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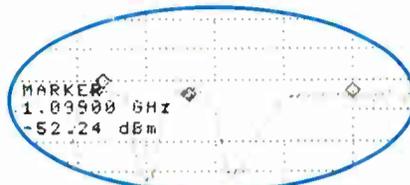


V O L 1 4 N O 8 , A P R I L 2 6 , 1 9 9 6

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Canadian Telco Plans Video Future

by James Careless

TORONTO

Despite their current handicap of having to work with a narrowband twisted-pair copper connection to the home, Canada's telephone companies are not sitting on their hands when it comes to competing in the interactive services market.

This point was made abundantly clear in November of 1995 when — at the same time Rogers Cablesystems announced its interactive WAVE service — Stentor alliance member Bell Canada launched its "Sympatico" Internet access service in Ontario and Quebec, a service slated for national roll-out in the near future.

AVERAGE USE

Currently aimed at the average Windows-based PC home user with a conventional telephone modem (a Mac version is coming soon), Sympatico basically does what any Internet provider does,

namely, provides the software and necessary network access to all subscribers to "surf the Net."

Its prices are also unremarkable: C\$22.50 for a startup kit, plus monthly rates that vary from C\$7.50 to C\$30 based on hours used. In fact, in many ways Sympatico costs more than many small Internet services.

However, from a market standpoint, what makes Sympatico significant is that it is backed by a major telephone company, one whose technology has a good reputation with Canadians

As well, the fact that Sympatico startup

kits are also sold in major retail chains gives the service a cachet of legitimacy its small competitors cannot hope to match.

Still, from an engineering standpoint, Sympatico is still yesterday's technology, while Rogers' WAVE is tomorrow's. Stentor knows this, which is why its nine member companies are spending C\$6 billion on "The Beacon Initiative" to get truly high-speed interactive services online.

The question is, lacking cable's hybrid fiber/coaxial base and saddled with twisted-pair connections to the home, how are the telcos going to get such services to the

customer?

According to Rolando Oliver, director of network access engineering with Stentor Resource Centre Inc., the answer is to use a range of technologies to drive interactivity to the consumer's doorstep.

CENTRAL UPGRADE

The first thing the telcos need to do — and have already done — is to upgrade their central telephone networks to fiber to support high-speed data transmission. On this point Canada's telephone companies are way ahead. In fact, Oliver foresees the day when they will be able to transmit data at the astonishing speed of 10 terabits/second. (A terabit equals one million

(continued on page 7)

Reaching for the Skies:

Satellite and mobile news-gathering technology, such as this truck from Taurus Communications, is the focus of this month's Buyers Guide.

Product reviews begin on Page 31.



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Computer Titans Ready for War
Page 10

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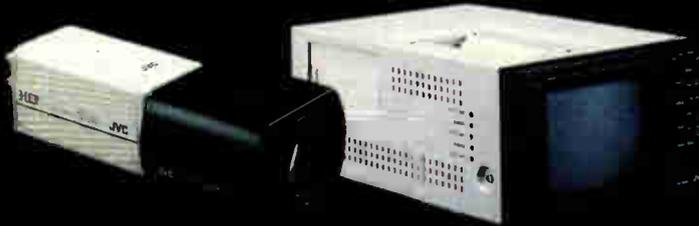
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BUSINESS

CHYRON CORP. TO PURCHASE PRO-BEL

MELVILLE, N.Y.

Chyron Corp., manufacturer of graphics and character generation equipment, is set to buy U.K.-based Pro-Bel Ltd. for US\$21 million.

Chyron has signed a letter of intent in which it would provide US\$12.1 million in cash plus US\$9 million of restricted Chyron common stock.

Pro-Bel, which manufactures video and audio distribution and switching equipment, had revenues of approximately US\$27.2 million last year.

According to Michael Wellesley-Wesley, Chyron's chairman and chief executive, the purchase is part of an effort to further the company's worldwide expansion.

"This is a major step in Chyron's strategy to establish itself as a global provider of equipment, systems and solutions for the broadcast and related video industries," he said. "Chyron's goal is to work with Pro-Bel as a strategic partner and to grow Pro-Bel's business aggressively. In particular, we believe that the combination of Chyron's well-established distribution network and Pro-Bel's innovative product lines will result in substantial growth of Pro-Bel sales in the U.S."

"Working together, the two companies will have enhanced opportunities in the Far East," he added. "Further, Pro-Bel's strong presence in the U.K. and Continental Europe will present Chyron with additional opportunities to sell to this growing international marketplace."

Pro-Bel Chairman Ray Hartman said the deal will also benefit Pro-Bel's worldwide standing.

"The development of new technologies is being driven by increased spending by the broadcast industry on new and expanded systems to satisfy the demand for additional program channels," he said. "The Pro-Bel product line will benefit from Chyron's established U.S. presence and strong industry relationships and will make Pro-Bel a more truly international company."

For further information, contact Chyron Corp. at telephone: +1-516-845-2000; FAX: +1-516-845-5210, or circle Reader Service 20.

PEOPLE

FALKENBERG NAMED PRESIDENT OF SACTLER U.S.

FREEPORT, N.Y.

Eric Falkenberg has been named president of Sachtler Corp. of America.

"We are happy to promote Eric to President of Sachtler Corp. of America

after 15 years of successful service," said Juergen Nussbaum, CEO of Sachtler AG.

Falkenberg started the U.S. operation of the lighting and camera support company in 1981.

GRAPHICS

THOMSON BROADCAST TO DISTRIBUTE GETRIS LINE

PARIS

Thomson Broadcast Systems has signed an agreement with Getris Images in which Thomson will become the sole distributor of Getris products in the U.S., Canada and much of Europe. In addition, Thomson will be allowed to include Getris systems as part of its integrated systems packages throughout the world.

The agreement, which will last 18 months, covers Getris' Eclipse, Venice, Hurricane and Broadnews systems.

All marketing and after-sales services in the areas covered by the contract will be provided by Thomson, which will establish local specialist teams.

The agreement is expected to benefit both companies in that the Getris line complements Thomson's series of 4:2:2 digital mixers, making the package suitable for Thomson's all-digital strategy for the broadcast and post production markets.

Thomson will include Getris' Broadnews and Eclipse graphics systems in a new production and broadcast facility it is designing for Sei Milano in Italy. The configuration will include two DVE layers, an Aramis and a Broadway control terminal capable of two video outputs, as well as Internet access for importing remotely created sequences.

Meanwhile, with North America taken care of with the Thomson agreement, Getris has set its sights on South America with the creation of a service center in Buenos Aires. Getris is currently planning to install three Hurricane suites at TV Globo in Brazil and a Venice studio at Sorin Producciones in Argentina.

For further information, contact Thomson Broadcast Systems in France at telephone: +331-3420-7071; FAX: +331-3420-7045, or circle Reader Service 26; or Getris at +33-7690-9777; FAX: +33-7690-7234, or circle Reader Service 121.

BUSINESS

DYNATECH SPLITS INTO TWO UNITS

SALT LAKE CITY, Utah

Following a decision by parent company Dynatech Corp. to get out of the broadcast market, Dynatech Video Group has been split into two entities in preparation for its sale.

Under the new structure, the Utah Scientific line will include the Utah router and switching systems and the Delta line of character generators, originally sold under the Quanta label. Dynatech Video Group will oversee the ColorGraphics, EMC, Alpha Image, Digistore and Cable Products systems.

In the overall corporate structure, Dynatech Corp. will slim down to three product groups: Communications Test, Industrial and Scientific Communications Systems and Video Technologies.

"Dynatech Corporation's long-term mission has moved it into a strategic direction away from the broadcast equipment

industry," said George Merrick, vice president of Dynatech Corp. "This provides an opportunity for the strengths of the Video Group, specifically in routing and distribution, to flourish with a new owner."

Craig Soderquist, president of Utah Scientific and Dynatech Video Group, said the company will continue to provide service to existing customers and make the transition to a new owner as smooth as possible.

"The founding strength of the Dynatech Video Group was always in routing and distribution, and we have an extremely powerful and popular line of character generators in the Delta," he said. "As we move forward, we intend to sharpen our focus on these strengths, continue to build domination in the broadcast arena, and continue to take those strengths to non-traditional and emerging market areas."

"Our mission when I joined the company nine months ago, was to become the premier routing and distribution company in the industry," he added. "Dynatech's decision to exit the broadcast market does not alter that mission."

For further information, contact Dynatech Video Group at telephone: +1-801-575-8801; FAX: +1-801-537-3099, or circle Reader Service 71.

DESKTOP VIDEO

QUANTEL SUES ADOBE SYSTEMS

NEWBURY, U.K.

Graphics and editing systems manufacturer Quantel has filed a patent infringement suit in the U.S. against Adobe Systems Inc., maker of the popular Photoshop desktop video production package.

Quantel alleges that the Photoshop system violates five Quantel patents in the U.S. Quantel is seeking unspecified damages in the action.

Quantel has brought suit against a number of manufacturers around the world, all of which have been upheld in court or resolved privately. This is the first time Quantel has filed suit against a software manufacturer.

FIBER OPTICS

ARD JOINS FIBER OPTIC NETWORK

MUNICH

Germany's first public broadcasting network has signed a deal with Vebacom and Viag to link its 36 studio sites from all 11 affiliates via a closed fiber optic network to be called Hybnet.

This comes as a major blow to the Deutsche Telekom, which was hoping to link broadcasters with a new broadband ISDN network. B-ISDN was targeted at broadcasters, and DT demonstrated it at the Montreux ITS.

The German government was forced by the European Union to liberalize closed user groups in 1995 and all communications by 1998.

The existing ARD studio network is provided by DT and is to be maintained until the Hybnet is installed.

Vebacom hopes to sell the new service to leading private stations, such as RTL and Sat1, when DT's dial-up broadband service, the Video Broadband Network, is closed down sometime this year.

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The Power of Networked PCs

by Keith Trickett

GUEST COMMENTARY

In the world of broadcast-quality graphics, proprietary hardware has traditionally been the name of the game. In the last year or so, there has been a movement toward graphics systems that have been designed to take advantage of both standard platforms and standard operating systems. The character generator (CG) provides an excellent example of why a standard platform graphics system can be not only competitive with, but superior to, traditional graphics systems.

A PC- and Windows NT-based character generator offers many advantages over proprietary hardware-based character generation. The most obvious advantage is that PC hardware is easy to purchase, upgrade and maintain. Since the PC marketplace is so intensely competitive, prices are reasonable and many companies provide excellent customer service. Many people are frustrated with buying equipment that is based on hardware that in just a few short years will become so obsolete that the company that manufactured it no longer offers maintenance.

UPGRADE AT WILL

If your system is based on a PC, you can upgrade whenever you want and you can be

sure that as you need to add more memory or a larger hard drive, you will be able to shop for the best deal available. You can also be sure that wherever you are, if you cannot perform the upgrade you need yourself, there is a long list of service and maintenance companies in your area that will handle it. And of course, when you are not using this PC as a character generator, you can always use it for other applications.

Using Windows NT as the operating system for a character generator yields more benefits. NT is a very stable, robust operating system. It includes built-in networking, so you do not have to add another layer of software to network multiple CGs. The speed and power of Windows NT lets you shift data in real time across the network to create real-time multi-operator systems with ease.

NT is lower cost than other operating systems like UNIX and the user interface is already familiar to millions of people. These reasons add up to make Windows NT a professional-level operating system with a lot to offer a broadcaster.

Windows NT makes it practical to own a very large font library. You can purchase off-the-shelf fonts for dramatically less than those available for traditional character generators, and they can be installed quickly and with a minimum of fuss. You can even create your own fonts and import them into your character generator, again using off-the-shelf software.

Our PC-based CG, TypeDeko, even has a built-in logo font, which each client customizes. You simply scan a logo or other image with Photoshop, import into TypeDeko, and "allocate" to a key. Then, every time you need a logo, type that character from the logo font, and you have it on-screen, fully resizeable — no need to ask the manufacturer to create special logos for you as with proprietary hardware-based systems. Imagine how creative you can be when any font you

can dream of can be yours without undue expense.

Windows NT also makes it easy to create CG pages in international character sets, even pictographic languages. NT's Unicode capability allows for 65,000 characters per font, which makes languages like Chinese and Korean easy to handle. The input technique for these pictographic languages is also already built into the appropriate versions of Windows NT, so for example, any Chinese typist can sit right down and start titling.

UP AND RUNNING

A Windows NT-based CG can decrease training time drastically. It only takes minutes for a Windows user to learn to operate a character generator designed to follow Windows standards. There are many documented cases of first-time users just sitting down and using a PC-based CG to create beautiful pages with no training at all, in fact, even without a manual. The wasted time and expense of a three-day dedicated training course is not required to learn to use a well-designed Windows NT-based system. You can spend more time being creative and less time memorizing keystrokes.

Also, efficiency can be increased dramatically with the ability to import and export files to other Windows-based software applications. Graphics, textures and backgrounds can be imported from paint and graphics packages. Clients can send files that contain all of the names and titles to be used in credits, which can be imported directly into your sequence with no rekeying or typos. You will never have to wait for a vendor to retouch a graphic again. It can simply be scanned into a paint program like Photoshop, retouched and imported to the CG.

And, of course, PC-based CGs can offer all of the functionality and speed of a traditional CG. Our TypeDeko offers unlimited layering, effects like shadows and glows and even the ability to move or resize text on the page easily. Real-time titling is at its best on a PC.

Some people may try to scare you aware from PC-based character generators, claiming that the quality of output is not good enough. This is not true. A PC-based CG can output serial D-1, composite, Y/C or component of a high enough quality to satisfy any engineer. Some hardware must still be proprietary to offer broadcast-quality input and output, but companies like Digital GraphiX have shown that with a minimum of proprietary hardware (only two boards in the case of the TypeDeko), a standard PC platform can become a high quality broadcasting tool.

It is clear that it is a very good idea to create graphics systems, such as character generators, on standard platforms. What will, in the end, make these CGs successful are careful attention to detail in the software design and dedication to nothing but the highest quality output. ■

Keith Trickett is President and CEO of Digital GraphiX Inc. a leading manufacturer of broadcast-quality graphics systems, including the TypeDeko PC-based character generator. Trickett has more than 30 years of experience with companies involved in computer applications to a wide range of broadcast and industrial areas.

For further information, contact the company at telephone: +1-201-845-8900; FAX: +1-201-845-0693, or circle Reader Service 57.

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SHOW LISTINGS

15-18 APRIL — NAB

Las Vegas. The National Association of Broadcasters will host U.S.'s premiere broadcast and production technology exhibition, set to draw record crowds again this year. For information, contact the association at 1771 N Street NW, Washington D.C., 20036-2891, USA; telephone: +1-202-429-5350; FAX: +1-202-429-5406.

16-20 APRIL — INFORMATION SUPERHIGHWAY CHINA

Beijing. The Beijing Exhibition Center will hold an exhibition of China's voice, video and data providers looking to foster broadband networks. For information, contact E.J. Krause and Associates, 7315 Wisconsin Ave., Suite 450 North, Bethesda, MD, 20814, USA; telephone: +1-301-986-7800; FAX: +1-301-986-4538.

21-23 APRIL — MIDCOM '96

Dubai, UAE. The Middle East International Communications Exhibition will run concurrently with the Midcab cable show and the Midsat satellite event. For information, contact Infocenter International LLC at the Dubai World Trade Center, P.O. Box 9392, Dubai, United Arab Emirates, telephone: +9714-310-551; FAX: +9714-310-096.

Send announcements and updates to *TV Technology International*, P.O. Box 1214, Falls Church, Virginia 22041 USA, or FAX: +1-703-998-2966.

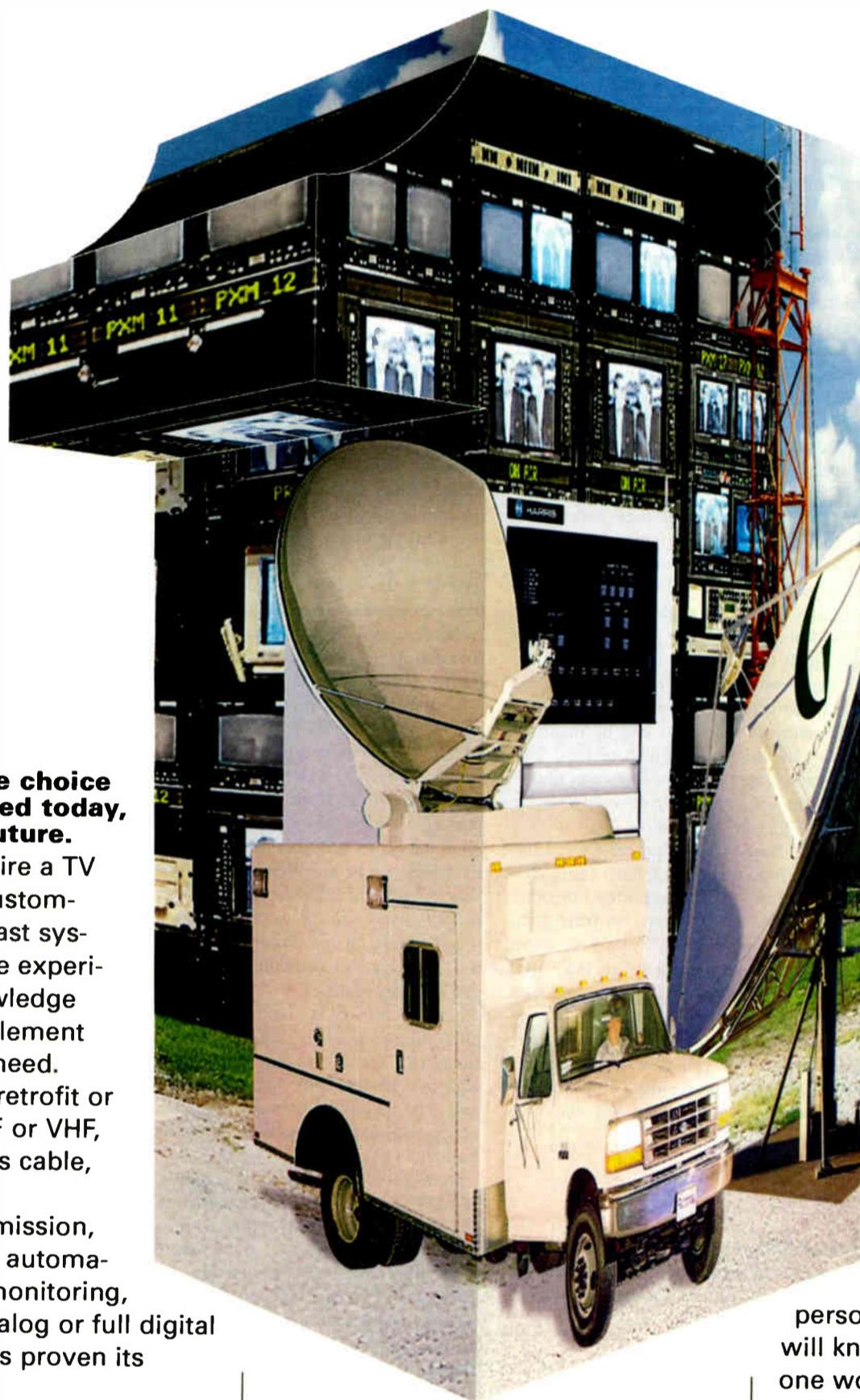
CORRECTION

Product listings in last month's NAB preview incorrectly identified the manufacturer or several pieces of equipment.

The Airbox video server, Sport Edit editing system and Super LSM slow motion disk recorder are manufactured by EVS Broadcast Equipment of Belgium, not by JVC Corp.

TV Technology regrets the error and apologizes for any confusion this may have caused to attendees at the show.

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CONTINUED FROM PAGE 1

Canadian Telco Sees a Video Future

megabits.) This done, the next step is to get these networks connected to subscribers. According to Oliver, there are three ways of doing this, each one applicable in different geographical situations.

The first is to deploy a cable-style hybrid fiber/coaxial network to provide the necessary bandwidth to make two-way interactive video and data services possible. Oliver defines this as an "interim technology for one to two years," while the industry develops more advanced network systems.

The second is to bring fiber as close to the home as possible in an effort to get broadband performance out of the telcos' existing infrastructure.

"We can do something very similar with copper, and deploy fiber deeper and deeper into the network, and use only the last part of the copper feed," Oliver said. "That will create capacity on our copper network."

Once this is in place, there will be three

"However, the PC has a lot of intelligence and, in many cases, can do without a very sophisticated (peripheral) device because you can get software for your PC to (make it) perform a lot of the functions that normally would be performed in the set-top."

However, this does not mean that Oliver necessarily believes that the television set is doomed to life as a passive picture screen.

"I think, and for many other reasons many people believe, that the PC and the

television might converge at one point in time," he says. "You would see more and more televisions that will almost hold a PC inside of them."

This belief in the future dominance of the computer over the television has apparently taken hold throughout much of the Canadian media industry. In fact, despite the move here toward digital TV (including the creation of a federal task force to oversee the start of digital over-the-air transmissions), neither cable nor the telcos show much faith in the ability of conven-

tional television technology to provide the interactive services on which they are staking their futures. The one company to do so, Videotron, is currently having significant trouble getting an interactive TV set-top box to market and has had to delay its planned trials in Saguenay.

Hence, the consensus here seems to be that a migration to PC services is the right route to the Information Highway. As for TV? Well, it seems doomed to remain what it currently is, namely, a one-way passive entertainment device. ■

The TV is a very dumb device. Therefore, you must put a lot of stuff into the set-top.

— Rolando Oliver
Director,
Network Access Engineering,
Stentor Resource Centre



ways to boost copper's performance, Oliver added.

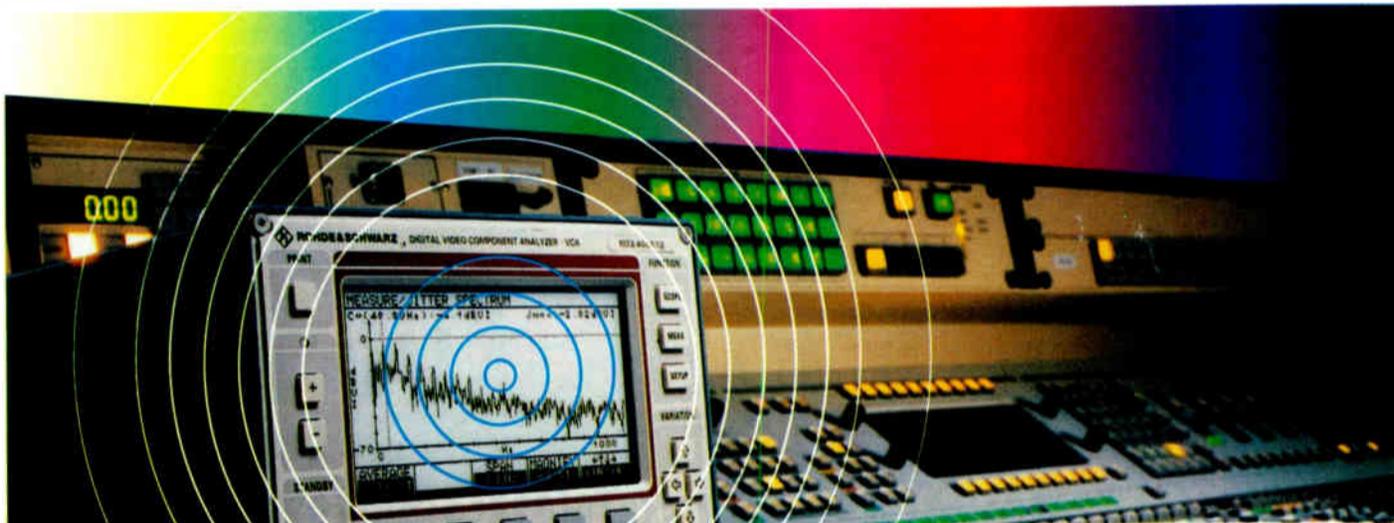
"First, you use switched digital video, so that you don't have to do like cable companies, (namely) send out channels at the same time. You switch them," he said. "Second, you increase the capacity of the bit rates by using more sophisticated compression techniques, modulation techniques. And third, you increase that capacity by going closer with fiber. If you go close enough, you can go up to 52 megabits a second."

COPPER BYPASS

The third broadband transmission method being considered by the telephone companies is to bypass the old copper connections entirely, Oliver said. Instead, they would use 2.5 or 28 GHz wireless cable links for the final drop to the home.

In any case, Oliver is sure of one thing: when it comes to providing interactive services, Stentor agrees with Rogers that the future lies not with television sets, but with PCs.

"The TV is a very dumb device," he said. "Therefore, you must put a lot of stuff into the set-top. Therefore, a set-top for a television tends to be quite an expensive endeavor."



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Jasmine Taps Multimedia Niche

By Frank Heatham

NEW YORK

Jasmine, a newly-announced object database technology designed for easy development and deployment of multimedia over computer networks, is expected to open a new range of business opportunities for television producers who do not have computer programming resources.

Jasmine combines advanced object database technology from Fujitsu with a new multimedia application development environment created by Computer Associates of Islandia, N.Y. The two companies said applications using audio, video, graphics and animation can be developed by non-programmers with Jasmine, and can be rapidly deployed over virtually any type of computer network, including the Internet.

WEB EMBRACES

Jasmine features an authoring system with an extensive collection of multimedia classes, including image processing, advanced video, sound, algorithmically generated background music and voice recognition. Non-programmers can use the software to lay out "scenes" with objects, define properties and behavior, specify user interaction and set up integration with a database.

The new software embraces a growing number of complex technologies for Web-based applications — including HTML, ISAPI, NSAPI, Java and Visual Basic — and facilitates their integration through language-specific plug-ins. It integrates with Netscape's Commerce and Internet servers and Spyglass' Web server.

Jasmine's ease of use in creating applications comes from the class libraries that the software uses as building blocks. Some basic class libraries will be included with Jasmine's authoring software, while more application-specific libraries will be sold by Computer Associates and third parties.

Class libraries can support multimedia data, including images, frame animation, audio of different types, video of different types, rich text and page layouts. Such libraries can be designed for an endless number of multimedia projects, such as an on-line music or clothing store, electronic catalogs or a very user-friendly public library.

For example, a producer could purchase a class library developed for an on-line music store. Once the library is acquired, the author — a "creative" person who does not need computer programming skills — can employ original video images and clips as "objects" to create a unique multimedia presentation for the Internet's World Wide Web.

Then, once the music store is operating on-line, Jasmine could be used to automatically tap into a database for continuing updates, such as a section featuring the Top 10 compact discs of the week displayed on-screen with attached cover art and sample video clips.

CLASS ACTION

Once a class library is used for one project, it can be re-used for another that requires similar functions. Fujitsu and Computer Associates predict the sale and trade of class libraries will become a business in itself.

"Using graphics, animation, audio and video, Jasmine lets organizations construct a new breed of applications that mirror their business environment," said Tatsuzumi Furukawa, general manager of

Fujitsu's Middleware Products Group.

"Jasmine differs from other currently available object-oriented software because the application development environment and the underlying database are built together from scratch," said Charles B. Wang, chairman and CEO of Computer Associates. "The most important thing is that Jasmine is a true object database, not a

Jasmine features an authoring system with an extensive collection of multimedia classes . . .



relational database. Objects lend themselves to multimedia programming."

When asked to compare Jasmine with Macromedia's industry-leading Director authoring software, Computer Associates Senior Vice President Predrag Dizdarevic said an important difference is the ease of use of the application for authoring by artists without programming skills.

"Whatever you do with Director requires you to go into the scripting," Dizdarevic said. "That's not the case with Jasmine. Artists with only basic Macintosh operating experience can use Jasmine's tools right away without additional skills."

However, Dizdarevic noted that the creation of class libraries is another matter. To build a class library requires computer programming skill. The skill line is drawn between application authoring and library building, he said.

HEAVY HITERS

Jasmine received an immediate and positive reaction from several industry leaders, including Netscape Communications, Sun Microsystems, Aberdeen Group, META Group and Microsoft.

"Jasmine's multimedia authoring capabilities, coupled with a strong content management environment, positions it well for the 'new media,' as well as Internet WWW HTML-based applications," said Natasha Krol, vice president of the META Group.

Jasmine's entry into the multimedia market means increased new competition for the makers of authoring software, said Hany N. Nada, vice president and technology analyst specializing in multimedia at Piper Jaffray in Minneapolis.

