also provide a star configuration datacom network, linking all EBU members to EBU headquarters in Geneva. Moreover, the datacom system should soon pay for itself and produce significant savings, due to reduced public telex expenditure.

At TELECOM 95, I was most impressed by the NEC demonstration of the "Global College." Students anywhere in the world would be able to call up professors at participating colleges and hold interactive tutorials on subjects of interest. Compressed digital library material would be available to illustrate the subject under discussion, and satellite links or fiber-optic circuits would transmit the compressed video and audio.

In this system, a four-in-one split-screen displays the professor, the library material and two students at two remote sites, this display being available at each location. A full-screen display of each source is also available of course. In practice the professor does not necessarily have to see the students, in which case audio conference connections would suffice at the student locations.

International projects like the "Global College" encourage international understanding and tolerance. Such international educational and cultural exchange facilities represent a very positive aspect of modern telecommunication developments.

Also on the show floor, interactive multimedia was demonstrated as a home-shopping facility by several manufacturers. It remains to be seen to what extent the public will welcome this service, which is the electronic equivalent of the mail-order catalog. The demonstrations were well-prepared and convincing.

DIGITAL CONVERGENCE

On the subject of convergence, television transmission engineers and computer engineers have rather different approaches to digital transmission. This struck me forcibly several years ago, when a company that hoped to sell the EBU a computerized planning system, proudly told us that it had a global leased network of high-speed data circuits, transmitting data at 56 kbps. This was at a time when TV engineers were wondering whether or not a digital TV signal could be compressed to 34 Mbps for transmission with acceptable quality.

Video transmission systems of 64 kbps now exist, delivering one frame of mediocre picture quality per second, which is adequate for some purposes such as videophones. Store-and-forward 64 kbps systems can deliver proper moving pictures by taking several minutes to transmit one minute of material.

One of the most fascinating topics now being investigated in computer research laboratories is the possibility of using quantum technology for computing. In conventional computers, bits are either 1 or 0, whereas in a quantum computer, "qubits" can be 1 and 0 at the same time, in a state of "superposition." This is due to wave/particle duality at the level of quantum-mechanical systems.

To illustrate the strange nature of quantum gates, consider the fact that two coin-flip (randomizing) quantum gates in series perform the NOT function.[1] This is like scrambling an egg and then unscrambling it, which seems to circumvent the principle of increasing entropy. Life itself also circumvents this principle on a local scale. Anyway it follows from the two-gate result that an individual coin-flip quantum gate performs the function of the square root of NOT, or in other words the square root of -1.

It is indeed a strange beast, having to do with Heisenberg's "Uncertainty Principle" and probability wave functions, which together account for the two superimposed states. Probability wave functions collapse to discrete states when they are observed. Observing means receiving information, so nature conveniently abandons its virtual state when it is required to provide information.

... the linking of LANs to WANs clearly provides a speedy and effective means of communication ...

NO CLASS

As an analogy, think of a classroom full of unruly schoolchildren who run around transgressing the school rules, seeming to be in two places simultaneously when there is no teacher present. However, they immediately come to order, sitting at their desks, when a teacher (observer) appears on the scene.

You may have heard of Schroedinger's cat. In this thought experiment, a cat is enclosed in a box and it is arranged that the decay of a particular atom of a radioactive substance triggers the death of the cat. After a period of one half-life for that substance, the cat has a 50/50 chance of being dead or alive. According to Schroedinger, the cat should exist in two superimposed states, dead and alive, until somebody opens the box to check. Personally, I do not believe in dead/alive cats.

"Many universes" physicists will tell you that the universe splits into two universes, one in which the cat is dead and one in which it is alive. I find that even harder to believe, since it implies that the universe is splitting into countless universes at every instant, following the daddy of all divergent series to produce an unimaginable proliferation of universes.

If quantum computers can be built, they will probably have some surprising abilities. It has been suggested that the human brain uses quantum computing. If we are not careful, while watching our future combined computer/TV sets, we may find that it is also watching us. But then you can always switch it off. ■

An engineer at the European Broadcasting Union for 33 years, Brian Flowers is the former head of service and project manager for the EBU's Eurovision Control Center in Geneva. He was recently transferred to the Transmission Technology sector at the EBU. He studied engineering at the University of Southhampton and served for two years in the Royal Air Force before joining the BBC. He is a member of the Royal Television Society and was recently accepted as a member of the IEEE.

[1] *Brian Hayes, "The Square Root of NOT", American Scientist, Volume 83.*

New Markets Need New Thinking

by Terence Dyke and Paul Smolen

DESKTOP VIDEO

By now, it is pretty much a given that the fastest-growing area of video production is on the desktop. But what seems increasingly evident is that video delivery is headed for the desktop as well. After all, as production moves into the digital domain it makes sense that the playback platform of choice will be the personal computer. Adding to this trend is the fact that computer-based networks are not only an excellent means of distribution, but they are also growing at a remarkable rate.

Digital video production is at the very least a new way to do old business. It is still about making good pictures, as always. However, if that were the whole story it would not be all that interesting. As technology adds more capabilities, there are new dimensions in content and style that open up for those who see the opportunities.

Typically, the opportunities are most apparent "at the fringes," among the newcomers, the outsiders, the eccentrics. The important innovations rarely come from established players. For example, in the 1920s, studio boss Jack Warner, when queried about the new dimension of sound in the movies, reportedly shrugged it off with "Why do we need actors talking?"

EMERGING FROM THE FRINGES

Multimedia is still in the process of emerging from the fringes, even as it grapples with the challenges of a new technology. For starters, there is the relatively limited bandwidth imposed by the current state of computer art, with the corresponding problem of getting it to convey credible resolution, motion and sound. But there is also the issue of what to do with this new dimension called "interactivity."

As computer-based video matures, the desktop will increasingly be a target for video products. This implies not only new techniques, but also new audiences, new means of delivery, new markets. Personal computers and local area networks are becoming the norm in the workplace and should prove to be a very suitable platform for delivering employment-oriented content, such as training and corporate news.

A pioneering example of desktop delivery can be found at the Texas Worker's Compensation Fund here in Austin. Management saw to it that every employee was equipped with a PC; then television converter cards were added to each machine and, in parallel with the company's LAN, wired the building with what amounts to an in-house cable system. This is used to broadcast training material that employees can view at their desks. They can even request specific tapes in addition to the regularly scheduled broadcasts. Essentially, employees watch television on their computer monitors. With this approach, the two systems — television and computer — are independent, converging only at the display.

Further along the evolutionary path, so to speak, is a system made by Target Vision of Pittsford, N.Y. It is a loosely integrated system that in some ways is reminiscent of the videotex systems of the 1980s and in other ways is a creature unto itself.

STILL VIDEO

The content it carries is primarily in the form of "video slide shows": text, graphics and photos on a series of static screens. On the central TVI Edit System, the slides are created and then sent to the organization's various locations via the TVI ComServer, basically a PC with multiple modems. At the receiving end, there is the TVI Broadcast System that converts the incoming files to NTSC and puts it out over an in-house cable system; there is also the TVI Desktop that converts the material to a form that a LAN server can send out to individual PCs.

Because of the high bandwidth requirements, full-fledged network-based digital video is only arriving gradually. However, the StarWorks system from Starlight

(continued on page 21)

1995: A Pivotal Year of TV History

When the history of video is written, 1995 will surely be remembered as a pivotal period when digital technology began to have mainstream impact.

The events came fast and furious throughout the year. When viewed as a whole, they represent a fundamental shift in technology and a human challenge in adaptation and training. Here, in a nutshell, are some of the key developments to impact video communications in 1995:

SERVER NETWORKS

—Avid began delivery of the first server-based network news system. Sony and Tektronix joined Avid in announcing plans to build all-digital, fully networked television broadcast and production facilities.

The announcements signaled the beginning of the end of the traditional analog television plant. It was the year the studio VTR gave way to the server. Component racks were replaced by CPUs and hard drives, and most production and post production tools were designed to be part of networked computer systems.

—DVC (digital video cassette) and Firewire entered the public arena. Sony and Panasonic introduced a new generation of all-digital DVC camcorders that are expected to redefine the cost of making professional quality video programs. The camcorders from both companies weigh less than three pounds and cost under US$4,500. They rival the industry standard Betacam SP format in image and sound quality.

Sony made headlines by adopting IEEE 1394 serial bus technology — known as FireWire — for its DVC camcorders. FireWire will allow digital video equipment to be easily connected to personal computers for desktop post-production. The FireWire standard, originally developed by Apple Computer and now supported by many major manufacturers, is expected to be a key to low cost, high quality, all-digital desktop television production.

—DVD (digital video disc) manufacturers put aside differences and agreed on a single five-inch disc format. Time Warner/Toshiba and Sony/Philips avoided another format war and came together on a new play-only format that is being touted as the successor to both the CD-ROM and the VHS cassette as the primary home distribution medium for motion pictures.

The new DVD technology, to be introduced in 1996, will be able to store an entire 133-minute movie on a single side, meaning the disc has a data capacity about seven times that of today's CD-ROM.

ON THE WIRE

—The Internet stole the new media show. As cable and telco plans for interactive video networks stumbled due to technical complexity and unexpectedly high costs, the Internet laid solid claim this year as the genuine information superhighway.

Growth of the Internet has been extraordinary. INPUT, the global market intelligence firm, estimated the Net will grow from 25 million users today to more than 200 million by the year 2000. Another estimate said the number of sites on the Internet's World Wide Web is now doubling every 23 days.

"To suggest that the so-called information highway is something else that will be negotiated in Brussels is silly," said Nicholas Negroponte, director of the Media Lab at the Massachusetts Institute of Technology. "It already exists. It is grown up from the grass roots.

"There are certain things like security and privacy that make commercialization still complex," Negraponte added. "Digital cash is a complex issue. There are still a number of questions — all of which are manageable. In three years these issues will be resolved and the net will perhaps be the primary form of world commerce."

—Multimedia re-focused on networking. Pressed by the limits of current CD-ROM technology, several major multimedia players changed directions in 1995 to set their sights on the World Wide Web for distribution of interactive programming.

During the year Netscape Communications, whose Netscape Navigator is the leading browser for the Web with an estimated 75 percent of the market, announced alliances with Macromedia, Adobe and Sun Microsystems to bring advanced interactive multimedia capability to the Internet. Netscape will modify future versions of Navigator to incorporate Macromedia's Director playback engine, Adobe Acrobat Reader and Sun's Java, a comprehensive new Web programming language.

The new focus by key multimedia companies on the Internet is a recognition that network computing is expected to play a key role in multimedia distribution and that the increased bandwidth needed to make that happen will soon be available on a widespread basis.

DIGITAL DESIGNS

—The shift from analog to digital technology is already having a major impact on careers and human skills. A television engineer at one of America's great research laboratories suggested privately at NAB '95 that this rapid change will carry a significant human toll. There will be a lot of retirements, he speculated, in the ranks of traditional broadcasters. HDTV, he suggested, will not come from existing broadcasters but from a new group of entrepreneurs who will re-invent the delivery of over-the-air information and programming.

—The technological shift will also cause change in the models of doing business. There were repeated warnings throughout the year that new forms of competition threaten traditional over-the-air broadcasting.

At NAB, entertainment executive Barry Diller warned the broadcasters that they have as little as five years before "a big pipe with a lot of data flowing back and forth" is available to every home. He predicted that the advertising model that supports broadcasting today is going to be displaced by new forms of direct selling.

"The danger for broadcasters is if they do not think expansively. One day the cable operator is going to figure out through an interconnect how to sell in the local market with enormous effectiveness," he said. "There are not enough people in broadcasting with a really sensible plan for using this extra spectrum."

It may already be too late for traditional television broadcasting, said Andrew Lippman, assistant director of MIT's Media Lab at its 10th anniversary celebration in Cambridge in November.

"Something is happening to that sleeping giant we all watch but try to avoid: television," he said. "It is being stalked by a ghost ... an ephemera called the Internet."

Lippman warned that the broadcasting medium "is about to fall to a sucker punch that it will never see." That punch, he predicted, will be computational media.

"Once you accept a computer in the midst of your simple entertainment and information medium, you have opened a new door...you have let the virus into the home," he said. "The Internet is the fly buzzing around the thoroughbred; not even worth swatting, if you could only hit it. But the signposts are there for those who care to look." ■

Frank Beacham is a New York-based writer and producer. Visit his Internet web site at: http://www.beacham.com. Mail: 163 Amsterdam Ave. #361, New York, NY 10023. E-Mail: beacham@radiomail.net

CONTINUED FROM PAGE 20

Desktop Users Tap Into Video

Networks takes a long stride toward this end. This system can deliver real-time compressed video in a variety of formats (Indeo, MPEG, Motion JPEG, QuickTime and others) over several types of LAN (Ethernet, Token-Ring, FDDI) with no special hardware at the client end.

The hitch, though, is that StarWorks has to deliver the video in a broadcast mode. It is available on demand as one would expect with LAN-based data. That will have to wait for true video servers and video-on-demand solutions.

While digital video is maturing on corporate local-area networks, there is no reason to keep the idea confined to a small scale. The "Information Superhighway" vision involves wide-area carriage of digital, computer-mediated content composed of sound, video and data. The vision comes in various forms, of course. Early on, because coaxial cable has such a high capacity and is widely installed, the cable companies were quick to assume that the Infobahn was theirs to create — and control. They promptly declared a digital-television future with 500 channels and enough interactivity to click an on-screen "buy" button.

The media moguls of today, unlike those of the silent-film era, are at least receptive to new technologies. However, they still tend to get caught in the new-ways-to-do-old-business trap. Digital technology has gained their attention primarily as a way to make the cable business "better" — more programming, faster access, easier use. Essentially the same, but more of it.

Meanwhile, out in the fringe area known as the Internet, digital images get more sophisticated as the World Wide Web attracts a rapidly expanding audience. Bandwidth is still the major limiting factor, but here and there one can catch glimpses of a possible future.

CLIP FILES

QuickTime and AVI clips are available for those determined and patient enough to download them. More recently, real-time audio-on-demand has become available on the Web. The quality is not great yet, but it is just fine for browsing popular radio programs or previewing tunes from a self-published rock band.

Then there is InterneTV, a student project at the University of Texas. As an adjunct to their low-power television station, the students run a 24-hour "netcast" that includes music-video feeds from MuchMusic USA and the city-sponsored Austin Music Network. To receive it, a user needs CU-SeeMe teleconferencing software (available as shareware) and a 28.8 kbps modem.

Such advances are not just about "doing TV on the Net," nor do they stop there. Macromedia, makers of the Director multimedia authoring system, recently announced a collaborative effort with Netscape, makers of the World Wide Web browser. The new product, called Shockwave, will allow interactive titles created with Director to be played on-line using Netscape. Developments in on-line technology may leapfrog television as we know it. If that happens, it will be another case of the fringe taking the mainstream by surprise and eventually surpassing it.

In the opinion of one analyst writing in a recent issue of the New York Times Magazine, a crucial milestone has already passed. Steven Levy argues that when Netscape went public on Aug. 9 (doubling its value by day's end), Wall Street effectively endorsed the Internet vision of the electronic future and closed the books on the "500-channel dream" of the telecommunications conglomerates. Assuming it plays out that way, it looks like we will be producing a lot less for couch potatoes in the living room and a lot more for propeller heads in the den. Stay tuned. ■

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

For further information:
Target Vision
Telephone: +1-716-248-0550
*Circle **Reader Service 15***

Starlight Networks
Telephone: +1-415-967-2774
*Circle **Reader Service 88***

InterneTV
http://www.utexas.edu/depts/output/tstv.html

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Telephone: +1-415-252-2000
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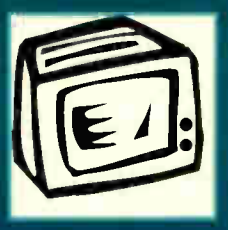

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USER REPORT

Matrox Lets MMI See the Light

by Morten Kristiansen
Co-Owner
Multi Media Inform

ODENSE, Denmark

The Amfibia still store system is the latest PC-based video product from Multi Media Inform (MMI). MMI was founded by Soren Larsen in early 1992 as a complement to his position as a video engineer at TV2 in Denmark. Soren started the company to develop solutions to problems he encountered in television production that could not be readily solved by existing products.

At the beginning, sales were made through personal contacts Soren had at TV2, and the product line was limited to solutions designed for special projects. These projects were a direct result of the trend toward the growing use of personal computers in broadcasting. Technological advances enabled general-purpose computers with specific software to take over tasks previously performed by special-purpose, dedicated hardware.

Among these products in use by Danish and Norwegian broadcasters are: the TV Clock, a versatile clock/logo generator; the Broadcast Logging System, a timer that controls a number of tape machines for taping satellite transmissions and logging broadcasts; and Amfibia, a LAN-capable still store system.

When we first started developing products for the broadcast video market, we were using the ATVista graphics adapter from Truevision. Quite soon, however, we discovered that it was limiting us in what we wanted to achieve, despite its powerful graphics processor. We started to look for an alternative, and discovered the Illuminator-PRO videographics card from Matrox in Canada. When we started working with it we felt like we had bought a Rolls Royce disguised as a 1970 Honda Civic.

After working with Illuminator-PRO for a while longer, we discovered even more of its possibilities. Primarily, it gave us the ability to develop the Amfibia still store system, which is being used in a broadcast environment at TV2 in Norway. The still store is built around the concept of using a touchscreen as the control panel.

During the development, we performed several rounds of prototyping and user evaluations.

PUSH OF A BUTTON

Buttons along the edge of our user interface are designed to be large enough to simplify the concept of touching them at a display resolution of 640 x 480 pixels. Nine small images in the center of the display represent the actual stills stored in the system. They are, in fact, a reduced size version of the full frame image.

The lists used for playing the stills to the output are composed of standard Windows drag-and-drop operations. But it is in the Transmission mode where we use the capabilities of the Illuminator-PRO. When the user enters the Transmission mode, the first still gets pre-loaded to the preview output (the RGB output of the Illuminator-PRO).

Once the user presses the Take button (the red button in the lower right-hand corner), the still gets transferred to the program output. The transition time and type can be preset by the other red button. The transition effect is performed on board the Illuminator-PRO, by the internal mixer and DVE engine.

After finishing the single-channel version of the still store, which uses one Illuminator-PRO, we decided to undertake the challenge of combining two Illuminator-PRO boards together with two Toccata-PRO D-1 output boards from Miranda Technologies. When we asked the engineers at Matrox about this, they told us that we might succeed, but they had never actually tried this before.

We developed a way for the Illuminator and Toccata boards to communicate on the Movie bus. This is the digital audio/video bus on the top of the Illuminator-PRO that is also utilized in the Matrox Studio system. After sanctioning the project, the Matrox engineers provided us with full support throughout the development process. Once we developed the dual channel version, we installed two systems in Denmark Radio's provincial department in Aarhus.

KEEPING TIME

Since we began to devote our efforts to developing applications for use with the Matrox video products, we have also developed different sorts of timing applications for use at sporting events. These applications typically register the times of activities performed by the athletes, and display them on the video output. This gives the producer a signal to key over the live video.

The Matrox Illuminator-PRO plays a big part in MMI's work.

In addition, we have the first version of our clipstore. The clipstore is integrated with the same user interface as the still store system. The clipstore utilizes the Digital Video Building Blocks from Matrox, which enable us to record and playback live video from/to disk at a data rate of 6 MBps. This equals a compression ratio of 3.5 to 1.

The MMI development department combines people with different backgrounds, ranging from those with broadcast video experience to programmers and engineers. This combination results in a very competent and knowledgeable work team that is able to produce and implement innovative ideas.

As the products proved to be quite relevant to the broadcast field, personal contacts evolved into a number of sales channels. Currently, the products are sold through agents, nationally and abroad. To expand the international market, we are in the process of negotiating a contract with a London-based company with many years of experience in broadcasting.

The future vision of MMI is to further the use of desktop video technology in broadcasting. Upon reading recent technical literature, it becomes clear that the personal computer is here to stay in the broadcasting field.

Through the development of new processors and bus types, such as the Intel Pentium and PCI-bus, DEC Alpha, IBM PowerPC and Matrox Movie-bus, the personal computer has become capable of handling signals with the bandwidth required to satisfy today's professional video demands. In addition to new technology in the area of storage, we have a new challenge concerning image manipulation of computer generated video sequences. MMI intends to stay in tune with the latest developments in these areas to take full advantage of the newest technology for its products.

At MMI we aim to develop technologically advanced equipment but make it easy to use. We often find that the more capabilities the technology offers, the more difficult it becomes to operate. Our goal is to create a user interface so simple to use that the operators do not need to be trained. Ideally, a child will be able to operate the basic functions of a system after a half an hour of instruction.

This goal can only be achieved if the user interface is designed with human logic in mind. On a short term basis, we are continuing to develop the Amfibia, making it possible for the user to have a stillstore, character generator, hard disk video recorder and more in a single unit. The system will be affordably priced so that it is possible to purchase a unit for each location that requires these capabilities.

In the midst of our activities, we are always awaiting any new developments for the broadcast video market from Matrox, which will aid MMI in its continued growth. ■

Editor's note: Morten Kristiansen provides the computer engineering expertise to MMI while Soren Larsen provides the video experience. MMI can be contacted at telephone: +45-6617-9109; FAX: +45-6591-7044.

The opinions expressed above are the author's alone. For further information, contact Matrox in Canada (Telephone: +1-514-969-6037; FAX: +1-514-685-2853; e-mail: Janet.Matey@matrox.com), or circle ***Reader Service 75.***

USER REPORT

WFLA-TV Installs Pinnacle in a Flash

by Mark Schaefer
Director of Engineering
WFLA-TV

TAMPA, Florida

WFLA Newschannel 8 is a top station in the market. As its name implies, most of the station's efforts are directed toward news. We produce four-and-a-half hours of local news plus hourly CNN Headline News updates each weekday. Our schedule is slightly reduced on weekends.

The graphics department was flooded with requests for more and more news graphics in late 1992. We quickly came to the conclusion that we had to replace the Harris Iris II stillstore system. After holding several meetings with our engineering, production, graphics and news departments, we chose the Pinnacle FlashFile/FlashGraphics system.

INTEGRATING IN A FLASH

Our criteria were simple. The system had to be multi-user, friendly to operate, easily integrated with other equipment and fast enough to keep up with the pace of news.

We integrated a combination of Pinnacle FlashFile/FlashGraphics systems into our facility. We installed FlashFiles in the main production and master control areas, FlashGraphics in the two post production and graphics suites and a Browser station in the news department.

A system of eight Pinnacle workstations, all networked together, is the backbone of the WFLA graphics department. When we installed our system we chose the two video channel units. Since then, Pinnacle has developed a feature that gives the operator a third output channel.

The major difference between the FlashFile and FlashGraphics systems is that FlashFile is a high-tech stillstore, while FlashGraphics is the same stillstore with an advanced paint program. The paint program allows the user to cut, paste, crop, add text and much more. The systems are very similar in most other ways.

The Pinnacle was built with television production in mind. All video inputs and outputs are via BNC connectors. There are no DB-to-video-style jumper cables in the system. Remote control is available by either RS-232 or RS-422. The standard unit genlocks to black and accepts composite, component and RGB inputs. Additional linear key-ins and key-outs are standard for each channel. An optional digital 601 board is also available. A built-in video switcher allows the operator to switch between any of four inputs: two composite, a component or RGB, and a digital 601.

Simultaneous composite and component outputs are always available, allowing for connection to a production switcher and a component VTR. We do all video-level and timing adjustments in software. There are separate software setups for each input and output. The operator can assign multiple setup files to each I/O. This flexibility permits easy correction of non-standard video sources on any input.

From a technical standpoint, the system integration was a snap. We easily connected the Pinnacle to our existing equipment using the various I/O options. The composite I/O feeds the routing and production switchers and the component I/O goes to patch bays.

We keep any Pinnacle graphics transferred to or from tape, iNFiNiT!, Mac or graphics cameras in component mode. Keeping signals in this format helps maintain quality and avoid many of the NTSC artifacts.

Because all the workstations are on a common Novell network, it is easy to send or retrieve stills to and from the file server or any other workstation. Our system has approximately 5,000 stills on-line at any given time. There are several thousand others available on removable magneto-optical disk packs.

GRAPHICALLY SPEAKING

With the amount of news we broadcast, our graphics department stays busy. The more graphics we produce, the more graphics the news producers want. An average one-hour show contains between 30 and 40 graphics. We create some original graphics from scratch. We also design many from a standard format, which we pull from our library.

Once the still is on the screen, we can invoke the paint program and make any changes necessary. We can do something as simple as change the slug on the still or as complicated as resize and rebuild the entire image. All of these functions are easily accomplished using the tablet on the FlashGraphics system.

FlashFile is one of the best systems on the market for recall. Once the news is on the air, we have several options for recalling stills. We put stills into a sequence list and can call them up in order from the tablet, the keyboard or a Shot Box. If the show format changes and stills have to be rearranged, it is a simple matter to tag the affected stills and move them around in the list. If breaking news occurs and the producer calls for a still that is not in the list, the entire library can be searched by key words or fields. Once we find the still, we can quickly call it to air.

Rebecca Johnson, WFLA's senior graphic operator, says of the system, "Without the speed and versatility that the Pinnacle gives us, our graphics look would suffer. Whether it is creating, storing or recalling, we have to be able to do it all and do it with speed and accuracy."

WFLA-TV uses the Pinnacle FlashGraphics system almost exclusively for news.

Pinnacle has been great to work with from an engineering standpoint. Because we purchased one of the original systems and did a lot of beta testing, we certainly had some bumps and bruises. As with any computerized system, we had software problems, but the Pinnacle engineers and product support staff listened to us and acted to correct these problems. Pinnacle listens to its customers. Its staff does not just say "This is how the system was designed and it cannot be changed." Some of the current features on the FlashFile product were conceptualized in the field, many at WFLA. In my opinion, Pinnacle is a customer-oriented company. ■

Editor's note: Mark Schaefer is director of engineering at WFLA Newschannel 8, a Media General television station. He started at WFLA in 1981 as a maintenance technician and was promoted to director of engineering in 1994. Mark is an active member of SMPTE.

The opinions expressed above are the author's alone. For further information contact Pinnacle (telephone: +1-408-720-9669; FAX: +1-408-720-9674) or circle ***Reader Service 60.***

USER REPORT

Snell Makes Magic At NDTV

by Rahul Deshpande
Systems Manager
NDTV

NEW DELHI

NDTV is India's foremost production house, employing more than 375 people. With a strong commitment to high-quality graphics, we are proud to be one of the first users of the Magic DaVE digital video effects system from Snell & Wilcox.

NDTV is already using Snell & Wilcox equipment, with a number of NRS30 noise reducers and Video Brick units already installed. A range of state-of-the-art equipment includes products from Quantel and Avid, numerous Betacam machines, Sony studio and OB cameras, a Steadicam unit, and numerous other systems. NDTV also has an extremely sophisticated newsroom using Autocue's NewsMaker software for live news production.

NDTV produces news programs called "Tonight" and "Headlines" several times per day, as well as "The World This Week" each week, and a variety of other news and financial programs. We also do capsuling for MTV and produce news capsules for a number of European channels.

Magic DaVE was the best cost-to-performance DVE/switcher on the market, and it virtually matched the performance of much more expensive systems. In addition, the features it offered and its user-friendliness were real attractions, especially as NDTV needs to use them in edit suites working to tight deadlines producing news stories, which is a constant race against time.

Magic DaVE offers 8-bit, 4:2:2 processing throughout. It includes a range of two-channel effects that are made available on a single channel. These include dual-source, double-sided page-turns, push-ons and push-offs. Other effects include quad peels, 3D rotation with perspective, various image modulation effects, such as flag waves and ripples, dual light sources, mosaic, solarization and color correction. An optional advanced wipe generator provides more than 60 patterns with trail and sparkle options and image texturing.

There is also an optional background combiner that provides a third live input source for use as a background. Other options include a trail store for video trail and sparkle with texture control and modulation, and a downstream keyer with lift gain and transparency control.

The system's four DVE channels can be controlled from one switcher panel, allowing us to operate the system from several different rooms. Inputs can be composite or component analog, and full synchronization is provided for all inputs. For interfacing composite signals, Magic DaVE provides a proprietary Gate system for a sharper separation of luma and chroma components, bringing composite signals up to the quality of component.

Snell & Wilcox also resisted the temptation to design the user interface as a mouse-driven "virtual keyboard" on a computer screen. Instead, there is a full-featured keyboard with joysticks, rollbars and all the other tools we have grown accustomed to.

The contract with NDTV was set up through Snell & Wilcox's Indian distributor, PRAMAN. Six Magic DaVEs will be installed in the New Delhi production facility, while other units are to be installed in edit facilities in Bombay, Madras, Bangalore and Calcutta. ■

Editor's note: Rahul Deshpande entered the video industry seven years ago and joined NDTV last year. He oversees numerous installation, commissioning, training and operational aspects of the facility.

The opinions expressed above are the author's alone. For further information, contact Snell & Wilcox in the U.K. (telephone: +44-1730-821-188; FAX: +44-1730-821-199), or circle ***Reader Service 135.***

USER REPORT

ElectroGIG Delivers Realism

by Ben Liebrand
Owner
Ben Liebrand Audio Studio

WEURT, The Netherlands

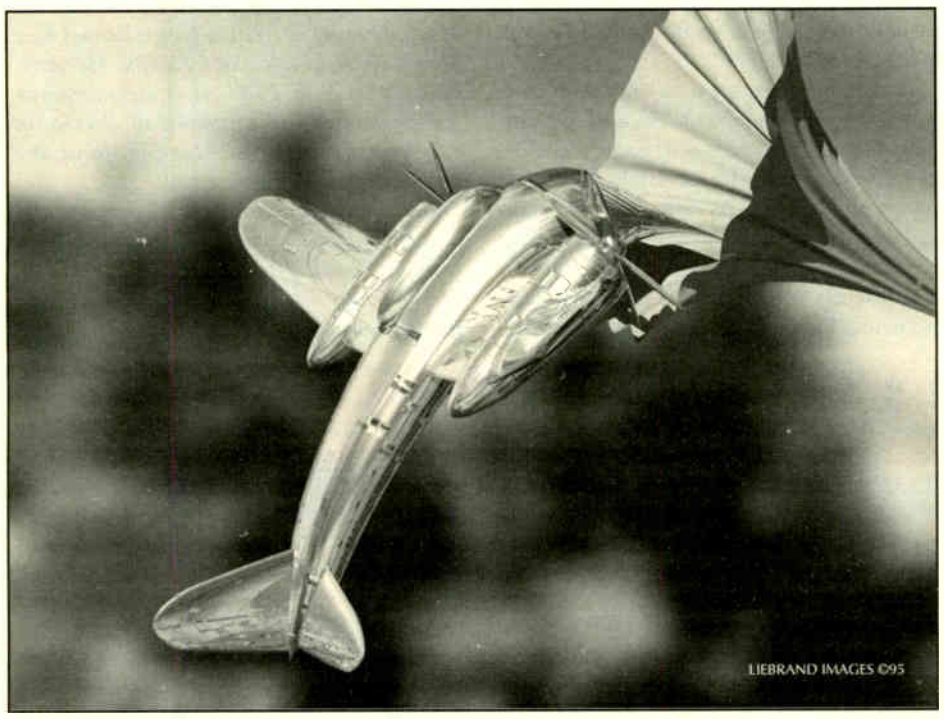
As a producer and mixer in the music industry for many years, there came a time when I began to feel the need to branch into new areas. This desire was brought to the surface in 1989 after playing, producing and mixing my own solo album, Styles, and then creating the artwork too.

What followed was a journey through the numerous programs available for 3D modeling. I now work on a Silicon Graphics workstation with ElectroGIG's 3DGO as my main 3D modeling and animation tool.

SOUND AND IMAGES

I believe there is a certain emotional feeling when experiencing something beautiful and impressive. As with music, which should have a drive and a richness in sound, 3D images should have that same kind of feel and sense of brilliance, dynamics and power to convince.

What makes 3D images realistic are the imperfections as they appear in the real world. Dirt, smudge and a certain randomness ensure that a scene does not have that typical artificial look that is so common in 3D productions. Also, the consistency in detail throughout an image or animation greatly enhances the credibility of the work. Finally, a great idea and a sense of humor are essential for creating the best possible work.



Ben Liebrand used 3DGO's 3D capabilities to create this image.

ElectroGIG is a solid modeler. Although a polygon modeler has advantages in certain fields, the perfection of working with solids is a pleasure considering I never have to worry about facets or curves that appear dented due to lack of resolution in the number of polygons.

A surface, sphere or curve is always smooth in the 3DGO system, no matter how far it is zoomed into a scene. Also, the possibility to not only use Boolean operations but also to animate them is another advantage.

When conventional primitives, rotations, extrusions or patches are insufficient, 3DGO has several alternatives. First of all, there is NURBS modeling (Non-Uniform Rational B-Splines). There is also Sculpt, which is a sort of a Meta-blob-form modeler with an important difference from other blob-modelers: apart from spheres, it can be used with other primatives, like cubes, cylinders and cones.

ORGANIC MODELING

Organics complete the modeler selection with the possibility of modeling and animating all these various forms. Particles are also included, as are force fields in the form of "flowmotion." All different forms of modeling have the possibility of performing Boolean operations on each other.

When combined in a scene, all these items are then ray-traced. This method is time-consuming, but it delivers the best possible quality. ElectroGIG excels when it comes to materials like metal and glass.

Reflections can be created through tricks. They look adequate, but again there is the question of credibility. Although an image created with fake reflections might be suitable, it still lacks a certain quality to make it look convincing. And although the average viewer probably cannot tell exactly what is wrong, he or she will have that uncertain feeling.

Working as a music producer for more than 13 years, I have recorded numerous expensive string and horn sections. Brilliant solos were recorded, and lots of tracks were filled with riffs and melodies during many expensive hours in the studio. However, if a certain solo or a complete section did not add to the final production, it was muted and never heard again. If a four-minute, US$4,000 string section works best if only used in a small 15-second sections in the background, then that is the way it should be.

The same is true for 3D modeling. I have seen a lot of artwork ruined by improper lighting caused by the fact that people are afraid that some detail in the image or some part of the hard modeling might be overlooked. If getting the right atmosphere means that considerable portions of the image are close to black, in a fog or hardly visible at all, so be it.

Using a general ambient light to enhance the dark portions of an image is about the worst thing anyone can do. It makes all shadows flat and causes an image to lose a lot of its dynamics. When lighting a scene with a single light source, there are areas where shadows are cast that are virtually black. When ambient light is added, the shadowed areas are brighter, but detail is lost on the remainder of the image.

A nice solution is to emulate the real world by using the sun as one light source and the sky as another. Of course, the sun should be slightly yellow in color and cast shadows, while the sky light source should be slightly blue and positioned straight over or slightly opposite the sun. The result is that the shadow areas will still have detail and a slightly blue cast. Areas that are equally affected by both light sources will produce the same color as if they were lit by a white light source, while the sunny side will still have the slightly yellow cast. Adding a little specular and some amount of reflection will add a sense of realism to the image.

Doing artwork for record companies is a lot of fun because if it is good enough, the still on the sleeve will become the theme for the video or commercial. This is the moment when the still comes alive. The original models are loaded back into the computer and animation can begin.

In ElectroGIG, movements are as smooth as silk or as sharp as your computer system can handle. Curves are as bezier as you can get them, and points can be edited until your creation is as you imagined it.

REAL MOVES

Camera movements are related to the real world. Track moves you back and forth along a track and Pan pans the way it should be done, always relative to the position you are in. If you already happen to fly on your side through your favorite maze, pan will work as you expect it to. 3DGO will recalculate the actual amounts in roll, tilt and pan and will be ready in the animation layout for you to keep or edit. Tilt, roll and zoom work in the same units as a real camera would. Fisheye, panoramic, 360-degree or basic pull-the-universe-inside-out views are also available.

The user also gets to choose the resolution, as well as the quality at which to render, with or without a matte, to Targa or tiff if extra space is needed on the hard disk. Utilities are supplied for file conversion, renumbering and renaming batches and viewers for stills and animations.

Everyone can make a logo fly. So what will get you that next job? Will it be because you give a client what he wants, or what he needs? To be a success, you must know your client, know his business; and if a job would benefit more from something other than a 3D animation, tell him. You might miss out on a job, but your professionalism will pay you back in the end. ■

Editor's note: Ben Liebrand has spent most of his professional career in the music industry, producing and mixing the music of Sting, Phil Collins, The Art of Noise, TLC and Salt 'N' Pepa.

The opinions expressed above are the author's alone. For further information, contact ElectroGIG in the Netherlands (Telephone: +31-20-521-7300; FAX: +31-20-622-6801; e-mail: http//www.electrogig.com), or circle ***Reader Service 40.***

BUYERS BRIEF

Questech Ltd. has introduced a real-time morphing option to its popular Charisma TEN DVE system.

With the upgrade, morphing, the ability to smoothly convert one image into another, can now be performed in minutes, rather than hours. The system will allow special effects artists to quickly render sequences and rearrange or alter the results without tying up a graphics suite for hours.

The system works by displaying the "before" and "after" images on the screen. Control points are first marked on the original image, and then corresponding points are marked on the final image. The transition can then be viewed in real time.

"This new morphing option on Charisma TEN will not only save hours of pre-production time, but give program producers greater flexibility as morphed images can be created and modified at will," said David Ackroyd, Questech's sales manager. "When combined with the extensive warp and CLEO effects already available on Charisma TEN, we can justly claim that it is the most powerful DVE in the world."