"All these companies are aiming at a 250,000-customer base with easier to use and more powerful tools," he said, predict-

ing that in the end only a few such products will survive.

Computer Associates' Wang offered a strategy for Jasmine's market entry. "In order to be successful in this new paradigm of object-oriented databases, you must have robust class libraries and the support of the people who are developing those class libraries. Otherwise applications will take much longer to build," he said. "To get class libraries built and to get the support of the development community, we are now making the SDK (software developers kit) available for free. Anyone can apply to be a beta tester." (For information on the SDK, send an e-mail to jasminesdk@cai.com.)

Jasmine is scheduled to go on sale in the fall. Beta authoring software is expected to be available by early summer. Wang said most of the income from Jasmine will come from sales of server software and class libraries.

"Pricing will start at about US\$2,000 for an NT server and run up depending on the power of the computer," he said.

Jasmine's object-oriented database server runs on Windows NT and UNIX. The development environment operates on Windows 95 or Windows NT. The execution environment supports Windows 95, Windows NT, Mac and UNIX. Popular Web browsers are supported through the Jasmine add-in run time. ■

For additional information on Jasmine, visit Computer Associates' Web site at <http://www.cai.com> or Fujitsu's Web site at <http://www.fujitsu.co.jp/index-e.html>

NEWS WATCH

TELECOM

HONG KONG AND TAIWAN TO BUILD ATM NETWORK

HONG KONG

Hongkong Telecom and the International Telecommunications Administration of Taiwan have signed an agreement to build an international asynchronous transfer mode (ATM) network for high volume data, voice and video communications.

The system will be designed to evaluate the effectiveness of two-way ATM switches over international links.

"The (agreement) marks the first step in what will eventually be a wide range of applications, including interactive multimedia services, such as video-on-demand and broadband applications, such as desktop videoconferencing and medical images," said Linus W.L. Cheung, chief executive of Hongkong Telecom.

The push for an international link in Hong Kong arose shortly after a successful test of a local ATM network involving corporations in late 1995.

"We were encouraged by the results of the local trial and are quite confident that ATM services can provide significant improvements to network services," said Norman Yuen, deputy chief executive of Hongkong Telecom.

TRANSMISSION

PORTUGAL EXTENDS REBROADCAST NETWORK

LISBON

Portugal's telecommunications company, Portugal Telecom, has begun a program to extend its current TV rebroadcast network through the installation of a new line of systems from Mier Comunicaciones of Barcelona.

The network will be used largely to serve PT's existing signal broadcast agreements with the country's three leading TV channels. PT currently has more than 100 broadcast centers throughout the country.

The new gear from Mier incorporates digital control facilities, as

well as possible connection to an integrated telecontrol network.

For further information, contact Mier Comunicaciones at telephone: +343-871-7500; FAX: +343-871-7230, or circle Reader Service 76.

DIGITAL TV

CLT'S DIGITAL PLANS PUT ON HOLD

LUXEMBOURG

The Luxembourg media giant CLT is reported to have hit a series of difficulties in the introduction of its new digital television service on Astra.

The reason for the delays are said to be disagreement between the two main shareholders, Groupe Bruxelles Lambert and Havas, their bosses, Albert Frère and Pierre Dautier, and CLT's new manager Michael Delloye. The row erupted following Delloye's recommendation that CLT invest a total DM 1 billion (c.a. 400 million pounds) to launch dozens of new digital packages on the Astra satellite system from Luxembourg company SES.

GBL Chairman Albert Frère is said by CLT employees to be ready to enter a partnership with the giant Bertelsmann group. Havas chairman Dautier was able to get the agreement of the other shareholders to have CLT join Canal Plus digital venture with a 25 percent stake in the form of employees, studio facilities and programming rights. Originally, CLT was to have entered the French market on its own.

This still leaves CLT's considerable stake in the German market in a state of uncertainty. Earlier this year, rumors that initial plans for 1996 appear to have been shelved. However, Roland Steindorf, marketing manager for RTL-Direct, a CLT digital package project based in Cologne, Germany, denied these rumours.

"Nothing has happened to alter our plans to enter the German market with a digital TV-bouquet this year," he said.

He also denied that the employment-stop that his department has implemented since December has anything to do with these rumors, but is because of the continued uncertainty over the MMBG digital television decoder group.

Computer Titans Ready for War

Microsoft and SGI Battle to Win Software Providers for Their Competing Operating Systems

by Chris Dickinson

LAS VEGAS

Among the host of new product launches at NAB this year, one of the most interesting battles is between the big computer companies. Microsoft and Silicon Graphics (SGI) are both determined to outdo each other with software applications running on their proprietary operating systems: in Microsoft's case, Windows 95 and Windows NT; in SGI's case, SGI UNIX.

As a prelude to the Las Vegas exhibition and conference, SGI launched its long-awaited update to the Onyx Reality Engine2 platform and signed a strategic alliance with Avid. The Onyx Infinite Reality processes geometry and video data 100 times faster than its predecessor, while costing only about 10 percent more, SGI officials say.

AVID ABOUT SGI

At the same time, the Avid deal with SGI is likely to result in more Avid products being reconfigured to run on SGI platforms. At present, only Avid's Media Suite Pro can run on SGI computers. Avid products expected to join Media Suite Pro include new high-end editing systems, the Parallax Advance compositing system and Avid's Basys newsroom software. Avid is launching a high-end system, Media Spectrum, at NAB.

SGI is also pushing ahead with its Keystone Initiative through subsidiary Silicon Studio. The Keystone Initiative is aimed at developing a common user interface for software packages that run on SGI platforms and the group now includes more than 30 companies, including Avid, Discreet Logic, Kodak, Sonic Solutions, Adobe, Chyron, TimeLine Vista, US Animation and Xaos Tools. SGI openly admits Keystone's secondary aim is to encourage the use of SGI platforms.

Meanwhile, Softimage, Microsoft's high-end graphics software division, has launched new versions of its animation and effects software on the Windows NT operating system. Softimage 3D was previously available on SGI platforms, but by moving to Windows NT, it can now run on computers supplied by PC rivals DEC, Intergraph and NetPower.

Microsoft also has its own industry grouping for applications running on Windows, the OpenDML consortium. Though originally led by Matrox and D-Vision, the OpenDML consortium is designed to promote software applications on Windows NT and Windows 95. So far, it has attracted about 80 companies.

While the SGI/Microsoft rivalry continues, one company to sit in both camps is Cambridge Animation, launching version 2 of its Animo 2D animation system at NAB, while also showing it for the first time on an SGI platform. Animo also runs on PCs and Hewlett-Packard RISC workstations.

QUANTEL SURPRISE?

Quantel, though often keeping something up its sleeve for the beginning of a show, claims to have nothing new at NAB this year. On display will be Editbox, Henry,

Domino, Paintbox Express, Hal Express, Clipbox and Newsbox.

Scitex Digital Video, which last year bought Abekas to add to its previous

and light sourcing feature, and UltraWarp, with a variety of warp and other visual effects.

Over at Dynatech, new products at NAB include version 6 of the DELTA character generator, a new newsroom monitoring system, Ccapture, which monitors and captures up to four channels of closed captioning simultaneously, and a new routing

SGI launched its long-awaited update to the Onyx Reality Engine2 platform and signed a strategic alliance with Avid.



acquisition of ImMIX, is debuting DVEous, the new digital effects system shown first at IBC in Amsterdam. DVEous will be shown with SurefaceFX, a texture

switcher control system, SC-3.

Pro-Bel, acquired by Chyron in January, is also preparing to show new routing switcher technology.

As for the Japanese giants, Panasonic and Sony, Panasonic promises systems solutions around its DVCPPro small format digital tape format, while Sony is launching a new range of non-linear devices for the low, mid and high ends. System L and System M will be on display at NAB, with System H probably tucked away in a back room.

BTS will show MiniPool, developed in conjunction with Micropolis, a low-cost server system to complement its MediaPool server range.

Among other product launches, French manufacturer Thomson will launch a split head compact camera, the 1657, which will be available in both PAL and NTSC, three new digital production mixers, the 9250, 9300 and 9600, aimed at small OBs and small studios, mid level post production and large OBs and studios, respectively. Thomson is also showing the Pixtore graphics system, developed jointly with Getris Images.

And Snell & Wilcox will launch a new MPEG-2 compression system for testing signals compressed in MPEG-2, as well as unveiling a widescreen edit controller and widescreen display processor. ■

Bosch Sets Digital/Analog Mix

by Andrew von Gamm

BACKNANG, Germany

The engineers at Bosch Telecom, the communications arm of the Bosch manufacturing group, have come up with a whole new range of products and technologies to put a quart into a pint pot.

At a press conference in Backnang near Stuttgart, Bosch engineers unveiled a whole range of new products, including a method of getting six digital channels to live alongside a terrestrial broadcast channel inside a conventional analog cable channel. The basic idea is to place four digital channels inside the so-called 'taboo' channel that separates analog signals, combined with the addition of a fifth digital channel below sound and picture on the analog signal. The remaining digital channel is tucked into the last 1.5 MHz of unused bandwidth. As long as the transmitter sites are not co-located, interference is not a problem.

CABLE READY

According to Dr. Gert Siegel, Bosch's head of research and development, this new technology will be of particular use for cable operators, who could add an extra digital channel inside every analog signal without having to expand their frequency range.

In Germany cable systems only provide space for 28 programs using the range up to 300 MHz in 7 MHz steps. The remaining spectrum between 300 and 450 MHz is at present lying dormant waiting for the introduction of digital television. This is enough for 150 channels in the future, but many systems do not have that capacity and Bosch hopes that the addition of an extra 28 channels will be of interest to cable operators once they run out of existing capacity.

Bosch has also been able to multiply fiber optic capacity by four to no less than 10 Gbps using just one single fiber optic conductor. This is regarded by many as being a major step in fiber optic technology. Original research was part of the R.A.C.E. (Research in Advanced Communications in Europe) program.

The new system is being launched at the CeBit, Germany's huge technology fair in March. The technology uses four 2.5 Gbps pump-laser wavelength multiplexers that cause minute changes in wavelength of the Erbium-doped laser amplifiers, enough for a digital filter at the other end to recognize the separate signals.

Another new Bosch product being launched at the CeBit is an 8 Mbps wireless to the home system called PMP (Point to Multi-Point) that can be used in an almost limitless number of ways to provide multimedia interactive access to the home or business. This wireless-to-the-home system is targeted at the projected launches of telephone and cable systems that will inte-

grate ISDN and ATM protocols to provide telephone, cable TV and corporate communications. In 1998, Germany along with most other European countries, is being forced by the European Union to open up its communications market to outside competition.

ALL-POWERFUL

Until now, state-owned Deutsche Telekom has enjoyed a monopoly of nearly all services, including transmitters and cable systems for broadcasting and telephony. Licenses are now being sought by joint ventures between the electrical utilities and outside service providers, such as British Telecom and AT&T.

Because the new market entrants do not own wires to the home but have a substantial fiber optic backbone throughout Germany — wound around the neutral wire of the high-tension electrical grid — Bosch is hoping to sell this system as a turnkey solution, providing all services, both business and private, to a given area.

PMP links the household to a transceiver station up to 40 kilometers away for a fraction of the cost of conventional hardwiring. This cost savings is particularly significant for countries like Germany where all cables have to run underground. According to Bosch, such wireless systems are so much cheaper that total investment per household, including network and installation, could fall below US\$1,000.

Also, entire networks can be erected in days, rather than years. Each area is to be served by a central feeder station consisting of eight flat antennas, each of which will be able to transmit to several users on different frequencies.

The German government has freed the use of 2.5 - 2.7 GHz for such a new service and an invitation to bid for licenses will probably be made some time this summer. This frequency was used by Deutsche Telekom, but it has reallocated nearly all its long-distance distribution system to 2.5 Gbps fiber-optic backbones for the usual reasons of temperature inversion, etc. The wireless bandwidth will be completely vacated by the end of this year.

Bosch claims to be the world's leading manufacturer of satellite earth stations, though until now these have been marketed under the brand name ANT. PMP is to be sold as a completely integrated video and telephone distribution system in one turnkey package, including complete network management.

The square antenna is about the size of a sheet of writing paper and even easier to mount on the wall of a house than a satellite dish. Output power is just 10 milliwatts, which, given the outcry in Europe over "electro-smog," is an important sales argument. Bosch is already installing its first system as a trial project in the center of London with an unnamed partner rumored to be British Telecom. ■

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Sweets for the Desktop Suite

by David Aughenbaugh

CD-ROM PRODUCTION

I am going to cover a basic shopping list for multimedia production tools. This month I will talk about tools for the Mac, next month, the PC. The items on the list will probably come as no surprise; however, it is through discussion of the tools that I hope to provide something useful.

This should not be taken as a complete list, nor will it be right for every situation. If you are new to multimedia, perhaps it will help you to understand some of the issues you must address. If you have been doing this for some time, maybe it can nudge you out of a rut or help you re-examine some of your assumptions.

PLATFORM PICKINGS

The tools I describe here are the ones I use every day. In shopping for tools I have looked at a lot of alternatives and these are the ones I like. I am not going to talk about the ones I did not buy.

The first question will deal with machine platform — “Should I get a PC or Mac?” The obvious answer would be that it depends on which platform your final product is to run.

That simplicity does not hold up very long, however. If your final product is to run on a Mac, you can generally get away with developing exclusively on the Mac. But if your final product will run on a PC, you will need both Macs and PCs for development.

Macs are expensive, so many potential developers do not like the idea of having to buy both. But developing exclusively on the PC would be a painful experience and an inefficient use of resources.

In general, it is best to do editing, image processing and palette work on the Mac, and move to the PC for compression and testing. The Mac has After Effects and DeBabelizer, which you cannot find on the PC (not yet at least, but stay tuned). The PC has cheap horsepower and the Windows AVI file format, as well as QuickTime for Windows.

COMPLETE ESSENTIALS

DeBabelizer, referred to as the Swiss Army Knife of graphics tools, is absolutely essential. If you have a Mac, you need this software; if you do not have a Mac, you need to get one so you can use this software. Equilibrium is reportedly developing a version for Windows, but until that day, you need a Mac.

On the surface, it is a file format conversion tool with some image manipulation abilities. That alone would be valuable, but combined with the power of scripted batch processing and DeBab's superior algorithms, nothing else comes close. (See last month's column in which I talked about DeBabelizer as part of my discussion on field interpolation.) Why Photoshop and other graphics tools have not picked up on the power of batch processing is a mystery to me.

I think it is the ONLY place to go for

palette work. It is kind of ironic that developing for Windows requires a huge amount of palette work, but there are no palette tools on that platform.

The makers have done a very good job of dove-tailing DeBab with tools like Photoshop, Premiere and After Effects. There is little redundancy, and the duplicated functions are there for good reasons. On top of that, the algorithms used to accomplish those tasks are as good or better than the ones used by the other tools, almost without exception. I have done a fair amount of comparison testing, and DeBab usually wins. I have also found DeBabelizer to be quicker and more direct with many Photoshop type functions — cropping, scaling, x-flip, etc. In the case of scaling, you have a choice of algorithms and several time-saving presets.

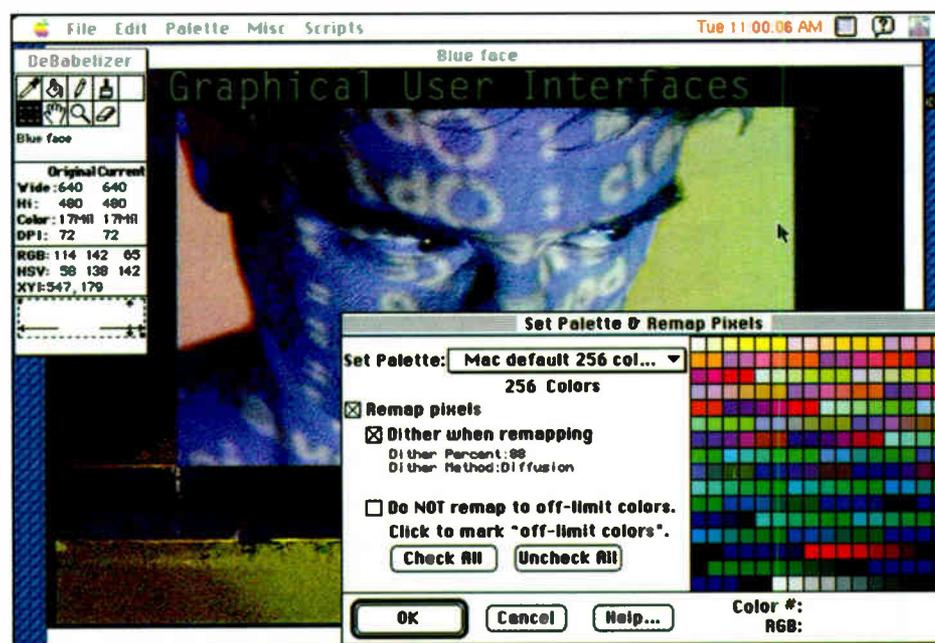
With that glowing description, one could be left wondering why you would bother

they will do, I'll tell you what they will not do. Or more accurately, what they will not do well. Palettes come to mind.

Photoshop is very happy working in a 24-bit environment, but I cringe when I hear someone say, “I will just take it into Photoshop and make a palette.” DeBabelizer is so good at this, it is just silly to go elsewhere. Likewise, you can open an 8-bit image in Photoshop, but do not expect to do much of anything useful to it unless you convert it to 24-bit first.

The story is similar with Premiere. If you open an 8-bit bit source image, you do not even get to see it displayed in its own palette. Premiere will dither it to the default Windows palette. If you save it to a movie, the palette is lost unless you load the palette separately in the “Compression settings” dialogue.

Another limitation of Premiere is image processing. It offers a wide array of image



DeBabelizer's scripted batch processing and superior algorithms make it an essential Mac tool.

with the other tools at all. But fear not, you still need them for the things they were designed to do and DeBab was not.

NO SUBSTITUTIONS!

Photoshop and Premiere are, of course, the standard tools of the trade. They are powerful, mature tools and both are a joy to use. They are so common that I will not waste a lot of time telling you about them. Available on both platforms, my recommendation would be to get Photoshop on one or the other, and Premiere on both. And do not “save money” on substitutes. The possible exception would be Razor Pro for the PC, particularly if you have a Targa 2000 or PAR system.

Perhaps better than telling you about Photoshop and Premiere in terms of what

filtering and audio processing functions, but dedicated tools work better. Premiere is the jack of all trades, but master of none, when it comes to image processing. If you need to scale, crop, composite or otherwise tweak an image, you are likely to get better results in Photoshop, DeBab or After Effects.

The same thing goes for audio. If you need to make any changes to an audio track (especially down-sampling), take it into Sound Designer or some other dedicated audio tool. Do not just change the output settings and expect to get great results.

Premiere's main benefits are that it is simple and has all the tools in one place.

CoSA After Effects has very good tools. People are intimidated by After Effects, but it is not really that complicated. The interface takes a little getting used to if you are

accustomed to timeline-based editing like Premiere, but you can do everything and do it well.

After Effects' fortés are multilayering and motion. You can work with an infinite number of layers, each one with an alpha channel, effects and motion. Go back to layer one, make some changes and the changes will ripple through. Work in image sizes up to 4,000 x 4,000 resolution. Think about what that means for titling or camera moves.

All effects can be ramped. Only a few in Premiere have that ability. And while

If your final

product is to run on a

Mac, you can generally

get away with developing

exclusively on the Mac.



Premiere has a lot of crashes and quirky behavior, After Effects is rock solid. It just feels good to work with that kind of quality.

As for a machine to run it on, I was told by Cosa to get into the PowerMac line, but spend my money on RAM rather than CPU. The company recommends RAM in the range of 80 to 100 MB or more.

LOOKING UNDER THE HOOD

Lastly, I want to cover some of the advancements you can get in the Apple QuickTime Developer's Kit:

ResEdit, short for “Resource Editor,” is useful for digging into the system's internal environment. It is not for the faint-hearted, but this is the only way I know of to explore the inner workings of Mac files. It is frustrating enough for people with a DOS background to start working on the Mac, where everything is hidden. ResEdit will at least let you look under the hood.

Movie Player is a very small QuickTime viewer. Its advantage over something like Premiere is that it takes no time at all to launch and requires very little memory, so you can run it simultaneously with other programs.

Make It MooV is a simple utility that will do one very handy thing. Users can drag and drop QuickTime files onto it and it will change the “Type” and “Creator” to “MooV” and “TVOD” respectively. “Type” is a line in the header of the file that

(continued on page 14)

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CONTINUED FROM PAGE 13

A Wide Array of Tools For the Desktop Suite

tells other programs the kind of file it is. "I am a PICT," "I am an AIFF," or in the case of QuickTime — "I am a MooV." This is accomplished in DOS and Windows with the three-letter extension. On the Mac, the extension is generally ignored by programs. It looks at the "Type" code instead. This is why on the Mac you can give a file the wrong extension and it will still open. If the Type is set wrong, you are in trouble.

"Creator" refers to the application that will launch when you double-click on the

file. "TVOD" is the four-letter code for Movie Player. Normally, the four-letter code is based on the name of the program such as "PrMr" for Premiere and "BABL" for DeBabelizer.

Having Type=MooV and Creator=TVOD is useful because you can double-click on the file and view it quickly in Movie Player without having to wait for a big program like Premiere to launch. Also, if the movie was created on a PC, the Type and Creator will be set to the defaults "text" and "mdos," which are unamil-

iar to Premiere and other programs. Dropping the file on Make It MooV will make the file intelligible to Mac programs.

Combo Walker is the tool I use to flatten QuickTime movies to take them over to a PC. You can flatten movies in Premiere, but Premiere is finicky, and there are too many ways to mess it up. With Combo Walker, it is easy.

QuickTime movies must be "flattened" to be readable on a PC. The Mac system works in such a way that the various pieces that make up a file are stored separately — audio, video, etc. These pieces are referred to as "resources" (hence "ResEdit"). The PC file system does not work that way. PCs expect a single file to be a single piece. The flattening process combines the various pieces into a single file unit that the PC can handle.

Picture Compressor is similar to Movie

For further information

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Player but for PICT files. I use it as a quick and easy way to view multiple PICT files. You can also use it to apply QuickTime compressors to a PICT. But why you would want to do that, I don't know. ■

David Aughenbaugh is trained in video, graphics and fine arts and has worked in digital video for seven years and in computer games for four. His computer game titles include "EarthSiege" and "Front Page Sports: Football and Baseball." He may be reached at +1-541-334-3350, internet: davida@Sierra.com.

NEWS WATCH

TRANSMISSION

HARRIS SIGNS JOINT VENTURE IN CHINA

ANSHAN CITY, China

In a move designed to further its penetration of the Chinese market, transmitter manufacturer Harris Corp. has entered into a joint venture with Anshan Broadcast Television Equipment Group Corp.

The deal creates Anshan Harris Broadcast Equipment Company, Ltd., which will manufacture radio and television transmitters backed by Chinese-based customer service and support from Harris. The relationship will initially call for Harris to provide technology, equipment and various services to Anshan Harris, allowing the company to incorporate Harris solid state modules into Anshan Broadcast's existing product line.

However, over time Anshan Harris will develop a new line of advanced transmitters for China and other countries. Chinese distribution channels will also be established for existing Harris products.

In other news, Harris recently won a contract to provide television transmission equipment to Slovenia's Radiotelevizija Slovenija. Under the deal, Harris will provide a 10 kW Platinum Series HT EL Band III transmitter, along with two UltraVision 2 kW UHF models.

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DVC Is Destined for the Pros

by John Watkinson

VIDEO WATCH

DVC is to video what DAT is to audio: an extremely high-quality compact digital tape recording medium. DAT started out as a digital successor to the compact cassette intending to follow the path of the compact disc, which had effectively eliminated the vinyl disc.

But despite its stunning sound quality, a combination of paranoia and vested interest killed DAT as a consumer medium. Still, it was eagerly snapped up as a semi-professional medium where it has been highly successful despite not having been designed for professional use.

I see many of the trials and tribulations of DAT stacking up for DVC. First, to succeed as a consumer video recording format, picture quality is almost incidental. The predominance of VHS proves that. The quality of VHS cassettes is grim, but VHS is in universal use because of the video rental bandwagon. I do not see DVC replacing VHS because rental outlets will not want to have every title on two different media during a changeover period. The only thing that would make that happen would be for one or more of the DVC manufacturers to start their own rental organization.

Technically, DVC is almost too good to be true. For a start, it is component (no nasty decoding problems or composite artifacts). Also, it is digital (no tape noise or dropouts, thanks to the use of error correction). Lastly, the use of a relatively mild 5:1 compression factor means that on all but the most critical material, DVC will give the same quality as D-1. In addition to component video, there are two channels of 16-bit, uniformly quantized digital audio at 32, 44.1 or 48 kHz, with an option of four audio channels using 12-bit, non-uniform quantizing at 32 kHz. A good indication of the potential of tape recording is that the volume of an entire DVC camcorder is no greater than that of a D-1 cassette alone.

PRO FUTURE

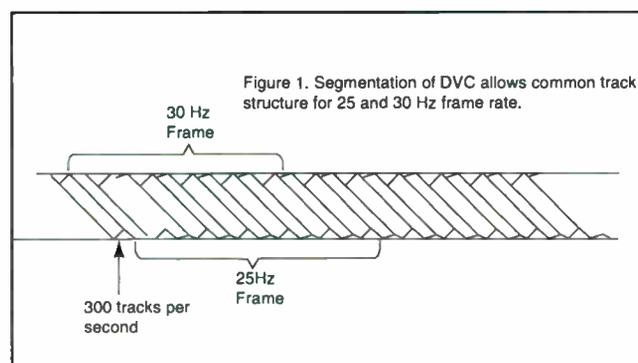
Whatever the future holds for DVC in the consumer marketplace, there is no doubt that it will be used professionally as an acquisition format for applications such as news gathering and simple production. This will be due largely to its low cost and small size. In war zones and riots, the compact size of the equipment means that it is not a liability if the time comes to run for your life. Furthermore, if the gear has to be abandoned or gets trashed, it is not a financial disaster. Given the low purchase, running and media costs, DVC certainly makes the future of disk-based camcorders look pretty bleak.

It is perfectly feasible to mount a DVC camcorder in a model plane or helicopter to get airborne shots at a fraction of the cost

of using full-sized aircraft. Plus, the unmanned model could be exposed to risks that a human pilot would not consider.

The secret of DVC is its phenomenal recording density. To achieve this, DVC has adopted many of the features first seen in small formats, such as the DAT digital audio recorder and the 8 mm analog video tape format. Of these, the most significant is the adoption of metal evaporated tape and the elimination of the control track permitted by recording tracking signals in the slant tracks themselves. Tracks recorded with slant azimuth are only 10 micrometers wide, and the minimum wavelength is only 0.49 micrometers, resulting in a superficial density of more than 0.4 Mb per square millimeter.

Segmentation is used in DVC in such a way that as much commonality as possible exists between 50 and 60 Hz versions. The transport runs at 300 tape tracks per second. Figure 1 shows that 25 Hz frames contain 12 tracks and 30 Hz frames contain 10 tracks. From a tracking standpoint, there are three types of tracks: F0, F1 and F2, as shown in Figure 2. F1 contains a low-frequency pilot and F2 contains a high fre-



quency pilot. F0 contains no pilot tone, but the recorded data spectrum contains notches at the frequencies of the two tones. Figure 2 also shows that every other track will contain F0 following a four-track sequence.

MORE BITS

The embedded tracking tones are recorded throughout the track using a neat modulation technique. At every 24th data bit, DVC adds an extra bit with no data meaning but with a polarity that affects the average voltage of the waveform. By controlling the average voltage with this bit, low frequencies can be introduced into the channel-coded spectrum to act as tracking tones. The tracking tones have a sufficiently long wavelength so that they are not affected by head azimuth and can be picked up by the "wrong" head. When a head is following an F0 type track, one edge of the head will detect F1 and the other will detect F2. If the head is centralized on the track, the amplitudes of the two tones will be identical. Any tracking error will result in the relative amplitudes of the F1 and F2 tones changing. This can be used to modify the capstan phase in order to correct the tracking error. As azimuth recording is used requiring a minimum of two heads, one head of the pair will always be able to play a type F0 track.