Questech currently demonstrates the morphing capability using a dual-channel Charisma TEN and the Questech SSVR solid-state video animator. However, any RAM- or disk-based recorder can be used. Because it is a real-time system, it is also possible to record an effect on tape at 25 frames per second.

The system is currently being installed at North West Imaging and FX in Vancouver, Canada.

In addition to the RAM recorder, Charisma TEN interfaces with a number of production and post production systems. For production, a wide range of mixers from BTS, Grass Valley, Panasonic, Alpha Image and Thomson are available. The mixer controls the Charisma for sequence selection, run length, triggering and GPI, while the DVE controls the mixer's auxilliary bus for source selection.

The system itself operates in PAL and NTSC in 4:3 and 16:9 aspect ratios. In addition to morphing, it provides numerous effects, such as 3D CLEO and warp moves (page turns). The system uses frame-based supersampled interpolation with 10-bit serial digital inputs and outputs. Three video and key inputs are provided with the Advanced Input Mixer (AIM). An input matrix provides program, preset, background and key sources, and these can be mixed, defocused, color-corrected, chromakeyed and pixel-switcher prior to 3D manipulation and downstream mixing to a live background. Also available are multi-freeze effects that allow each channel to have a defocusable drop-shadow.

For further information, contact Questech in the U.K. at telephone: +44-1734-787-209; FAX: +44-1734-794-766, or circle **Reader Service 116.**

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- FTB - Presets fading to black and reopening of PGM.

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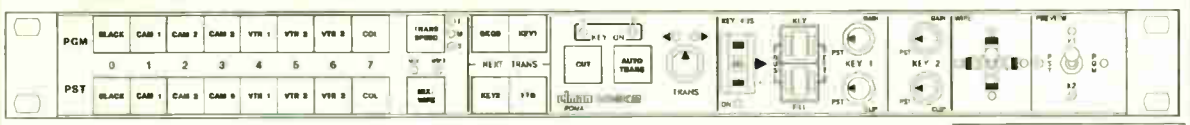

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MARKETPLACE

TIME COMPRESSION

Orban has added a new time compression and expansion module, known as Time-Fit, to the DSE 7000 digital audio workstation.

The system allows individual tracks or entire stereo mixes to be compressed or expanded up to 25 percent without affecting pitch. The new system requires no additional hardware and is available with Orban's Version 5.0 software release.

Other features in the new software are pitch-shifting, two-octave vari-speed copy, and two-octave vari-speed play that keeps a constant output sample rate.

For further information, contact Orban in the U.S. at telephone: +1-510-351-3500; FAX: +1-510-351-0500, or circle **Reader Service 1.**

WIDE ANGLE LENS

Canon has introduced the J9aX5.2B.IRS/IAS lens that provides the widest angle with the shortest minimum object distance of any lens on the market.

With a focal length of 5.2 to 47mm (94mm with 2x extender), the system uses Canon's improved internal focusing (IFplus) technology to provide wide angle shots of 5.2mm with little distortion. The unit can also macro-focus to 5cm.

Also available is an add-on wide converter, the W83, that provides an extremely wide angle of 4.3mm. This provides the J9zX5.2B with a horizontal angle of view of 90 degrees, compared to 85.4 degrees without the adapter.

For further information, contact Canon Europa in the Netherlands at telephone: +31-20-545-8905; FAX: +31-20-545-203, or circle **Reader Service 36.**

DIGITAL VIDEO ANALYZER

Advanced Audio-Visual Systems (AAVS) has released the DSA309 digital video analyzer that improves on the key features of the ground-breaking S310 unit.

The new system provides a more ergonomic operation and offers greater synthesis between the oscilloscope and the computer.

Occupying a half 3RU, 19-inch rack space, the system provides a touch-screen display and offers the means for interfacing and data storage. And like the S310, the unit offers complete error detection and handling and instant notification if a parallel or serial signal does not conform to accepted standards.

For further information, contact AAVS in France at telephone: +33-1-4988-3419; FAX: +33-1-4857-3358, or circle **Reader Service 3.**

AUTOMATION SYSTEM

The D-MAS multichannel automation system from **Drake Automation Systems** provides fault-resilient control of broadcast transmission gear in an architecture that can operate simultaneously in real-time multichannel output.

The system executes schedules in real time with the ability to edit schedules up to air time. It also controls broadcast equipment, such as presentation mixers, disk recorders, cart machines and VTRs, with a switching accuracy of 100 milliseconds.

A basic system consists of two automated controllers, one traffic controller and system software.

For further information, contact Drake in the U.K. at telephone: +44-1707-333-866; FAX: +44-1707-393-530, or circle **Reader Service 5.**

FRESNEL LIGHT

Sachtler's new line of Director 1.2 and 2.5 kW compact daylight fresnel lens luminaires feature a durable housing and a new precision focusing mechanism.

The housing is a corrosion-resistant lightweight aluminum diecast with a sturdy hoop-guard for outdoor use. The focusing system features linear ball bearings that ensure proper operation without jamming or slipping, regardless of temperature.

The focus display is easily read from a distance, while a connector box with switch and igniter is mounted at the coolest part of the body.

For further information, contact Sachtler in Germany at telephone: +49-89-321-58242; FAX: +49-89-321-58227, or circle **Reader Service 35.**

THREE-CHIP CAMERA

JVC is delivering the new KY-27CE, three-CCD two-third-inch color camera that delivers pictures comparable to the frame-interline transfer (FIT) standard but without the cost.

The camera provides a sensitivity of f/9 at 2000 lux with 0 dB gain. With JVC's LoLux dual pixel readout sampling technique, the camera is capable of operation at a minimum of 1 lux.

Resolution is 800 lines and a signal-to-noise ratio of 61 dB provides virtually noise-free images.

Other features include a 1.5-inch viewfinder with 600 lines of resolution, and a full Auto-Shooting facility with manual override.

For further information, contact JVC in Japan at telephone: +81-426-60-7560; FAX: +81-426-60-7569, or circle **Reader Service 19**.

ANIMATION SOFTWARE

The new Animator Version 7.0 from **Alias/Wavefront** is a full 3D package with modelling, animation and rendering capabilities.

Features include a new user interface with floating tool palettes and user-defined tool shelves, and programmable plug-in support that allows the addition of tools, menu items and dialog boxes for direct manipulation of data structures.

The system also greatly speeds up the animation process with the ability to cut, copy and paste complex operations from multiple animations. For rendering, the system features advanced motion blur and lower anti-aliasing settings.

For further information, contact the company in France at telephone: +33-1-4492-8181; FAX: +33-1-4492-8182; e-mail: Valerie Gagliano@aw.sgi.com, or circle **Reader Service 41.**

ROUTING SWITCHERS

The new Via line of routing switchers from **Leitch Technology** are available in compact 32 x 16 and 32 x 32 configurations for video, stereo audio, timecode, AES/EBU and serial digital video applications.

The system features front loading signal routing modules, removable cassette power supplies, PSU redundancy, diagnostic alarms and standard RS-485 and RS-232 ports.

The video router has a bandwidth of 100

MHz, while audio is available at 200 kHz for transparent signal processing.

For further information, contact Leitch in the U.K. at telephone: +44-1256-880-088; FAX: +44-1256-880-428, or circle **Reader Service 6.**

AUTHORING SYSTEM

The TARGA 2000 digital video authoring system from **Truevision** is designed for PCI-based Windows 3.1 personal computers. The system provides non-linear editing, 3D animation and multimedia development.

The system is a single-slot, Video-for-Windows compatible system that digitizes, compresses, stores, edits and plays back digital video. Video is 60-field NTSC or 50-field PAL with CD/DAT-quality stereo audio on-board.

Also included is 20 MB of video processing memory and Truevision's DVR compression architecture that by-passes the host computer for video I/O. Instead, the system processes signals on a shared 20 MB RAM buffer that reduces data transfer requirements.

For further information, contact the company in the U.S. at telephone: +1-408-562-4200; FAX: +1-408-562-4056, or circle **Reader Service 23.**

SWITCH-OVER UNIT

Italy's **Elettronica Industriale** has developed an automatic audio/video switch-over unit that allows intelligent commutation of two television microwave systems.

Audio and video signals are directly connected to the switching system, which analyzes characteristics, such as signal-to-noise and synchronization, and decides which is to be used.

The system features modular construction, real-time LED monitoring, rapid switching and low power consumption.

For further information, contact the company in Italy at telephone: +39-39-73981; FAX: +39-39-483-395, or circle **Reader Service 37.**

CART MACHINE

Introduced at Montreux, the Smart-Cart from **Panasonic Broadcast** plays two channels from a single-rack space in a totally automated system.

The system features a combined tape- and disk-based system available with the Panasonic D-3 and D-5 lines, as well as M-II and S-VHS decks. A DVCPRO system will be available shortly.

Smart-Cart can be configured with library bins to accept small and medium-sized cassettes in a side-by-side configuration, effectively doubling capacity.

Panasonic is working with Tektronix to foster use of the Profile disk recorder for spot playback.

For further information, contact Panasonic in Japan at telephone: +816-905-4984; FAX: +816-908-5969, or circle **Reader Service 55.**

USER REPORT

Chyron Takes TCI to iNFiNiT!

by Peter Douglas
Vice President, Operations and Engineering
Tele-Communications Inc.

LITTLETON, Colorado

The National Digital Television Center is a full-service facility that offers network origination, master control rooms, traffic operations, real-time video compression, uplinking and downlinking, subscriber authorization, production and post production.

Tele-Communications Inc. (TCI) is a worldwide cable company that has its network origination center in Colorado. It serves as a digital production center and uplink site to cable satellite sites throughout the U.S. TCI's National Digital Center currently uplinks more than 100 signals for DBS and network clients including Primestar, Encore, Fox and Your Choice TV.

With such a varied clientele, we had to determine what the majority of our customers wanted in terms of products. The answer came quickly and repeatedly — the Chyron graphics system, whether our customers were cable television programmers or producers.

CONSISTENT RESULTS

It is important to producers and directors that the look of the graphics remain consistent. They feel assured of consistency with Chyron equipment. We attempted to include other manufacturers' equipment in our facility, but that did not meet with approval from our clients. They expect Chyron equipment, and we do not want to disappoint them.

We use Chyron equipment for everything from network logo insertion to generation of graphics for the nationally syndicated "George and Alana Show." We have seven Chyron iNFiNiT!s with triple transform in our live control rooms and studio operations. We have six dual-channel MAX!>s in our edit bays for the production of graphics and titles for cable and pay-per-view channels. And we use 11 single-channel MAXINE!>s in our air uplink facility for graphics and titling.

Because of the almost universal acceptance of Chyron equipment, we are able to meet the needs of a wide variety of clients while maintaining a consistent equipment base within the facility. We can even network the units together for operational flexibility.

Our customers depend on Chyron to produce unique and complicated titles and effects. For example, we recently needed to create a look for a new cable channel called tv!, which promotes other cable channels. The look incorporates multi-effects and layering read effects. In addition, it requires the use of live triple transform effects twice an hour.

Those kind of effects were once done in post. When we purchased an iNFiNiT!, we moved tv!'s graphics creation to the master control room — a much more cost-effective solution. Chyron's graphics system may be the only one on the market that can create the graphics we need. The iNFiNiT!'s triple transform feature provides functions that were only available on multichannel digital effects units in the past. Moving these functions into a real-time master control environment frees up the post rooms for other work.

For Bud Sports, producers of worldwide sporting events, we created transform animation effects for the Olympic Festival, in which U.S. Olympic athletes compete against one another. Producing graphics for a series of worldwide sporting events requires product consistency like the Chyron.

FEATURES THAT DELIVER

According to one of our free-lance graphic artists, Kay Schumacher, prospective clients once asked her if she "ran Chyron." Now they ask her if she "runs iNFiNiT!." The standard graphics system has now moved from the Chyron 4100 and 4200 to the iNFiNiT!.

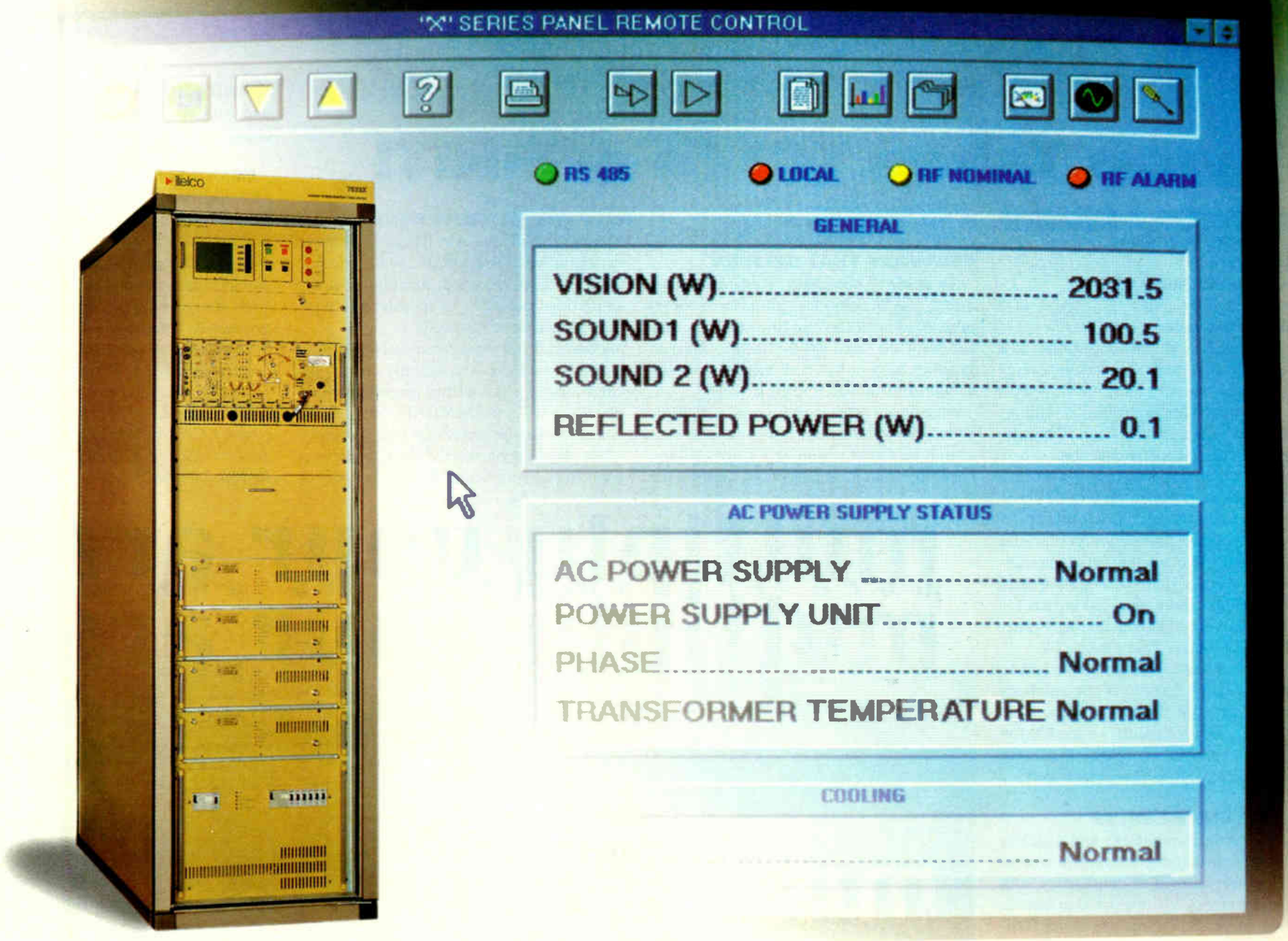
Schumacher often uses Chyron's "Font by Wire" on-line service. If a particular font cannot be found within TCI's own library, she looks it up in a catalog and receives the desired font via modem. Schumacher also uses iNFiNiT!'s "Alt Record" feature extensively. "Alt Record" recalls the last page the user recorded, meaning that the artist does not have to re-enter the page number that he or she needs.

Schumacher has praise for several of Chyron's graphics products. She recently created the entire look of a TCI internal production in just two hours using the MAXINE!. She said the unit is very flexible and affords tons of options.

She depends on the iNFiNiT! to deliver what her clients want. "In the case of the iNFiNiT!, if I know I will be working on one with all the trimmings I can give the client anything they ask." ■

Editor's note: Peter A. Douglas, vice president of operations and engineering at TCI, has been at the Littleton, Colorado, facility since it was established in 1993. Douglas designed the facility, including master controls, post production and studios. He currently supervises network and production operations. Douglas has been in television broadcasting since 1971 and is a certified Senior Broadcast Engineer.

The opinions expressed above are the author's alone. For further information, contact Chyron (telephone: +1-516-845-2041; FAX: +1-516-845-3895), or circle ***Reader Service 25.***



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USER REPORT

Dean Street Runs Hal Express

London Facility Takes Advantage of Numerous Upgrades

by Peter Laverack
Facility Manager
Dean Street Post

LONDON

Dean Street Post has the pleasure of being the first facility in London to take delivery of the Hal Express, complete with a Paintbox Express.

As a facility manager who had become literate with Flash Harry and Harriet, I can say I am very pleased with the Hal Express. My choice of what to purchase was made more difficult by the fact that we have a sister company called The House that had already acquired an Edit Box. As I work closely with The House and utilize the facilities there, I had to consider the broader view across the group.

POWERFUL COMBO

As a 10-bit graphics tool capable of high-quality compositing, the original Hal/Paintbox combination has enabled us to take better advantage of our telecine room and digital edit suite, both of which are full 10-bit digital quality. In simple terms, we can bring material in on the telecine, cut on an Avid, autoconform in the digital suite and deal with special effects on the Hal, loading either the edited clip or selected rushes, depending on the nature of the job.

For the uninitiated, this is Hal with much improved software and faster processing.

Hal worked well for me because I needed to have at least a Paintbox facility to attract commercial work. In addition, I acquired the ability to animate artwork for title sequences, replace packshots, deal with problem chroma-key and have another capabilities outside the digital suite to multilayer high-quality images. I could neither afford, support nor fully utilize a full disk editing system like Henry.

STRONG SELL

During the first year of using the Hal, I discovered that it was fairly unknown in London among mainstream commercial people. Quantel had spent a large portion of its effort marketing the Henry, so I realized It would be a difficult job selling the Hal.

However, I soon discovered that the corporate market was familiar with Hal as a graphics tool. It was also being used at several broadcast facilities in London. I marketed the Hal to commercial clients easily once I got them to our facility and made them understand the fact that Hal cannot autoconform. Instead, we use a different route, via the edit suite to autoconform first.

As my client base grew, the majority of clients were happy with the Paintbox and graphics tools. However, those who had worked on the Henry found that Hal's editing menu was slower, more clumsy and not as user-friendly when working from a master that had to be rebuilt once the Hal work was completed. In all honesty, these issues were the main criteria raised by clients.

And so it was that when I first saw the Hal Express demonstration, I was instantly impressed. For the uninitiated, this is Hal with much improved software and faster processing. I also discovered that it included improved editing facilities, four-point tracking and many of the Henry features, including background suppression to aid problem chroma keys.

I have every faith in Henry. It is a formidable piece of kit. But the secret to marketing the kit you have is the ability to be fully conversant with the competition. I also have to judge the best possible equipment for each storyboard that I quote, and we are building our reputation as a fairly new group of facilities by educating clients of the power of systems such as Hal Express. ■

Editor's note: Peter Laverack has worked at numerous post houses in the U.K., gathering experience on a number of high-end systems.

For further information, contact Quantel in the U.K. (telephone: +44-1635-48222; FAX: +44-1635-31776), or circle ***Reader Service 61.***

USER REPORT

CGC Moves Ahead with Getris

by Erro Verschoor
Managing Director
Cyber Graphic Center

HILVERSUM, The Netherlands

Cyber Graphic Center (CGC) is a Dutch company that designs and creates 2D and 3D computer graphics. We offer customers the possibility of renting an entire graphics department on an as-needed basis.

In addition to graphics, we also take care of directing and editing for everything from small show promotions to total station identifications. We are not a very large company, but we are well-known in the Dutch TV market.

STATION LINE-UP

Our principal clients are the main TV stations in the Netherlands, such as SBS6, The Music Factory, TV10Gold, Tros, RTL 4 and 5 and several production companies. We are also involved in starting regional commercial TV stations, as well as a new European station.

Our share of the work obviously has to do with the creative side. Next to our 3D Silicon Graphics machine, we use a Getris Eclipse with three layers, one of which is a DVE, and almost all the software that is offered.

We only work in digital. In our Hilversum facility, the system is hooked up to a six-minute Sierra Design Labs disk recorder, and we have joined forces with several companies that give us a strong position in the high-end production market.

We also maintain a facility in Amsterdam where we have Eclipse running with a 10-hour Tektronix Profile server and two Betacam decks. It seems that everyone in Holland is switching to digital, so we also plan to introduce Digital Betacams.

I first saw the Getris system in Montreux and was very impressed with its performance. From my professional point of view, I think the Eclipse offers a very different approach compared to other systems. While this means that operators must become accustomed to a new way of doing things, the speed and quality of the system is well worth the effort.

The best thing about the Eclipse is that we get direct results, so we instantly know how a particular sequence will look. We can perform up to 11 animations, and because of the real-time animation capabilities, these sequences can be started as late as three hours before air-time. In essence, we prepare a background and play in Digital Betacam footage, and then make the animation in the several layers that are left over. At the same time, we can record it and forward it to the editors in time to be aired.

GRAPHIC DISPLAY

We provide the entire computer graphics design for four TV stations now, devoting one of our graphics teams totally to SBS6, the Amsterdam wing of Sweden's SBS network. All together, we have five designers, some of whom are experienced directors of music videos and leaders.

With such strong interest in graphics among area television stations, CGC is preparing for significant expansion. We currently have three designers doing graphic work for three stations, and we hope to be up to 10 people next year.

It appears that graphics creation is going to be increasingly real-time oriented in the future. It is already possible to do amazing things on the Mac, but high-end companies will improve their capacities at the same time. In two years' time, I expect the Mac will be able to perform the same as the Eclipse does today. But then again, Eclipse will make even further advances in speed and ease of use.

Computer systems and those based on traditional videotape machines will integrate more toward the editing process, and I expect to see 3D systems become more compatible with these systems. ■

Editor's note: Erro Verschoor founded his first production company, R.O Productions, in 1989 after previously working at RTL 4 and 5 in Holland and Luxembourg. He founded CGC a year-and-a-half ago.

For further information, contact Getris in France (telephone: +33-7690-9777; FAX: +33-7690-7234), or circle ***Reader Service 38.***

USER REPORT

Parallax Advances to New Level

by Peter Moyer
Co-Founder
Digital Filmworks

LOS ANGELES

When I formed Digital Filmworks in early 1995, the goal was to take the tricks learned in the video domain and bring them into the film arena. However, there was a limited number of suitable tools that could make the jump from R/T D-1 effects to high resolution. After a lot of intensive research, we decided on Advance, the powerful resolution-independent vertical editing, compositing and effects system from Parallax Software.

PAST WORK

Two years previously, I worked with the Parallax Matador system on our first film project, The Fugitive. Matador was and still is considered the industry leader in 2D paint and animation software. It was an incredibly robust tool to have, offering huge benefits with the macro programming language and multichannel functions. Matador was supplemented with Elastic Reality for morphing and warping, and together they provided a complete effects solution. So during my investigation of the various options, Advance, the big brother of Matador for special effects and multilayer compositing, became an obvious contender.

I was already familiar with other high-end systems, but when I first saw Advance, I was extremely impressed. Advance is a logical system based on a flow-chart approach. It offers a vast array of image processing and multilayering tools, such as 100-point motion-tracking, color correction and a sophisticated 3D DVE with lighting effects. And being fully integrated with Matador, it provides the world's best 2D paint system.

When we began evaluating different systems, two of the main issues were how it would provide an advantage over competitors and how could those benefits be transferred to customers. The fact that Advance runs on any of the Silicon Graphics range of machines is the first attraction. The system provides the same features on an Indy as it does on an Onyx. The only consideration is the speed at which it runs. Therefore, the client does not have to be charged astronomical hourly rates for the use of a US$500,000 system.

Advance will run at real time on a four-processor Onyx, but it will also give incredible speeds on an Indigo2 with sufficient memory and running speed. A system running at 200 MHz with about 128 MB RAM is the optimum configuration for a single-processor machine. Advance is also completely resolution-independent. I do not have to reconfigure the system to go from video to film. Instead, image resolutions can be mixed to any degree within the same sequence. The only consideration is whether there is enough disk space to handle the file-size images.

Advance allows superior mask creation and keying, so these elements can be incorporated with absolutely no edging.

KEEPING CONTROL

Also, I have found Advance to give a unique level of control. Customers will invariably request various approaches and styles for their work, and the image proxies in Advance provide quick visualizations for changes in motion or color, for example. The overall flexibility of Advance is beyond comparison. Being able to see different combinations of effects before rendering is a very useful feature, especially if a client suddenly asks for the sync to be split by two frames, for example.

Advance provides two options for viewing and working on sequences. Simple editing can be performed in the clip manager where sequences can be cut, spliced, stretched, compressed and resized. More complex shots can be created using the Process Tree. A number of effects or layers can be added instantly without affecting any of the other layers. It can be as involved as necessary, and work can be done on an infinite number of layers.

However, the item that really differentiates Advance from a lot of comparable systems is the User Function Objects (UFO) feature, or plug-ins. The UFO feature allows proprietary algorithms to be installed in the UFO setup and plugged into the Process Tree. In effect, Advance has a limitless ability to be customized. The other systems I have seen are very much the same — the only thing that makes them different is the operator. But Advance is set apart because I can create an effect that is not available anywhere else. It makes my work unique.

In our TV and film work, we are often called upon to make realistic composites of difficult elements, such as smoke and lights. Advance allows superior mask creation and keying, so these elements can be incorporated with absolutely no edging. We used these techniques on the film Judge Dredd, where smoke, lights and digital rain were added to several scenes, some of which consisted of more than 16 layers.

GAME OVER

Most recently, Advance has been used on two TV shows requiring a lot of morphing and rotoscoping. We also used it for a computer game called Maximum Surge that consisted of 40 layers containing 3D, 2D and blue screen elements. We created the game switching logic in Alias PowerAnimator 6.0 and used Advance to composite the 40 individual CGI elements over live-action background plates, with blue-screen inserts added all in one pass. When we changed levels in the game, it was a simple matter to just change the blue-screen inserts, which were the second layer in the composite, to another background, keeping all the motion-tracking and sizing from the original intact. On many other systems, it would not have been possible to view the results immediately.

The next project to get the Advance treatment will be Warrior on Waverly Street, a new film to be directed by Manny Coto. I took this job with Advance in mind because it is going to need a lot of effects to give the feeling of fast movement. So motion blur can be employed, along with some new processes we will develop and add via the UFOs.

On a corporate level, Parallax Software's recent merger with non-linear editing giant Avid Technology promises exciting developments for their products. Already, the Spectrum project is underway, combining Matador and Advance for vertical effects and editing, and Maestro for D-1 uncompressed on-line editing. Being a Parallax customer now means that new opportunities will open for me. As progress is made with product design, my upgrade path will expand and my options will increase. Who knows in which direction we will turn over the next couple of years? The possibilities are limitless. ■

Editor's note: Peter Moyer has worked in real-time D-1 digital compositing for seven years.

The opinions expressed above are the author's alone. For further information, contact Parallax in the U.K. (telephone: +44-171-287-3626; FAX: +44-171-494-2822), or circle ***Reader Service 47.***

USER REPORT

TV2 Adds Character with Digital Graphix

by Dávur Isfeldt
Chief Engineer
TV2/Nord

AABYBRO, Denmark

A few years ago, a character generator for broadcast television was a very expensive unit because it was a powerful piece of hardware and software that was generally very difficult to use.

Today, it is possible to run a character generator on a powerful standard Pentium-based computer, which makes it very cheap and easy to use.

One year ago, we purchased a TypeDeko character generator from Grass Valley Group for our OB van. Grass Valley has since sold off its graphics and character generation product line to Digital Graphix, which markets and sells the systems and is continuing research and development of the line.

The reason we chose the Deko was that it runs on inexpensive hardware, mainly a standard computer with a frame grabber card and I/O for composite and component video. The software is a standard DOS/Windows NT operating system, which makes the system very easy to operate.

Another important reason was that we would have the same graphics lay out in the OB van as we have at the main station. All the graphics at the main station are created on a Graphics Factory from Grass Valley. When we want to use graphics in our OB productions, we make it on the Graphics Factory and export it to a standard DOS format, such as TIF or Targa. We can then use it directly in our Deko character generator.

In the TypeDeko, we also have multilayer functions. Even the Graphics Factory only has two layers. The Deko also has sequence playback and linear key dissolve between program and preview, allowing us to have a preview channel when we are on the air.

I think in the future, we will see more standard equipment like the TypeDeko in broadcast facilities. Powerful features at an inexpensive cost is a tough combination to beat. ■

Editor's note: Dávur Isfeldt was born on the Faroe Islands in Denmark and has worked in the broadcast industry since 1982.

For further information, contact Digital Graphix in the U.S. (telephone: +1-201-845-8900; FAX: +1-201-845-8063), or circle ***Reader Service 4.***

BUYERS BRIEFS

The Taarna 3D from **Discreet Logic** is a standalone paint system that allows animators and designers to paint directly onto 3D objects.

The system allows greater flexibility than 2D texture-mapping systems by allowing computer-generated objects to be created with surface attributes that match real-life models.

The system operates on any Silicon Graphics workstation.

For further information, circle **Reader Service 39.**

The Crystal Topas Professional 5.0 system from **Crystal Graphics** is a fully integrated broadcast-quality 3D animation package that offers additional features over the original Crystal Topas.

Included are unlimited network rendering and a host of functions designed to produce top-quality animations.

Although the system uses a Windows-like user interface, it operates in a DOS environment.

Also available is Crystal Topas for the Mac, with support for System 7.0.

For further information, circle **Reader Service 21.**

Aston Electronic Designs has introduced the MotifXL, which incorporates character generation, still storage and powerful new dynamics.

The system provides fast text rendering, full-screen images, a soft mask and standard animation moves.

It is also compatible with numerous other systems, allowing text and graphics to be imported and exported on disk or across networks.

For further information, circle **Reader Service 8.**

USER REPORT

Henninger Taps Sony DME-3000

by Jef Huey
Senior Editor
Henninger Capitol

WASHINGTON, D.C.

This is an interesting town for an on-line editor. There is a yearly crunch of political ads always looking for new ways to fly in newspaper headlines. The majority of documentaries produced here may need just a little fixing, but the promotions can get quite complicated. Throw in graphics compositing, local spots and industrials and every day is different.

MAKING THE SWITCH

This past spring, Henninger installed four Sony DME-3000 graphics systems to better handle this variety of edit room effects. Two years ago, when the company planned a major conversion of two of our four edit rooms to digital, we were looking for a unique twist: machines that worked in both D-2 and D-1. To be feasible, this meant finding equipment that could switch between modes.

Sony Electronics recently showed us equipment that could make this shift with a couple of board swaps and switch throws. We promptly purchased two DVS-8000C switchers, along with various extra boards and peripherals.

The DME-3000 seemed to fulfill our wishes in terms of digital effects. It had 10-bit frame-based processing, all the latest effects and the ability to switch between composite and component digital. Unfortunately, the DME-3000s were not yet available, so we acquired two DME-5000s that fit most of our needs.

A year later, the switchable edit rooms are a success and demand has increased. A new promotion contract required more effects power than the ADOs in our analog rooms could provide. Our operations department was struggling with "that session needs page turns" conflicts.

Luckily, Sony called just at that time. The company told us the DME-3000s were ready and they cost less per channel than the 5000s. We arranged a trade-in and soon received four DME-3000s with all the options.

The time we needed to learn the system was minimal because of our experience with the DME-5000s. Controlling the system becomes intuitive once you have worked with it for a short while. Though the operator's manual is very basic, training and support from our local Sony product specialist has been excellent.

SONY SKIES AHEAD

Some of the DME-3000's features were immediate hits, such as a promo graphics package that can greatly defocus and flatten the contrast of the opening scene of each spot. We also use defocus extensively for text and background treatments.

One of the system's strengths is its standalone control panel. The central trackball/ring arrangement seemed awkward at first compared to the old joystick. But after a thorough tour of the panel and VGA-displayed menu structure, the precise control of this different-looking panel becomes addictive. A VGA monitor for menus gives us more information than a traditional LED strip or monochrome CRT. The system allows us to see two completely different menus (recursive and sepia) and to switch between the two to make adjustments. The use of color helps us navigate through the many adjustment choices.

We were impressed by the DME-3000's ability to "rack focus" a shot in post production. Contrast control can sometimes enhance images that simple time base corrector (TBC) tweaks cannot. Blurring a key signal separately from the fill has improved marginal matte elements.

The non-linear option is a useful tool. Besides the usual page turns, ripples and waves, the DME has some new tricks. I have been using Mosaic Glass, which gives the effect of looking through an old window pane, for text distortions.

Especially useful is the adjustment range on all the non-linear effects. We are getting great organic looks by combining various effects such as defocus, moving mosaic glass in non-linear and adding colored lighting for realistic water reflections.

One of the system's strengths is its standalone control panel.

IN MOTION

The DME-3000 offers flexible motion paths and good timeline editing. The system allows the user full control of spline, tension and continuity, although the user manual lacks an explanation on how to use these features. The user is left to experiment.

I built a complex tracking move that I use to customize the graphics open for National Geographic International Specials. Until recently, building this open was done slowly in a separate HARRY session. Now it is a quick part of the on-line. With the DMEs talking to the digital switchers and our CMX Omnis running the DME timelines like a VTR, graphics sessions are much more productive.

The Wipe package is like having another M/E bank. The various patterns can be used to create, crop or selectively adjust contrast of key shapes without using the switcher. This is great for problem-solving, especially in our analog rooms. We only wish that defocus and blur interacted with the wipes.

The system produces high-quality images, and the expansion for fixes has held up well. The only problem with reduction has been in some film-originated scenes. Certain motion patterns confuse the adaptive processing mode, forcing a switch to field-based processing for these scenes.

The advantages of having four DME-3000s in our facility are familiarity and flexibility. Learning only one effects box is great when an edit room starts in NTSC D-2 in the morning, moves on to NTSC D-1 at lunch and then switches to PAL D-1 in the afternoon. Moves stored on disk run transparently in any standard, which makes it much easier to integrate graphics into shows of different formats.

One drawback to the product is the system that handles source and target space. If an image is placed numerically in source space and inserted as a keyframe, the numbers are translated to target space and "disappear" in source. For this reason we rarely use source, or we work purely by eye.

The future for the DME-3000 looks promising. Sony is spending time and resources enhancing the system and continually updating the software. They are considering some interesting new options. The adaptability of these devices allows us keep up with the wide variety of work our clients bring to us. ■

Editor's note: Jef Huey has been an editor since 1986 at Henninger Capitol, formerly Capitol Video, which provides on-line, off-line, graphics and general post problem-solving solutions to a host of clients.

The opinions expressed above are the author's alone. For further information contact Sony (telephone: +44-1256-55011; FAX: +44-1256-474585), or circle ***Reader Service 111.***

USER REPORT

CTV-12 Strikes Pro Video Gold

by Stephen Weber
President
CTV-12 Corp.

CEDAR CITY, Utah

CTV-12 Corp. specializes in training, corporate and promotional videos and has produced more than 500 commercials that have run locally and regionally. We place commercials on ESPN, CNN, TNT and CTV-12. In 1992, the corporation launched Channel 12, a local cable TV station that cycles information and high-quality graphics 24 hours a day, seven days a week.

At the time, we used an Amiga 2000 computer to cycle graphic ads consisting of colored backgrounds (but no pictures) with text showing public service announcements, cars for sale and school information. We were also using Pro Video Gold by Shereff Systems. Pro Video was a wonderful program but it did not have picture capabilities.

In 1994, we contacted Shereff Systems to see if it had updated Pro Video. We wanted a program that would allow high-quality pictures to cycle on our ad channel. We were in luck. The company had just released Pro Video 24, a 24-bit color graphics program that designs background images and graphics for video production.

Pro Video 24 is a Windows-based program that very quickly processes and manipulates scanned images to create fully composed graphics. Even more importantly, Pro Video 24 is very easy to learn. In just a few hours, we were able to put together high-quality graphics. Once the basics are understood, it is possible to create picture graphics with many effects in just minutes. It might take hours to create the same graphic with another program.

To run Pro Video 24, the minimum requirements are a 386 processor that runs at 33 MHz, a math coprocessor, 8 MB of system RAM, 25 MB of free hard disk space, a true-color VGA card with Windows driver, a Windows-compatible mouse, a high-density 3.5-inch floppy drive for program installation and Windows running in enhanced mode with at least 16 MB of virtual memory.

The recommended hardware configuration is a 486 or higher processor, 50 MHz DX or faster, 16 MB of system RAM, a true-color VGA card and a video encoder or genlock with video monitor setup.

It was not hard to integrate Pro Video 24 into the CTV-12 Corp.'s system. We simply bought a new computer that matched the specified requirements, installed Pro Video 24 and began importing pictures and creating the graphics. We unplugged the old Amiga 2000 and plugged the new computer into Channel 12's output. It was like flipping a switch.

Since we put Pro Video 24 to work for us, business has never slowed down. As the saying goes, a picture is worth a thousand words. The people in our community have told us repeatedly that the quality of our product has improved greatly.