Figure 3 shows the track dimensions. The tracks are approximately 33 mm long and lie at approximately 9 degrees to the tape edge. A transport with a 180-degree wrap would need a drum of only 21 mm in diameter. For camcorder applications with the small cassette, this allows a transport no larger than an audio "Walkman." With the larger cassette, it would be advantageous to

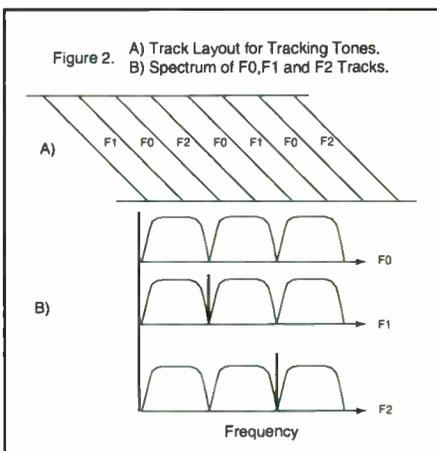
use time compression to allow a larger drum with partial wrap. This would simplify threading and make room for additional heads in the drum for editing functions.

The track begins with the insert and track information (ITI) block. This identifies the position of the track in the segmentation sequence and in the tracking tone sequence and allows a record head to identify its physical position along the track prior to an insert edit. The audio, video and subcode data are recorded in three separate sectors with edit gaps between so that they can be independently edited. As there are no linear tracks, the subcode is designed to be read in shuttle for access control purposes. It will contain time codes and flags.

TIGHTLY PACKED

As in other DVTRs, the error correction strategy relies upon a combination of shuffle and product codes. Frames are assembled in RAM and partitioned into blocks of 8 x 8 pixels. In the luminance channel four of these blocks cover the same screen area as one block in each color difference signal. The four luminance blocks and the two color difference blocks are together known as a macro block. The shuffle is based on reordering of macro blocks.

Following the shuffle, compression takes place. The compression system uses tools that will be familiar from MPEG and JPEG and acts within frame boundaries so as to permit frame-accurate editing. This contrasts with the intra-field com-



pression used in Digital Betacam. Intraframe compression allows a higher compression factor because advantage can be taken of redundancy between the two fields when there is no motion. If motion is detected, then moving areas of the two fields will be independently coded in 8 x 4 pixel blocks to prevent motion blur.

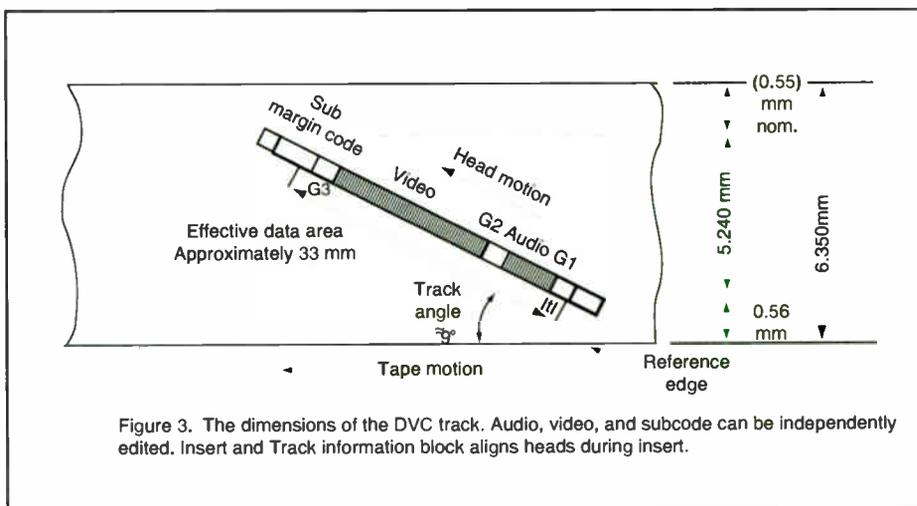


Figure 3. The dimensions of the DVC track. Audio, video, and subcode can be independently edited. Insert and Track information block aligns heads during insert.

Following the motion compensation, the DCT coefficients are weighted, zig-zig scanned and requantized prior to variable length coding. As in other compressed VTR formats, the requantization is adaptive so that the same amount of data is output irrespective of the input picture content.

DVC is quite definitely a consumer product. Consumer VCRs are not expected to do much more than record and play back on the same deck using a minimum quantity of tape. Consequently, the track pitch of DVC has been made rather small. Taking a con-

In war zones

and riots, the compact

size of the equipment

means that it is not a

liability if the time comes

to run for your life.



sumer format into the professional field brings greater extremes of temperature and humidity, more intensive use, likelihood of editing and a requirement for reliable interchange. This means there is more chance of hitting problems.

Panasonic acknowledged this by derating DVC when it developed DVCPro. DVCPro speeds up the tape, allowing tracks to be wider. The reduced playing time is not an issue for professional working, but the resultant increase in robustness is. Given the choice, I would go for DVCPro. However, Panasonic is between a rock and a hard place on the price of DVCPro equipment, which is made in much less volume than DVC. Pitch it too high and everyone will use consumer equipment. Pitch it too low and no one will buy the half-inch recorders. ■

John Watkinson is an independent consultant in digital audio, video and data technology and is the author of numerous books on the subject, including *The Art of Data Recording and the Art of Digital Video*, acclaimed as definitive works. He is a Fellow of the Audio Engineering Society and is listed in *Who's Who in the World*. Based in England, he regularly presents papers at conventions of learned societies and has presented training courses for studios, broadcasters and facilities around the world. John can be reached at +44-1734-834-285, or read his Web page at <http://www.pro-bel.com/guest/john>

The Beauty of PAL and SECAM

by Randy Hoffner

AUDIO
ETC.

Last month I reported that historically there were some attempts to achieve worldwide agreement on a universal television broadcasting standard, but that this objective has proven elusive. One such effort occurred in the 1960s, when the CCIR attempted to gain agreement on a universal color television broadcasting standard. No agreement was forthcoming, however, and three distinct methods to include color information in the broadcast television signal emerged: NTSC, PAL and SECAM.

We took a close look last month at the NTSC color system, which is used exclusively with the ITU-R (formerly CCIR) "M," or 525/60 scanning system. NTSC was the first color transmission system to be implemented, and the developers of the other two systems borrowed from it to a greater or lesser degree. Now that we have examined NTSC in some depth, let's take a look at PAL and SECAM.

EXCEPTIONS TO THE RULE

Developed in Germany, the PAL color encoding system is a variation of the NTSC color system. It is usually used in 625/50 scanning systems, but there are some exceptions. Brazil, for example, uses 525/60 scanning with the PAL color encoding system. There are a number of 625/50 PAL transmission standards, but the differences between them are primarily in RF transmission parameters. A common set of technical specifications are used for 625/50 PAL program production, which are routinely referred to as PAL-B.

PAL employs a double-sideband suppressed-carrier subcarrier modulated by two color signals in quadrature that is fundamentally similar to that used in NTSC but with some important differences. The PAL color subcarrier is located at 4.43 MHz. The Y or luminance signal for both PAL and SECAM is derived in the same way as that for NTSC, and it is transmitted in wideband form as the monochrome picture, just as in NTSC.

The R-Y and B-Y color difference signals are also derived in a manner identical to that used in NTSC. In the NTSC system the R-Y and B-Y signals are converted to the I and Q signals, which actually modulate the subcarrier. In the PAL system the R-Y and B-Y signals are encoded into the U (unswitched) and V (switched) signals, which actually modulate the color subcarrier.

While the bandwidths of the I and Q signals are about 1.5 MHz and 0.5 MHz respectively, the U and V signals of PAL both have bandwidths of approximately 1.3 MHz. The acronym PAL stands for Phase Alternation by Line; the phase of the V-signal is reversed on each successive line. In vector representation, the U axis is always

at zero degrees, while for a given scanning line n, the V axis is at 90 degrees and the burst is at 135 degrees (see Figure 1).

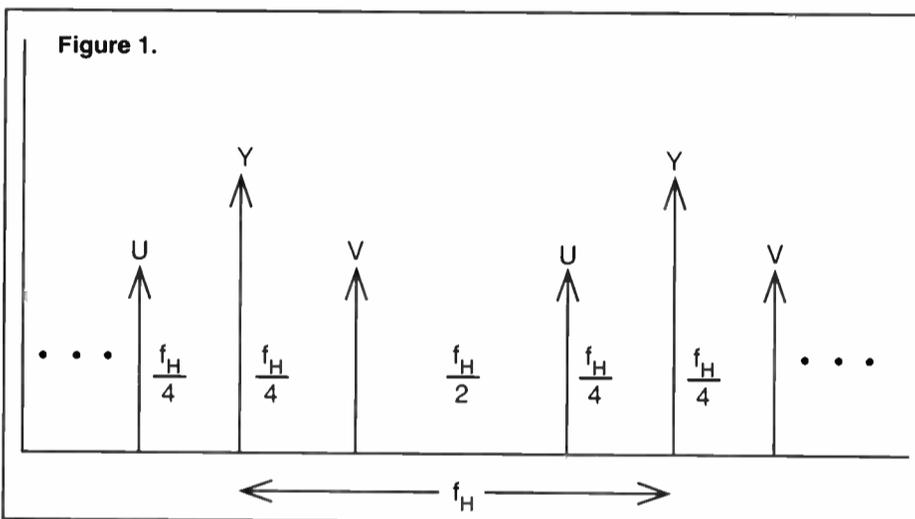
The vector representation of line n+1 is a mirror image of line n, with the V axis becoming -V and the burst appearing at -135 degrees. This is called swinging burst. A color of a given saturation and hue is represented by subcarrier of a certain amplitude and one of two phases, depending on the polarity of V-axis modulation. When looking at color bars, an NTSC vectorscope displays seven dots, one for each primary color and its complement and one for burst.

A PAL vectorscope displays 14 dots with color bars, two for each primary and its complement, and two for bursts. The result of phase alternation by line is that any phase error on a given line has a complement on the following line. When a line-to-line averaging process is performed, hue and saturation errors are effectively canceled. In so-called Simple PAL, the aver-

aging process is performed by the retentivity of the eye. However, PAL as actually practiced is known as Standard PAL, and it incorporates a one-line delay element in the receiver, which enhances the averaging process.

While PAL was adopted by England and much of Western Europe around 1967 (and has since spread to many other parts of the world), SECAM was adopted around the same time by France and the former Soviet Union, and subsequently by other countries. SECAM is not an acronym, but is a name composed of parts of the words *Sequentiel Colour avec Mémoire*, or sequential color with memory.

In SECAM the Y or luminance signal is derived and transmitted the same way as in NTSC and PAL, but the color signals are incorporated in a quite different way. The R-Y and B-Y signals are transmitted sequentially line-by-line. Because there is an odd number of lines, this results in the



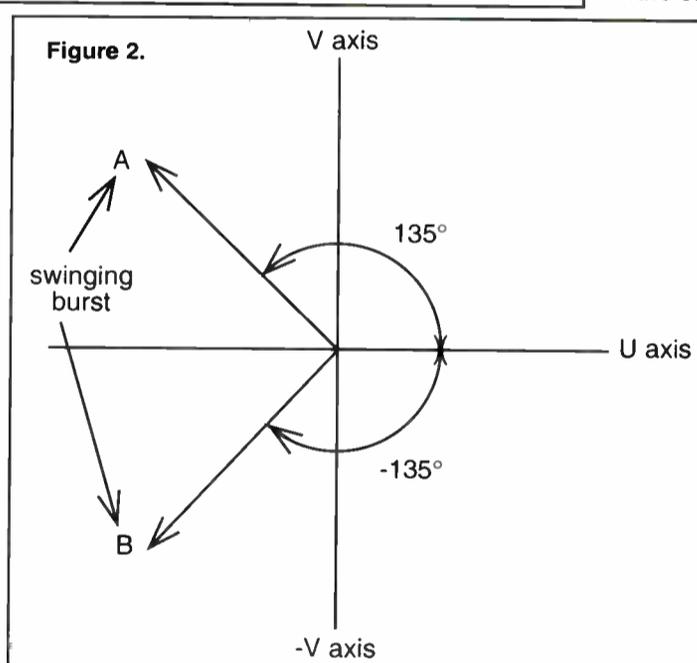
ing process is performed by the retentivity of the eye. However, PAL as actually practiced is known as Standard PAL, and it incorporates a one-line delay element in the receiver, which enhances the averaging process.

SPACING INTERVALS

In PAL, as in NTSC, luminance components or dots are spaced at intervals equal to the horizontal scanning frequency f_H . Because the V components are switched symmetrically at one-half the line rate, only odd harmonics are generated. The V components are spaced at intervals of f_H from each other and from the U components, which are in turn spaced at intervals of f_H from each other (see Figure 2).

If half-line offset were used in PAL as in NTSC, the U dots would be perfectly interlaced, but the V dots would fall precisely on top of the luminance dots, and thus would not be interlaced at all. This would create vertical, stationary dot patterns in the picture. For this reason, the PAL subcarrier is offset from f_H by $1/4$ -line +25 Hz (refer again to Figure 2). The subcarrier frequency is actually $1135/4$ times the line rate plus 25 Hz.

With $1/4$ -line offset, interlace is acceptable but not perfect. Another 25 Hz is added to the offset frequency to add an element of movement to the color subcarrier dots, further decreasing their visibility. In NTSC, half-line offset causes the chrominance dot pattern and the subcarrier-to-hor-



R-Y information being contained in one field and the B-Y information in the next field. This generates a requirement for a 1-H delay component in the receiver to integrate the color difference signals.

The R-Y and B-Y information is transmitted by the frequency modulation of two subcarriers, one for each color difference signal. The R-Y subcarrier's center frequency is 4.406250 MHz (282 f_H), while the B-Y subcarrier's center frequency is 4.250000 MHz (272 f_H). The deviation of D'_R (the R-Y subcarrier) is ± 80 kHz, and D'_B (the astute reader will correctly guess that this is the B-Y subcarrier) is ± 30 kHz.

The direction of frequency change with respect to polarity of the modulating signal

is opposite for the two subcarriers: a positive value modulating D'_B produces an increase in frequency, while a positive value modulating D'_R produces a decrease in frequency. Two types of pre-emphasis are applied to SECAM color subcarriers. The first is a conventional type of pre-emphasis of the low-frequency color difference signals to reduce color noise in the decoded output. The second is pre-emphasis of the amplitude of the subcarriers themselves.

CONSTANT CHANGE

The amplitude of an FM carrier changes continuously as a function of the applied modulation. The curve of the pre-emphasis applied to SECAM color subcarriers causes their amplitude to be reduced when there is little or no deviation, and boosted progressively as modulation increases. This pre-emphasis is intended to reduce visibility of the subcarriers when low luminance levels and low color saturations are present, and to improve the signal-to-noise ratio when high luminance levels and high color saturations are present.

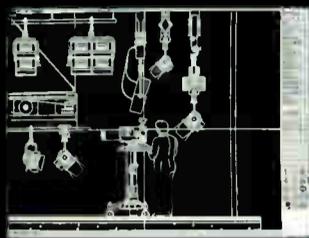
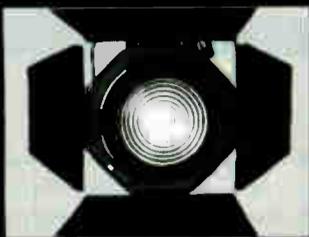
In an effort to further reduce visibility of the color subcarriers when viewing in monochrome, the phase of the subcarriers is reversed on every third line between each field. In SECAM, phase of the subcarriers carries no information as to hue or any other property of the picture.

The subcarrier/line switching sequence in the receiver must be synchronized to that in the transmitter, and this is done by placing alternating D'_R and D'_B color identifying signals on nine lines during the vertical blanking interval. These synchronizing signals occupy a full line each and represent the frequency deviation of each subcarrier at zero luminance value. During horizontal blanking, the subcarriers are turned off and sine wave bursts locked to the center frequency of each of the two subcarriers are inserted and used as gray-level references for the two FM discriminators in the receiver.

The SECAM video signal occupies the widest bandwidth of the three-color transmission systems (6 MHz wide). The NTSC signal occupies the narrowest bandwidth (4.2 MHz), and the various versions of PAL fall somewhere in between, typically around 5.5 MHz. The SECAM transmission system, designated by the ITU-R with the letter "L," also differs from either M/NTSC or any of the variations of PAL in that it uses an amplitude-modulated sound carrier. As the reader might have surmised, mixing of the FM color subcarriers is problematic, and for this reason most production for SECAM transmission is done in PAL, and converted to SECAM for broadcast.

This description of the television systems of the world is offered so that the reader may become familiar with them before they are replaced with digital television transmission standards. Next month, we will take a look at some color television transmission systems that were developed in the experimental era, but did not make the leap to actual implementation. ■

Randy Hoffner is manager of Distribution Systems at CBS, New York, N.Y. The views expressed in his column are his own, and not necessarily those of CBS. Write to him c/o TV Technology.



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Enter the Multichannel Mix

More Sophisticated Receivers Require Higher Production Quality

by Terry Nelson

SOUND IDEAS

In the last two columns, we have made quite an extensive tour of surround monitoring systems, as well as the philosophy behind monitoring for AV applications as opposed to music recording.

We can now round off this excursion into multichannel sound (for the moment) with a look at some ideas for multichannel sound mixing and production.

Up until comparatively recently, television sound was generally reproduced in the home in glorious low fidelity by a very basic amplifier in the television set and a three-inch speaker or an elliptical driver. Top-end sets might have had the luxury of a two-way system with a small tweeter, crossed over by a capacitor.

AUDIO OUT

The moment that magic little connector marked "Audio Out" made its appearance on television sets, consumers grabbed the opportunity and began plugging their TVs into their hi-fi systems, with some surprises. Sometimes the sound was good, and sometimes all that nasty com-

TV sets with surround capability are now becoming commonplace due to lower prices . . .



pression that got hidden previously started to make itself noticeable, along with rather annoying sounds, such as background hum, buzzes and various other unpleasanties.

Where all this came from is irrelevant. The point is that the moment television sound is put through a half-decent playback system, the quality control at the transmission end has to improve significantly.

While home cinemas are still the exception rather than the norm, TV sets with surround capability are now becoming commonplace due to lower prices, thus

removing the "sound for the minority" tag.

As we are all aware, the screen channels consist of left, center, right (LCR). In consumer formats, Dolby Surround has a phantom center channel with optional hard center feed, while Dolby ProLogic is derived from the cinema format, Dolby Stereo, and has a fixed center channel with "steering" circuitry for enhanced imaging in the LCRS channels.

As a general rule, the left and right channels are for music and sound effects with the center channel reserved for dialogue. This provides both a wider sound stage for music and effects and increased clarity for the dialogue, due to the dedicated channel. This is not to say that the center channel cannot be used for other than dialogue, but rather that it may be used for effect when there is no dialogue to be masked.

The original 70mm film soundtracks often had five screen speakers, and it was not uncommon for dialogue to be panned across the screen to follow the actors. The advent of stereo television quickly brought up the question, "to pan or not to pan," concerning the dialogue.

CENTER SPEECH

The fact that a TV screen is much smaller and that the picture content tends to be more condensed brought about a consensus that dialogue should be firmly rooted in the center unless a special effect, such as off-screen dialogue, was required.

A typical example of a situation where panning would have turned into a ping-pong match was a talk show where the host and guest would have had their microphones panned left and right. However, the moment the camera angle changed, the pan would need to follow to avoid an extreme effect, such as a person on the left having his voice coming out of the right. The brain is quite happy identifying dialogue positioning when it is dead center.

An added advantage was that stereo production consoles could be used for LCR work — a stereo bus being used for left and right and a mono bus for center, making film-style LCR panning unnecessary.

So what about the surround channel(s)? In general, the desired effect is one of ambience, or putting the viewer into the picture. This means the sound information should be non-directional cues, rather than directional ones that will cause the viewer to turn his or her head away from the screen, thus providing a distraction to the picture rather than an enhancement. This information could be rain, crowd noise or whatever may be deemed necessary to put the viewer into the action.

It is also worth noting that surround information is not necessarily limited to just the surround speakers. The screen left/right speakers can also be considered as being part of the surround system, especially for subliminal signals for atmos-

phere, such as wind noise.

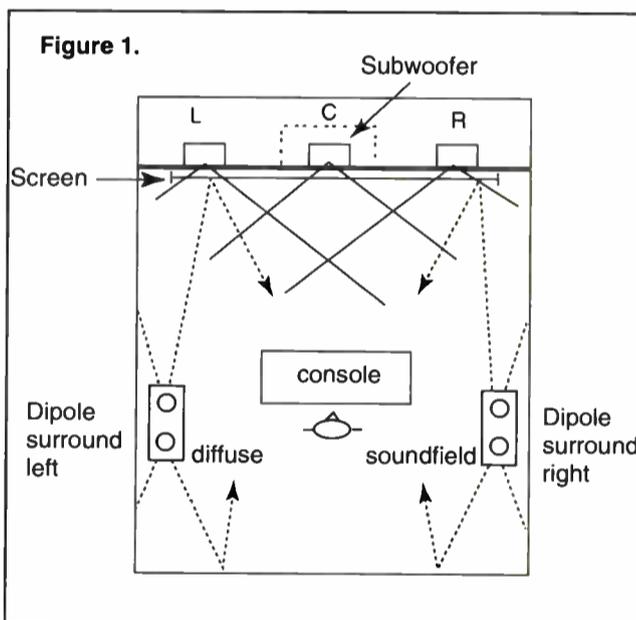
To avoid confusing localization, the surround channel is also delayed with respect to the front channels and band-limited between roughly 100 Hz and 7 kHz. This also enhances the spatialization effect.

DOLBY DECISIONS

A short word here about Dolby decoding may be in order.

As most people will be aware, the Dolby system consists of four channels coded into a matrix of two stereo-compatible channels, Lt and Rt (left total and right total). When decoded, this gives the left and right channels, with Lt + Rt providing the center channels and Lt - Rt providing the mono surround. The simpler domestic Dolby Surround decoder provided left, right and surround with a "phantom" center channel between the left and right speakers with the option of using a center system. As noted above, ProLogic was a big step forward with all four channels and steering circuitry.

To avoid channels bleeding through to each other, such as dialogue in the surround, proper calibration is required and is virtually mandatory when mixing to



monitor the signal through a matrix encoder/decoder to make sure that there is no annoying crosstalk.

While ProLogic can be considered as today's standard, AC-3 is already with us for the digital age and will open up new sonic vistas with five discrete full-bandwidth channels and a dedicated subwoofer channel. This means that crosstalk problems within the matrix are eliminated, bass effects are not derived from the left or right channels via a lowpass filter and we now have stereo surrounds.

To be able to exploit this fully, the mixing console will require LCR panning, plus front-to-surround panning and stereo panning for the surrounds. As well, a dedicated subwoofer bus through an auxiliary send could always be used.

The transition is a bit like that of driving a car to flying an airplane: you have to start thinking in three dimensions.

While most mixers will be quick to grasp the possibilities offered, it is also to be hoped that management will realize that these sonic enhancements will almost certainly take more time to produce, and that this should be accounted for in production budgets. ■

Terry Nelson is co-principal of Studio Equipment in Yverdon-les-Bains, Switzerland. He began his professional audio career in 1967 and has worked in the areas of sound reinforcement, recording studio design and mobile operations and has more recently become involved in turnkey studio projects for music, film and television.

NEWS WATCH

TRANSMISSION

GREEK BROADCASTER UPGRADES NETWORK

ATHENS

Greek public broadcaster ERT, Hellenic Radio Television S.A., has installed two high-powered IOT transmitters in its Athens network.

The systems were purchased from Italy's Itelco SpA. Installation is expected to begin in May, with on-air service starting in June.

ERT will install a 40 kW UHF IOT system at its Mt. Parnitha site and a 20 kW UHF tetrode unit on Mt. Imittos. Both systems feature common amplification in a passive reserve configuration system.

For further information, contact Itelco at telephone: +39-763-316-231; FAX: +39-763-316-236, or circle Reader Service 83.

POWER TUBES

RUSSIAN FIRM GETS U.S. HELP

HUNTSVILLE, Alabama

The U.S. majority owners of Russian tube manufacturer Svetlana has been awarded a US\$3 million investment from the Defense Enterprise Fund, a private venture capital fund backed by the U.S. government.

Svetlana Electron Devices will use the money to strengthen its joint venture relationship with the Svetlana tube complex in St. Petersburg, allowing it to further expand into worldwide industrial and medical markets.

Originally a manufacturer of electronic components for radar and other equipment for the Soviet military, Svetlana is now primarily occupied with electron power tubes and glass vacuum tubes for civilian applications. The Defense Enterprise Fund focuses on the conversion of former Soviet defense complexes to non-military use.

"These projects represent excellent defense conversion and also make good economic sense," said Kevin McDonald, president and CEO of the fund.

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DVD: Video's Next Big Thing

by Terence Dyke
& Paul Smolen

DESKTOP VIDEO

As the business of making pictures moves more and more into the world of digital technology, we have gotten used to the fast pace of incremental improvements for which that technology is famous. Processor speeds rise, storage prices fall, resolution gets better.

Indeed, the changes come rapidly enough and steadily enough to leave us yearning for a brand-new system every two or three years. In between, we make do with upgrades and add-ons. Occasionally, though, the continuous stream of small improvements is punctuated by The Next Big Thing (NBT).

Windows was certainly an NBT, despite the snickers of happy Mac users. The CD-ROM was an NBT. So was NewTek's

Video Toaster and the whole desktop video concept that it introduced. But since then, the only comparable NBT, in our opinion, has been the World Wide Web. Although NBTs are routinely proclaimed every few months, subject to sharp differences of opinion and endless debate about authentic NBT-hood, nothing of a similar stature has really stuck out from the crowd in recent years.

One way or another, it is time for a new, true NBT. Our candidate for that distinction is Digital Video Disc (DVD). A controversial choice, perhaps, but the story of DVD is full of controversy — even down to its name.

This is the latest move in the constant quest for cheap, large-scale storage and delivery media. Some view DVD as nothing short of a unified replacement for videotape, laserdisc, CD-ROM and even audio CD. At 650 MB, the venerable CD-ROM seemed huge when it was introduced, but it was not long before people started thinking about a successor. The latest round began when the creators of the original CD format, Sony and Philips, expanded it into the Multimedia CD format (MMCD). They cheerfully assumed MMCD would simply follow in the family footsteps.

However, a coalition led by Time-Warner and Toshiba got into the act, very much aware of the generous royalties that Sony and Philips had been pocketing for every CD and CD-ROM ever pressed. The challengers put forward a competing and alto-

gether incompatible format they called Super Density (SD). It started to shape up as another battle of giants, threatening to replay the VHS/BetaMax standards war of the 1980s — a war in which the public turned out to be the biggest loser.

Each camp offered distinct technological advantages. SD had the edge for sheer volume:



5 GB per side, with early proposals calling for a two-sided disc totaling 10 GB. MMCD started with a 3.7 GB capacity, but then Sony positioned it to incorporate a two-layer technology in which a twin laser would be able to read both sets of tracks from one side.

This would effectively double the capacity to 7.4 GB, while avoiding the mid-play flip that proved so unpopular with laserdiscs. Also in MMCD's favor were its modulation and error-correction schemes, which not only were considered superior for data, but also would permit future disc players to be backward-compatible with existing CDs and CD-ROMs.

TWO BECOMES ONE

All this while, the two sides were talking to each other and trying to work out a common format, but as each coalition lined up additional allies, the game became more a matter of muscle-flexing than rational design. But last summer, just when chances for detente seemed to be fading, yet another consortium entered the arena, this time from the computer industry. Behind closed doors, the likes of IBM, Apple, Microsoft and Compaq apparently told the two factions in no uncertain terms that there was going to be just one format, thank you, and the two had better compromise.

What emerged is actually a family of compatible formats, all of which will include backward compatibility with current CDs. The line starts with a single-layer, single-sided disc that holds 4.7 GB. At standard television resolution, that capacity represents a 133-minute run time. Double-layer, single-sided discs will store 9.4 GB, and the double-sided version 18.8 GB. The standard also specifies write-once and re-recordable versions to come in the next year or so. Players and discs in the new format are expected to start shipping by the end of 1996.

Once the substantive issues were settled, there was still some squabbling about the name. Clearly, neither side could have the satisfaction of applying its original name to the compromise format so someone came up with the generic "DVD." At first, this was to stand for "Digital Versatile Disc," but cooler heads prevailed and gave us the present "Digital Video Disc."