If customers want to advertise their business or product, they simply bring a picture of the product to us. We scan the picture using a three-chip camera that sends the image to a scanner called the Snappy. The image is saved as a BMP or JPG file.

The image that we scanned into the computer is a full image when we call it up on our monitor. With Pro Video 24 we can reduce the image, put a border around it, add text on top of it or add filters to increase or decrease its colors. We can then import the image into our cycle program along with our other graphics.

Once image has been put into the cycle, it is necessary to choose a transition effect and set the length of time that the image is to run. Then, just save the graphic into the cycle. When it is time to remove a particular graphic, simply delete it from the cycle. Pro Video can run 24 hours a day, seven days a week.

Pro Video has a very nice feature that makes it easy to resize and angle text. Text can be slanted at almost any angle in a split second. The program has so many text colors available that it is sometimes hard to choose. Once the size, color, shadow and edge have been selected, the text is rendered in seconds. Then, the text is placed over the scanned image.

Shereff Systems seems to be on the leading edge for creating programs that adapt to the video production and television markets. We have found Shereff staff members very easy to reach. They always seem to be able to answer our questions and help troubleshoot any problems that might arise. Even more importantly, Shereff Systems always stays ahead of the graphic business market. ■

Editor's note: Stephen Weber is president of CTV-12 Corporation. He has founded and continues to run seven cable television stations throughout southern Utah. He has taught broadcasting and video production at Dixie College in St. George, Utah. He was also a member of the Utah National Guard Broadcast Unit.

The opinions expressed above are the author's alone. For further information, contact Shereff Systems Inc. (telephone: +1-503-591-5984; FAX: +1-503-591-0224), or circle ***Reader Service 34.***

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- Bitstream typeface library selection
- Variable edges: border, drop shadow and offset
- Variable flush
- Full position and justify control of character & row
- User definable intercharacter spacing (squeeze & expand)
- Multiple roll/crawl speeds
- Automatic character kerning • User definable tab/template fields
- Shaded backgrounds of variable sizes and transparency
- User definable read effects playback; wipes, pushes, fades
- High quality composite & S-video (Y/C) encoder
- Integral composite and S-video linear keyer
- NTSC or PAL sync generator with genlock
- Module switchable NTSC or PAL operation
- Software controlled video timing
- Board addressability for multi-channel applications
- Auto display sequencing • Local message/page memory
- Preview output with safe-title/cursor/menu overlay
- Composite & S-video input with auto-genlock select

PC-CODI Hardware and Software Bundle

- **PC-CODI Board** – Fully anti-aliased text displays, 16.7 million color selection, sync generator with genlock
- **Win CG Software** – Provides complete conytrol of all PC-CODI features from any PC with Windows 3.1. Win CG features include: High Speed Operations, Up to 99 message pages, Dynamic effects such as roll, crawl, fade, matrix wipes, pushed, peels and reveals. Win CG also provides control of the PC-CODI background generator and all page format controls such as center row/page, swap rows, and character font or color changes. A Safe Title/Margin generator with prompt channel is also displayed and controlled by Win CG.
- **PC Font Create** – Software to create anti-aliased fonts from Bitstream master typefaces supplied on 3½" DOS compatible disks. Includes five master typefaces.
- **Windows Font Convert** – Windows Font Convert is a Windows software application that allows for Postscript and Truetype fonts loaded on a PC to be converted for use on the CODI. Control of such attributes as edges, italics and character weight are provided. In addition, custom character placement tables can easily be created with Windows Font Convert.

TAO EDITIZER 3.0

A/B Roll Edit Controller for PC or Macintosh

Hardware Features:

- 3 VCR control ports for true A/B roll. Each VCR port can support a different protocol.
- Dynamic Tracking (Slow Motion) Control provides a "fit and fill" type interface
- Built-in SMPTE Longitudinal (Audio) Time Code generator with external & internal video sync.
- Three multi-speed SMPTE Longitudinal time code readers.
- Auxiliary serial port for full control of Newtek Video Toaster, GVG 100, and Panasonic WJ-MX50 switchers. Also Hotronic AS-11, Pinnacle Alladin and Videonics MX-1
- Audio Control: Mackie CR-1604, TAO FollowMix, Alesis ADAT
- MPC Audio & MIDI support for embedding sounds and MIDI sequences in your EDL.
- DPS TBC II & III support – you can control two personal TBC cards and the Personal V-Scope from a serial port.

Software Features:

- VCR Control – up to three VCR controllers on-screen simultaneously. Jog and shuttle control. You can use either your mouse or keyboard.
- Tape Logging – Mulit-event search, copy directly into edit list, multiple log windows may be opened simultaneously, log files or selected events may be printed to a window.
- Includes non-linear editing support
- Time code generator in Drop/Non-Drop frame.
- Multi-event controller/can handle up to 16,000 events.Interactive graphical "Time Line" window. Two audio-video splits per event, cut/copy/paste events.
- Preview, Perform, Review. Automatic and manual EDL ripple.
- Optional support for AutoDesk 3D Studio, Lightwave 3D.

NEW! EDITIZER-DTC

First editing controller to directly control JVC's BR-S500U and BR-S800U (Edit Desk) VCRs. The Editizer-DTC plugs directly into their 12-pin serial bus connectors and consistently achieves accurate edits through control of the BR-S500/800 capstan bump feature.

- TAO's 12-pin interface provides a direct line to JVC's precision-built VCRs and eliminates the need for hundreds of dollars worth of extra control boards needed in an A/B roll set-up.
- Direct connection also means that the two slots in each VCR remain free for other enhancement boards such as TBC cards.
- Editizer's time code generator window provides remote control of JVC's CTL Time Code Generator so there is no need to buy additional time code boards. Plus, this leaves both linear channels free for higher quality production work.

SPECIAL! COMPLETE A/B ROLL EDITING PACKAGE:
• JVC BR-S500U Players (2) • JVC BR-S800U Edit/Recorder
• TAO Editizer DTC w/cables • Panasonic WJ-MX30 Digital A/V Mixer • 3 JVC TM-131SU 13" S-Video Monitors

JVC

S-VHS EDIT-DESK SYSTEM

BR-S500U Player • BR-S800U Edit Recorder
RM-G800U Edit Controller

Fast, accurate and professional style videotape editing is now more affordable than ever. This new "S" editing system, costing thousands less than ever before, consists of the BR-S500U Player/Feeder, the RM-G800U Edit Controller and the BR-S800U Editing Recorder. Linked via JVC's proprietary control bus, these three units offer all of the editing features professionals have come to expect. The VCRs feature a fast, heavy-duty tape drive similar to that used in JVC's renowned "22 Series", and the built-in CTL (Control Track) time code provides unparalleled accuracy and flexibility. Best of all the VCRs feature an open architecture for easy system upgradeability.

OPEN ARCHITECTURE

Two plug-in extension slots on the rear panels (for both VCRs) accept a variety of optional expansion boards. To build a PC-based editing system, add the SA-K27UA RS-232C interface board. To use with more sophisticated editing controllers, plug in the SA-K26U RS-422 board. Other boards include the SA-K28UA 45-pin board for connection to older JVC editing systems, the SA-N50U DNR board with time base stabilizer, and the SA-R50U VITC/LTC time code generator/reader.

CONTROL TRACK TIME COOE SYSTEM

Built-in time code reader (BR-S500U) and time code reader/generator (BR- S800U) utilize JVC's CTL (Control Track) Time Code System. This system records absolute tape address information (hours: minutes: seconds: frames) on the control track, and provides fast and accurate access to any frame on the video tape. This is far superior to control track counters that lose reference when the tape is removed. CTL Time Code can be added to the tape during the recording process or "post striped". For professional SMPTE time code operation there is the optional SA-R50U VITC/LTC Time Code Reader/Generator card.

SUPERB VIDEO PERFORMANCE

Has latest picture improvement technologies for razor sharp images, with over 400 lines of horizontal resolution. Digital Y/C separation, chroma noise reducer, chroma aperture correction and a 3-line cross-talk cancellation all combine to offer outstanding image quality, even when dubbing down multiple generations.

32X VARIABLE-SPEED SEARCH

Front-panel search dials featured on both the BR-S800U and BR-S500U provide fast, accurate picture search at up to 32x normal speed. This is possible due to the incorporation of a heavy-duty direct-drive mechanism similar to that used in JVC's "22 Series."

FOUR-TRACK AUDIO

Each features two Hi-Fi stereo channels with a wide frequency response and a dynamic range of over 80 dB and two linear tracks. The linear tracks of the BR-S800U can be dubbed independent of each other and of the video. This is ideal for adding background music or sound effects to an existing audio track. There are two audio level meters, switchable between the Hi-Fi and linear channels. Separate input and output terminals are provided.

RM-G800U EDIT CONTROLLER

- Has two GPIs allowing automatic triggering of special effects generators, switchers or audio mixers.
- Features automatic assemble and insert editing, audio insert editing, as well as preview/review for checking edits before and after editing, and goto for direct access to any edit point. A capstan bump function is provided to assure greater edit consistency.
- 8-digit LED counter indicates all edit data in either the TC or CTL mode. Switchable between player and recorder.
- The RM-G800U's Jog control is precise and responsive, making it easy to locate any frame on the tape. You can enter the Jog mode directly and switch between the player or recorder at the touch of a button. The Jog dial can also be used to enter and trim edit points and pulse timing from the GPI ports.

LEADER

5850C Vectorscope

An ideal companion for the 5860C Waveform Monitor, the 5850C adds simultaneous side-by-side waveform and vector monitoring. Featured is an electronically-generated vector scale that precludes the need for fussy centering adjustments and eases phase adjustments from relatively long viewing distances. Provision is made for selecting the phase reference from either (A or B) inputs or a separate external timing reference.

5860C Waveform Monitor

A two-input waveform monitor, the 5860C features 1H, 1V, 2H, 2V, 1 µs/div and 2V MAG time bases as well as vertical amplifier response choices of flat, IRE (low pass), chroma and DIFSTEP. The latter facilitates easy checks of luminance linearity using the staircase signal. A PIX MON output jack feeds observed (A or B) signals to a picture monitor, and the unit accepts an external sync reference. Built-in calibrator and on-off control of the DC restorer is also provided.

5864A Waveform Monitor

A fully portable waveform monitor for field use, the Model 5864A is a two-channel unit that provides 2H and 2V sweeps with MAG, FLAT and IRE response, and normal and X4 gain.

5854 Vectorscope

2-channel portable vectorscope is ideal for field use and features A and B phase reference, fixed and variable gain. Both units shown w/optional battery holder and NP-1 type battery.

SONY

COLOR MONITORS

PVM-1350

13˝ Presentation Monitor

- Employs a P-22 phosphor fine pitch CRT to deliver stunning horizontal resolution of 450 horizontal lines.
- Equipped with beam current feedback circuit which eliminates white balance drift for long term stability of color balance.
- Has analog RGB, S-video and two composite video (BNC) inputs as well as 4 audio inputs.
- Automatic Chroma/Phase setup mode facilitates the complex, delicate procedure of monitor adjustment. Using broadcast standard color bars as a reference, this function automatically calibrates chroma and phase.
- Chroma/Phase adjustments can also be easily performed with the monochrome Blue Only display. In Blue Only mode video noise can be precisely evaluated.
- Factory set to broadcast standard 6500K color temperature
- Provides an on-screen menu to facilitate adjustment/operation on the monitor. The on-screen display can be selected in English, French, German, Spanish or Italian.
- On power up, automatic degaussing is performed. Also has a manual degauss switch to demagnetize the screen.
- Sub control mode allows fine adjustments to be made on the knob control for contrast, brightness, chroma and phase. The desired level can be set to the click position at the center allowing for multiple monitors to all be controlled at the same reference level.

PVM-1351Q

13˝ Production Monitor

Has all the features of the PVM-1350 *PLUS* -

- Is also a multisystem monitor. It accepts NTSC, PAL and NTSC video signals. NTSC 4.43 can also be reproduced.
- Equipped with a SMPTE 259M Serial Digital Interface. By inserting the optional serial digital interface kit BKM-101C for video and the BKM-102 for audio the PVM-1351Q can accept SMPTE 259M component serial digital signals.
- Equipped with RS-422 serial interface. With optional BKM-103 serial remote control kit all of the monitor's functions can be remotely controlled with greater confidence and precision.
- Equipped with input terminals such as component (Y/R-Y/B-Y), analog RGB, S-video, 2 composite video (BNC) and 4 audio terminals for complete flexibility.
- Aspect ratio is switchable between 4:3 and 16:9 simply by pressing a button.
- Underscan and H/V delay capability. With underscan, entire active picture area is displayed. Allows you to view entire image and check the picture edges. H/V delay allows viewing of the blanking area and sync/burst timing by displaying the horizontal and vertical intervals in the center of the screen.
- Color temperature switchable between 6500K/9300K/User preset. 6500K is factory preset. 9300K is for a more pleasing picture. User preset is 3200K to 10,000K.

PVM-1354Q/PVM-1954Q

13˝ and 19˝ Production Monitors

All the features of the PVM-1351Q *PLUS:*

- SMPTE C standard phosphor CRT is incorporated in the PVM-1354Q/1954Q. SMPTE C phosphors permit the most critical evaluation of any color subject. Provides over 600 lines of horizontal resolution.
- The PVM-1354Q mounts into a 19-inch EIA standard rack with the optional MB-502B rack mount bracket and SLR-102 slide rail kit same as PVM-1351Q. The PVM-1954Q mounts into a 19-inch EIA rack with the optional SLR-103 slide rail kit.

SVP-5600 and SVO-5800

S-VHS Player/ S-VHS Editing Recorder

SVP-5600 and SVO-5800 features:

- By combining the high resolution (400 horizontal lines) of S-VHS with high quality signal processing techniques like DNR, Digital Field DOC and Chroma Process improvement, they deliver the consistent picture quality so essential to editing. They also incorporate a wide video head gap and track width (58mm) for stable and faithful picture reproduction.
- Each has a built-in TBC plus an advanced Digital Noise Reducer (DNR) for both the chrominance and luminance signals to eliminate noise during playback. At the same time, a field memory incorporated in the noise reducer removes jitter to provide sharp, stable pictures. The field memory, also includes a Digital Field DOC (Dropout Compensator), which replaces signal dropout with information from the previous field.
- They also incorporate Chroma Process Improvement circuitry for excellent color picture quality in the playback mode. This advanced circuitry greatly improves the chroma bandwidth, thus enabling sharper and clearer color picture reproduction.

ADVANCED EDITING FUNCTIONS

- For frame accurate editing, both machines employ a sophisticated servo system, an improved quick response mechanism and built-in LTC/VITC time code capability. This makes them ideal for animation and computer graphic recording, where a frame-by-frame editing function is indispensable.
- They are equipped with industry standard RS-422 9-pin serial interface. The 9-pin connector carries edit commands and time code data between the VCR and the edit controller.
- When connected to an RS-422 equipped edit controller, the SVO-5800 functions as an editing recorder. It performs assemble and insert functions and also provided audio split editing capability of norman audio tracks 1 and 2. In the insert mode, video, audio and time code can be inserted independently, or in any combination.

FOUR CHANNEL AUDIO SYSTEM

- They each incorporate four-channels of high quality video. There are two channels with Hi-Fi (AFM) tracks and two with longitudinal (normal) tracks. The Hi-Fi tracks provide a wide frequency response from 20hz to 20khz and a superb dynamic range of 90db. The normal tracks incorporate Dolby B noise reduction for high quality sound reproduction. XLR connectors are used for the inputs and outputs for all four channels.

MULTIPLE INPUTS AND OUTPUTS

- Both machines employ composite and S-Video connectors. With optional SVBK-170 Component Output Board, they provide component signal output through BNC connectors. With the board, the VCRs can be integrated into Betacam SP editing systems.

USER FRIENDLY OPERATION

- Built-in character generator which superimposes characters on the "video monitor output" signal. This allows time code data, control track, menu setup and VCR function status to be shown on a monitor.
- For more efficient operation they have an on-screen setup menu which allows a variety of customized VCR mode operations. Programmed in the form of a layer structure, you simply go through the menu and initialize VCR operation.
- All parameters of the TBC, such as luminance level, chroma level, setup, hue, Y/C delay, sync phase and SC phase are easily controlled from the front panel, and can be remotely controlled from the optional UVR-60 TBC Remote Control, which also accesses field freeze function in the still mode and allows on/off control of chroma and luminance noise reducer.
- Quick and smooth picture search can be performed by either using an RS-422 equipped edit controller or the optional SVRM-100 Remote Control Unit. Recognizable color pictures are provided at up to10x normal speed in forward or reverse.

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ST-30 ..... 7.69 ST-60 ..... 8.49
ST-120 ..... 8.99

M221 Hi 8 Double Coated

Metal Particles		Metal Evaporated	
P630HMP	4.99	E630HME	8.79
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P6120HMP	9.49	E6120HME	15.49

AMPEX

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SPA20 ..... 10.89 SPS20(mini) 10.89
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BC-20A (small) ..... 20.49 BC-30A (small) 22.39
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BC-60LA ..... 31.79 BC-90LA 49.59

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P6-60 HG BQ ..... 5.09 P6-120 HG BQ 6.69

BQ Certified HI-8 Metal Cassettes

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P/I PLUS Expitaxial VHS

T-30 Plus ..... 1.69 T-60 Plus 1.99
T-90 Plus ..... 2.09 T-120 Plus 2.19

HGX-PLUS Expitaxial VHS (Box)

HGXT-60 Plus ..... 2.69 HGXT-120 Plus 2.99

BQ Broadcast Quality Expitaxial VHS (Box)

T-30 BQ ..... 5.49 T-60 BQ 6.19
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ST-126 BQ ..... 8.39 ST-182 BQ 14.99

SONY

Hi-8 Professional Metal Video Cassettes

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P6-60 HMPX ..... 6.59 P6-60 HMEX 11.49
P6-120HMPX ..... 8.89 P6-120HMEX 15.49

NEW! HMEAD Series Hi8 Metal Evaporated Editor

E6-30 HMEAD ..... 10.49 E6-60 HMEAD 14.89
E6-120 HMEAD 20.19

PR Series Professional Grade VHS

T-30PR ..... 2.39 T-60PR ..... 2.59 T-120PR 2.79

PM Series Premier Grade Professional VHS

T-30PM ..... 3.49 T-60PM ..... 3.99 T-120PM 4.79

BA Series Premier Hi-Grade Broadcast VHS (In Box)

T-30BA ..... 3.59 T-60BA ..... 3.99 T-120BA 4.79

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MQST-60 ..... 7.99 MQST-120 ..... 8.39

BRS 3/4" U-matic Broadcast Standard (In Box)

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B&H SPECIAL! KCA-60 BRS 11.99

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KSP-10 ..... 10.09 KSP-20 ..... 11.59
KSP-30 ..... 12.99 KSP-60 ..... 16.99

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BCT-20M (small) ..... 21.29 BCT-30M (small) 23.29
BCT-60ML ..... 33.19 BCT-90ML 51.99

NRG

POWER BELT SERIES

NRG power belts are the ultimate power solution. They provide the power to run lights, camcorders and decks without the fear of shutdown. Advanced high-density nicad power cells provide the lightest weight and longest service life of any power products made. Innovative features such as dual power outputs, power indicator, removable packs, plus accessories like high-speed chargers, solar panels and high-current cables combine to form the complete power solutions for any kind of users.

880 Power-Pro +

- High capacity quick-charge capable 12-volt 10-amp sintered nicad power pack (removable).
- Power chassis with dual 3-pin XLR inputs allows for pack interchange without shutdown.
- 2500-cycle cell life provides lowest cost per cycle.
- Microprocessor-controlled 5-step multi-color power indicator display.
- Belt with cellpack weighs only 4.9 lbs for all day comfort.
- Dual outputs allows simultaneous powering of two devices (eg. camera and light). Output configurations include cigarette lighter and 4-pin XLR in any combination.
- Charge in under 2 hours with the optional 650-III charger.
- Includes Power-Pro+ belt and power chassis, 12-volt 10-amp cell pack, model 600 overnight charger and comprehensive owner's manual. Fits waist size 30"- 40". (Available in large size 40"-52" if needed).

970 Power-MAX

Same features as 880 Power-Pro + Belt ***Plus***–

- Highest capacity quick-charge capable 12 Volt 14-AMP sintered nicad power pack (removable).
- Rugged high-grade, black leather belt case; chassis assembly with dual 3-pin XLR inputs for pack interchange without shutdown.
- Belt with cellpack weighs a comfortable 7.5 lbs.
- Includes Power-MAX belt and power chassis, 14-amp cell pack in 12V or 13.2 volt configuration, model 600 overnight charger, comprehensive owner's manual. Fits waist size 29"-44".
- Also available in 13.2-Volt 14-amp version. The 13.2-Volt version offers 15-20% longer runtimes because industrial VCRs shut off at higher voltage levels.By not shutting off the Power-MAX is allowed to fully discharge, thus the longer running time.

VARA-LITE PRO

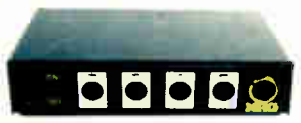
Professional DC On-Camera Light

The revolutionary new NRG Vara-Lite Pro combines the ruggedness, light efficiency and versatility of NRG's best selling Versalight Pro (DC only) with a sophisticated electronic light management system. Thanks to on-board control IC's using NRG's Light-Gate technology, light intensity can be infinitely adjusted by the user within a range of 10% to 100% of the lamp's rated power. Now instantly adjust light output to exactly meet changing light requirements. Best of all, the Vara-Light Pro virtually eliminates color shift and dramatically conserves precious battery power by using only the power required for the selected light level.

- Accomodates bulbs from 20W to 100W DC.
- Prismatic dispersion grid provides smooth even light ouput and reduced glare without changing light intensity.
- Sturdy all-metal click tilt mounting bracket with ratchet action. Eliminates shake under action shooting conditions.
- Optional barn doors enhance light control capabilities.
- Front retainer assembly pops off for instant bulb access without the bother of screws.
- Rugged milled aluminum light head disperses heat and provides years of service under adverse conditions.

POWER STATION-2 SERIES

Just plug the PowerStation-2 into any AC outlet in the world and out comes perfectly regulated 12-volt DC power through four 4-pin XLR connectors and one cigarette lighter connector. It uses an advanced pulse-width-modulated power supply which allows for ultra-light weight and small size . It operates with little heat even at full output. The PowerStation-2 is the ultimate multiple-output professional power source for cameras, decks, lights, monitors, and a host of other video accessories.



- 85-264 volts worldwide auto-adjusting input (just plug in).
- Supply is fully protected from overcurrent.
- Ultra-light weight - under 3 lb.
- Outstanding 300,000 hour mean time between failure is far in excess of any other manufacturer.
- Ultra-efficient PWM regulation generates far less heat than linear type supplies.
- Provides the ultimate in performance and reliability in a universally compatible and compact package.

ARRI

ARRI, the most highly revered name in lighting for motion picture and discerning television production, is now available in its entirety at B&H. ARRI pioneered the HMI, now the industry standard for lighting Hollywood feature films.

ARRI Fresnels

Whether in spot or flood position, fresnel lighting creates a tight, even pool of illumination. The specially crafted fresnel lens directs light into parallel rays with a slight diffusion. "Lensless" instruments, (even with grid spot accessories) can neither duplicate the fresnel's quality nor its efficiency.

300 watt Fresnel

ARRI introduces to the world of both video and still photography the precision and efficiency of fresnel lighting in a small, light weight location instrument. Choose this very small but powerful fresnel for either quick set-up news and documentary work or very precise, accurate studio shoots.

- Low expansion fresnel lens that's only 3.2" in diameter
- 16° spot focus beam diameter of 1.4' at 5' to 5.6' at 20'
- 60° flood focus beam diameter of 5.8' at 5' to 23.1' at 20'
- 3200° Kelvin lamps for 120 or 220 volt AC
- Truly rugged, well designed body w/extremely smooth but very tight, accurate control mechanisms
- Lamps not included.

650 watt Fresnel

ARRI's 650 watt fresnel instrument includes all of the 300 watt unit's features plus:

- Low expansion fresnel lens that's only 4.3" in diameter
- 16° spot focus beam diameter of 1.4' at 5' to 7' at 20'
- 60° flood focus beam diameter of 5.8' at 5' to 28.8' at 20'
- 300, 500, or 650 watt 3200° Kelvin lamps for 120 volt AC or 650 watt 220 volt AC
- Lamps not included

Similarly designed ARRI Fresnels are also available in 1000, 2000, and 5000 watt instruments with up to 11.8" lenses for stand mounting or studio hanging.

ARRILITE

ARRILITE offers the fine precision professionals demand in adjustable general illumination lighting. Ample focus knobs provide wide spot/flood options. Units start at just 3.6 pounds

- ARRILITE 600 adjustable beam angle: 34° to 90° in 600 watts 120 volts AC; 250 watts at 30 volts; 420 or 650 watts 220 volts. Optional Safety Glass and Handgrip
- ARRILITE 650 adjustable beam angle: 24° to 70° in 120 volts at 400 watts or choose 4 lamp options at 650 watts; 800 watts at 240 volts
- ARRILITE 1000 adjustable beam angle: 24° to 65° in 120 volts only with 4 lamp options for 1000 watts
- ARRILITE 2000 adjustable beam angle: 19° to 56° in 120 volts at 1000 or 2000 watts; 2000 watts at 240 volts
- Lamps not included

ARRI Portable Kits

ARRI offers the "runnin and gunnin" video photographer plenty of kit options. The popular 300/650 Fresnel Combo Kit includes 2 - 300 watt and 2 - 650 watt Fresnels plus an extensive compliment of stands, accessories, and a heavy duty case. ARRI's best selling Softbank I Kit comes with 1 - 300 watt and 2 - 650 watt Fresnels plus an Arrilite 1000, a Chimera Video Pro Small and Speedring as well as stands, accessories, and a heavy duty case.

Mini-Flood & Mini-Cyc

These ARRI instruments offer an excellent means of broad illumination. The Mini-Flood's beam spread is twice that of its light source to subject distance, flooding a 50' wide area from just 25' away. Both include a uniquely adjustable, integrated 2 Way Barn Door with Filter Holder. Designed for stand mounting, the Mini-Flood includes a 25' Cable. Typically used for the overhead washing of a cyc wall the standard Mini-Cyc includes a 30" Cable and Pipe Clamp.

- At 120 volts, 2 lamp options each: 500, 750, and 1000 watts; 220 volts 2 - 800 watt lamp options.

ARRIsoft 1000 & 2000

Call B&H for further information on ARRI's compact design for these steel construction soft fill lights and their unique Egg Crate, Filter Frame, and Reflector systems.

Complete line of HMI, Arri lights, Lighting kits and accessories available...Call

MAGNI

MM-400

- The MM-400 is a combination waveform and vector monitor especially configured for the cost-conscious producer. A low-cost alternative to CRT-based waveform monitoring the MM-400 produces a video picture of the input signal's waveform and displays it on any video monitor. It provides a simple, affordable and accurate way to set camera levels before a shoot, or to check time base correctors and color fidelity in editing. Problems like hue shift, smearing, muddy contrast and loss of detail are easily identified for correction.

FEATURES:

- Converts waveform or vector display information into a standard video signal which can be displayed on a video monitor or routed around a video facility. no need for additional expensive monitors. Switch between pictures and waveforms at the push of a button.
- Incorporates an advanced SC/H phase and color frame indicator that is a must for editing and post production. At a glance it tells you if a signal's subcarrier-to- horizontal phase is properly adjusted and if the signal's color frame matches the house black burst connected to the MM-400 external reference input.
- Works anywhere and with any analog video format—NTSC, PAL, Component or S-Video. It has automatic detection between NTSC and PAL formats.
- Three loop-through inputs can accept three composite signals or one component, or RGB signal
- No complex displays or special test signals are required for component video monitoring
- Interchannel timing and amplitude display make component analog monitoring easy. has color bar limit markings for Betacam, M-II and SMPTE formats.
- Waveform and vectorscope controls, including channel, sweep speed, position control, phase rotation are on easy-to-see dedicated pushbuttons.
- Besides instant toggling between picture and waveform, a mix mode combines waveform and picture displays for simultaneous viewing.
- The MM-400 can be readily used by even novice operators. It has easy-to- understand set-up menus for display color, Interchannel timing, SC/H phase alarm.
- Usable in any video facility of any size for displaying signals. its low cost makes it affordable by the smallest studio, while its features and performance make it ideal for monitoring in high-end facilities as well.

HORITA

BSG-50

Blackburst/Sync/Tone Generator

The BSG-50 provides an economical means for generating the most common RS-170A video timing signals used to operate various video switchers, effects generators, TBCs, VCRs, cameras and video edit controllers.

- 6 BNC v deo/pulse outputs
- Now available: 6 blackburst, 4 sync, 2 subcarrier
- Each sync output individually settable for composite sync, compos te blanking, H-drive, or V-drive.
- Separate buffer for each output–maximum signal isolation
- 1KHz, 0dB sinewave audio tone output, locked to video
- Outputs can easily be configured to meet specific user and equipment needs **$269**

CSG-50

Color Bar/Sync/ Tone Generator

- Generates full/SMPTE color bars, blackburst and composite sync signals.
- Built-in timer can automatically switch video output from color bars to color black after 30 or 60 seconds. Easy and convenient for producing tape leaders and striping tapes with color bars and black.
- Front panel selection of full-field or SMPTE color bar patterns or colorblack (blackburst) video output.
- Includes crystal-controlled, 1KHz, 0dB audio tone output.
- Outputs: video, sync, ref frame, 1 KHz, 0dB
- Audio tone switches to silence and color bars change to black when using 30/60 second timer
- Fully RS-170A SC/H phased and always correct. No adjustment required **$349**

WE STOCK THE FULL LINE OF HORITA PRODUCTS INCLUDING:

WG-50 -	Window Dub Inserter
TG-50 -	Generator/Inserter
TRG-50 -	Generator/Inserter/Search Speed Reader
TRG-50PC -	Has all of the above plus RS-232 control.
VG-50 -	VITC Generator, LTC-VITC Translator
VLT-50 -	VITC-To-LTC Translator
VLT-50PC -	VITC-To-LTC Translator / RS-232 Control
RLT-50 -	Hi8 (EVD-9800/9850)TC to LTC Translator
TSG-50 -	NTSC Test Signal Generator
SCT-50 -	Serial Control Titler "Industrial" CG, Time-Date Stamp, Time Code Captioning
SAG-50 -	Safe Area, Convergence Pattern and Oscilloscope Line Trigger and Generator

EQUIPMENT EXCHANGE

TV Technology's Equipment Exchange provides a FREE listing service for all broadcast and pro-video end users. Brokers, dealers, manufacturers and other organizations who sell used equipment on an occasional basis can participate in the Equipment Exchange on a PAID basis. All free listings run at the discretion of the publisher.
Call 1-703-998-7600 for details.
Submit your free listings on your letterhead and state the make, model number, a brief description, sale price and complete contact information and mail it to:
TV Technology, PO Box 1214, Falls Church VA 22041

CAMERAS

Want to Sell

Steadicam SK, modified for 21 lbs, soft case, many accessories, 4 Anton Bauer batts, Quick Charger, like new, $9995 firm. Denny, 502-552-6628.

Sony DXC537, 3-CCD camera head, Sony DXF501 viewfinder, Canon J15x9.5BII lens, manuals, exc cond, pkg only, $7500. Tony, 201-429-1108.

JVC X2 camera, incl A/B system case, Canon glass, less than 20 hrs of use, exc cond, $6800. Hank, 818-968-1237.

Sony CCD-V801 w/RC time code, low hrs, Sony VCL-0746C wide conversion lens, new batt, charger, all supplied cables & access, manual, box & packing, exc condition, $795. 614-946-6611.

Panasonic WV6000 hi-band Saticon camera, w/ENG-style f1.6 10.5-126mm servo zoom lens, view finder, mic, pwr cable, carrying case, Panasonic NVB51 pwr sply, exc cond, $600. Joe, 408-553-2323.

JVC X2B camcorder & lens, new w/warranty, $6800. Ed, 610-889-9676.

Sony VO6800, 3/4", exc cond, w/cable, 4 batts & CMA 3 AC pwr supply w/cable, $1350; Panasonic WJMX 12 mixer, exc cond, $800. Richard, 206-820-9065.

Sony DXC537A, 750 lines resolution w/Fujinon 10-130mm lens, Sony PVV-1A docking Betacam SP package, hard case, both in mint cond, camera has less than 50 hrs, PVV-1A has less than 20 hrs, new this year, $14,500 or B/O. M. Darrah, 503-223-8689.

Sony DXC-1820 camera heads, $120 + shipping. 916-354-1990.

Panasonic F500 3 CCD camera w/AU45 dockable MII record deck, like new, $10,500. Robert, 301-340-9566.

Ikegami HL95b w/Sony BVV1 back & Fuji 14x9 2x lens, hard case, AC supply, good cond, $4000. Glen, 407-859-7940.

Sony DXC3000, 3 CCD, Fujinon 12-1 zoom lens, Sony hardside carrying case, 6 ft cable, 20 ft cable, fast release tripod attachment, 5 batts, Hitachi AC power pack & batt charger, Sony VO4800 3/4" portable w/2 batts & AC power pack, auto power cord, all well maintained & in perfect running order, $4000 firm. Carter, 717-839-2512 11 AM-7 PM only.

Ampex CVC3A broadcast camera w/Canon 12x zoom lens, hard shooters case, new tubes, like new, no back, $1750 or B/O; Sony LC420 hard case for DXC series, $150. Bill, 502-426-6278.

WD5000 camera w/WS, kit incl pan, tilt/zoom remote & 12x lens, $1000 or B/O. David, 804-721-2467 or FAX 804-498-6553.

Video Show 150F, $300; (2) Video Show 160, $400; (2) Video Show 180 Pro, $500; (3) Sony SMC70 computer w/RGB super imposer, $250; Sony VIW3020 view system w/LDP2000 disc player, $900. Joe, 910-867-5149.

JVC KY19 camera (750 lines, 62 dB S/N) w/Fujinon 16x6.7-107 zoom lens, JVC BRS422U SVHS deck w/Anton Bauer batt mount, all in perfect cond, 15 hrs use, $6995 or B/O. Doug, 518-383-2620.

Panasonic WV3260, 8AF color cameras (8) w/case, ER remote cntrl w/14-pin adapter, $400 ea; Panasonic AG455 camcorder, 2 batts, DC adapter, like new, only used twice, $1200; Panasonic AG400 SVHS camcorder w/digital special effects, $650; JVC Ka27U camera adapter (for KY27 or KY19) w/2 cables for AG7400 portable VCR, $1500; Panasonic AG7500A w/AG750 cntrllr, SVHS edit decks, recently overhauled by manufacturer, $6500; Panasonic AG7650, mint cond, less than 1500 hrs, $2800; (2) Bogen monolight cases, $50 ea; misc Lowell lighting equip. Frank, 914-623-0842.

Sony DXC537/PVV-1-A Beta SP Fujinon lens 14x, broadcast 2x extender w/ lens shade, $15,600. Bud, 309-697-9669.

JVC KY1900, 3 tube camera, (3) old but still good pictures, $300. Joe, 910-867-5149.

Sharp XC800 w/CCU & 100 ft cable, Fuji 14x broadcast grade lens & AC, exc condition, $1500. Hammer Productions Studios, 913-271-7200.

Sony M3-A camera, AC adapter, hard case, $1500; Panasonic AG450, SVHS camcorder w/charger, batts & hard case, $800. R. Wiltse, 303-444-8439.

Sony DCX537L, 3-chip hyperhead camera, 16:1 Fujinon lens, hard case, tripod adapter plate, $6000; Sony EVV9000 Hi 8 dockable recorder, $3500; Sony EVO9700 Hi 8 self-contained desktop editing system, $3500; all three in one pkg, $12,000. Robert, 301-340-9566.

Sony BVW507, 3 CCD Betacam, lots of accessories, exc condition, $21,000. Shaun, 303-779-9578.

JVC GYX2 w/4 Anton Bauer batts & Mag Quad charger, $7500; AG455, 3 mos old, new condition, only about 10 hrs, $1200 or B/O. 305-472-2888.

Sony BVP330, BVU110, tripod, head, batts, cases & manuals, $3500. Shaun, 303-779-9578.

Sony M3A, AC adapter, hard case, exc condition, $1500; Panasonic AG450 SVHS camcorder w/charger, batts & hard case, $800. Russ, 303-444-8439.

Panasonic AG460 SVHS camera, 2 yrs old, incl hard case, 2 batts (1 new), all accessories from original package, exc cond, $1600. Andrew, 206-365-7384.

Panasonic WV-F250 w/AG7400, 14x lens, hard case, mic, tripod plate, only 35 hrs on deck, will separate, $4500. Jim, 215-794-3861.

Sony DXC1210, needs some work or parts, $200. James, 716-264-0335.

Sony DXC-3000A w/shipping case, tripod plate, 2 camera cables, Porta Brace rain cover w/Fuji 16x1 lens, vgc, $3100; Sony DXC-M7 w/shipping case, tripod plate 1 camera cable, Canon 12x1 lens, vgc, $5500. Kerry, 334-794-4101.

Ikegami HC230 w/lens & case, $1500; Sony VO8800 3/4" SP deck w/TC, $2500, or both for $3000. Ray 213-960-4523.

Sony DXC-M3, only 50 hrs on Saticon tubes, w/hard shell case, $2000. Brian, 916-241-3468.