That left only the matter of how to spell

"disc," which is an aspect of the controversy we have not seen adequately addressed — certainly it would be unsettling to leave such a fundamental loose end untied. Much of the trade press uses the spelling with a final "c," whereas the computer industry has always preferred their disks with a "k."

The last time this issue arose was shortly after the introduction of the videodisc (later known as the "laserdisc"). Stylistic convention of the day held that in the video

domain, the appropriate spelling was "disc," while in the computer domain it should be "disk." Now that the video/computer distinction is blurring, the conundrum appears more vexing than ever.



On the authoring software front, Asymetrix recently announced the newest version of its ToolBook software, "Multimedia ToolBook 4.0," which is currently shipping. The company claims a 50 percent increase in run-time performance over earlier versions, as well as enhanced ease of use. Other features include support for control of Visual Basic, a new Object Browser for easy modification of a user's application, improved script management and features that support Web applications and integration with Web browsers. Asymetrix promises that future versions will include HTML and animation interfaces for word processors, as well as new technology for using the Internet to serve the distance learning market.

New hardware is forthcoming from Truevision. The company announced that it is shipping the TARGA 2000 Pro, an integrated digital video production PCI board for the Apple Power Macintosh. The QuickTime-based system allows users to capture, manipulate and play back component video at what the company claims is "broadcast quality."

It supports full-screen, 60-field-per-second video at CCIR-601 resolution. At US\$7,995, this high-end board is positioned for a wide range of applications, including 3D animation, post production, storyboarding, CD-ROM production and corporate presentations. Software that comes with it includes Adobe Premiere Accelerated Transition Plug-Ins and QuickTime 2.1.

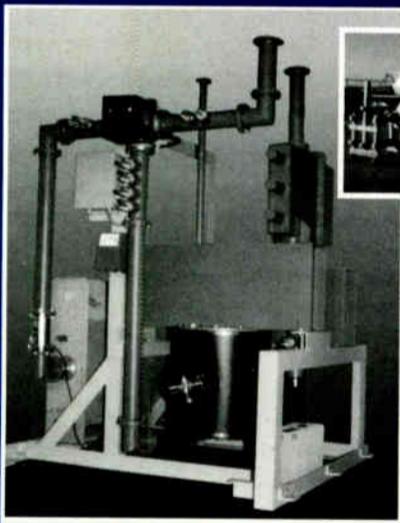


Is Apple going the way of Commodore? The company that created "the computer for the rest of us" seems to be slipping steadily downhill. Over the last year or so, the graphics-friendly Mac lost its inherent edge in the desktop video arena as the Windows/Intel platform improved.

Last fall, Apple closed up shop on Kaleida, a joint venture with IBM to produce the advanced authoring system

(continued on page 21)

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Interactive Fervor Resumes in Europe

by Andrew von Gamm

MUNICH

Despite the failure of most multimedia trials to get off the ground, particularly in Europe, enthusiasm for interactivity does not seem to have diminished in the slightest. The latest move is the creation of a consortium of 22 major European communications companies and universities led by Italtel of Italy. The group is launching a series of interactive multimedia trials at various sites across Europe.

VERY AMUSING

Described as "part of a multimillion ECU R & D programme" the new scheme is to be called Advanced Multimedia Services for Residential Users, or AMUSE. Each organization is to contribute its own area of expertise to provide a variety of network technologies, as well as social, cultural and regulatory backgrounds. B-ISDN may be used in some areas such as Munich, where it is available.

Other trial sites are Milan, Italy; Mons, Belgium; Cambridge, U.K.; Avario, Portugal; and Reykjavik, Iceland, to research trends in service provision and delivery platforms. Some criticism has been heard in Germany that these schemes may be just a replacement of the six or seven trials from Deutsche Telekom that failed to launch last year.

In a separate scheme, Vebacom, Düsseldorf, the communications arm of

power utility Veba, has been given the green light by the German government to go ahead with a large pilot project "Infocity" to test broadband multimedia applications for home, schools, businesses and other institutions in the North Rhein area.

Some 10,000 users are to be chosen in the cities of Bonn, Cologne, Essen, Düsseldorf, Bochum, Wuppertal, Oberhausen and Duisburg. Tests are to begin this year and it is hoped to extend the area to cover parts of Holland and Belgium, as well as other German cities with home shopping, video-

conferencing, VOD and home banking services. Universities have agreed to have lectures in selected subjects transmitted to students' homes.

Outside of Europe, Microware Systems of Burnham, England, and City TV Nakano (CTN) in Tokyo have announced the implementation of Microware's OS-9 David real-time operating system for a hybrid fiber/coax trial of 6,400 Tokyo households in the Nakano suburb. CTN is a joint venture between Fujitsu and the city of Nakano.

NIFTY IDEA

The David set-top boxes are to provide the viewer with a variety of VOD and PC services, such as high-speed Internet access via the "Nifty-Serve" communications network.

"This demonstrates our vision of a single operating system for all information com-

ing to the home," said Martin Allen, manager of Microware.

CTN's interactive system brings just one line to the home for both television and home computer access using MPEG-2, parallel processing servers and an ATM fiber network.

In the U.S., software developer Macromedia and @Home, a provider of high-speed data to the home, announced the launch of @Home services at 10 Mbps to Sunnyvale, California, and the development of new Java-based tools for broadband multimedia content on the World Wide Web. The @Home network is to provide home, schools and businesses with high-speed Internet access using Macromedia's "Shockwave for Director" developer's kit, which is free from the company's Web site. This package is also to be used by Discovery Channel Online and the Internet Shopping Network. ■

THE BIG PICTURE

FEATURES



CONTINUED FROM PAGE 20

It's a DVD Thing

ScriptX. In January, CEO Michael Spindler faced a meeting of angry stockholders, one of whom told him, "You have mismanaged assets and brought a great company to its knees." At last count, the company had entered into discussions with Sun Microsystems about a possible takeover. 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

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Can Digital Transmission Fulfill All of Its Promises?

You may never have heard of BER — bit-error rate — but you will curse it for the rest of your career in this industry because it is the Wicked Witch of the West in the Land of Digital.

Digital has been oversold as a system in which images are forever and generation losses unknown. The truth is that all storage and transmission systems have losses. A 10th generation

digital tape may look as good as the first, but it is far from identical. Along the way, errors have been detected and concealed.

DISTANCE CONCERNS

Did you ever have a floppy disk that your computer would refuse to read? Be prepared for digital VCRs to act the same way.

The reason that we are moving into a digital world is that the

manipulation and storage of digital video is certainly easier and leads to greater productivity in the editing suite. A lot of time is saved avoiding VCR pre-roll and lockup problems.

Advanced television systems will be entirely digital, but the BER will limit reliable reception to a certain radius, just like the television of today. Can distant locations receive ATV? Certainly,

but how much BER will be acceptable has not been demonstrated.

It is important to know how much the BER margin varies with time for a given distance from the transmission site. We know that cable companies pick up off-air signals at favorable locations. But what decibel margin is needed at 20, 30, 40 and 50 miles to ensure reception over the course of one year? If that information exists, I would love to see it.

Because of the demanding nature of real-time compression, the need for clean source material is most

by Roy Trumbull

SPECIAL REPORT

apparent. That is a general requirement for all A-D conversions, whether the digital system is compressed or not.

JERKY MOTION

There are additional problems with compression. If a source tape is so worn that it seriously challenges the drop-out compensator and TBC, the resulting streaks and jumps will not play well with the motion detection circuitry in the compressor. The result will be jerky motion.

While checking out the booths featuring compression systems during the 1995 NAB, I found a Snell & Wilcox device intended for the noise reduction of satellite or microwave feeds. It was being used by the vendors to bandwidth-limit the video going into the compressor. This year, I expect Snell & Wilcox may have a device designed just for that purpose.

Do not hit a compressor with more bandwidth than the compression and transmission scheme can pass. The compressor will try to handle whatever it is given and waste computing power. If you consider that no overhead is required for transmission path problems on a copper or fiber circuit, then those who propose four channels of video on an ATV carrier are certainly guilty of technical hubris. Even four talking heads would not be a pretty picture.

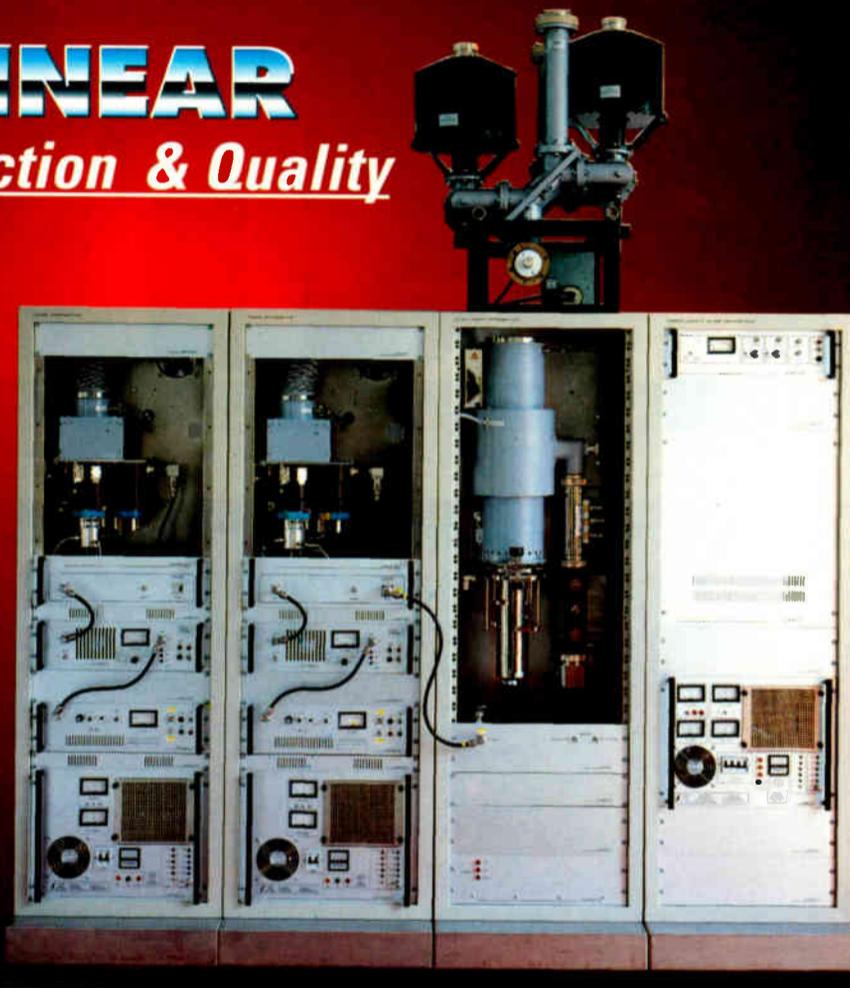
But the marketplace certainly exists for very sophisticated compression schemes that allocate resources on the fly. One can forgive the occasional gratuitous checkerboard when the picture always has perfect color saturation and freedom from noise. That is really the digital trademark.

We are in that awkward period in which much of our source material is still analog, but we are going digital. Over the next five years, we will migrate to systems that originate, record and transmit all in the digital domain. The learning curve will be a steep one. Much of what we have grown up with will be gone. Instead, we will be trying to connect together pieces of equipment that claim to observe the same standard. We will have to put the era of slapdash video on worn tape behind us. It just will not compute. ■

Roy Trumbull is the assistant chief engineer of KRON-TV in San Francisco.

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Networks Eye Server Solutions

by Karl Paulsen

MEDIA SERVER TECHNOLOGY

Network fabrics, including the Internet, are now beginning to incorporate video and video "server" applications. This new and still somewhat crude feature may someday play an important role in creating a different direction for telemedia. Without necessarily waiting for all the various promises of video-on-demand or interactive video, new feature sets are now being imbedded into text and graphics-based information that will play video and audio back as an integral part of the information retrieval process.

Of late, real-time video technology for the Internet has been promoted with companies actually readying products in cooperation and conjunction with other new-media communications product providers. One company, VDOnet Corporation, produced a beta version of its VDOLive technology and showed it at the fall Internet World convention. Its product enables real-time video, defined primarily by the access speed of your connection, to be played from any Web page that accommodates it.

Since that introduction, VDOnet has announced two server products that are promoted as "desktop video broadcasting." If you want to experience it yourself, a "personal" player version is downloadable from the VDOLive Web site (<http://www.vdolive.com>). The main-stream Video Server product comes with built-in editing and compression tools for use on Windows 95 or Windows NT PCs equipped with video capture. This network-based server can be configured for delivery on more than 100 simultaneous video streams and is priced less than US\$100 per stream where more than 100 streams are configured. Future versions are intended to include a multicast server, enabling simultaneous broadcast of scheduled events and two-way Internet video communications. Currently being promoted for the Internet, this video server application also offers conceptual performance

in domains outside the public network fabric proper.

THE REAL TRUTH

The real truth comes from examining the actual system performance (which is by no means limited to the hardware/software applications at the server itself). Real-time video performance obviously varies from product to product, site to site, and user to user. Video delivered in a real-time form over the Internet will depend upon nearly flawless, ideal conditions. There must be minimal Internet traffic, no local network overhead and minimal overload on the server. Under these conditions, VDOLive might realize up to two frames per second (fps) at 14.4 kbps, up to 10 fps at 28.8 kbps and with an ISDN line, 20 fps is possible. Here, in this definition, the operative phrase is "up to," as performance could be significantly worse depending upon some or all of the conditions not being met.

So the interpretation of "real-time video" probably needs more clarification and classification. "Real-time" will most likely be a dynamically changing definition. If one links a group of frame-based images, sequenced to give the observer a feeling of ascending transition, then you might call it "video." Real-time video, for the most part, means it is unnecessary to pre-download, compile, convert and play out of a sequence of files to make "video." However, produc-

implementation, it is unlikely that any network will sustain even 50 percent of the continuous throughput required for SIF quality imaging on a real-time basis any time soon.

Modem technology for the PC has evolved to 28.8 kbps in just the last year. Bandwidth-wise, 28.8 kbps, even with compression, is just about the limit for the majority of conventional telephony delivery to the home or office. Still, the noise in circuits, the degree of telephony traffic and the condition of the receiving end at the service provider will still bear weight in just how much data actually gets through.

Next, the links through the Internet are only as good as the worst site it must traverse. If fast access, even with ISDN, to a 64 kbps Web site must pass through a crippled 28.8 kbps server site, then guess what: You peak out at a rate far lower than the 64 kbps site might have permitted. To see the problem first-hand, compare how long it takes to download a 1 MB file using different modem speeds. This congestion, which is everywhere on the Internet, makes it very difficult to determine what can really get through the pipe to the host and in what time frame.

Video servers intended for more extensive commercial delivery and servers geared for the Internet are still very different today. With the increased promotion of the Internet and the information superhighway,

host to host, client to server.

It is predicted that once the server solutions are available and acceptable and the private networks begin to emerge; the model for real-time delivery will be in place. The question then becomes "If these solutions are available on private networks, will they still be applicable to the Internet?" That will remain to be seen, and the course of action is the subject of many new kinds of information delivery trials, including MMDS and ITV.

SHOWING SOME BACKBONE

The backbones for some types of private delivery networks are actually in place, but they just have not been thoroughly implemented with real-time or near-full-motion video. Such backbones will most likely expand once technologies such as HFC (hybrid fiber-coax), cable modems and FTTC (fiber-to-the-curb) are in place, but their widespread installation is still many years away.

Still, some take the position that the audience for fully implemented interactive video-on-demand is not there and won't be for decades. Others wish they could implement video services on other circuits besides videoconference, but they are not satisfied with the public network delivery model being introduced on the Internet. Even with private networks in the works, it is still unclear if there will be one inter-operative network or several. The concepts of advanced intelligence for the multi-node, single network is something that is also being experimented on by several companies, including Microsoft, Oracle and the ever-popular Netscape Communications.

Barriers are being broken down, new businesses are being created and slowly but surely the widespread implementation of video servers for intra- and inter-networking are emerging. It may not look much better than the early video motion on PCs, but it is evolving. This will do nothing but good for those media companies, news and information organizations and the like that are beginning to build the all-important content packages for delivery on whatever pipeline is available.

Clearly, what the video server of the future will look like is still being defined. Where the products and technologies will be implemented and accepted is another question. Direct-connection video servers are being manufactured and implemented worldwide. Now it is time for Internet software and server hardware to get in line for its own race. ■

Karl Paulsen is the Manager of Systems Integration at Synergistic Technologies Inc., Canonsburg, Pa. STI and its satellite branch, AtlanSat Services, provide consulting, engineering and full turnkey system integration services for satellite, mobile, broadcast and non-broadcast television and interactive digital media technologies. Contact him via the Internet: kpaulsen@stinet.com or on CompuServe: 72303,2112

Video delivered in a real-time form over the Internet will depend upon nearly flawless, ideal conditions.



ing "full-motion" video on any level is another adjective all together.

Although this concept is certainly a start, I would ask you, "Is two frames per second playback actually video?" If so, then ask yourself: "If I can tap out a sequence of tiny frames faster by clicking a mouse than looking at an Internet playback in real time, is this really video?" Some answer "yes" at this point, which leads to the conclusion that the definition of real-time video, as defined in VCRs and broadcast television, will certainly need to evolve over time.

EXPENSIVE PROCESS

Accomplishing full motion from any widely dispersed public network in real time is still only on the most expensive of drawing boards. Even with the promise of MPEG-2 as a solution for video server

bottlenecks will only continue to get worse. But there are some emerging alternatives.

GOING PRIVATE

Several large companies, and even some smaller businesses, have started to fabricate their own intranet. We define the "intranet" as a private network that can carry the kinds and types of services that might be expected on the Internet, but with added benefits. These upcoming private networks will operate faster, will be far more secure, will provide cheaper long-distance voice service and will be effectively dedicated to a select few. They will also provide gateways or router access into the Internet. Businesses that must regularly recognize that Wide Area Networks (WAN) still for the most part depend on the long-distance carriers for service. With these networks, industries with overseas or remote locations will be able to take full advantage of Internet services while still being connected either full- or part-time to their home bases. Today we see new and expanded services being offered that will be able to take advantage of the server concepts currently being developed by some Internet software providers such as VDOLive.

Certainly the technology is now available to provide many sets of video streams using a variety of digital compression techniques. Those video data sets can now reside on conventional-based data servers for embedded real-time video delivery functionality. So one more puzzle part that still remains is the pipeline, the connection medium from

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8PSK Triples EBU Satellite Capacity

Three Channels per Transponder Leave Room for an Adequate Link Margin

by Brian Flowers

ENGINEERING CORNER

Tests carried out by the EBU in 1995 showed that it is just possible to use 8PSK modulation with 5/6 FEC for the planned digitalization of the Eurovision satellite network. Each channel requires a minimum of 18 MHz RF bandwidth, so in theory four channels could fit into a 72 MHz bandwidth transponder.

In practice, this gives only 1 or 2 dB link margin in fine weather, which is clearly unacceptable for an operational system. Therefore, we decided that only three channels could be carried per transponder, which doubles the satellite capacity compared with the present analog TV configuration. The link margin with three 34

Mbps channels per transponder was in the 4-6 dB range.

tion, we have a total of 12 TV channels in our four leased wideband transponders of Eutelsat II/F4, and a link margin of 6-8 dB. This gives us confidence that the signals will survive, even with heavy rain at both the upleg and downleg locations.

There are presently 52 earthstations in operation for the Eurovision network, which extends from Reykjavik to Moscow in the north and from Rabat to Amman in the south, covering a total of 48 countries. Further 34 Mbps, 8PSK tests are now

available power to send nominal EIRP, bearing in mind that their TWTs should be backed off at least 5 dB from maximum power to avoid non-linearity and consequent spectrum spread.

However, with digital transmission and a satellite link margin of 6-8 dB, an upleg which is 2 or 3 dB low in power should not cause any major problems. The pictures and sound should still be perfect, which illustrates one of the advantages of digital transmission. The other main

advantage is that we shall have 12 contribution quality TV channels in place of the former six analog channels. When you add this to the availability of scrambling with no degradation, high quality stereo audio and spare capacity for additional audio channels, the advantages of going digital are clear to even the most cautious.

FINDING SPACE

Figure 2 shows three 34 Mbps, 8PSK (2/3 FEC) signals with 24 MHz channel spacing in transponder 26 of Eutelsat II/F4. In Figure 3, one 34 Mbps, 8PSK signal has been replaced by two 8 Mbps, QPSK signals. These have an RF bandwidth requirement of 9 MHz each, and a satellite IBO of 16 dB.

There is also enough bandwidth available to add two 2 Mbps Euroradio channels with 18 dB IBO, requiring 3 MHz RF bandwidth each. This gives a total bandwidth requirement of $(2 \times 9) + (2 \times 3) = 24$ MHz, which matches precisely the bandwidth made available by removing one 34 Mbps channel. In practice, we shall probably replace two 34 Mbps channels by this combination of 2×2 Mbps plus 2×8 Mbps, namely in transponders 25 and 26 respectively, using a mirror image configuration.

One remaining option is whether or not to use Reed Solomon in the modulator/demodulator. Since ETSI 34 Mbps encoders/decoders already include Reed Solomon with 6:1 interleave, the improvement achieved by adding a second Reed Solomon with 4:1 interleave is negligible. As I mentioned in a previous article, it is like wearing a sombrero and a Stetson simultaneously.

However, the proposed Intelsat standard for 34 Mbps, 8PSK transmission will

probably include Reed Solomon, so EBU may include it also, just to conform to the standard. ■

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 Southampton 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.

Algorithms Through The Ages

The art of digital compression requires the application of algorithms, a mathematical procedure with a rather interesting history.

In the year 800 AD, a Persian mathematician named Abu Ja'far Muhammad ibn Musa invented many useful mathematical procedures. In fact, he was the first person to explain how to extract a square root from a number. He also showed that in the familiar 10-base number system, if the sum of a number's digits is divisible by 3, then the number itself is also divisible by 3.

His home town was called Gorazde in Persian or Kwarism in Arabic. Therefore, he was known as "Muhammad al Gorazde" in Persian or "Mohammad al-Kwarismi" in Arabic. As you may know, before the European Renaissance, the Arabs introduced advanced mathematical concepts into Europe, mostly via Spain. "Al-Kwarismi" pronounced in European tongues became "algorism."

Subsequently, a certain Spanish king had a lisp, pronouncing "s" as "th." To curry favor with the king, the royal court also adopted this pronunciation, which eventually became the normal way to speak Spanish, as it is to this day. Hence, "algorism" became "algorithm."

Algebra was also introduced to Europe from Arab culture, and this word came from the Arabic "al-jabr," which is a short-hand version of the title of a book by Mohammad al Kwarismi, namely "ilm al-jabr wa'l-mukabala." This means, "the science of restoring what is missing and equating with the like." In other words, algebra.

On the other hand, Abu Ja'far Muhammad ibn Musa did not invent the "MUSA" video connector. This was invented by British Telecom in the days when it was known as the "General Post Office." I suppose that MUSA stands for "Monitoring Unit with Signal Access," but this is just a guess. If anyone knows for sure, please let me know. ■

Figure 1.

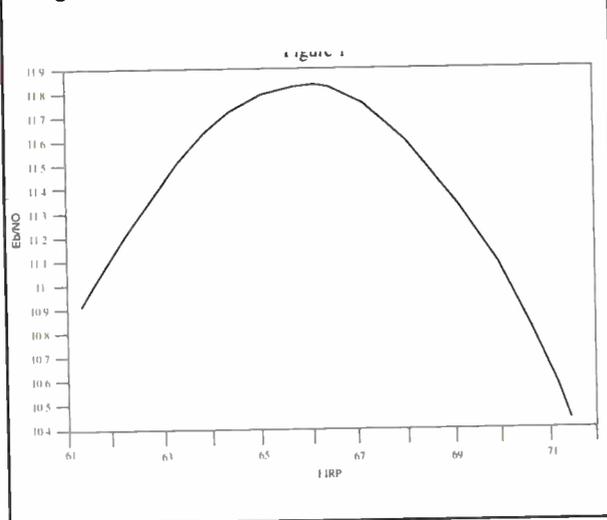
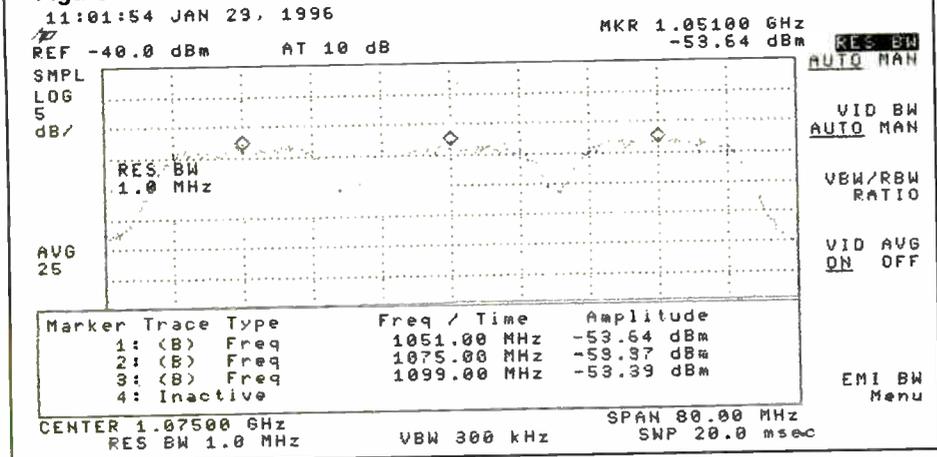


Figure 2.



Mbps channels per transponder was in the 4-6 dB range.

It seemed likely that we could improve the link margin by about 2 dB by increasing the FEC ratio from 5/6 to 2/3. This would increase the required RF bandwidth to about 24 MHz, but we could still comfortably accommodate three channels per transponder.

BACK OFF

The calculated optimum input back-off (IBO) at the satellite for this arrangement was 12 dB, giving the required EIRP of 66.3 dBw at the Geneva, Zurich and Frankfurt earthstations. While sending uplegs from Geneva, Zurich and Frankfurt, the three EIRPs were simultaneously aired in 1 dB steps above and below the theoretical optimum value, and the resulting Eb/No measurements of the received downleg signals were noted.

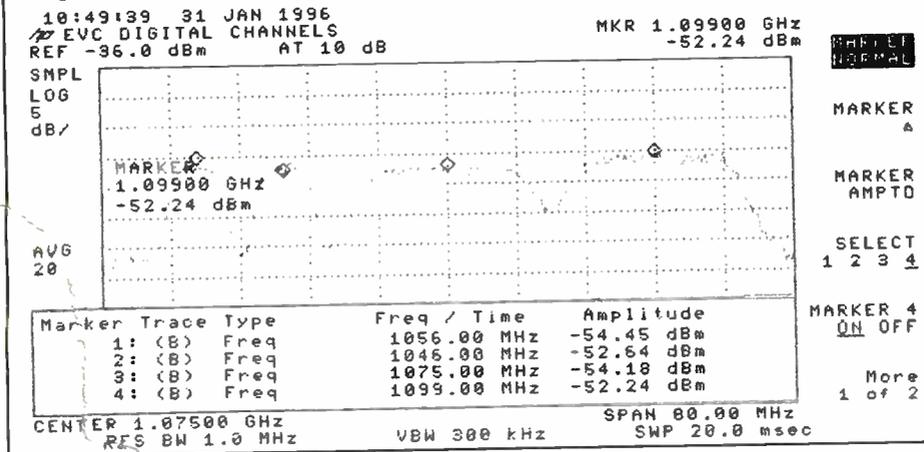
Figure 1 shows a graph of the average Eb/No for the three downlegs plotted against the upleg EIRP. It can be seen that the Eb/No peaks at an EIRP of 66.3 dBw, showing that the calculated optimum value of 12 dB IBO at the satellite is correct.

Hence, with this improved configura-

being carried out using various earthstations, including those located at the edges of the satellite's footprint. The earthstation dish diameters vary from 7.6 meters in the center of Europe to 13 meters in Moscow.

We are also checking the feasibility of transmitting 34 Mbps, 8PSK from transportable earthstations, since many Eurovision sports transmissions are fed directly from the origin by this means. These earthstations may not have enough

Figure 3.



Sony PC: Internet Appliance?

by Paul McGoldrick

SPECIAL REPORT

The recent announcement by Sony that the company was entering the personal computer market with products powered with Intel processors is a major milestone in computer history — no, it is more, much more. It will be a major milestone in domestic life.