Sony DXC-537/BVV-5 Betacam SP camcorder, exc pictures & rcdgs, BVV-5 broadcast recorder w/4 audio tracks, TCG, uses oxide or metal tape, only 500 actual hrs, camcorder complete w/hard case, tripod adapter, BC-1-WD charger & 4 NP-1B batts. Mike, 806-791-2800.

Video package, complete ENG, low hrs, exc condition, Ikegami 730AP w/hard case, AC box; Canon 17mm f1:1.6 w/2xtndr; Tiffen filters; (2) Anton Bauer ProPac 14 NiCad batts & quick charger, mtng brkt; Cool-Lux lite kit 1 w/diff, dichr filter, barn doors, lamps, Olympic recharge batt; O'Connor 50D w/clwball & col adapt; Quickset tripod; Sony VO6800, Kangaroo case, AC adapt; (7) NP-1 batts; Sony BC1WA batt charger; Sony 8" PVM8020 w/sun hood; Sony C74 shtgn mic w/hand grip, AD-44 windscreen; (2) Sony ECM50 lavs; var cables; Wheelit prod cart; Gitza fishpole w/clamp, $7500. Gene, 212-757-5679.

JVC KY-15 w/BRS410U back, 3 CCD dockable SVHS camcorder w/brand new Canon 13x lens, exc condition, $4000. Scott G, Creative Video, 608-274-7373.

Sony CCD-V5000 (2), lots of accessories, $1500 ea; 1 Porta Brace Quick Draw case, brand new, CC505 pw fit BVP90, 70, 50, 5, etc, still in box, $250. Lou, 408-947-7030.

Dual Pentium system, (2) 100 MHz Pentium processors, 32 Megs RAM, Diamond Stelh 64 video card w/4 Megs, SCII controller, 1 Gig SCII hard drive, 540 Meg SCII hard drive, 16 bit sound card, 17" color monitor, DPS perception card w/daughter card, 4.3 Gig hard drive, Light Wave 4.0, Adobe Premire 4.0a, Photo Shop 3.0, Windows NT, Windows 3.1, Microsoft Office, Epson Color Stylus 720 DPI, Win Images Morph, $9000 or B/O. Dan, 813-360-6531.

Ikegami HK322 (2), w/Canon P18x15B, all cables & panels; (2) RCA TK47 w/Fuji 17-270, all cables & panels, all items B/O. Greg, 401-459516 or Fax 401-455-9168.

Sony DXCM7 camera head (no lens), vf, mic clamp, dual NP1 batt adapter, case, raincover, 26/14-pin cables, bought new 4/91, low hrs, mint cond, $4000. Sharpshooter Prods, 908-280-8003 phone/fax.

Hitachi FPC-10, 3 chip, high res view finder, Canon 12x7.5B KRS, will genlock while docked, have adapters to dock w/SVHS (AG7450), Betacam SP (PVV1), incl CA-C10 adapter, $4200; AG7450, extremely low hrs, $1400. Todd, 703-956-1659.

JVC KY27, 16:1 Fujinon w/BR-S422U docking SVHS, less than 40 hrs, B/O. Sam, 415-564-6378.

CAMERA ACCESSORIES

Want to Sell

Ikegami CCU for HL79, everything but cable, $400; NEC SP-1AD camera back w/Anton Bauer snap-on plate for SP-3A camera, $300; send SASE for list. CJ Scheppers, 1675 Madison Ave, Kansas City, MO 64108 or call 816-221-0231.

JVC AAP250 battery charger & camera power supply w/2 NBG1U NiCad batteries, all brand new, factory sealed carton, $300. Laura, 909-613-9154.

Vinten pedestal & dolly 3320, $2500; Anton Bauer QC40 quick charger for Bricks, $200; Sony BC210 charger for BP90's, can charge 4 batts, $300; Cypher 6000 time code reader/generator, $1100 or B/O; Fujinon x1.8 teleconverter, $500; 19" Anvil shock case w/double rack rails, $600. Craig or Chris, 334-433-7733.

Century wide-angle lens, $750; Steadicam, bought in April, $12,500. Bud, 309-697-9669.

Bogen 3191 tripod w/3066 head, exc condition, $550. Todd, 703-956-1659.

Sony CA537 genlock camera back w/component, composite, Y/C, 26-pin output for 537, 527, 637 cameras, still in box, $925. Tim, 303-936-1636.

Sony RMM7G remote mini CCU for M7 or equiv, Porta Brace case for M7 or equiv, Porta Brace rain cover for M7, also 26-pin to 26-pin 30 ft & 10 ft cables. 315-445-0979.

Bogen 3140 tripod & dolly. Dean, 214-343-0879.

Sony BC210, (2) BP90 chargers; Houston Fearless M125040 camera crane/dolly; (2) Harris/Iris ICS still store remotes, TSM large camera pan/tilt remote for TK47 size camera; Ampex ATR700 reel to reel; RCA TP66 16mm projectors, all items B/O. Greg, 401-455-9516 or Fax 401-455-9168.

Panasonic WV-RC30 camera remote control unit, no cables, $100. Scott G, Creative Video, 608-274-7373.

Panasonic WV-CL19, 3260/5000 tele lens converter; viewfinder for JVC X-1; mike holder for Panasonic 70; 3260/5000 lens WV-LZ 14/8AF. David, 918-258-6389.

Canon PH15x7B KTS 7-105mm teleconference lens (2), designed exclusively for remote control operation, Canon TCR-201F controller provides remote servo control of focus, zoom & iris, 1/2" cameras only, extension cables, exc image quality, perfect condition, $1800 ea or $3300 both. Joe, 408-553-2323.

Sony CA-3A camera adapters (5), $300 ea; Sony Va-1V composite component adapter (2), $400 ea. David, 804-721-2467 or FAX 804-498-6553.

Tripod cases, ABS plastic, (1) field tripod case such as ITE T40, $125; (2) Shorty cases for Shorty tripods, $100. Joe, 910-867-5149.

DIGITAL EFFECTS

Want to Sell

Ampex ADO1000 keyboard, $495. 916-354-1990.

NEC system 10C, DVE fully stuffed, software V 4.0, AB input, component system, E-board, manuals, etc, $14,000. Homer, 608-271-1226.

Microtime Act One, just serviced, works like new, $2500. Guz, 201-773-3559.

Sony DFS500 switcher/digital effects unit w/optional down stream keyer, exc condition, $13,500. Bill, 219-490-4021.

EDITING EQUIPMENT

Want to Sell

Sony BVR820 remote control unit, $595 + shipping. 916-354-1990.

Future Video EC 1100PRO edit controller for Panasonic AG1970 or 1960, $350. Bob, 408-685-9424.

Sony EVO9650 Hi 8 player/recorder w/remote jog/shuttle, exc condition, $3500 or B/O. Martin, 210-614-5900.

Epic Harris controller, CMX style, multiformat editing at affordable price, $2900; JVC MII KRM800U modified w/SVHS inputs & outputs, $3900. Bennu Productions, 914-964-1828.

RM450, like new, (2) 9-pin cables, (1) 33-pin cable, $1100; Para adapter for Sony to JVC, $200, take both for $1200. Steve, 407-777-3936 or 407-777-6036.

Sony VO9850 w/time code, 3/4 SP, mint cond, $3995. Pro Video, 817-696-3184.

Panasonic NV9600, NV9240 (2), AUA70, 3/4" editing systems, working condition, may require service, selling together, $3500 firm incl shipping. David, 718-527-8594.

TAO Editizer, PC based A/B roll edit controller, TAO shuttle knob, software & cables, $1200. Kelly, 318-234-1422.

Sony BVE500A controller, (2) BVU200A U-matic recorders, very good condition, $1500. James, 716-264-0335.

3/4" complete editing system, (2) JVC CR600U source decks, (1) JVC CR850U edit/recorder, Abner/Paltex (version 7.5 software for frame accurate editing w/time code), 13" monitor, 3 connecting cables, $4495 or B/O. Michel 802-257-7605.

Avid Media Suite Pro, 36 GBs, broadcast quality, every bell & whistle, w/Quadra 950 (57/350) w/CD-ROM, Mackie mixer, 17" & 20" color monitor displays, EDL, free tech support & upgrades, plug & play, $32,650 or B/O. Bob, 310-277-2229.

Callaway 100 MKI, very low hrs, prof maint'd, outstanding cond, delivery possible, $4000 or B/O + shpg; Sony BVE5000 w/add'l EDL automation & disc drive, well maintained, exc cond, manual, records, no switcher interface installed, delivery poss, $6000 or B/O. Jasen, 412-537-8175.

Videomedia V-Lan-R-Ser (2) parallel receiver programmed for Sony VO5800s, connects parallel control VTRs to any V-Lan equipped editing cntrllr, $700 ea. George, 801-621-0084.

A/B roll edit system: (3) JVC CR-850 3/4" editing recorders, Paltex Abner edit controller, Alta Centaurus A/V switcher, JBC CR-4900 portable 3/4" recorder w/time code, batts, AC charger, carry cases, Hitachi waveform monitor, vectorscope, plus much more, $10,350. Eric, 404-325-7676.

Videonics AB-1 edit controller, brand new, works perfectly, $600. Jim, 316-365-7335 phone/fax.

DPS TBC III, plug-in card for Amiga or PC, composite or Y/C inputs, exc for Toaster, full bandwidth w/strobe & rock-solid frame or field freeze, full proc amp w/color correction, exc cond, $450 firm. Bruce, Digital TV Prods, 509-332-5858.

Panasonic NVA960 edit controller. David, 918-258-6389.

Panasonic AG7500A SVHS editor, $2500; Panasonic AG7510 edit feeder, $1800, both have had new heads in '95; Panasonic NV-A500 34-pin edit controller w/cables, $400; will sell entire package for $4000. Scott G, Creative Video, 608-274-7373.

Tektronix 528 WFM (3), $600 ea; Tek 1420 vector, $1400; Chyron VP-2 w/script font, $1400; Sony CMA-8, $350; Sony AC500, $450; Ultimatte Newsmatte, $1200; Leitch SPG-120N sync gen, $750; Panasonic AG450, $700; Sony VO5850, $2300; JVC BR7000, $350; JVC BR5710, $450; Harrison Pro-7 audio mixer, 12x4, $1000; Convergence serial interfaces, $150 ea; Virgin 90-minute Sony D-2 tape, $40 ea; Lenco 350 VID DA modules, $100 ea; (2) Sony BVM1910, $1700; (3) Iki TM20-9RHA, $800 ea; Chyron RGU, $700; Ampex AVC4100, loaded, $2500. Eric, 203-357-8488.

Paltex Abner A/B roll controller w/Panasonic cables, all knobs were recently rebuilt, exc condition, w/1" interface if requested, $1800 or B/O; Paltex R-SID serial interface for 9-pin to Paltex, $600. Scott G, Creative Video, 608-274-7373.

BVH 2000 w/TC & BVT 2000 TBC. Craig or Chris, 334-433-7733.

CMX 300 editor w/4.92 software, $3000 or B/O; extra controller available. Gordon, Magnolia Video, 904-668-0611.

Sony TC13 CTL code plug ins, $75; BKE915, BKE916, MKE906, BKE901, BKE915A, $150; FCG700 frame code gens, new, $200. Joe, 910-867-5149.

DVR10's, GVG200, BVW75, BVW60, BVH2500, ADO3000, BVH1100's, CMX3600 & 12's, audio video DA's, waveform & vector scopes, 10x10 video audio router, Sony MXP2000 mixing console, more equipment, call for details, B/O. Bob, 412-471-3333.

Sony DXC-537A camera head, $6200; Sony DFS-500 w/all upgrades, $14,500; Sony PVW-2800, $14,000; Sony RM-450 edit controller, $1300; Sony BVU-950, 3/4" SP edit recorder w/TBC & time code, $8500; Panasonic AG5200X VHS duplicators, original box, $300; Sony BVH-3100 1" NTSC recorder, low hrs, $16,000; Sony VP-9000 3/4" SP player, $1500. Max, 305-856-8606.

Paltex Abner 2-5800, 1-5850, Alta Pyxis TBC/SEG, Chyron VP-2 CG, Panasonic BTS702 dual color monitor, Panasonic CT1910 color monitor, Tek wfm monitor, Ramsa audio mixer, audio patch bay, QSC amp, ADS speakers, cass deck, all wired up in Winstead console, $9000 or trade for DVE; RM-440 sys w/5800 and 5850, $3000. John D, 617-396-6093.

Complete 3/4" edit system incl Sony 5850, 5800, RM450, like new, $4500; Panasonic WJ-MX12 digital AV mixer, incl character generator WV-KB12A, like new, $750. L. Stephens, 716-227-4693.

Betacam A/B roll edit system, Sony Betacam BVW10, BVW15, BVW40, Tektronix 1740 waveform/vectorscope, CMX-300 video edit cntrlr w/monitor & latest software, video switcher, Toaster 4000 w/040 and CG, chroma FX new software & more, 1 studio 13 color monitor, 13", 2 color monitors, Sony 13, 1344Q 2 color monitors, Videotek AVM19S 19" color bar generator, Cox-NTSC202, Lenco video processing system, Lenco black burst PPS302, Lenco PSG412 pulse generator, Lenco PVA350 video DA, Lenco OST341 delay, Lenco PPT314 timing, video patch panel, Winstead D150A edit console, Beta console, Crown stereo amp w/speakers, Logitek audio DA, ADA-8 audio patch panel, Yamaha MR842 audio console, sold only as a package, $30,000. Gordon, 904-668-0611.

LIGHTING

Want to Sell

Spectra Candela LD50 footcandle light meter, like new, newly calibrated, $200. Len, 313-945-9292.

MOVIE PRODUCTION EQUIPMENT

Want to Sell

Moviola 6-plate flatbed w/3-plate side table & rewinds, $2200. CJ Scheppers, 816-221-0231.

Bell & Howell 545 228581, 16mm projector, $200. 401-732-6399.

services

MOVIE PRODUCTION EQUIP...WTS

16mm projectors, $95 ea; 16mm projector lenses, new in box, $25 plus shipping. 916-354-1990.

Bell & Howell high intensity arc specialist (2), auditorium type projectors w/power supply, both work, only one lens, $200 each or B/O. Guz, 201-773-3559.

Beaulieu R-16 w/12-120 Angenieux, 2 batts, charger, 200 ft magazine, hard case, sun shade/filter holder, 7 filters, synch generator, zoom stick, Nikon F to C mount lens adapter, owners manual, $1150 or B/O. Charley, 718-263-6300.

Vintage Arriflex 16BL, 16mm film camera, Angineux lens, 2-400 ft film magazines, changing bag, measuring tape, battery holder, charger, original Arri case in exc cond, needs new motor for sound sync, as is, $1900. Mike, 806-791-2800.

Moviola 35mm, 4 gang synchronizer w/2 mag mounts, $150; 16mm Moviola, 4 gang synchronizer, $125; Moviola 4 gang 16/35 combo synchronizer w/2 mag mounts, $100; 16mm Zeiss Moviescope, $150; Moviola long stem rewinds w/brakes & tight wind attachment, $125; Maier Hancock 16/35 hot splicer w/fresh blade, $350; Ediquip/QTS 35mm tape splicers, straight $125, diagonal $75; Rivas 35mm straight cut/razor, $150; Precision optical/magnetic track reader, $40; Synchronizer mag heads, $30; 35mm 1100 ft split reels, $15. Charley, 718-263-6300.

SIGNAL PROCESSING

Want to Sell

Hotronic AH91 dual channel TBC w/digital effects, composite & S-video, $1500. Kelly, 318-234-1422.

Microtime 2020, $500; Microtime T100, never been used, $750. Bud, 309-697-9669.

Faroudjia CTE-N encoder, exc high-end unit, $2000 or B/O. Homer, 608-271-1226.

CEL P151/P147 TBC w/FX, $900. Walt, 314-428-8430.

Digital Creations Kitchen Sync, dual TBC w/Y/C option, $850. Todd, 703-956-1659.

Quantel frame sync DFS1550 (2), $250 ea; Microtime T100 TBC, $500; RCA frame sync TFS121, parts, $100; Vital pulse DA 6X1 (5); Vital video DA 6X1 (5), $300; Tektronix WFM 529, $100; Tektronix 670A monitor, parts, $100. 401-732-6399.

Leitch video DAs and sync gen, (2) FR-682 frames w/11 cards (8 VDA-681 video/subcarrier DAs, 2 SVD-680 switchable video delay amps, 1 VEA-680 video equalizing amp for 88 outputs total), (1) SPG-1300N sync gen frame w/4 cards (1300GL genlock, 2600TG NTSC test gen, 1300BT clr/blk output & tone gen, 1300PG pulse gen excellent, near new w/manuals, $8500 new, asking $4000 or B/O or will split up. Sam, 415-564-6378.

DPS 270, Y/C & composite, TBC, 1 RU high w/full proc amp control, $500. Scott G, Creative Video, 608-274-7373.

Nova 920SP TBC, 100% up to spec, digital drop-out compensator, 4 inputs, freeze, fade, variable rate strobe, color bars, posterize, mosaic, multiformat transcoding, 5 outputs, manual, orig box, $1900 or B/O. Charley, 718-263-6300.

SWITCHERS

Want to Sell

GVG 100 component production switcher, border line generator, 10 meter cable, drop shadow independent of matte generator, manuals, & E-board, $8000. Homer, 808-271-1226.

JVC KM1200EB PAL 5 input switcher, new, never used, $800; Videotek RSI0 10x1 routing switcher, audio follow video, vertical interval switcher, new, $500. Joe, 910-867-5149.

Panasonic WJMX switcher, like new, $4300. Bennu Prods, 914-964-1828.

Panasonic WJ-MX12 special effects switcher w/caricature generator, $1100. Kerry, 334-794-4101.

Grass Valley 100 video switcher w/chroma key, exc cond, looks like new, just had full factory tuneup, all documentation & manuals, $5000. Hammer Production Studios, 913-271-7200.

Crosspoint Latch 6119, 5 input production switcher w/optional Y/C in and out, needs work on circle, square & diamond wipes but all else works fine, $400 or B/O. Scott G, Creative Video, 608-274-7373.

Grass Valley GVC 1600-IL master control switcher, gd cond, audio follow video, 10 input switcher w/program & preset (2) x10 audio follow switcher heads, B-line, chroma key (6 input), pulse gen, complete cables, mix effects A-B, stereo audio, phase revers for audio, $5500 or B/O. Gordon, Magnolia Video, 904-668-0611.

Grass Valley HX64, 64X3Z video & mono audio routing switcher, $12,500. Tom, 213-383-0426.

TV FILM EQUIPMENT

Want to Sell

Rank Cintel w/Dubner 16mm & 35mm gates, $55,000; Sierra Video Systems transcoder, both ways, $1750; CF-200 film cleaner, $4500; Accom still store, $12,500; Abekas A-64, $14,000; 35mm Stedigate, $10,000; Rank 35mm slide gate, $6000. Myron, 404-237-9977.