There is nothing particularly special expected from these machines in terms of features, so why the milestone? Because this is a technology barrier jump. It is the move that firmly puts the PC into the consumer world. It is the stamp of acceptance that places the PC alongside the TV, VCR and Pro Logic receiver on the same shelves in the same stores. Previous entries on those shelves have always been close to "toy" status: either factually or perceived.

COMPUTER AND TV AS ONE

At least one start-up company in recent years has tried to show that, for the home environment, the computer and the TV receiver will sooner, rather than later, be the same piece of equipment. There will be different input sources, different display alternatives, different standards up to and including HDTV. The commonality will be in a standard bus, handling the various signals in a homogenous manner. That partic-

ular start-up failed to excite, or convince, the venture capital community of the validity of its ideas, and there was, perhaps, too much emphasis placed on decoding technology and the nature of the bus itself rather than the importance of the concept.

We have had Packard-Bell move very successfully from consumer equipment to computers to survive; now we have Sony — and others to follow — moving from consumer equipment to computers to change our lives. Sony's jump is actually not nearly so dramatic: it is simply adding to its existing, broad consumer range.

One cannot assume that everyone thinks in the same ways, but given that they know the implications of where they are going, a name like Sony will now be able to bridge the gaps, and the evolution absolutely will take place. It is one of the weaknesses of the computer industry that it may well ignore this change at its peril. While Microsoft and others concentrate on the office environment, the really giant market could slip away from its grasp. The challenges for the evolving products will all be on the video side, and the experience and knowledge do not seem to be there, or in search, in the pure computing operations.

You might have gathered that I am excited by all this. Keep a close eye on how there is the potential that the fear of technology in general, or, new technologies in particular will be alleviated for what is an incredibly large percentage of the population.

Technology fears are not confined to a particular group of people. I have heard people who are intelligent, articulate and who have been involved with technology for as long as we have been acquainted, go into the most amazing diatribe on computers in general and e-mail in particular. On one recent occasion, an inference that there was a link between computers and some form of techno-chemical dependency was difficult to follow through an incredible and vehement outpouring. There was no logic to it and no

arguing with it — fear to the core.

There are a couple of companies in the San Francisco Bay area that specialize in educating senior executives in using computers. Nothing odd about that, perhaps, except that most of the client companies are in the computer business and a good few of the executives are the CEOs. Quite a load to carry around on a daily basis you would have thought.

Some technology fears are better known and are at least based on some fact. Yes, programming the recording functions on an

It is the stamp of acceptance that places the PC alongside the TV, VCR and Pro Logic receiver . . .



earlier VCR was not totally intuitive (unless you were four years old). No, dealing with DOS is certainly not everyone's idea of a good time. And there are some car stereo systems that are more complicated (and, perhaps, costly) than the cockpit of a Lear jet. But to fear the use of the computer as a straightforward word-smithing or calculating tool, and to resent e-mail per se, is not entirely logical or practical.

PROTOTYPING LOW COSTS

Oracle Corp., certainly not known for personal computers, announced at COMDEX that it was aiming toward the US\$500 computer and that it, in fact, already has a prototype. The low cost will be achieved, as Oracle's CEO Larry Ellison explained, by throwing most of the memory load back to

the network to which it is connected. Although this smacks a little of the dumb terminal connected to a mainframe, it is not quite so simplistic.

Each unit will have 4 MB of dynamic RAM, a RISC microprocessor, 4 MB of flash RAM for essential programs, a keyboard and an ATM chip for connection to the outside network. An RF modulator will probably be provided to connect to a standard TV receiver. Oracle envisions that the unit will serve as an Internet connector only. As Ellison put it, "All my mother cares about is being able to send e-mail to her grandchildren."

No fixed drive, no disk drives or controllers, no expensive programs, no Intel processor, no Windows. The single functionality of the unit could well be a commercial winner while overcoming a lot of fears.

Long term, such a "communications computer" and its limited possibilities will probably also be its undoing. But, when the time comes to add a printer port, a reasonable word processing package (without using on-line time to access the software) and maybe a game port(?), the cost of the components will probably have dropped far enough to maintain the same US\$500 price.

At the same time the Oracle price calculations seem to ignore the modem. But it should be possible to design such a unit so that it is technically very friendly: not strictly cuddly, perhaps, but nothing to be afraid of in the long run.

But is it possible, you ask, to overcome all the fears, all the time? No, of course not: However technically oriented we all are there is going to be some piece of equipment that induces trepidation. Mine, to my wife's great amusement, is the electric sewing machine. ■

Paul McGoldrick has been in the video/broadcast field since 1963, when he joined the BBC straight from school in London. Since then he has worked for Harris Corp., Moseley Associates, Magni Systems and, most recently, Snell & Wilcox. He is currently at work on a textbook on video in computers.

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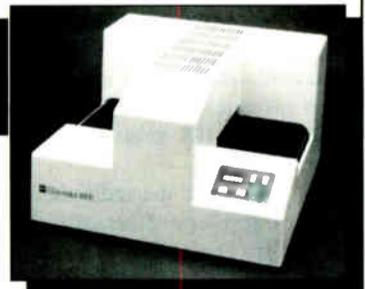
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The MotifXL from **Aston Electronic Design** is the latest in the company's line of character generators. The system offers CG, stills capability and numerous other functions in a 3RU unit.

Based on the single-channel Motif and Motif ESP designs, the MotifXL provides fast text rendering, full-screen images, a soft mask for dynamics and "Moves" animations.



Through the NFS capability, the system also accepts files from other platforms, such as Silicon Graphics workstations, PC systems and Apple DTP units. In addition, the MotifXL software provides direct access to files of other character generators on a network without having to copy the files first.

For further information, contact the company in the U.K. at telephone: +44-1252-836-221; FAX: +44-1252-837-923, or circle **Reader Service 73**.

SOUND PROCESSOR

Sonic Solutions has unveiled its Multitrack USP system that connects several of the company's UltraSonic Processor (USP) cards installed in a Mac computer. The result is a sound processing system that supports extraordinary "wide-track" performance.

The USP is a wide-channel, high-resolution digital audio editing and mixing workstation that provides up to 64 channels in and out and 80 to 100 simultaneous disk playback tracks.

Multitrack USP links the individual USP cards using a high-speed board-to-board bus. The system is capable of recording, editing, filtering and mixing with 24-bit resolution.

For further information, contact the company in the U.S. at telephone: +1-415-893-8000; FAX: +1-415-893-8008, or circle **Reader Service 116**.

TIMECODE SYSTEMS

Alpermann & Velte has introduced a new line of AV timecode systems for digi-

tal video. The line includes the TC 17 integrated studio system featuring a character generator, DVITC reader/insert, DVITC generator/insert and an RS-232 interface.

The TC 18 includes the same features as the 17, but also offers an LTC/VITC reader/insert and generator/insert. Also available are the TC 300 LTC-DVITC converter/reader/insert, the TC 70 DR analog timecode-to-DVITC converter and the TC 70 GR DVITC analog-timecode converter.

For further information, contact the company in Germany at telephone: +49-0202-244-1110; FAX: +49-0202-244-1115, or circle **Reader Service 92**.

GRAPHICS STORAGE SYSTEM

The Broadnews videographic system from **Getris Images** is a data bank for animation and stationary images. Designed primarily for weather reporting, the system uses simple journalistic data to create complex graphics, such as diagrams, graphs, cartographs, etc.

The system is completely automatic, thus reducing the delay of updating images between broadcasts.

Broadnews is compatible with numerous programming tools for customization and interface to other software or databases.

For further information, contact Getris in France at telephone: +33-7690-9777; FAX: +33-7690-7234, or circle **Reader Service 122**.

TBC/FRAME SYNCHRONIZER

The Compon TBC/Sync from **Prime Image** is a full-frame synchronizer and time base corrector that transcodes between YUV (YRB), RGB and composite inputs and outputs.

The unit has an optional three-way adaptive comb filter that provides the best frequency response for composite input and an optional high-performance encoder for maximum output performance.

The device can be configured with RGB 3 and 4 wire in and out and is available with remote control of all functions, including proc amp controls.

For further information, contact the company in the U.S. at telephone: +1-408-867-6519; FAX: +1-408-926-7294, or circle **Reader Service 93**.

RADIO COMMUNICATOR

The microEar from **Phonak Communications** is the world's smallest "in-the-ear" communications receiver. Suitable for intercom or on-air talent cueing, the microEar measures 17.5 x 11 x 5 mm and fits deep into the ear canal to remain perfectly hidden.

The unit is crystal-controlled for customized frequency assignment in the VHF band. A Zinc-Air battery A10 provides low-current power for 15 to 30 hours.

The device includes automatic squelch control, a superheterodyne circuit for high sensitivity, a noise filter and automatic frequency control.

For further information, contact the company in Switzerland at telephone: +41-3772-1775; FAX: +41-3772-1401, or circle **Reader Service 86**.

ANIMATION SOFTWARE

Cambridge Animation Systems has released Version 2 of its computerized cartoon software. The new version includes an entirely new graphical user interface based on process-tree compositing that allows operators to control all elements in the production process via live links.

Also featured is Inter-Process Communication (IPC), designed to maximize available computing resources in single or mixed platform networks.

For further information, contact Cambridge in the U.K. (telephone: +44-1223-578-100; FAX: +44-1223-578-121, or circle **Reader Service 63**).

NON-LINEAR EDITOR

Editing Technologies Corp.'s Ensemble Gold non-linear editing system includes a range of enhanced features compared to the original Ensemble.



Through multiple video channel control, Ensemble Gold offers infinite video layering for compositing and effects. Also, the system's time clip management capability is combined with full EDL functionality, and the system eliminates the need for pre-digitizing and pre-selecting scenes. Clips can be rolled in from tape or randomly accessed from a hard drive.

The system can control the Tektronix Profile, an internal disk array or a variety of external video disk arrays.

For further information, contact the company in the U.S. at telephone: +1-805-529-7074; FAX: +1-805-529-6744, or circle **Reader Service 84**.

CAMERA PEDESTAL

The **Sachtler Vario-Ped 2-75** pedestal provides excellent stability at a very low tare weight.

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The 2-75 has an extended on-air stroke of



770 mm/30 inches. It also comes with Column Lock and Quickfix Mount for fast head changes, as well as Friction Damping that prevents unwanted vertical movement during quick tilts.

For further information, contact the company in Germany at telephone: +49-8932-158-241; FAX: +49-8932-158-227, or circle **Reader Service 69**.

UHF TRANSMITTER

Aquila Broadcasting Sets (ABS) has available a 60 kW UHF transmitter designed to comply with CCIR rules on band IV-V channels in negative vision modulation.

Powered by a single TH 680 high-power diacode tube, the system features modular construction, steam condensation cooling and local or remote control.

For further information, contact Aquila in Italy at telephone: +39-863-995-150; FAX: +39-863-995-215, or circle **Reader Service 61**.

VIDEODISC RECORDER

Pioneer's VDR-V1000P rewritable videodisc recorder is a dual-head optical recorder for simultaneous recording and erasure that affords a minimal chance of accidental signal loss.

An analog time compression system ensures high-quality images, while separate PCM tracks allow independent audio recording. Non-linear access has been rated at 0.3 seconds, while total disc capacity is measured at 48,000 frames.

For further information, contact Pioneer in Japan at FAX: +813-5434-3225, or circle **Reader Service 102**.

Send new product press releases along with black and white photographs to: Marketplace Editor, P.O. Box 1214, Falls Church, VA 22041, USA

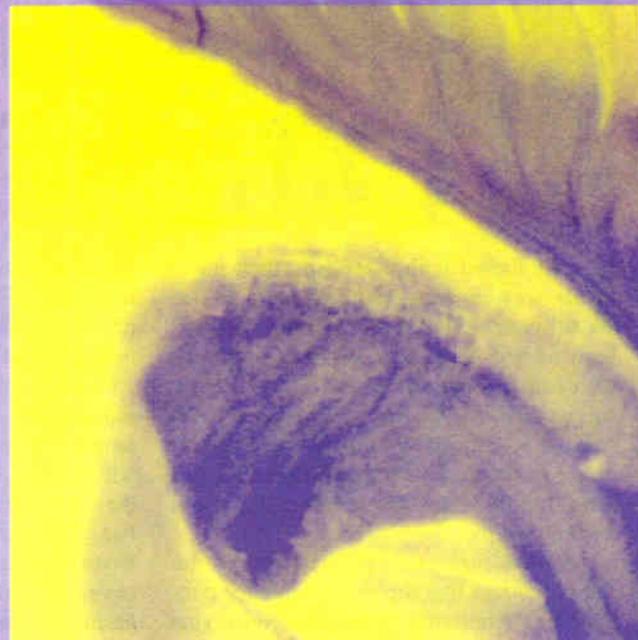
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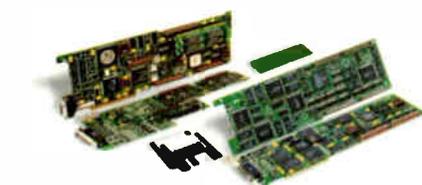
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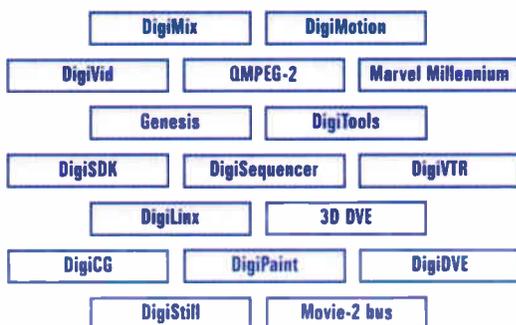
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Say No to Annoying Acronyms

by Hugo Hertz

VAPOR TRAIL

It all started with a brochure that made its way into my stack of stuff at last summer's SIGGRAPH Show. A company named Ariel Corp. was touting its latest computer plug-in gizmo. The top entry on its list of features: 2 BOPS, 100 MFLOPS, 250 MIPS DSP. Were they kidding? It sounded like a bad rock and roll lyric from the late '50s: two bop flop and a mips sips dips.

I am not sure exactly what worries me more, the fact that the entire sentence consisted of Annoying Computer Acronyms (ACA) or the fact that I understood every word. For those TV Technology readers who are geek-jargon impaired, the Ariel product is a parallel DSP (Digital Signal Processor) that plugs into a PCI (Peripheral Connect Interface) expansion bus and it seems to be extremely fast at whatever it does, being capable of 250 MIPS (Million

Instructions per Second), 100 MFLOPS (Million Floating Point Operations Per Second), with an overall speed of 2 BOPs.

BOP? I assume a BOP is a Billion Operations Per Second, although it is a three-letter acronym (TLA) that I have never seen before. The closest TLA I can find is BOT — Beginning of Tape — but that phrase speaks of a much quainter time in computer history.

GET TO THE POINT

The point of the story is that the Ariel brochure went on for four pages with DSPs, BOPs and MFLOPS; RAM, DRAM and VRAM; VGA; RGB; NTSC; PAL and a whole lot more while never really explaining exactly what the unit did or why I might consider purchasing one. After reading all the ACAs my reaction was Zzzz.

Clearly all disciplines have technical phrases that naturally lend themselves to jargon. In the video field, there is NTSC, which some engineers interpret as "never the same color." Of course, it really stands for National Television System(s) Committee — whether it was a System or several Systems that the committee was hashing about depends on where you look up the acronym. My various references disagree on this particular point.

The computer industry, which has in the past few years made a home for itself in the video industry, has much more than its share of TLAs and four-letter ACAs. My guess is that it goes back to the first computers. New technology is often considered

magic, whether it was radio around 1910, motion picture sound circa 1929 or digital computers in 1946.

You have all heard the stories: a computer was as large as an office building and cost considerably more. Only a few possessed the knowledge to program these beasts (in those days computer programs were hard-wired, literally with a large panel of rotary switches or hundreds of patch cords). Only a few large nations could afford a computer, so the handful of computer people were a mysterious and exclusive group.

By the time I got involved in the 1960s, only a few large corporations could afford computers. While a computer was now less than the size of an office building, it did take up most of a single floor. Computer rooms were always lined with picture windows so that visitors would know that this corporation could afford a computer. I remember being allowed into this inner sanctum and walking on raised floors between row upon row of water-cooled core memory. These were the actual memory banks of the computer — the size of a convenience store — even though this particular computer had less memory than a typical wristwatch of today.

CLASS BY THEMSELVES

In those days, computer nerds were divided into distinct classes: the programmers and those who actually were allowed to operate the computer. Programming consisted of typing lines of code onto 80-character paper punchcards with a large noisy keypunch. This stack of cards was dragged down to the computer room (a typical program weighed about 20 pounds) and read into the card reader at the computer operator's convenience. The computer still remained quite mysterious, out of reach behind its large wall of glass.

It wasn't until the microcomputer (or personal computer) arrived in the early 1980s that the glass walls came tumbling down. Today, as I type this a mere decade later, there are three computers running at my desk. This easy and constant access to what are truly "personal" computers encouraged some of us to begin experimenting with things for which they were never intended. Things such as desktop video. Which is why this bona fide computer geek is writing for TV Technology.

Today there is hardly anything mysterious about PCs: anyone from a kindergarten student to that student's grandparents is likely to be surfing the Internet. PCs are ubiquitous, and the only mystery left is the language computer users speak, interwoven with technical jargon and other ACAs. I guess this techno-babble lets the computer people carry on the secret computer order of 50 years ago.

The Net, or any of the on-line services, is probably where this "secret language" is most visible. I speak of course of e-mail (electronic mail). If you look at a typical batch of e-mail messages, an initial question might generate a response followed by a string of back-and-forth responses known as a thread. A thread is supposed to follow a common thread of thought or conversation. If the discourse gets too far off the mark, messages tend to pop up asking the participants to "either rename the thread or take your drivel elsewhere."

Abusive responses are known as "flames," an activity that is generally frowned upon. E-mail dialect is full of strange acronyms, usually initials for lengthy phrases — the better to avoid tedious typing. For example,

BTW means "by the way ... " If you feel the need to jump in on an ongoing thread, you might preface your message with PMFJI, short for "Pardon me for jumping in ... " Another is IMHO, "In my humble (ha!) opinion ... " and, lastly, my favorite: IANAL, "I am not a lawyer, but... "

WRITING STYLE

One positive thing about e-mail, in my view, is that after years of telephones and televisions, the written word is creeping back into daily interaction. Of course e-mail messages cannot compare with the carefully composed letters our grandparents wrote to one another. In olden times a letter was written, folded and sealed to be carried four miles to the post office. A four-mile walk will cool off most momentary passions. On the other hand, e-mail messages — particularly flames — can be written in a few seconds and sent across the world in just a few more seconds, to be repented at one's leisure.

It is the lack of facial expression, or even the tone of voice the telephone affords, that has generated a whole genre of strange conversational acronyms. Attaching a <grin> or a simply <g> conveys that the preceding message was meant as a jest. The suffix

**I assume a BOP is a Billion
Operations Per Second,
although it is a three-letter
acronym (TLA) that I have
never seen before . . .**



<gd&r> (grinning, ducking and running) generally means the preceding joke was either dripping in sarcasm or couched in some special way that, if spoken face to face, might come to blows.

Lastly there is the strangest facet of geek-speak, the emoticon. An amalgam of the words emotion and icon, this phrase refers to the strange mutant punctuations at the end of some e-mail sentences. For example:

This is great reading :-)

If you turn your TV Technology 90 degrees to your right — do it now, your co-workers aren't looking — that colon, dash and closing parenthesis becomes a smiley face. The same noxious smiley face that covered the earth during the 1970s :-)

That second noxious smiley face is winking at you. See how well it works? While the emoticon should probably remain out of great literature, it serves as innocent fun on the Internet. Consider the strengths of the emoticon:

It can express both joy :-D and sorrow :-(

It can represent resignation :^| or show inebriation %^)

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Drop me a line when you get the reply :^)

Hugo Hertz is the pseudonym for a well-known computer animator who would rather you keep your flames to yourself. Contact him by snail-mail, care of TV Technology, or CompuServe 74103.2435

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ITALIAN TECHNOLOGY FOR WORLDWIDE MARKETS

CTE INTERNATIONAL BROADCASTING DIVISION

New Tools for the Desktop

Last month I wrote about the near-term future of video and computers, namely the DVC (Digital Video Cassette) format and the accompanying IEEE1394 FireWire interface standard.

Albert Einstein never thought of the future, meaning it would come soon enough. But as we all know, you cannot produce the work of today with the tools you may (eventually) buy tomorrow. And as announcements in the computer industry are even less reliable than the weather forecasts, it is wise to take a look at the products that are available today.

NEW TOYS

So this month, I will tell you about shipping products for the integration of video and computers, especially from Europe, without forgetting that famous saying from Bernard Baruch, that a speculator is a man who observes the future, and acts before it occurs.

miro Computer Products from Germany uses the PCI-Bus that is common in PCs and Macs to bring its miroVideo DC20 and miroMotion DC20 products to the masses. For about US\$1,000, you get a plug-in board for your PC or Mac, including Adobe's Premiere 4.0 software. You can take any NTSC, PAL or SECAM signal and feed it via composite or S-video connectors to the board. This is in full resolution, so for PAL it is 768 x 576 pixels at 25 frames per second; NTSC is 640 x 480 at 30 frames per second.

A built-in compression chip uses the Motion-JPEG algorithm to compress the resulting data stream in real time at a 7:1 ratio, so any ordinary, fast hard disk can be used for digital video storage.

Adobe's Premiere video-editing and special effects or any other similar software you may have in use lets you edit your video footage with all the comfort and variety that is common to the digital video world. Cuts, blends, titles, whatever you can imagine, is added via computer without any loss of quality due to generations of copying tape.

Finally, as soon as you are satisfied with your video, you can output the finished real time video stream via composite or S-video connectors to a TV or a VCR. Internally, the YUV 4:2:2 is used, so the quality for a product of its price range is just amazing.

Fast Electronics, also from Germany, has various products like ScreenMachine for Apple's NUBUS models, as well as for PCs with ISA and PCI slots. Their most famous and unique product, called VideoMachine, has won nearly all "best-of" and "readers-choice" awards that you can imagine. VideoMachine, while definitely not a product for the low-end consumer market, is a full digital video-switcher with special effects, all on a plug-in board for PCs or Macs.

TAKING NOTES

More on the low end is MRT from Norway, which uses PCMCIA (now called PC-card) technology to connect camcorders to notebook computers. As PC-cards do not have the data throughput of PCI right now, it only allows you to grab single frames in full resolution or full motion video in less resolution. The next release of PCMCIA PC-card is said to support full PCI speeds, so even full-screen, full-motion recording of video on a notebook computer will be

possible. Right now there are some proprietary solutions that only work with some Toshiba or Apple Notebooks to provide full-screen, full-motion recording of video. But I guess before the high-speed version of PCMCIA PC-card technology will be available, we will have notebooks with FireWire capabilities to easily load broadcast-quality digital video into a notebook without any conversion at a price point of a few hundred dollars.

Henry Ford II realized that the economic and technological triumphs of the past few years have not solved as many problems as we thought they would, and, in fact, have brought us new problems we did not fore-

see. Will a mass movement of video producers change the world to the better or will we just see more of what is common on TV today, albeit in broadcast quality? We shall see.

But in the meantime you might be interested in using still video technology right now.

On the low end there is Casio's QV10 with 320 x 240 pixels resolution, and Apple's Quicktake 100 and 150 cameras with 640 x 480 pixels resolution. They are easy to use, come with software for Macs and PCs and let you get pictures into your PC or notebooks within a few seconds. And for less than US\$1,000, you can buy Kodak's new DC50 camera, complete with

by Hannes Wolf

SPECIAL REPORT

3 times zoom, flash and PCMCIA PC-card storage capability. Resolution is 768 x 576 pixels, and as with the cameras from Casio

(continued on page 30)

LIGHTWORKS



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CONTINUED FROM PAGE 29

Desktop Tools from Europe

and Apple, you can transfer pictures via serial cable.

One step above will be Sony's DKC-ID1, which should have already been announced by the time you read this article. It should ship this summer, and pricing will probably be less than US\$2,000. The unit will capture images at resolutions of 768 x 576 pixels in 24-bit color. Images will be JPEG-compressed at a ratio of 5:1 and stored on a standard Type II PC Card. An electronic shutter can operate at speeds ranging from 1/50th to 1/4,000th of a sec-

ond. A built-in 12x zoom lens will provide magnification equivalent to a 38mm to 460mm zoom on a traditional 35mm camera. The zoom lens can be operated both manually and automatically.

The DKC-ID1 will connect to a computer (Mac or PC) through a SCSI-2 interface to download stored images. A lithium-ion battery used in Sony's consumer camcorders will power the camera. Naturally, within a few years, all these still video cameras will reach price points comparable to the cheapest film cameras today.

As Frank Moore Colby mentioned so wisely: Every improvement in communication makes the bore more terrible. But on the other hand, under these millions of people that will use these new video technologies there might as well be some geniuses who will produce the Mona Lisa equivalent of video soon. ■

Hannes Wolf is a computer consultant based in Vienna, Austria, specializing in on-line communications and desktop platforms.

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Technical Specifications: Standard product complies with most international specifications and can be supplied for world-wide CCIR systems.

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Circle Reader Service 110

NEWS WATCH

NEW TECHNOLOGY

TOSHIBA DEVELOPS FAST ATM SWITCH

TOKYO

Toshiba Corp. Has developed a prototype switching LSI for asynchronous transfer mode (ATM) networks that meets the specifications of the ATM forum, an international consortium of ATM manufacturers.

The system delivers data at speeds of 5 Gbps with an 8 x 8 622 Mbps port, all on a single CMOS chip.

The new system's speed is the result of two key developments: a high-speed signal input/output, low voltage differential signals (LVDS) interface and a high-performance address generator that supports multicasting to multiple ports without an external dedicated LSI.

The LVDS interface is able to function reliably with a narrow signal voltage amplitude, which reduces the time required for voltage charging and discharging. The LVDS is the first with an amplitude of 0.4V, allowing the system to operate at the 200 Mhz required for 5 Gbps operation.

Meanwhile, the address generator temporarily holds the address information of each cell of the transmission. It then transmits the cells in order of priority. The shift register-type memory supports a buffer than can hold up to 320 cells.

The LSIs are made using 0.35-micron, double-layer CMOS technology. It holds approximately 2 million transistors on a 17.4 x 17.4 mm chip.

For further information, contact Toshiba at telephone: +813-3457-2105; FAX: +813-3456-4776, or circle Reader Service 103.

TECHNOLOGY UPDATE

NTL Eases Satellite Access

by Bruce Randall
Public Relations Manager
NTL

WINCHESTER, U.K.

It has taken an exceptional combination of circumstances to bring about a new service for providers of cable programming.

Until recently, the cost of satellite delivery to cable head-ends was prohibitive to all but the largest suppliers of programming. This was especially for those catering to special interests. But this was before the advent of digital technology and the dramatic effect it has had on the economics of video distribution.

PENT-UP DEMAND

Just as pent-up demand from new channels was reaching critical mass, the technology of MPEG-2 video compression became a reality. And there was one further piece of the jigsaw as far as satellite service provider NTL was concerned — a partnership with a satellite operator.

Last September, NTL and Orion Atlantic announced a new joint service platform to provide a one-stop-shop for cost-effective digital distribution by satellite. Targeted at London play-out centers, NTL would provide fiber-optic connection to its new central London teleport, all the necessary video compression equipment, uplinking to the satellite and receiver-decoders at cable heads. Orion would provide the space segment, which covers both Europe and the United States. This meant that not only could London-originated channels be

the performing arts featuring opera, ballet, jazz, dance and classical concerts. Channels such as this are often restricted to distribution to individual cable heads by videotape.

Nicholas Moncrieff, managing director of performance, is targeting the broader market.

"We are very happy to have signed this deal with NTL and Orion," he said. "We can now look forward to making Performance available throughout the U.K.'s existing cable network and to a potential 20 million European cable viewers."

The real benefit of digital distribution on this basis is that program channels are getting excellent use out of a minimum amount of bandwidth. By providing an all-inclusive service platform, NTL and Orion put together multiplexes consisting of groups of users each with an allocation of digital bit-rate capacity to suit their needs and their pockets. Whereas a single transponder may accommodate a maxi-

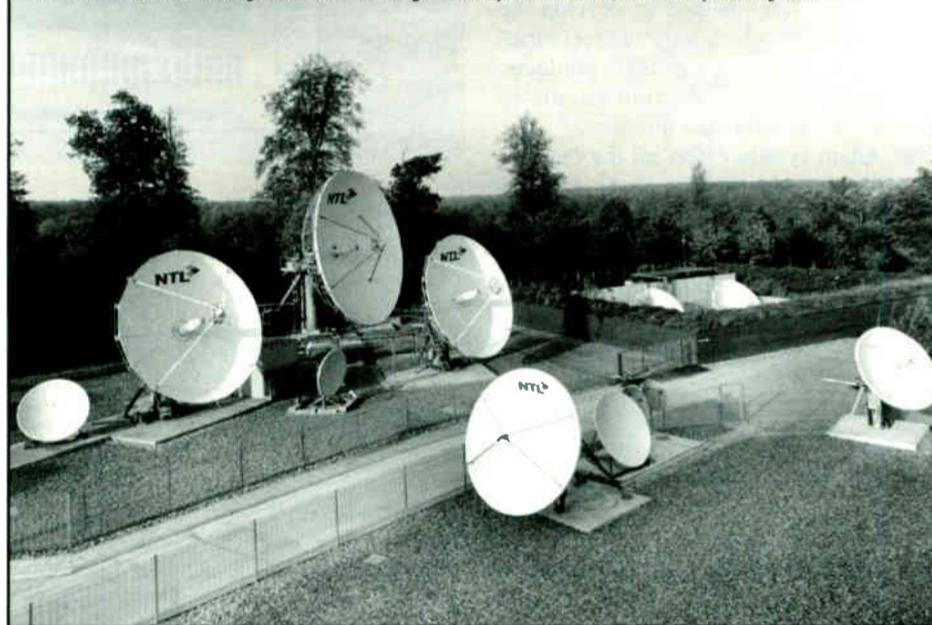
mum of two analog TV services, the same bandwidth could handle as many as 10 to 15 digital services, or even more depending on the bit-rate, and hence quality level, chosen. Provided there are enough customers to fill the available capacity, the economics are extremely favorable as broadcasters only pay for what they use.

MPEG EXPANSION

NTL has recently completed a second expansion at its main teleport in central southern England. This is to meet the surge in demand for MPEG-2 digitally compressed services from new, high power direct-to-home satellites promising hundreds of channels, and from broadcasters increasingly requiring global coverage. The location conveniently connects East and West, acting as a kind of European gateway for both broadcast and telecommunications traffic.

A 13-meter antenna links Europe as far as western Australia via Intelsat at 57° E using C-Band. This carries a variety of digital feeds, including those for TV New

The main NTL teleport at Crawley Court, near Winchester, Hampshire



Zealand, Mauritius Broadcasting and SIS. Intelsat 601 at 27.5° W provides transatlantic connections for CBS News, while Gorizont 40° E and Eutelsat 7° E provide data/telephony circuits to eastern Europe and beyond. Music Choice Europe has located its play-out center on NTL property right next to the teleport, distributing 60-channel digital audio services to cable operators.

ORION RAVES

"We are delighted to be carrying Channel One and Performance," said Jack Albert, senior vice president and general manager of Orion. "The relationship with NTL makes us proud. It is exciting to see how European programmers are showing increased interest in Orion and having a quality choice for program distribution. When the service started, over 40 cable systems passing more than 3 million homes had dishes pointed toward Orion 1."

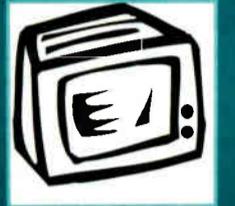
Steve Holebrook, business development manager for satellite services at NTL, explained, "In two and a half years of rapid growth we have become a major supplier of satellite uplinking services out of the U.K., with three teleports and antennas beamed to all the important satellites. But never before have we been able to offer a complete package 'off the shelf.' This

makes life a lot easier for our customers by simplifying and speeding up the process of getting on-stream. We anticipate strong demand for this sort of offering from the small players enabling them to keep up with the bigger operators as they enter the digital era."

The rural location of the NTL teleport makes it ideal for direct-to-home uplinking to Astra 1C and 1D, which requires special screening to avoid interference. Current customers include Turner Network TV, The Cartoon Network, Discovery, Bravo and The Learning Channel. Astra 1E and 1F will be digital and therefore promise to open up vast new possibilities for programmers and viewers alike.

With Orion 1 added to the NTL portfolio, the prospects in the digital era for channel providers look extremely good, even those for whom satellite distribution has been but a dream. ■

The opinions expressed above are the author's alone. For further information, contact NTL in the U.K. (telephone: +44-1962-823-434; FAX: +44-1962-822-378), or circle Reader Service 118.



BUYERS GUIDE

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The real benefit of digital distribution . . . is that program channels are getting excellent use out of a minimum amount of bandwidth.



delivered digitally to modest receive-sites anywhere in Europe, typically 2.4m antennas, but also there were options for high-quality contribution feeds across the Atlantic.

The first fruits of the partnership have been five-year distribution contracts for two cable channels run by Associated Newspapers, owners of the U.K. "Daily Mail" national newspaper.

Channel One was available only on cable systems in the London area via the Interconnect network linking a number of adjacent cable franchise areas. It is a 24-hour, seven-day-a-week news and entertainment channel in considerable demand from U.K. viewers.

According to Julian Aston, managing director of Channel One, "This deal offers us an opportunity for continued growth and expansion across the U.K. We have had considerable demand from the viewing public for further access to Channel One and we're delighted to be able to meet that demand."

Performance - The Arts Channel is also a cable exclusive channel and is dedicated to

USER REPORT

NEP Talks With Telex ADAM

by George Hoover
Director of Engineering
NEP

PITTSBURGH

Live television production, particularly sports and breaking news coverage, is one of the most exciting and challenging aspects of our industry. The key to a successful production is good communication, both before and during the actual production.

How many times have we heard, "For being in the communications industry we sure do not communicate well." For major events like the Super Bowl, World Series, New York Marathon or Indy 500, solid, reliable communications make the production a success.

Because millions of dollars have been invested in bringing these productions to broadcast, mistakes due to poor communication cannot be tolerated. As one of the largest suppliers of mobile units in the United States (servicing NBC, FOX, ESPN, ABC, CBS, TNT and other program producers), NEP is constantly looking for new and innovative products to help improve our clients' productions. We search for the best and most reliable communications systems available to place in our SS8, 12, 16 and N9 mobile units.

EVOLUTION OF ADAM

Over the years, the basic intercom system has evolved from a simple battery and telephone operator headset to a hodgepodge of PL systems, IFB systems, hot microphones and two-way-to-telephone interfaces, which are generally not easily reconfigured or, for that matter, easily understood.

NEP felt that an integrated system encompassing all our operational requirements in a quickly-reconfigurable and redundant package would be the best approach for a new communications package. After looking at various systems we

selected the Telex Adam based upon the following operational needs:

- party line (PL) paths between user stations and cameras
- party line ISO for senior video and video operators
- point-to-point talk paths
- IFB for talent
- stage announce
- telephone interface
- interface to conventional two-wire RTS boxes for stage managers, etc.

Weight, size and power consumption are also a constant concern for mobile operators and systems designers. The Telex Adam system offers a small footprint, moderate weight and minimal power consumption. Being a digital system running on RJ-type cables, bulky and heavy 25-pair telco cables were eliminated between each panel and the mainframe.

SEPARATE MASTERS

Most mobile units in the United States have been carrying separate RTS 802 master stations and RTS 4003 IFB panels, with which the producers are very familiar and comfortable. Telex helped us develop the 98 series panels, which look and feel virtually identical to the older RTS products. This enabled our production clients to maintain that comfortable interface.

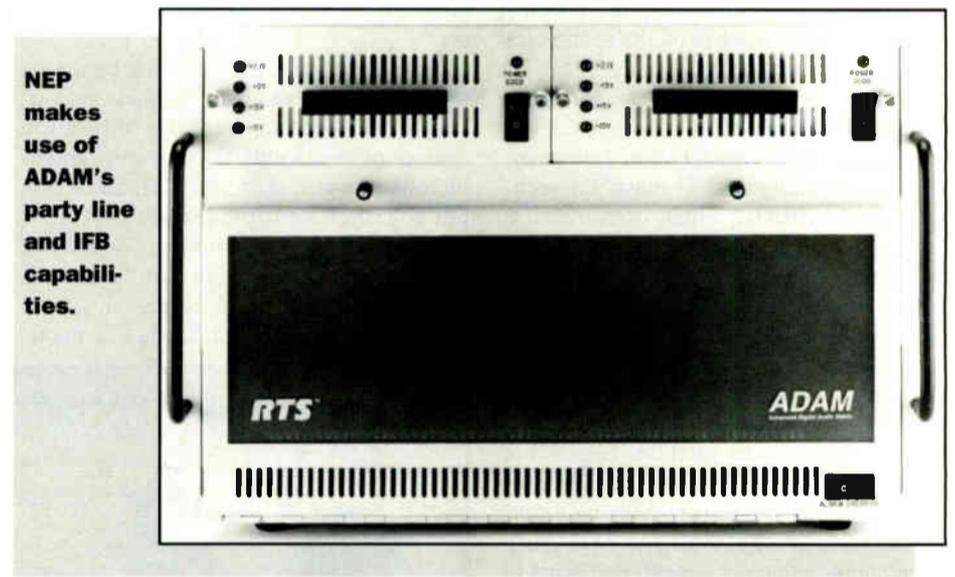
The Adam system offers all the features our clients require in a compact, familiar

package. Individual level controls are available for each switch assignment, a critical requirement when many channels are monitored. System setups are developed off-line on a standard PC and then ported into the Adam system, offering rapid reconfiguration from show to show. The optional numeric keypad allows changes to be made quickly at the panel for last-minute additions and revisions. More than one system can be bundled together quickly when multiple mobile units cover a big event.

Our first Adam system was on the road for the football season. Performance and reliability were excellent and the sound quality superb. We rate the product highly, which is reflected by our decision to install four more Adam systems over the next few months. ■

Editor's note: George Hoover says he has been involved in the remote television industry for too long to remember, but black and white and kinescopes come to mind, along with a man named Jackie Gleason.

The opinions expressed above are the author's alone. For further information contact Telex Communications (telephone: +1-612-884-4051; FAX: +1-612-884-0043) or circle Reader Service 36.



USER REPORT

Passport Rolls with Harris

by Mark S. Cooper
President
Passport Communications Inc.

FOREST CITY, Iowa

Passport Communications Inc. provides transportable Ku-band satellite uplink services that utilize Harris Broadcast S-23s. The mobile uplinks were originally owned by the transportable division of Cycle Sat, which was acquired by Passport in 1995.

The original trucks were designed and manufactured by Harris. One is based in Iowa and the other in Cincinnati. We began with an Iveco chassis and incorporated a self-contained unit for terminal and production equipment. Many changes and upgrade modifications have occurred over time, but the workmanship and structural integrity of the units built by Harris have remained intact. The units feature completely redundant transmission equipment, IFB, intercom, video switchers, audio boards, tape machines and on-board generators.

RF equipment includes Vertex 2.6-meter parabolic antennas, redundant 300 W phase-combined TWT high-power amplifiers, Scientific-Atlanta and LNR redundant video exciters with three audio subcarriers and Standard Intercontinental and DX broadcast quality off-air receivers. Planned future upgrades include modifying the RF systems so they are dual path.

LOGGING MILES

Being located in and operating out of the Midwest region of the U.S., it is not uncommon to log more than 50,000 miles annually per vehicle. Although the Iveco chassis performed very well, 200,000 miles takes a toll on the trucks and it eventually became necessary to either rebuild or replace both vehicles. Upon inspection, it was determined that the chassis was the only component requiring replacement, thus reducing the financial investment.

Harris replaced the first chassis with an International 4700 and the second with a Ford 7000. An important consideration

in choosing the new chassis was Gross Vehicle Weight Rating (GVWR). The new integrations in Passport's vehicles allowed for an increase of GVWR without exceeding 26,000 pounds.

The wheelbases were then modified, adding skirted, below-floor compartments and some extended cab space. This provided welcome storage and operating room within the vehicles. Very few other modifications were required, as the compartments containing the electronics were quite stable.

CHANGING ENVIRONMENTS

In a typical year, Passport handles many events in which audio and video signals are taken from a production truck, and then fairly routine uplink and downlink services with quality control are performed. However, between these events we may also transmit a corporate videoconference with cameras being switched through our mobile units (also requiring encryption). Or a news event may require IFB and camera coordination lines, or just a tape feed. The capability to adapt to these changing environments is critical.

For example, some time ago we were working on location with a network producing a special on the making of "Field of Dreams." The shoot was well-scripted and everything went perfect. En route back home after this shoot, a passenger jet crashed in Sioux City. Both mobiles headed directly to the crash scene and worked 24-hour shifts covering the crash for various news organizations. Immediately after, one unit covered a bicycle race and the other transmitted a B-MAC encrypted videoconference.

It can be very difficult to adapt at a moment's notice, but having the right tools for the job certainly helps. The mobile units designed and built by Harris Broadcast have been excellent and their service continues to be the best in the industry. ■

Editor's note: Mark R. Cooper is a 10-year veteran of the satellite industry and a member of the SSPI.

The opinions expressed above are the author's alone. For further information contact Harris Broadcast (telephone: +1-217-222-8290; FAX: +1-217-224-2764) or circle Reader Service 80

BUYERS BRIEF

The Vega C-5111 10-line/four-frequency radio control console provides selection of one or any combination of up to 10 remote base stations for transmit and receive.

A second speaker on the unit allows for monitoring of any combination of those 10 stations that are not already selected for transmit and receive control. PTT switches allow immediate response to a call on a "selected" or "unselected" line without disturbing the programming of the "selected" simulcast group or line.

Individual volume controls are provided for each "unselected" line. A timed mute switch temporarily mutes "unselected" audio. Line-activity LEDs function on all lines, "selected" or not. The C-5111 console is equipped with 120/240-VAC power supply, and runs on 12 VDC. For more information, circle Reader Service 52.

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

Sony EVW300 Hi 8mm camcorder, 12x Canon lens, 4 NP1B batts, Perrot System 90 charger, Thermadyne travel case, very low hrs, mint cond, \$5200. Scott, 301-916-6273.

Sony BVP-7 broadcast camera w/hard shell shipping case, operating & maintenance manuals, extender board, rain cover, tripod adapter, CA-3A camera adapter, Canon lens, Anton Bauer batt holder & 3 batts, LS4Q quad charger, Sony AC-500 AC adapter, Sony CCZ-2, CCZQ-2, CCZQ-5 cables, very clean, perfect cond, \$14,500. Jim Gray, 610-678-2640.

Ikegami 730 w/Canon lens, ENG & studio, power supply, hard case, \$1100. Stephen, 804-426-7782.

Sony BVP-7 w/viewfinder, Fuji 12x9 lens, \$9500. Bryan, 800-582-0582.

Ikegami HL-79EAL, in use now as copy stand camera, low hrs on new tubes, J13 Canon glass, case, power supply, base plate, \$2000 or B/O. Gordon, 904-668-0611.

Panasonic AG455U SVHS Hi Fi 12x zoom camcorder with Panasonic autofocus fix, excellent shape, only 80 hrs, metal battery adapter holder for BP88's, incl 6 good 2.3 AH batteries, 2 Ambico 200/100 W AC/DC lights w/bulbs, 3 aluminum stands, 2 excellent Bescor 20 A battery belts, Bogen shoulder mount/monopod steady system, 2 Plano fishing cases full of connectors, cleaners, wires, goodies for EFP, \$1499. Bill, 518-356-0334.

Sony VX3, Hi 8, 3 CCD, TC, showroom cond, orig box, accessories, still under Sony warranty, \$2600. Charlie, 914-381-2530.

JVC KY-17, docked to SVHS 411 recorder, 16x lens, only 30 hrs use, tripod adapter, MK50 mic, G10U power supply, charges 4 batts, 6 WBG1U batts, cables, flight case & manuals, \$4500. Don, 813-392-4756.

Sony EVW300 Hi 8, 3 chip camcorder, 16:1 Fujinon Eagle lens, 5 NP batts, charger & case, \$5300 or B/O; AG-455, like new w/case, charger, batt, \$1250. Nikolas, 602-905-7371.

Sony DXCM7 3/4" camera w/Sony VCL915YBA zoom lens, hard case, Porta Brace cover, VO880 SP recorder, BKU760 timecode, Sony BC1WA charger, 4 batts, all service manuals, mint cond, low hrs, \$7600. Kauai, 808-823-6130.

JVC KY1900, 3 tube with Fujinon 12x, manual, excellent condition, needs power cord, has power supply, \$400 or B/O; Panasonic WV555 with 10x lens, manual, needs work, \$150 or B/O; Panasonic CLE200 with Canon 12x, all accessories, \$2500; Sony DXCM7 with Fujinon 16x, all acces, excellent condition, \$5900. Jerry, 402-681-8453.

Toshiba TSC-200 Hi 8/26 pin Betacam out camcorder w/Canon 13x1, \$5400. 603-898-1240.

Panasonic WV6000, 12x lens, EVF, cable, remote control unit WVRC60 w/30 ft cable, camera case, \$700. Mike, 401-727-0262.

Sony EDC55 Beta camcorder, 500 lines, exc cond, Porta Brace case, filters, tripod adapter, 2 chip, \$1900. Jim, 214-345-7773.

Panasonic N3, 3 tube, 700 live camera with Canon lens, case, 3 batteries, PS, excellent condition, \$800. Walt, 314-428-8430.

JVC KY17B with 411 recorder & TC, 13:1 lens, 3 batteries & charger, \$3500 or Best Offer. Mike, 415-332-8489.

Panasonic WV3200, single tube with case, \$100; Hitachi UKC800, single tube, \$100. Tom, 914-528-5508.

Panasonic 200 CLE camera, SVHS 7400 recorder, Canon 15x lens, batteries, cables, hard case, low hrs, \$4500 or B/O. Bert, 401-946-9767.

Sony M3A camera, 700 lines, low hrs, power supply, batt holder, 2 batts, cam cable, case & manual, \$900. Don, 813-392-4756.

Hitachi Zone B, 3 chip dockable camera with lens, \$3000. Karl, 360-754-4260.

Ikegami HC-230 3 CCD camera w/Canon 12x, factory spec'd 7/95, multi pin cam/VTR adapter, Beta camcord adapter, shoe, mic, \$2900. C Angelos, 408-393-0332.

Canon J8X6B with 2x, mint condition, Sony mount, \$11,500; Canon J14Ax8.5B, mint condition, Sony mount, B/O. Ira Raider, 610-793-3000.

CAMERA ACCESSORIES

Want to Sell

Ikegami HL79D, without lens, \$2000 or B/O; Ikegami HL79E, without lens, needs eye piece, \$2000 or B/O; Sony BVP30, without lens, \$2000 or B/O; Anton Bauer LSQ4 brick quad charger, \$500 or B/O; Anton Bauer LPS4 brick single charger, \$250 or B/O; brick batteries, need to be re-celled, \$50 or B/O; Cine 60 leather battery belts, 14.4 V dual XLR connection, needs new cells, \$100 or B/O; 3 Redline battery belts, 12.0 V cigar connection, new cells & chargers, \$175 ea or B/O. Lewis, 818-994-5397.

Nikon S19x8 broadcast lens with 2x extender B4 mount, new condition, not internal focus, warranty still valid, will consider as part trade, Sony 8" field monitor, lightweight ENG tripod and/or batt, wireless mic set up, comparable new S20 model, must sell, \$6500. Gordon, 415-924-2875.

Cartoni 20C tripod/carbon fiber sticks, new w/case, \$5600; Schwem 6-300mm Gyrozoom lens FP-1 stabilizes helicopter, car, train, motorcycle, boat video shooting, Ikegami mount, \$8000. Rob, 513-779-4231.

Sachtler Video 14 fluid head tripod, spreaders, very good condition, \$700. C Angelos, 408-393-0332.

Camera turret crane, w/auto pan tilt head, good condition, 15 ft extension, carries all video cameras, Hercules tripod, over 150 lb weights incl. Bobby, 516-466-1919.

Vinten 3320 pedestal, \$2500; Anton Bauer QC40 quick charger for bricks, \$200; Sony BC210 charger for BP90's, can charge 4 batteries, \$300; Cypher 6000 timecode reader/gen, \$1100 or B/O; Fujinon x1.8 teleconverter, \$500; 19" Anvil shock case with double rack rails, \$600. Craig or Chris, 334-433-7733.

Saticon H4101 camera tubes, unused, set of 3, R, G & B, B/O. Al, 712-362-4119.

Quick Set Gibraltar QGT-5 (2) tripods, 2 Television Products P30 pedestals, 3 ITE H2 heads, 3 Quick Set QHD-1 dollies, 1 Quick Set Hercules QHT-1 tripod with QHH-5 cam head, all in fair working condition, Best Offer. Dennis, 800-388-6939 or e-mail 76620.607@compuserve.com

Sony CMA-8 power supply, \$225; 2 molded plastic airline cases, \$250 ea. Jerry, 402-681-8453.

CSI fluid head tripod, 3 section tripod, \$1100; Porta Brace carry on camera cases for DXC-325/9000, \$150; TGR-325 title gen for DXC-325, \$125; Panasonic NV-B51 power supply, \$200; Precision Optics 2x extender for Sony 1/2" lenses, \$550. Jim, 619-436-2308.

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Want to Sell

Ampex ADO1000 with Digimatte, Perspective 7.1 software, excellent condition, \$7000; Ampex ADO2000 with Digimatte, Perspective, 7.1 software, excellent condition, \$12,500; Ampex ADO3000 with Digimatte, Perspective, Rotation, input proc, 8.0 software, \$7500; extra good working boards & keyboards available. Eric, 203-357-8488.

DME-450 digital multi effects, no TBC needed, like new, \$1950. Lou, 408-947-7517.

Sony DME450 DVE, exc cond, \$2000. Mark, 864-281-9644.

EDITING EQUIPMENT

Want to Sell

Immix with Quadra 650, with monitor, 12 MB RAM, 230 MB HD, Sony PVM1390 monitor, speakers, under warranty with software upgrades til 1/97, \$35,000. Craig or Chris, 334-433-7733.

ESE black burst gen with 4 outputs, \$100. Bruce, 509-332-5858.

Sony RM440 with cables, great condition, \$500; R-SID serial controller for Paltex Abner, \$300. Rudy, 206-838-8338.

Panasonic AG-A96P, under 30 hrs use, \$300; Sony XVT600 image scanner with Sony GB6 track ball, \$1000 or Best Offer. 908-842-6026.

Complete 3/4" editing system, Edit Master controller, 486 computer with Windows 3.1, Sony 9800 & 9850 with TC, mixer, monitors, speakers & cables, \$13,750. Gard, 818-840-9100.

Edimaster CV Technologies, JVC, Sony & Panasonic parallel interfaces available, \$500 ea; Y/C breakout boxes, VTR JVC parallel connection cables & ROMs for serial & parallel interfaces & Ampex VPR80 test ROM, manual & recent software 4.12 for Edimaster, call for prices; Callaway CE150 4 machine editing system with cables, preview switcher & manuals, \$2000 or B/O; GVG old ISC editing system, needs disk drives, works with BVU, BVH & VPR80 machines, uses Callaway UPMC & UPLT interfaces, call for price; Sony RME700 editing controller, 2 months old, \$650 or B/O. Lewis, 818-994-5397.

JVC BRSS25U S-tape player with slo mo variable tracking, brand new noise reduction board, low head hours, mint condition, \$3500. Bob, 800-657-8501.

JVC BRSS611U SVHS Hi Fi edit feeder, 425 hrs, \$1499; JVC KRM800 MII Betacam quality, 270 hours on new drum/heads, \$2499; JVC RM88U controller with 2 45-pin 15 ft cables, \$249, or entire system for \$3999. Bill, 518-356-0334.

Betacam A/B roll edit system, Sony Betacam BVW10, BVW15, BVW40, Tektronix waveform/vectorscope 1740, CMX300 video edit controller w/monitor & software, video switcher, Toaster 4000 w/18 Meg RAM, chroma FX, loads of software, 6 educational tapes, 2 Sony 13" color monitors, Videotek 19" AVM19S color bar generator, Lenco video processing system, Lenco black burst, Lenco pulse generator, Lenco video DA's, much more, system in service now, call for more info, \$30,000 firm as package. Gordon, 904-668-0611.

Sony DFS500 video switcher with digital effects, incl DSK option & rack mount, \$10,000; Chyron DSC Eclipse, broadcast quality 3D digital effects, very user friendly, incl hardware, software & manuals, \$6000; Sony 3/4" edit system, VO5800, 5850, & RM440 controller, exc condition, \$4000; Amlink edit controller for Amiga computer, controls 3 serial VTR's, all hardware, software & manuals, \$1000; Nigel edit console with rack space, \$500; Mac 165C color Powerbook, 4/80 with software, \$1000. Mike, 714-847-6131.

Ampex ACE-25 with audio & video switcher, excellent condition, \$5000; Sony BVE-800 with 3 serial interfaces, \$1400; Sony BVE-500, \$350; Sony RM440, \$600; Convergence ECS104, 3 units, \$350 ea; 4 Convergence ECS103, \$300 ea; Quantel V-series tablet, \$850; 5850 interfaces for Convergence, \$200; serial interfaces for Convergence, \$150 ea; JVC interfaces for Convergence, \$200 ea; Convergence TC-100 timecode, \$200 ea; Convergence serial switcher interfaces for GVG 100 (SWI-120), \$200 ea; Ampex VPR-2 interfaces for Convergence, \$300 ea; Tektronix 528 waveform monitors, \$475 ea; Chyron VP-2 with script font, \$1100; Quantel DPB-7000 classic Paint Box system, \$6000. Eric, 203-357-8488.

Fast Video Machine VM70100, corporate studio with prof filter installed on Pentium 120, 16 MB RAM, 1.6 GB HD sound blast card, 17" monitor, like new, 1 month old, all warranties, manuals, \$7850. 209-275-8315 or 209-264-1048 ext 11.

Comprehensive Edit Lister software 3.4, original disks & documentation, \$250. Grant, 415-558-8339.

Ampex VPR-2B with TBC-2B, 3 units, \$2400 ea; 2 Sony BVU-200, \$300 ea; JVC 555OU, excellent condition, \$300; Chyron RGU, 1 channel, \$400; Chyron VP-2 with script font, \$1200; 17 Tech-nov MDA-310, 1x20 video & balanced stereo audio DA's, \$290 ea; 5 Convergence 104's with serial interfaces, \$400 ea; Sony BVE-500A edit controller, \$350; Sony BVE-800 with serial interfaces, \$1400; Quantel DPB-7000 Classic Paintbox system, \$5500; Sony RM-440, \$600; 3 Ikegami TM-20-9RHA color monitors, \$400 ea; 3 Tektronix 528 waveform monitors, \$450 ea; Nova 500 TBC, \$600; Shintron GH6 TC burn/reader, \$300. Eric, 203-357-8488.

LIGHTING

Want to Sell

Anton Bauer Ultra Light camera light, carry case, battery, extra bulbs, gels used very little, \$300. Jerry, 402-681-8453.

Lowell VIP light, AC/DC light with 100 & 250 W bulbs, rotatable barn doors, scrims, car cord DC adapter, L-link VIP-36, Vipod VIP-35, case, \$99; Lowell 100 W Tota light with scrim & 2 extra bulbs, \$99. Bill, 518-356-0334.



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MOVIE PRODUCTION EQUIPMENT

Want to Sell

Krasnogorsk 16mm K3 film camera, new in box, w/lens, filters, remote, \$300. Rob, 513-779-4231.

SIGNAL PROCESSING

Want to Sell

SA-T22 TBC for JVC 22 series VTR's, \$350 or B/O or will trade. Tom, 617-562-1039.

Nova 502 TBC with BVW-50 or similar, almost new with warranty card & box, \$900 or Best Offer. Gordon, 904-668-0611.

SWITCHERS

Want to Sell

Sony SEG2500 w/DSK, \$2000. Mark, 864-281-9644.

GVG 100N with pulse gen & serial control, \$5000 or Best Offer; GVG 1600 switcher, call for price. Lewis, 818-994-5397.

GVG 110 with serial & pulse, like new, \$9000; GVG 100, no control panel, \$3500; Crosspoint Latch 6112, 2-ME, \$800; Intergroup (ISC) 2-ME with serial & GPI, \$1400; Graham Patten 1231 down stream keying system, 6 in with serial control, \$750; Ampex Penguin 8 input video, 16 input audio serial control, \$1500; GVG 940A proc amp system, \$500. Eric, 203-357-8488.