RCA TP66, 16mm TV film projector, 3/2 pulldown, density wheel, mag/opt sound, $1100 FOB; Devry XD 35mm optical end projector, 100 W DRS lamp, solar cells & preamp, 2000 ST magazines, $1900/pair FOB. Rich, 216-929-3712.

Singer Telecine 5-blade film projector/adjustable gate, new, $850; Elmo Telecine 5-blade film projector, $1900. Bennu Produs, 914-964-1828.

Steenbeck ST 921 Super 16mm, 8 plates (2 pictures, 2 sound tracks), full accessories, plus interlock, xlnt cond, new, $21,000. Nigos Ambatzis, Spectral, 21 Ieronos STR, Athens 11634, GREECE.

VIDEO PRODUCTION EQUIPMENT

Want to Sell

Paltex Abner A/B roll cntrllr w/TC card, 2 JVC cables & 1 Panasonic cable, $2000; Super Gen 2000 and Deluxe Video III sftwr, $1000; JVC AA610-U pwr sply batt chrgr, $350. Bob or Wade, 406-248-5896.

Quanta MG 100srssp CG, 1 ch, Spanish/English, $400 or B/O; 3M D2200 CG w/4 discs of fonts, $400 or B/O; Nova 502 TBC, $900 or B/O. Gordon, Magnolia Video, 904-668-0611.

Sony VO5800, 3/4" recorder, low hrs, $1600; Microtime T320D TBC, $700; both for $2100 or B/O or negotiate/buy Sony BVU800 or 820. Charlie or Bill, 619-226-0805.

Sony PVW-2800 Betacam SP editor, exc cond, only 40 tape running hrs, $16,500; Sony PVW-2800 Betacam SP editor, exc cond, $15,000; Panasonic AU520 MII portable, exc cond, 3 1/2 yrs old, light use, serial cntrl, field color playback, manual, Porta Brace case, camera cable for Panasonic 300/200 CLE, batt charger w/4 batts, $5900. Mike, 806-791-2800.

Sony RM450 edit cntrllr, $1100; Sony VO8800 portable 3/4" SP VTR w/Porta Brace case, $1900; Sony M3A Mark II 3-tube video camera w/Porta Brace case, $1100; Alta Cygnus Y/C composite 5.5 MHz wideband TBC/synchronizer w/ effects, $1900; Hitachi CAZ1 camera back adaptor back, $575; C-201TD U-Matic (14-26 pin) camera cable, $150; Sony Zeppelin windscreen/handle, $250; LTM Pepper Pot 3-way pwr sply/dimmer, Sony CMA8 camera, AC pwr sply, $300; Sanyo VCR4900 consumer Betamax recorder, $200. Kirk, 606-885-9613.

Kramer VS11E active composite video processor, lock gain, contrast, phase, chroma & detail cntrl, 3 input A/V switcher w/3 A/V process outputs, 1 unit high rack mountable, $125; Datatron SMPTE time code gen, external or internal ref, $150. Scott G, Creative Video, 608-274-7373.

For-A VTW-222S video typewriter, SVHS & composite, cut, roll, crawl modes, 500 colors, 32 page memory, manual & orig box, $375 or B/O. Charley, 718-263-6300.

Videomedia Mini Z editor, complete but needs repair, $100 plus shipping. Leroy, 702-723-5457.

Alta Pictoris compressor w/EFX, clean mosaic, poster, negative, invert, dissolve, compress pip motion, field/frame freeze, GPI 50 event memory, $1800. Joe, 910-867-5149.

Chyron VP1SG char gen, exc cond, B/O; Nova 500 TBC, 32 line window, exc cond, $500. Hammer Prod Studios, 913-271-7200.

Fortel Y688 total error corrector TBC, composite or U-matic Y688 component input, composite Y688 or Y/R-Y/B-Y component outputs, Faroudja Pilot circuit, 5.0 MHz bandwidth, exc condition, $1200. George, 801-621-0084.

VCRs/VTRs/RECORDING MEDIA

Want to Sell

JVC CR4400U 3/4" portable VCR. Dean, 214-343-0879.

BVH 1100A, 1" NTSC w/Microtime 2020 TBC, BVH 1100 1" PAL w/Microtime 2020 TBC, both for $5000; Sony BVU110, 3/4" w/TC & Porta Brace, $800. Craig or Chris, 334-433-7733.

Sony BVU150 broadcast series portable 3/4" SP, light use, exc condition, incl BKU150 TCR/G & Porta Brace case, $2500 or B/O. Bruce, Digital TV Productions, 509-332-5858.

Panasonic AG7450, SVHS dockable recorder, extremely low hrs, $1400. Todd, 703-956-1659.

Ampex VPR2, 1", new heads in 94 under 200 hrs, w/TBC II & monitor bridge, $5000 or B/O; Sony VO4800 w/4" portable w/Porta Brace soft case, batt & charger, hrs barely register on meter, $300 or B/O; Sony SVO160 (4) VHS Hi-Fi recorders, like new w/origl boxes, remotes & documentation, $350 ea; Panasonic AG1950 VHS editor, $600. Scott G, Creative Video, 608-274-7373.

Sony BVW10 Betacam editing player, good cosmetics, picture quality & tape transport, unknown hrs, $3500. George, 801-621-0084.

Sony VO9800 3/4" VTR player/recorder, service manuals, exc condition. $3000. Kelly, 318-234-1422.

Panasonic AG7400, portable SVHS VCR, $1000. Frank, 914-623-0842.

Sony VO8800 w/TC, Porta Brace, batts & charger, exc cond, $2000. Russ, 303-444-8439.

Sony RMM501 rack slide kits for Sony 5800/5850, good cond, $75 ea + shpg. Al, 712-362-4119 eves.

Panasonic AU700 editor VTR, $485; Panasonic 9240, 3/4" recorder/player, $475; JVC CR4900, 3/4" field deck, $750. Bennu Prods, 914-964-1828.

Sony BVU50, BVU110, 3/4" field decks w/time code, Kangaroo & shipping cases, $750. Shaun, 303-779-9578.

JVC CR85OU 3/4" editor, address trk time code, parallel serial control, low hrs, exc condition, manuals, $2500 + shipping. Jack, 201-587-1177.

JVC CR665OU, U-matic player/recorder, used less than 2 hrs per week, $1000 or B/O; (50) 3M U-matic 1 hr tapes, $5 ea or B/O. Ken, 704-324-8218.

CVR-60, low hrs, exc condition, $13,500. Shaun, 303-779-9578.

Sony EVO9800 VCR, Hi-8mm, $2350; Sony DME 450 digital multi effects, no TBC needed, lots of effects, $2100; Sony BVM1201 monitor, $750. Lou, 408-947-7030.

Panasonic AG1970, very little use, $1100. Bob, 408-685-9424.

Sony BVW65 broadcast DT player, Sony PVW2800 edit recorder/player, Sony PVW2600 player, Sony VO9850 3/4" SP edit recorder/player w/additional time code reader/generator, mint condition, very low hrs. 315-445-0979.

Sony VO9600 3/4" SP rcdr, mint condition, original box, all manuals, very low hrs, $2900 or B/O; JVC CR8200U 3/4" rcdr, edit source, good condition, manual, $500. Clifton, 606-255-9829.

Sony VP5020, 3/4" player, low hrs, $600; Panasonic AG-7400 w/AGA-95 SVHS portable, $750; Panasonic edit system AGA-70, NV-9600, NV-9240, $2000. Glen, 407-859-7940.

Sony BVH3100 INT TBC, w/DT, completely reconditioned w/TC, $18,500; Sony BV00 w/BVT2000 TBC, DT & TC, exc cond, $6500. Ed, 610-889-9676.

JVC BRS811U editing SVHS VTR, very low hrs, perfect cond, recently serviced, $2000 or B/O. Laura, 909-613-9154.

JVC BRS378U industrial SVHS recorder w/editing function, jog/shuttle, color corrector, good cond, original box & manual, $800 or B/O; service manual for Sony VO8800 3/4" SP portable, $30 or B/O. Tony, 702-221-7995.

Sony svc manuals for BVU800s, $29.95 + shpg; Ampex VPR3 svc manual, $29.95 + shpg; Panasonic TQ2024F disc player, $495 + shpg; Sony BVR820 remote cntrl unit, $595; Sony BVH1000 video head, new, $895 + shpg. 916-354-1990.

Sony VO8800 3/4 SP portable VTR w/Porta Brace case & camera cable, like new, 200 total hrs, VO4800 incl at no charge, $1500. Hammer Production Studios, 913-271-7200.

Ampex VPR3 air supply assembly, new in box, $995; Ampex VPR3 svc manuals, $29.95 + shpg; Sony spare parts for 3/4" VCRs, new in boxes, $1500/all. 916-354-1990.

Panasonic AG7650 (2) SVHS Hi Fi, incl player w/TBC & DNR, 9-pin rem control RS422A, exc cond, $3200 or B/O; Panasonic AG7750 SVHS incl editor, rec w/TBC & DNR, 9-pin rem control RS422A, low hrs, exc condition, $4800 or B/O; Panasonic AG7450 docking SVHS rec, low hrs, exc cond, like new, $2100 or B/O. The Movie Makers, 909-371-5870 M-F 8am to 4pm PST.

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Advertising Sales Representatives

U.S. East Coast: Mike Dahle +1-914-762-3572 FAX: +1-914-762-3107

U.S. East Coast: Eric Trabb +1-908-591-0906 FAX: +1-908-591-1170

U.S. Midwest: Gene Kinsella +1-312-327-3192 FAX: +1-312-327-3193

U.S. West Coast: Gil Warren +1-415-493-8228 FAX: +1-415-493-2242

Europe: Dario Calabrese +39-2-7030-0310 FAX: +39-2-7030-0211

Japan: Eiji Yoshikawa +81-3-3327-2688 FAX: +81-3-3327-3010

Classified Advertising: Caroline Freeland +1-703-998-7600 FAX: +1-703-998-2966

USER REPORT

Ultimatte is the Key at PVR

by Steve Kotton and Tim Schaller
Pacific Video Resources

SAN FRANCISCO

Pacific Video Resources (PVR) is a digital component production and post production facility. Our plant is a digital, CCIR-601 environment equipped with D-1 and Digital Betacam. We primarily use our new Ultimatte 8 for our blue-screen soundstage, which is a virtual platform for advertising, game, music video and corporate producers.

We have helped create virtual environments for Foote Cone & Belding Ad Agency, Levi Strauss, Apple Computer, Grass Valley Group and many computer game makers in the Silicon Valley. We must provide the cleanest keys to accomplish the most realistic results.

THE BASICS

With the Ultimatte 8, we can provide the best possible digital chroma-compositing, even in extreme conditions of lighting and set design. The product's new matte-shading and screen-correction features make this possible. Screen-correction stores a video frame of the background shot without any foreground objects.

A correction-matte is derived from the stored image and used to eliminate any imperfections in the blue screen or its lighting. Ultimattes have always been sensitive to holes in the evenness of background lighting. The Ultimatte 8 now easily recognizes these as unwanted information.

4:4:4 image processing is another new feature that allows for twice the chroma-bandwidth in an all-digital environment. RGB video from the foreground source is fed to an Ensemble Designs analog-to-digital converter, where it is sampled at 13.5 MHz yielding a 10-bit 4:4:4 RGB video stream.

We then feed this signal to the Ultimatte 8 foreground inputs. This allows the Ultimatte to derive a high-bandwidth matte with superior edge discrimination. The Ultimatte 8 may also input 4:4:4 and 4:2:2 Y, Cr, and Cb signals. The Ultimatte 8 output is available as a normal 4:2:2 signal or as a 4:4:4:4 or 4:2:2:4 signal for recording on a DVPC 4:2:2:4-equipped Sony DVR-2000. This allows the processed foreground and matte signal to be recorded on the same tape reel at 10-bit depth, which preserves quality and eliminates the need for an additional video recorder. Another added feature is luminance keying.

The Ultimatte 8 has been well-designed for ease of use. The control panel is networked so that several control panels may be linked to the main chassis. We can download software upgrades from a PC and store control panel settings on a PC.

REAL-WORLD EXAMPLES

The Ultimatte 8's features permit a high degree of edge and background control while the composite is being tweaked. A single button toggle allows us to check the matte instantly. The machine's quick-save and quick-recall functions allow for five test settings before we commit to saving in one of the 100 memory files. We use this feature as a scratchpad while we experiment or for five instant on-line setups for different situations that will come up repeatedly.

On a recent job, the subject had three different colors in his clothing from which we were deriving mattes. The ability to instantly switch the color that was keying saved a great deal of time in the edit session. The client was impressed by the flexibility of the system.

In a composite, elements of the foreground that are the same color as the backing will change color. Ultimatte gives you the means to color-balance these foreground elements back to the original color.

We recently had a problem in which the blue element in the talent's purple suit jacket dropped out in the composite, changing the jacket to brown. I was able to dial that blue back into the coat without affecting the keying.

We use the screen-correction feature to restore shadows to a scene. During a recent production, there was a shot of a cat on a narrow runway painted the proper Ultimatte blue. Unfortunately, the top of the runway and the shadows below it had enough luminance contrast that, when eliminated in keying, no subject shadows could come through. Screen-correction allows the background scene to be entered into a buffer and inverted to eliminate this unwanted luminance information and to allow the desired subject shadow to come through.

In all, the 4 x 4 Ultimatte 8 is the perfect tool for our high-end compositing jobs. Whether we are creating the perfect match to a distant location on our stage, or creating a location that only exists in an art director's mind, the Ultimatte 8 allows us to exercise our imaginative powers fully. ■

Editor's note: Steve Kotton is director of production for and one of the founding partners of Pacific Video Resources (PVR). He is also a director member of the Directors Guild of America and is the winner of numerous awards for his broadcast, cable and corporate video and film projects.

Tim Schaller is senior effects editor for PVR. After receiving his bachelor's degree in broadcasting, he went to work for the NBC affiliate in Phoenix. He has won many awards since joining PVR in 1985.

The opinions expressed above are the author's alone. For further information contact Ultimatte (telephone: +1-818-993-8007; FAX: +1-818-993-3762) or circle ***Reader Service 49.***

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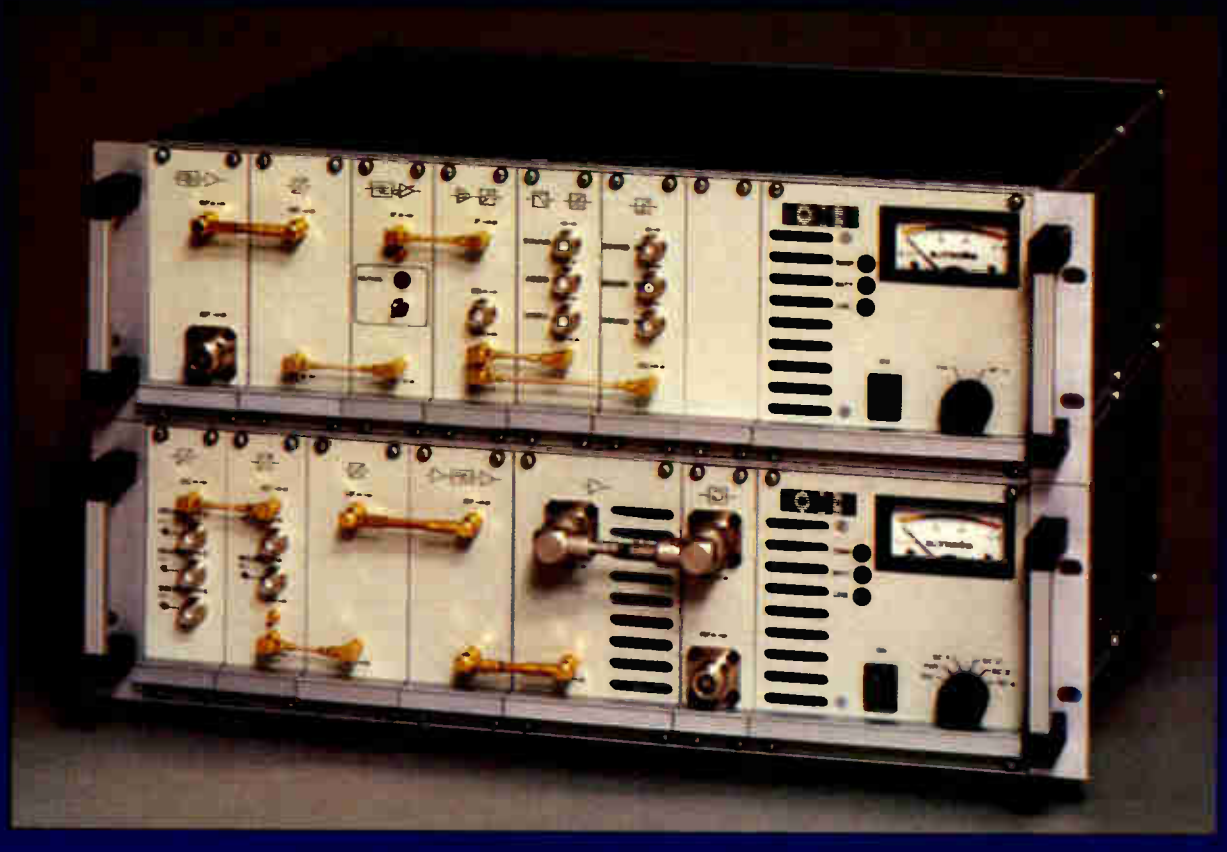

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A PRACTICAL APPROACH

Axiom's unique systems approach to broadcast audio production, with Remote Input/Output stations (RIOs), enables one console to service several stages or production suites. Coaxial cables provide simple connection of console, processor and I/O.

All system settings, from the console dynamics to signal routing, may be stored and instantly reset. Console controls may also be dynamically automated.

Integral to Axiom is a hard disk track per console channel, providing a 20-bit digital recording, editing and playback environment. "Freeplay" additionally provides instant replay from tracks on demand.

- **Totally digital signal path.**
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- **Systemwide or selective reset of console and input/output routing.**
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- **Simple installation and maintenance.**
  - Connections between console, inputs and processor are simplified by the use of coaxial cables

ABC TV

"Axiom is the first digital console with the knob per function interface that ABC wanted. In addition, SSL's systems approach, making use of RIOs (remote input/output stations) and HiWay links, will make installation and operation easier."

David Linick, Project Manager, TV7,
ABC TV, New York City

BBC

"The establishment of a fully digital audio mobile unit is part of the BBC's commitment to the widespread application of digital technology in the production chain. The audio vehicle complements the recently completed Digital Widescreen TV OB Control Vehicle, and will provide high quality source material for the Corporation's DAB (Digital Audio Broadcast) transmissions and the existing transmissions in Nicam Digital Stereo."

Gerry Glancy, Head of Operations,
BBC Radio Outside Broadcasts, London

Solid State Logic

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