GVG 200-2 switcher with aux bus, chroma key, \$27,500; GVG VPE-151 editor w/current software, \$15,000; Abekas A-53D digital effects gen, \$15,000; Ensemble Designs DS-2 w/Envoy software; Panasonic WV-5230B B&W triple production monitors; JVC 850U 3/4" tape decks; Sonic Solutions digital audio work station. Kevin, 312-587-8700.

JVC KM1200U switcher, new in box, \$1200. Reed, 816-391-5365.

Panasonic WJ5500A SEG mounted in Anvil case, with WJ300 video DA, manual, \$1100 or Best Offer. Jerry, 402-681-8453.

Sony SEG2550, 8 input, switcher w/E-file, clean signal, \$1000. Karl, 360-754-4260.

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Transmission line, 67 sections of used 6 1/8" rigid RCA transmission line, used on chan 21, \$200 per section. John or Keith, 417-865-2100.

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Emcee 100U, 100 W UHF TV, need final tube, up conv & receiver w/final, \$4800. Jose, 809-895-2725.

TV FILM EQUIPMENT

Want to Sell

Complete film production package, Arriflex S/B w/Zeiss 10-100 w/fiber optic, 400 ft magazine, all motors & animation, Kinoptic 5.7, Schneider 25mm 1.5, Kinetel 12.5mm T2, soft blimp, standard matte, NCE fluid head w/wood legs, baby legs, triangle, M77AH w/flickerless prism & low flutter transports, sync blocks, viewer, various splicers, Palmer interlock, Pageant, much more, call for details and prices. Henry, 318-861-1477.

VIDEO PRODUCTION EQUIPMENT

Want to Sell

Portal KBD-2 CG, needs help, \$100 or B/O. Jerry, 402-681-8453.

Mitsubishi VS1202 video projector, like new, Mitsubishi VC1200U panel controller, remote controller, Da-Lite Cosmopolitan screen, 6 ft size with rolling up & down motor, Mitsubishi ceiling mount, Mitsubishi cables, all RGB & 26-pin cables, industrial power panel included, all for \$3800. 818-995-3495.

UVW-1400A Betacam SP deck, new condition, orig packaging, great for non-linear, less than 35 hrs on head, still under warranty, \$5400. Jim, 619-436-2308.

Panasonic AG1960, little use, excellent condition, \$895. 614-946-6611.

Sony BVW-25 Betacam portable, excellent condition, \$3600; Panasonic editing system, SVHS, incl 7500 editor, 7510 player & 750 controller, \$4800. 603-898-1240.

BVH1100A 1" NTSC with Microtime 2020 TBC, BVH1100 1" PAL with Microtime 2020 TBC, both for \$3500 or B/O; Sony BVU110 3/4" with TC & Porta Brace, \$800. Craig or Chris, 334-433-7733.

Sony VO9850 3/4" SP rec with timecode gen, excellent condition, \$6000; Sony VO9800 3/4" SP player/record with timecode, excellent condition, \$4000; Otari MX5050 1/4" audio reel to reel, 2 track, \$500. Mike, 714-847-6131.

Sony VO8800 SP portable recorder with TC gen BKU-706, 110 original hours, Porta Brace carry case with heavy duty shoulder strap, Sony AC adapter, like new, \$3500 or B/O. Harvey, 516-421-4800.

Sony VO8800 portable 3/4" SP recorder, case cracked but runs well, with BKU706 TC board, manuals & Porta Brace case, \$1200. Jim Gray, 610-678-2640.

Sony VO4800 portable 3/4", Porta Brace, battery, AC, \$500 or B/O. Tom, 914-528-5508.

Sony BVU920 dynamic tracking with TC, DNR & TBC, \$8500 or B/O; 2 Sony BVR50 TBC remotes, \$300 ea or B/O; 2 Sony VO4800 portable 3/4" recorders with carry case, power supply, \$400 ea or both for \$650; Sony BVU110 portable 3/4" recorder with TC, carry case, power supply, \$400 or B/O; 2 Sony BVW25 portable Betacam recorders with TC & carry case, 1 needs work, \$2000 and other recently serviced, \$3500; Ampex VPR80 with serial control, TC, rack kit, TBC80, needs minor work, \$9000 or B/O. Lewis, 818-994-5397.

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Sony VO9800 3/4" deck w/TC, \$4250; Sony VO9850 3/4" deck w/TC, \$5995. Gard, 818-840-9100.

VCR/VTRS/RECORDING MEDIA

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Sony & JVC 3/4" top loading machines, some working, \$50 - \$250 ea or B/O; Sony & JVC remote controls, \$35 ea or B/O; Sony VO5800, needs work, \$2000 or B/O; Sony VO5850 with TC, needs work, \$2500 or B/O; Sony VO5800, works great, \$2500 or B/O; Sony spare buttons & belts for VO4800, BVU110 & BVW25, call for prices; Sony RF converters for top loading machines, \$25 ea or B/O. Lewis, 818-994-5397.

Sony 5800, 5850, RM450 VCR's, very good condition with cables & service manuals, \$3900. Reed, 816-391-5365.

JVC CR8500 (3), 1 parts machine, 1 RM-85U edit controller cables, \$1200 or B/O. Mark, 414-697-7699.

JVC BR525 SVHS slo-mo player with TBC, TC, DNR, 250 hrs, \$4000; JVC BR5622 with TBC, 1300 hrs, \$2500 or both for \$6000. Mike, 415-332-8489.

Sony VO5800 3/4" rec/player with zero offset address track, timecode playback mod, excellent condition, \$1650. Grant, 415-558-8339.

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Sony 5600 U-matic 3/4" deck, low hours, \$900. Bryan, 800-582-0582.

Sony SLV50, VHS, flying erase head, picture-in-picture, edit monitor, synchro edit, recently modified for LP playback by Sony, excellent condition, \$300. Charlie, 914-381-2530.

JVC BR822U with TBC, low hrs, like new, \$3900 or B/O. Gregg, 415-574-7888.

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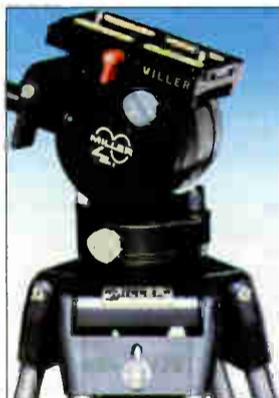
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Miller 20 - Series II Fluid Head

- Continuously adjustable fluid drag control
- Sliding/Quick Release camera platform
- Weighs only 4 lbs., will handle cameras up to 22 lbs.
- Counterbalance system designed to compensate for nose heavy or tail heavy camera configurations, and permits fingertip control of the camera throughout the tilt range.
- Includes independent pan and tilt locks, bubble level, dual pan handle carriers and integrated 75mm ball levelling.

#601-Lightweight Tripod

- Weighs only 4.5 lbs., supports up to 30 lbs.
- Minimum height down to 24", maximum height to 57"
- Extremely portable, folds down to 33"
- Engineered from thermoplastic moldings, diecast alloy & hard anodized tubular alloy.
- Fast one turn, captive leg locks
- Includes 75mm (3") ball levelling bowl



#649-2-Stage Tripod

- Two extension sections on each leg. Operates at low levels as well as normal heights without the use of mini legs.
- High torsional rigidity, no pan backlash
- Weighs 6.6lbs., supports 50 lbs.
- Very portable, folds to 27"
- Includes 75mm (3") ball levelling bowl

System 20 Catalog #338

- Miller 20 II fluid head • 601 tripod
- 410 on-ground tripod spreader **1549.00**

System 20 Catalog #520

- Miller 20 II fluid head • 601 tripod
- 510 above ground tripod spread **1549.00**

System 20 ENG Cat. #339

- Miller 20 II fluid head • 649 2-stage tripod
- 410 on-ground tripod spreader **1895.00**

System 20 ENG Cat. #522

- Miller 20 II fluid head • 649 2-stage tripod
- 512 above ground tripod spread **1895.00**

Vinten

Vision SD 12 and SD 22 Pan and Tilt Heads with Serial Drag

The Vision SD 12 and SD 22 are the first heads with the "Serial Drag" pan and tilt system. The system consists of a unique, permanently-sealed fluid drag and an advanced lubricated friction drag. Now you can achieve the smoothest pans and tilts regardless of speed, drag setting and ambient temperature.

- Patented spring-assisted counter-balance system permits perfect "hands-off" camera balance over full 180° of tilt.
- Instant drag system breakaway and recovery overcome inertia and friction for excellent "whip pans".
- Consistent drag levels in both pan and tilt axis.
- Flick on, flick off pan and tilt caliper disc brakes.
- Greater control, precision, flexibility and "touch"
- Touch activated, time delayed illuminated level bubble.
- Working conditions from as low as -40° up to +60°C.
- SD 12 weighs 6.6 lbs and supports up to 35 lbs.
- SD 22 weighs 12.7 lbs and supports up to 55 lbs.

Vision Two Stage ENG and LT Carbon Fibre ENG Tripods

The ultimate in lightweight and innovative tripods, they are available with durable tubular alloy (Model #3513) or the stronger and lighter, axially and spirally wound carbon fiber construction (Model #3523). They incorporate torque safe clamps to provide "ast, safe and self-adjusting leg clamps.

- "Torque Safe" requires no adjustment. Its unique design adjusts itself when required, eliminating manual adjustment and maintenance and making for a much more reliable clamping system.
- New hip joint eliminates play and adds rigidity.
- They both feature 100mm levelling bowl, fold down to a compact 28", and support 45 lbs.
- #3513 weighs 6.5 lbs - #3523 CF (Carbon Fibre) weighs 5.2 lbs.



Vision 12 Systems

All Vision 12 systems include #33643 SD 12 dual fluid and lubricated friction drag pan/tilt head, single telescoping pan bar and clamp with 100mm ball base.

SD-12A System

- 3364-3 SD-12 Pan and tilt head
- 3518-3 Single stage ENG tripod with 100mm bowl
- 3363-3 Lightweight calibrated floor spreader.

SD-12D System

- 3364-3 SD-12 Pan and tilt head
- 3513-3 Two-stage ENG tripod with 100mm bowl
- 3314-3 Heavy-duty calibrated floor spreader

Vision 22 Systems

All Vision 22 systems include #3386-3 SD-22 dual fluid and lubricated friction drag pan and tilt head, single telescoping pan bar and clamp with dual 100mm/150mm ball base.

SD-22E System

- 3386-3 SD-22 Pan and tilt head
- 3219-52 Second telescoping pan bar and clamp
- 3516-3 Two-stage EFP tripod with 150mm bowl.
- 3314-3 Heavy-duty calibrated floor spreader

Panasonic

AG-EZ1 3-CCD Digital Videocassette Camcorder

Heralding a new era in video, the AG-EZ1 is the world's first camcorder to incorporate 6mm DVC (Digital Video Cassette) technology. The biggest leap in video since S-VHS and Hi8 were introduced six years ago, DVC is a revolutionary video format that delivers such high quality—it literally rivals broadcast cameras. Utilizing DVC the AG-EZ1 records an extraordinary 500 lines of horizontal resolution—nearly 25 percent more than S-VHS, Hi8 or laserdisk, and 50 percent better than a live television broadcast. And because it's digital, picture quality is not only sharper but unbelievably clean. Audio is also recorded digitally, resulting in quality equal to that of CDs. In addition to its digital capabilities, the AG-EZ1 also features a 3-CCD pickup system, 180,000 pixel color viewfinder, 10:1 power and 20:1 digital zoom, full automatic and manual controls and a large LCD panel.



AG-DP800H SUPERCAM S-VHS 3-CCD Digital Signal Processing Camcorder



- Three high-density 380,000 pixel CCDs with half-pitch pixel offset achieves over 750 lines of horizontal resolution, a S/N ratio of 60dB and remarkable sensitivity of f8 at 2000 lux. Additionally the Frame Interline Transfer (FIT) CCDs minimize vertical smear, so you maintain impressive picture quality even in very bright illumination.
- Digital Signal Processing circuitry provides four valuable benefits:
 - 1) Consistently reliable up-to-spec performance.
 - 2) Fine adjustment of a wide range of parameters.
 - 3) Memory storage and instant recall of specific settings.
 - 4) More flexible and higher quality image processing, as well as easier maintenance.

Some of the DSP circuits and their functions:

- CHROMA DETAIL - This function compensates for poor resolution in the high chroma areas of the picture.
- DARK DETAIL - Determines optimum degree of contour enhancement in dark areas to deliver crisp, natural-looking images
- HIGHLIGHT COMPRESSION - Expands the dynamic range of the highlighted areas and prevents halation. The highlight compression circuit allows a wide dynamic range producing detailed images even against bright backlight or daylight.
- FLARE CORRECTION CIRCUIT - Compensates for unsteady black caused by light or by a subject's movements.
- Six Scene File modes. There are two user modes for custom digital parameter settings including Horizontal Detail, Vertical Detail, Chroma and Dark Detail, and Color Correction. The four preset modes are normal, fluorescent, special and sparkling.
- In addition to regular AGC (Automatic Gain Control), Supercam has a Super High Gain mode. At F1.4 this enables shooting under illumination as low as 2 lux while retaining detail and color balance.
- Synchro Scan function allows flicker-free shooting of computer monitors. Electronic shutter increments can be set variably from 1/61 seconds to 1/253 of a second.
- Built-in internal time code generator lets you record with SMPTE LTC/VTC (Longitudinal/Vertical Interval) time code
- Two hi-fi stereo audio channels with a dynamic range of 80 dB, as well as two linear audio channels with Dolby A.R. Normal/Hi-Fi recording is selectable. Uses XLR connectors to further ensure high-quality sound.
- Has a 26-pin connector on the back that outputs a composite or component video signal. This enables convenient backup recordings using an additional VCR equipped with a 26 or 14-pin connector
- Phantom power can be supplied to an optional microphone. Power can be switched off to prevent battery drain when not in use.

JVC GY-X2B 3-CCD S-VHS CAMCORDER



- Newly designed three 1/2" CCD image sensors deliver 750 lines of horizontal resolution and superb signal-to-noise ratio of 62dB
- New micro-lens technology provides exceptional sensitivity of F8.0 at 2000 lux and LOLLUX mode lets you shoot with almost no light! Shoot superb footage with excellent color balance at a mere 1.5 lux
- Variable Scan View allows flicker-free shooting of a computer monitor.
- Quick Record Mode - when turned on the camera is set to the auto iris even if lens is set at manual. Also activated is (ALC) Automatic Level Control and EEI Extended Electronic Iris which provides both variable gain and variable shutter. Now you can shoot continuously from dark room to bright outdoors without having to adjust gain, iris or ND filter.

- Full Time Auto White circuit lets you move from incandescent to fluorescent to outdoor lighting without changing white balance or the filter wheel.
- Genlock input allow synchronization with other cameras.
- Dual output system allows camera output to be connected directly to an external recorder

NEW! GY-X3 3-CCD S-VHS Camcorder

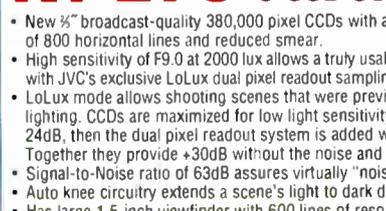


By employing professional camera technology in new economical ways, JVC has succeeded in bringing to market a professional 3-CCD camera that breaks all previous price barriers. The new GY-X3 delivers all the performance of a high end 3-CCD camera—high resolution, high sensitivity, low noise and natural color—at an incredible price.

Features:

- Three 1/3" CCDs provide a sensitivity of 2000 lux at F8.0, signal-to-noise ratio of 60dB and 650 lines of horizontal resolution.
- Low light capability allows you to shoot in as little as 4 lux and still have bright pictures with good resolution and strong, vivid colors.
- Full Auto Shooting (FAS) mode instantly adjusts to changes in shooting conditions. You can go from bright outdoors to indoor lighting and gain, iris, audio level and color balance will all be automatically adjusted.
- Variable Scan View allows flicker-free shooting of a computer monitor.
- Has a built-in 14:1 (5.5-77mm) continuously variable speed zoom lens. The amount of pressure applied to the rocker determines the speed of the zoom. Both the iris and zoom can be controlled manually if desired.
- Built-in Control Track (CTL) time code generator as well as a time/date generator. The advanced CTL time code generator has a "scene finder" function that records an identification code each time you start taping. This lets you easily advance to the next or previous scene when using the JVC Edit Desk system.
- Large high resolution 1.5-inch viewfinder displays comprehensive status indicators.

KY-27C 3-CCD Color Video Camera



- New 2/3" broadcast-quality 380,000 pixel CCDs with advanced electronics deliver resolution of 800 horizontal lines and reduced smear.
- High sensitivity of F9.0 at 2000 lux allows a truly usable minimum illumination of 1 lux with JVC's exclusive LoLux dual pixel readout sampling technique.
- LoLux mode allows shooting scenes that were previously impossible due to insufficient lighting. CCDs are maximized for low light sensitivity equivalent to an electronic gain of 24dB, then the dual pixel readout system is added which provides an additional 6dB. Together they provide +30dB without the noise and picture degradation normally associated with this much gain.
- Signal-to-Noise ratio of 63dB assures virtually "noise free" images.
- Auto knee circuitry extends a scene's light to dark dynamic range reproduction by up to five times without overexposure.
- Has large 1.5-inch viewfinder with 600 lines of resolution and SMPTE color bars. Status system provides audio levels, accumulated or remaining recording time, VTR operation, battery voltage and camera setup. Zebra pattern indication and safety zones with a center marker are also provided.
- Variable scan function enables a precise shutter speed from 1/60.2 to 1/196.7 of a second in 256 increments to be set, matching a computer's scan rate. Almost any computer display can be clearly recorded.
- Camera head allows direct input of genlock signal and timing adjustment. A wide range optional remote controls, RS-232 interface, multicore and triax CCU's are available.
- Docks directly to the JVC BR-S422U, BR-S411UB and BR-S420CU professional S-VHS recorders. Optional adapters for docking to Hi-8 and Betacam SP are also available.



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SONY DFS-300 DME Switcher

The world of video has changed, simple wipes and transitions are no longer the norm. Today, both the video producer and the client expect a blend of dazzling special effects and sophistication. Many desktop systems can deliver these elaborate visuals, but sacrifice ease of use and dependability. The DFS-300 has both desktop versatility and hardware reliability. It features basic transitions such as wipes and mixes, as well as complex DMEs, or digital multi effects. The DFS-300 allows you to insert sophisticated patterns like picture-in-picture, mosaic, mirror, slide and matrix wipe designs. And with the optional BKDF-301 3D Effects board installed, you can perform three dimensional rotations, page turns, image twists, multi-splits and 3D spherical effects—in real time. No sitting around waiting for loading or rendering. With it's digital multi-effects, numerous keying options, 3D transitions and user-friendliness, the DFS-300 is in a league of its own.



POWERFUL MULTIPLE EFFECTS

Up to 500 Effects

There are 330 factory preset 2D effects and wipes stored in the DFS-300 for immediate use. These include wipe, compression, rotation, slide, split, mirror, stream, etc. as standard.

With the optional BKDF-301 3D board installed, 130 additional preset effects such as twist, page turn, sphere, etc. can be memorized and recalled whenever required.

Powerful User Program

The DFS-300 provides powerful, yet easy to operate effects programming using the positioner and other controls to build your own effects. Cut, mix, wipe, slide, rotation and many other 2D effects and optional 3D linear and digital effects such as page turn, roll and sphere can be created with the unit's programming function. Up to 20 created effects can be stored for instant recall and that is doubled when the 3D board is installed.

HIGH PERFORMANCE SWITCHER

Multi-Format Inputs/Outputs

Has four primary video inputs. The first three accept composite, S-video and component signals. The fourth input accepts either component, R/G/B/Sync or a computer generated RGB signal. Independent color correction can be applied to any of the four inputs. There are two program outputs that likewise provide composite, S-video and component signals.

Built-in Matte Generator

Most digital video switchers have only one built-in matte color generator. The DFS-300 has three matte generators for backgrounds, which can be a solid color or one of 31 different textured patterns, border matte and effect matte signals. Also instantly-selectable color bars, grid pattern and solid black. With the optional BKDF-504 Downstream Key installed, you get two more independent matte generators for Downstream Key (DSK matte) and border colors (DSK border matte) with independent adjustment of luminance, saturation and hue parameters.

Luminance Keyer

• Foreground sources such as titles, captions or figures can be self-keyed over a background source and rotated, compressed and positioned optionally in 3D space.

• Any of the preset effects can be applied to the keyed picture.

• External key input also provided to accept a key source signal.

• A box mask is provided for masking an unwanted portion of the foreground picture.

Chroma Keyer

• Superimpose video from a foreground source onto a background source.

• Clip and Hue can be controlled for clear and sharp key edges.

• Any preset effect can be applied to the chroma keyed picture.

Effects Modification

• To suit individual tastes in creative program production, effects modification is provided for some of the preset effects such as mosaic, posterization, solarization, wave, multi-picture, strobe, frosted glass, cinema mode, etc.

• Fine control over various parameters such as size, density and amplitude further enhances effects editing.

Transitions

• 111 of the most frequently used wipes are available from the preset patterns and 13 of them are directly accessed with a press of the keypad.

Optional Down Stream Keyer

• An optional 8-bit linear DSK (Down Stream Keyer), the BKDF-504 lets you introduce captions, characters, etc. with clear edge quality, after mix/effects processing.

• DSK key input accepts composite, component or RGB signals

• Position and type of the DSK are selectable and a box mask is provided to mask unwanted areas of the picture.

Snapshot Function

The DFS-300 can store up to 99 control panel settings in it's "Snapshot" memory for instant recall of a specific combination of effects and parameter settings. Every parameter such as background color hue, border width, shadow density, etc. can be stored and recalled at any time.

Built-in Color Corrector

For white balance adjustment or to give some special tonal effect, color correction of foreground or background sources can be applied. Hue, offset and chroma gain of the selected signal can be controlled independently.

Other Features

• Four different title modes offer the ability to perform key effects such as luminance key, chroma key external key or downstream key from a variety of input sources.

• Equipped with three black-burst outputs to provide synchronization to VCRs, cameras and other equipments requiring sync signals. A genlock input allows the DFS-300 to be synchronized to an external timing source.

• When used with a compatible editing controller, the DFS-300 allows two-machine editing with effects. In a simple A-roll system, effects such as a color background or external titles can be keyed in during editing.

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.

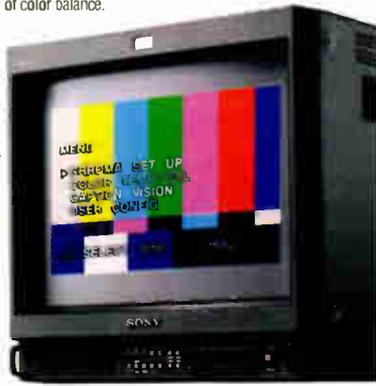
• Chroma/Phase adjustments can also be easily performed with the monochrome Blue Only display. In Blue Only mode video noise can be precisely evaluated.

• Factory set to broadcast standard 6500K color temperature

• On power up, auto degaussing is performed. There is also a manual degauss to demagnetize the screen.

• Provides an on-screen menu to facilitate adjustment/operation on the monitor. The on-screen menu display can be selected in English, French, German, Spanish or Italian.

• Sub control mode allows fine adjustments to be made on the knob control for contrast, brightness, chroma and phase. 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) & 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 & 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.

Sony BPPG products are not available for sale outside continental USA

Why pay \$10,000 to \$15,000 for a
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Introducing the new.....



Animated Postscript Character & Graphics Generator

A technological and engineering breakthrough, the PowerScript sets new price/performance standards for broadcast video production, multimedia and industrial applications. It delivers the huge range of titles and graphics supported by PostScript display technology, plus animation, effects, transparency and keying. It features anti-aliased, 17.5 ns (nanosecond) pixel resolution and 4:2:2 broadcast-quality video, plus high-speed RISC processing to provide real-time Level 2 PostScript imaging and fast rendering—even with the most complex images. The PowerScript works stand-alone or with a computer, has a built-in TBC, offers a powerful and intuitive interface, and is suitable for the desktop or can be rackmounted.



Powerful Character Generator

- Choose from 35 built-in fonts or download hundreds of PostScript fonts from your computer. With its high-speed RISC processor, it provides real-time PostScript Level 2 imaging—the full power of the PostScript language is at your command.
- Characters can be rotated at any angle, scaled to any size, stretched horizontally or vertically.
- Styles include variable bold and italic, underline and shadow (drop shadow, variable displacement and opacity). Each character can be adjusted separately.
- Text can be positioned anywhere on the screen or automatically centered, vertically or horizontally.
- Left, right, top, bottom & center justification is provided as well.
- Characters are automatically kerned, using the font's standard kerning information.
- Spacing is highly flexible with variable word and letter spacing and line spacing (leading).

Intuitive User Interface

- The user interface is fast and intuitive, easily supporting the rapid pace of real life video production.
- Built-in real-time object-based drawing tool and text editor—no external computer or software required. Design can be done ahead of time and displayed later, or can be done on the fly. Display is real time.
- Supplied keyboard and mouse are used with easy on-screen menus to place and modify graphics and text.
- Customizable function keys let you change fonts, colors, and other characters instantly.
- Separate preview output allows you to create and edit titles while another set of titles is being displayed.

Transparency and Colors

- Characters can be made transparent (0-100%) over video, other characters and graphics with 64 levels of transparency.
- Opaque characters can use over 4,000,000 colors, transparent characters can use over 8,000.
- Different colors can be used for fill and outline (variable width), and each letter and each graphic can use different colors.

Roll, Crawl, Animation, Effects

- Variable speed roll, crawl and push (slide) in all directions—plus extensive animation capabilities as well.
- Every text object, graphic, and logo can be separately animated. Complex animations include ability to have elements follow paths, bounce, etc.
- Elements can change outline and/or fill color, transparency, position as they move and results are displayed in real time.
- Move individual characters in different directions; make colors change; flash words; make letters and words bounce; spin a letter across the screen.
- Use effects like fades and wipes to transition between titles and video or between two pages of titles.

Two GPI Inputs

The GPI automatically plays a sequence of titles when a pulse appears at one of the two inputs.

Keyer

- Internal linear keyer superimposes characters and graphics on S-video or composite sources.
- Also provides anti-aliased down-stream keying via a separate linear KEY output.

Backgrounds and Graphics

- Titles can be placed on solid color, patterned or graduated backgrounds, or they can be genlocked to incoming video.
- Lines, squares, rectangles, ovals and circles can be created and placed anywhere on the screen.
- Each graphic object can use a different color, transparency, rotation, size, fill and outline.

Imported Logos and Graphics

- Can import and display complex graphics created with standard Macintosh, Windows, DOS, Amiga and UNIX-based programs, such as Photoshop, Corel Draw and Adobe Illustrator. Accepts most PostScript or EPS format graphics without modification.
- Imported images can be any size and can be scaled, skewed, and rotated when placed on screen.
- Transparency and anti-aliasing can be defined when graphic is generated.

Built-in TBC

The PowerScript has a built-in full-frame (dual field) time base corrector that constantly locks the signal to a reference input. If no reference is connected, the signal is synced to an internally-generated RS-170A time base.

Expansion Capabilities

Although the PowerScript operates on its own, you can still add peripherals and connect to a computer or network. Two PCMCIA (accepts Type I, II and III cards) slots allow the addition of non-volatile flash-RAM and Ethernet (file transfer protocol using TCP/IP) cards and an RS-232 serial port allows simple connection to desktop computers. This allows you to add storage capability and to download fonts and graphics from a computer. This means you can save titles to your computers hard or floppy disk, or download fonts and graphics files from a desktop publishing system.

Clock/Calendar

The PowerScript has a built-in clock/calendar that displays current date, time, or elapsed time(stopwatch) counter in a wide range of formats, using any color or font. Clock/ calendar can also activate selected titles at predefined times.

Built-in Test Generator

The PowerScript can generate standard video test patterns including color bars, crosshatch, ramp, gray wedge, multi-burst and blackburst. Titles can be placed atop any of the patterns.

Other Features

- Split screen titling allows definition of two titling windows with separate rolls and crawls defined in each.
- Small footprint makes it ideal for the desktop, or it can be rackmounted with optional rack kit.

Still not convinced,
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EQUIPMENT LEASING AVAILABLE

DIGITAL PROCESSING SYSTEMS INC.

PVR-2500 Digital Video Recorder

The PVR-2500 offers powerful features for awesome animation, morphing and rotoscoping capabilities. With features like 720 x 480 resolution, 10-bit 2x oversampled video encoding, better than D1 scaling, component and S-Video outputs, multi-processor support and integrated FAST SCSI-2 controller, it empowers your computer to rival the finest professional production studios.

- The PVR-2500 is a full-length PCI card with a SCSI-2 interface that connects up to seven dedicated hard drives. Because the SCSI controller is integrated with the PVR-2500, video data never has to move over the PCI bus during playback. This avoids the bottlenecks found in systems which use the computer's hard drive for video storage.
- Designed to run under Windows NT 3.51 on computers employing Pentium, DEC ALPHA or MIPS processors. Perception's software utilizes NT 3.51's native support for multitasking and multiple processors, allowing use with-in the most powerful computers.
- Perception's multi-format virtual file system ensures complete integration with your existing Windows NT applications. Any acquired video or computer generated Perception video clips appear simultaneously in many different file formats including TARGA, SGI, BMP and TIFF. Also compatible with new NT versions of Lightwave 3D, 3D Studio, TOPAS 5.1, Softimage and Elastic Reality.
- Video output section utilizes 10-bit 2x oversampled encoding and provides broadcast quality CCIR-601 (720 x 480) resolution. Its dynamic range is in excess of D1 scaling so that images are brighter, have more color and greater spatial resolution. Outputs component, composite and S-Video via the included breakout cables.
- Use with any compatible sound card while synchronization of audio and video is maintained by the PVR software. Captured audio is stored on the computer's system hard drive, not on the dedicated drives. This approach provides maximum flexibility for manipulating audio and video during editing.
- Can perform real-time interpolation of 30 fps video to 24 fps film rates or vice versa.
- VCR-like controls on the Perception's GUI simplifies the task of batch digitizing and recording. In this mode, it reads SMPTE time code from the source deck.
- Drivers for Windows 3.1 are supplied as well, so third party editing software like Adobe Premiere can be used. In fact, the PVR-2500 bundled with the AD-2500 capture card, a sound card, editing software and one or more SCSI hard drives becomes a non-linear editor of unparalleled performance at an unbeatable price.

AD-2500 CAPTURE CARD

- The optional AD-2500 is a video capture daughtercard, that transforms the Perception into a digital video recorder. It has component, composite and S-Video inputs for real-time recording, and storage capacity is limited only by the size and number of your hard drives. Captured video can also be exported as sequential RGB files for rotoscoping and other compositing applications.
- The AD-2500 incorporates a sophisticated automatic entropy prediction circuit that analyzes the content of incoming video and dynamically calculates the optimum amount of compression on a field-by-field basis—even during real-time recording. You also have complete manual control over compression level/quality settings.

TRUEVISION TARGA 1000/2000

PCI-based Digital Video Capture Boards for Windows

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

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

TARGA 2000 Additional Features:

- Equipped with composite and S-video inputs/outputs. Also available with component input/output (TARGA 2000 PRO).
- Accelerated Windows 3.11 and Windows NT display drivers offer integrated, true-color (24-bit), non-interlaced desktop up to 1152 x 870 pixels.
- Provides a large work area for displaying video, as well as editing application controls. Any part of the display (or even the whole image) can be recorded to tape (video-out-of-a-window).
- View your desktop and video-in-a-window on your non-interlaced high resolution desktop display while the processed video is output at NTSC or PAL resolutions to a video monitor and/or a VCR.

Turnkey TARGA 1000/2000 and PVR-2500 Perception Systems:

- Video capture board (specify) • 220-watt, 6-bay midtower case
- PCI motherboard with 256K pipelined burst cache • Pentium 133 MHz processor • Diamond Stealth64 Video 2MB VRAM PCI display card
- 32MB of EDO (Extended Data Out) RAM • Quantum 1.28GB IDE system drive • Seagate (Barracuda) 4.2GB SCSI-2 FAST/Wide hard drive
- Adaptec AHA-2940UW FAST/Wide SCSI-2 controller card
- 3.5" floppy drive • Teac CD-566 6X EIDE Internal CD-ROM drive
- Altec-Lansing 300.1 three-piece deluxe speaker system
- Princeton Ultra 17+high resolution 17-inch multiscan monitor
- Focus 2001A keyboard • Microsoft MS mouse • MS-DOS 6.22 and Windows 3.11 or Windows NT 3.51 operating system software.



*PVR-2500/AD-2500 Windows System with Adobe Premiere 4.0a	\$7295
*PVR-2500/AD-2500 Windows NT System with in:sync Speed-Razor MACH III	\$8495
TARGA 1000 Windows System with Adobe Premiere 4.0a	\$7795
TARGA 1000 PRO Windows System with Adobe Premiere 4.0a	\$8295
TARGA 1000 Windows NT System with in:sync Speed-Razor MACH III	\$8795
TARGA 1000 PRO Windows NT System with in:sync Speed-Razor MACH III	\$9150
TARGA 2000 Windows NT System with AVID Real Impact	\$11,250
TARGA 2000 Windows NT System with in:sync Speed-Razor MACH III	\$11,250
TARGA 2000 PRO Windows NT System with in:sync Speed-Razor MACH III	\$12,000

- *PVR-2500 System Notes: 1) Does not include Adaptec SCSI-2 controller card (has built-in SCSI-2 port)
 2) Includes Seagate Barracuda 4.2GB Narrow hard drive (doesn't accept Wide drives)
 3) Includes Stealth64 Video 2MB DRAM PCI display card (Add \$100 for 2MB VRAM card)
 4) Requires sound card (DSP-equipped card preferably)—see "Expansions and Upgrades"

Expansions and Upgrades for all Systems:

Substitutions	
Full Tower Case (10-bay)	add 100.00
Pentium 150 MHz processor	add 150.00
Seagate Elite 9.1GB Narrow drive (for PVR-2500)	add 1000.00
Matrox Millennium 4MB VRAM PCI Display Card	add 250.00
MAG Innovation MXP-17F 17" multiscan monitor	add 225.00
Altec Lansing ACS-500 three-piece surround sound stereo system	add 140.00
Add-Ons	
APC Smart Ups 650 power backup	349.00
Ensoniq SoundScape Elite DSP-equipped 16-bit audio card (for PVR-2500 systems only)	199.00
MediaTriX Audio Trix Pro DSP-equipped 16-bit audio card (for PVR-2500 systems only)	279.00
Elastic Reality for Windows/Windows NT (Includes Transjammer-30 transitions)	349.00
Transjammer Vol 1 (with 100 transitions)	89.00
Super Tower Case (12-bay)	add 200.00
166 MHz processor	add 400.00
Seagate Elite 9.1GB Wide drive	add 1000.00
Matrox Millennium 8MB VRAM PCI Display Card	add 400.00
MAG MXP-21F 21-inch multiscan monitor	add 1100.00
Conner 4GB QIC/ Wide tape backup IDE/SCSI	439.00

in:sync

SPEED RAZOR MACH III

Digital Video Editor for Windows NT

The ultimate digital video editing software, Speed-Razor MACH III allows you to edit full screen, 60 fields per second, CCIR 601 broadcast-quality video. Designed for the DPS PAR DR-2100/ Perception PVR-2500 and Truevision's TARGA 1000/2000 video capture cards, Speed-Razor MACH III is the fastest and most powerful tool for editing and compositing video clips, animations, stills, music and sound effects. Experience straight cut editing in real time and effects which fly on the fastest machines out there: Alpha, Intel, MIPS-based and PowerPC-based workstations, making this the fastest, most flexible software you've ever seen. Running under Windows NT, it offers three times faster than Windows 3.1 on the same machine and up to ten faster when used on Alpha-based systems.

Speed-Razor features infinite video, audio, transition and effects tracks and comes with Razor Blades—transitions and effects to enhance your production. There are preset tumbles, fades and wipes which you can easily customize and save as new presets. In addition, there are special image effects which are unquestionably the highest quality of any system—analogue or digital. Speed-Razor sports anti-aliased 3D DVEs, an infinite channel chroma keyer and an excellent character generator. Use the effects or transitions which come with the package, layer them to create new ones, make your own grayscale bitmaps to use as transitions, or use third party plug-in effects—the flexibility is yours.

EDITING FEATURES:

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

COMPOSITING:

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

FILE FORMATS:

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

There are two user definable resolution modes (thumbnail and final) to facilitate editing. The thumbnail mode allows you to use Speed Razor in the field on a laptop computer then transfer the project file back at the edit suite and automatically recapture and re-render the entire project at final resolution. Speed-Razor also features RS-422 control and even does batch capture (new batch capture module allows you to automate video capture via SMPTE time code), so digitizing video and audio is simple and painless. In fact, with the innovative "Virtual Editing" function you can actually edit your project, complete with effects and transitions—before you've digitized a single frame of video.

AUDIO:

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

EFFECTS:

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

TRANSITIONS:

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



Real Impact

Windows NT-based Video Editor for TARGA 1000 and 2000

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

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

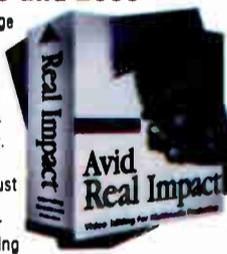
Video Capture: Digitize video and audio—without dropping a frame. Your video is full-screen, full-motion, 60 fields-per-second and your audio in sync. With its Dial-a-Quality image feature, Real Impact allows you to adjust image quality for differing system, storage and delivery requirements.

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

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

FEATURES:

- | | | |
|---|---|--|
| Video <ul style="list-style-type: none"> • Real-time JPEG compression / decompression and playback at 60 fields per second • Supports RS-422 control protocol and SMPTE time code • Edit two tracks of video for layered effects. | Import/Export <ul style="list-style-type: none"> • AVI video files, WAV audio files, FLC animation files. • OMF interchange files. • BMP, JPEG, PCX, TGA and TIFF graphics files. | Integrated Title Generator <ul style="list-style-type: none"> • 32-bit processing (24-bit color and 8-bit alpha channel). • Support for TrueType fonts and international character sets. • Drop shadows, transparency and color blends. • NTSC and PAL-safe color palettes. |
| Audio <ul style="list-style-type: none"> • Edit up to four tracks of 44.1 KHz, 16-bit CD-quality audio. • Real-time pan and volume adjustments, digital audio scrub. • Waveform for precise audio editing. | Special Effects <ul style="list-style-type: none"> • Filter effects with previews and adjustable parameters. • Transition effects include wipes, dissolves, zooms, pushes and squeezes. • Layered effects include picture-in-picture, luminance and chroma key. | Media Management <ul style="list-style-type: none"> • Media library for organizing digital clips. • Database with search capabilities. • Customized views for easy clip access and retrieval. |



A note about our turnkey systems:

In addition to the systems listed on this page, we can further customize any system to fit particular needs. We carry a large variety of 2X and 4X CD-ROM recorders (HP SureStore 40201, Sony Spresra, FWB Hammer CD-Rs), RAID subsystems (ATTO, FWB) and portable storage devices (Omega, Syquest) to name a few. Tell us what you need and our salespeople will custom design a system for you. And if you happen to be in New York, please come and...

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USER REPORT

S-A Keeps Taurus In Touch

by Dudley C. Freeman

President and CEO

Taurus Communications Inc.

FRAMINGHAM, Mass.

Since its founding in 1987, Taurus Communications has grown to become a major provider of satellite news vehicle (SNV) and other telecommunications services. As a start-up, we were one of the early pioneers in our business. Today, our customers include ABC, NBC, CBS, AT&T, Hewlett-Packard, ESPN, CNN and other major Fortune 500 companies that

we support with business television services.

Our company offers analog and digital video satellite transmission for SNV, program distribution, news backhaul, pay-per-view, videoconferencing for business and other mobile services. Our growth has resulted from successfully matching mobile applications with comprehensive satellite distribution services.

STAYING ON TOP

We acknowledge that our business is only as good as the technology available today.

Thus we have relied upon mobile uplink video components from Scientific-Atlanta from the beginning.

Our first SNVs were equipped with Scientific-Atlanta video exciters, upconverters and B-MAC encoders. Scientific-Atlanta knew what broadcasters and narrowcasters wanted to encrypt and that they wanted to secure their broadcasts. The company was just completing designs for its Mobile B-MAC encoder (MBE) when it began placing orders for our uplink vehicles.

The mobile market responded favorably

to the arrival of the B-MAC MBE. It is a compact encoder offering signal protection and addressability at an affordable price. When we installed the MBEs, the only signal protection available was "soft scrambling." Scientific-Atlanta gave broadcasters and narrowcasters the level of security they needed.

We chose Scientific-Atlanta's video exciters because they are rugged and completely modular in design. The modules are interchangeable and have up to three plug-in audio subcarriers. In addition, there are separate modules for a video baseband processor, modulator, IF filter and upconverter.

We are very optimistic about digital video and the economic benefits of compression. Taurus first embraced digital satellite broadcasting nearly two years ago, making us one of the first companies with a mobile digital video application. We did mobile broadcasts from a horse track that was simulcasting race events to off-track betting facilities.

Shortly thereafter, Taurus sponsored a demonstration of digital broadcasting for a major television network while providing a digitally compressed backhaul for an NFL football game. Our purpose was to give a side-by-side comparison of analog and digital transmissions, showing overall signal quality.

IN THE POWER

For these early trial runs, we used Scientific-Atlanta's MPEG digital video encoders. Scientific-Atlanta has since produced the PowerVu system, its latest generation of digital technology. This system is fully compliant with the MPEG-2 standards for compression as well as DVB (Digital Video Broadcasters) standards.

PowerVu is very easy to operate, making it a nice fit for mobile applications. Our customers like the high-quality digital video and user-friendly decoders. For business TV or videoconferencing applications Scientific-Atlanta's PowerVu decoder is desirable for its reasonable price and simple operation. For broadcast and narrowcast applications, PowerVu is useful because of its simple packaged diagnostics. The products are also very rugged.

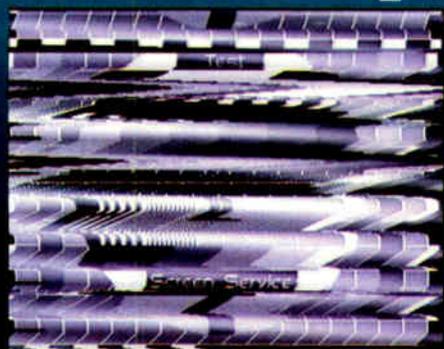
One advantage with Scientific-Atlanta is the company's serviceability. If products are still based on the "motherboard" design, it means that if one circuit goes bad, the entire system goes down. In our business, one is only as good as one's last job. We can't afford to go on the air with anything less than full confidence in our systems.

Success in digital video mobile broadcasting will be the result of several factors, including customer applications, broadcast technology and satellite economics. Taurus has entered the age of digitally compressed mobile and fixed broadcasting. Our engineering team firmly believes the market is moving in that direction. ■

Editor's note: Dudley C. Freeman is president and CEO of Taurus Communications Inc. of Framingham, Mass. Prior to launching Taurus, Mr. Freeman was one of the founders of BAF Communications, and worked as an independent consultant in the broadcast industry.

The opinions expressed above are the author's alone. For further information contact Scientific-Atlanta (telephone: +1-770-903-6057; FAX: +1-770-903-6464) or circle Reader Service 87

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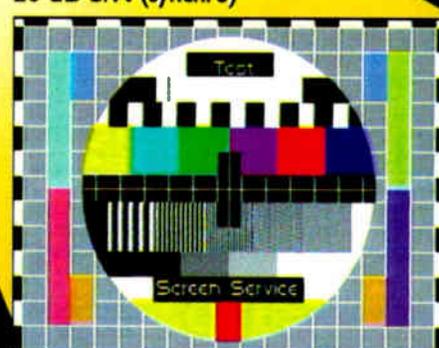
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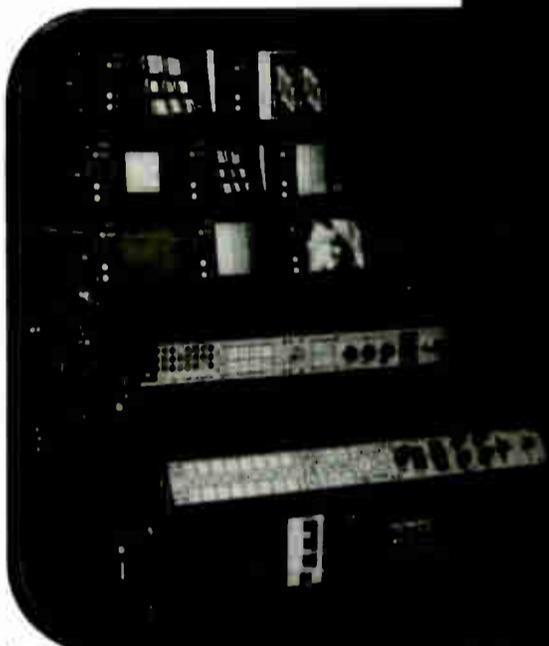
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READER SERVICE NO. 22

USER REPORT

ABE Forges a Strong Link In Cypress

by Barry Taylor

Principal
BCT Consultants

NICOSIA, Cyprus

The Cyprus Broadcasting Corporation (CyBC) has comprehensive needs for portable links and is an organization that sets stringent standards for microwave equipment that is used in a variety of technical situations. At the same time, and in common with many broadcasters today, the CyBC faces cost-constraints imposed not only by a tight budget, but by the need to carefully consider all demands for skilled manpower in program production and maintenance.

"Value-for-money" becomes a prime requirement, and it was only a matter of time before the CyBC investigated microwave systems from ABE Elettronica.

SOLID REPUTATION

The CyBC is one of the traditional broadcasting organizations. It is interested in maintaining its reputation as a public service broadcaster with a high national interest, while at the same time justifying its capital and revenue expenditure to government authorities. It prides itself on making good programs with high technical quality to

appeal to all sections of the viewing public.

The high standing of Cyprus as a tourist center means that audiences are discriminating in their choice of entertainment because they are able to spend time to find the best programs on the air. Finding itself in growing competition with emerging privately sponsored TV and radio companies, the CyBC cannot run the risk of poor quality standards for the sake of saving money. Its

technical standards must be above reproach.

In recent years, the use of microwave links for television purposes has burgeoned. Not only are many more fixed link distribution networks being installed, but the use of mobile links that can be transported and rigged in a comparatively short period of time has increased rapidly.

With the demand for more live reporting in the medium, producers of news programs, sports reports and documentaries are clamoring for more "radio links" from locations that previously might have been considered inaccessible or simply too expensive to bother with.

A problem faced by every broadcasting organization is battling with technical regulation in one form or another. Governmental organizations normally

impose strict regimes for allocation of frequency bands for the use of "portable microwave" systems, favoring the popular mobile configuration of equipment that uses tripod-mounted RF heads and antennas with 70 MHz FM modulators and demodulators housed in portable boxes within a suitable vehicle or building.

DC POWER

The RF heads derive their DC power via the 70 MHz IF coaxial cable that can be up to 150 meters long. From its comprehensive range of equipment from 2-14 GHz, ABE was able to offer reliable 1+1 link systems used by the CyBC for outside event remotes from the studio, operating in the 7.2 GHz band.

Two transmitter or receiver RF heads are mounted on a common tripod and "chain" multiplexed to a single 70-centimeter antenna. In cases where repeated use of existing structures is required, the CyBC has rigged permanent antennas, also supplied by ABE, which are fed from nearby RF heads by short lengths of waveguide. All the RF transmitter or receiving heads are interchangeable between these two formats.

ABE has been successful on two occasions in recent years to win a slice of the CyBC market for modern, high-performance and inexpensive portable microwave links, and has demonstrated that it can compete effectively with other international suppliers, all while being compliant with a demanding specification. ABE has taken care to design its equipment to be fully weatherproof and able to keep working in adverse environments. Not all of Cyprus is flat and sunny, and there is a wide range of temperature and operational situations to challenge these links in the years to come. ■

Editor's note: Barry Taylor spent years with the BBC overseeing equipment design, TV transmitter planning and capital projects. He is now a consultant with BCT Consultants and a Director of RBA Projects Ltd., providing broadcast transmission engineering consultancy and marketing services.

For further information, contact ABE in Italy (telephone: +39-363-351-007; FAX: +39-363-50756), or circle Reader Service 36.

A problem faced by every

broadcasting organization is battling with regulation

in one form or another.



impose strict regimes for allocation of frequencies. Regulators jealously guard the use of spectral resources, and they monitor the popular bands to keep out unauthorized users. High technical transmission standards have also become the order of the day.

STRICT REQUIREMENTS

Thus, flexibility with regard to operating frequency bands and the ability to meet stringent technical requirements for radiated signal purity, transmission beam-width and frequency stability, whatever the location and application, have become vital. These requirements are no less appropriate in Cyprus.

With many years of experience in this field, ABE Elettronica makes professional microwave links that are suitable for indoor or outdoor use, either rack-housed, or tripod-mounted with weatherproof RF heads. Aiming to provide links that can appeal to the total broadcast market, ABE currently markets a range known as the "PM" series, emphasizing the "Portable Microwave" application. However, if the application is for "Permanent Microwave," the RF heads are secure enough to be mounted on structures near the antennas themselves, thus avoiding loss and expensive high-frequency waveguide runs. Finally, if portability means "Pack-Mounted," ABE has also provides compact, lightweight transmitter units in the "PM/P" series. These work with hand-portable receivers for ENG use, either on foot, in vehicles or in any variety of moving situations.

Cyprus has a well-established system for capital plant purchases, regulated by commercial contract law and written specifications. Tender closing dates, bid-bonds, clause-by-clause answers, performance guarantees and reliability criteria — all the words that so often fill manufacturers with apprehension — are no problem to ABE.

Written tenders are used by organizations such as the CyBC for buying the most cost-effective equipment to the required standard, but with the commercial protection that is in the interests of both purchaser and supplier. This system, inflexible though it can be, actually favors manufacturers who can be versatile in their use of new technology without passing on high development costs to the customer. GaAsFET technology in power amplifiers at 7 GHz and above, as well as frequency synthesis with low phase noise and absence of "spurs" are elements of modern design increasingly specified in competitive tenders.

The CyBC has recently exploited the 7-8

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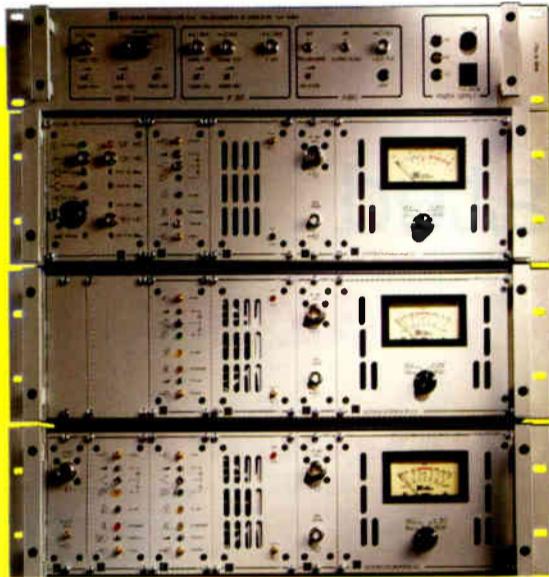
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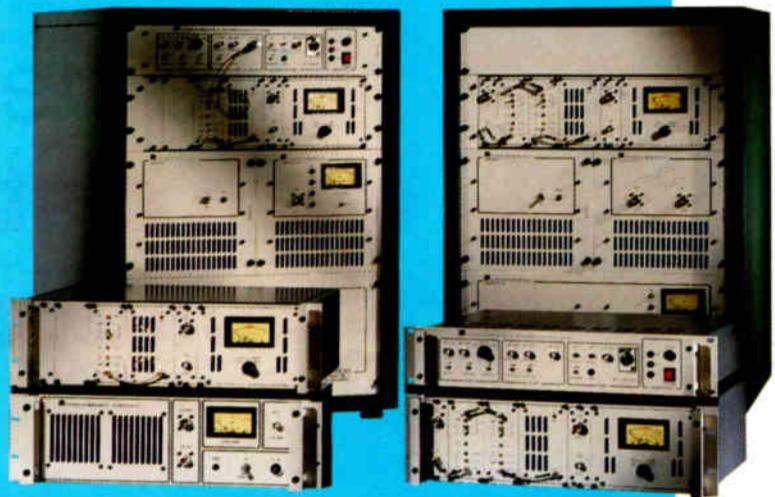
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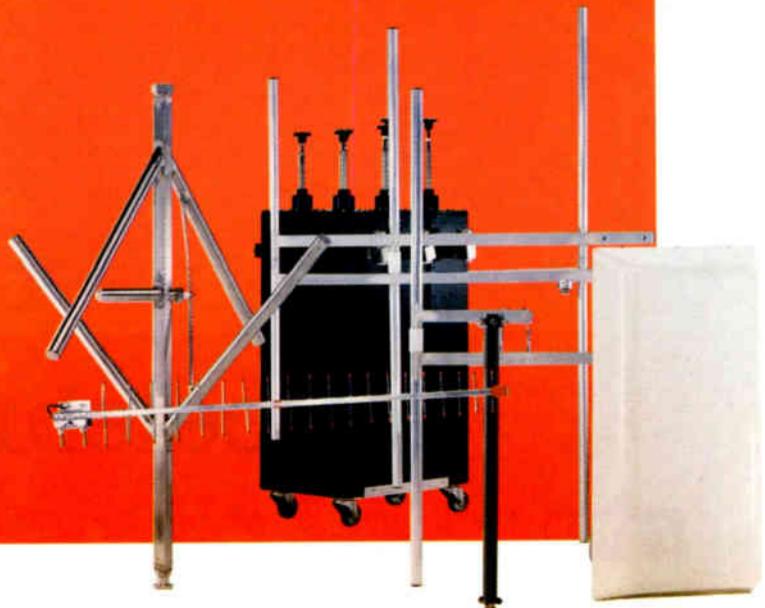


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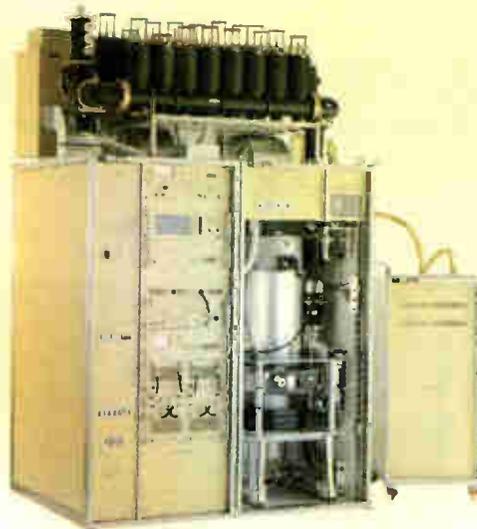
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Circle 127 On Reader Service Card

USER REPORT

WYFF Takes Wolf on the Road

by Sim A. Kolliner
and Mary F. Kolliner
WYFF-TV

GREENVILLE, S.C.

WYFF-TV is the Pulitzer Broadcasting Company's NBC affiliate in the Greenville-Spartanburg-Asheville-Anderson market. With as much as 60 miles between cities, it makes for challenging live news coverage.

The foothills and mountains of upstate South Carolina and western North Carolina preclude the use of microwave in many instances. For example, we are unable to get a live ENG shot from Cleveland Park, which is only five miles away in downtown Greenville. Prior to 1995, we had to cover live news without the aid of a satellite news vehicle (SNV).

GOT THE POWER

During the 1994 NAB, Wolf Coach unveiled the Power Truck, a new and radically different approach to SNV design. With this new design, Wolf was able to maximize interior space while remaining under the gross vehicle weight ratio (GVWR) limitation prescribed by the government for a Commercial Driver's License. Size, weight and space configuration are significant considerations in both construction and purchase of a satellite truck.

Heavier and/or longer units require additional drivers' licenses, higher taxation status and more cumbersome logging regula-



The Wolf Coach Power Truck

tions. Pulitzer approved the purchase of SNVs for four stations in its group. Each station came away with a well-designed, properly equipped and substantially built truck.

Wolf Coach saves space in design by utilizing rack access through exterior doors that are hinged at the top. This hinge style also provides a natural sun and rain shield. Another distinct advantage of the Power

Truck is its excellent horsepower-to-weight ratio. There is a hefty GVWR budget to allow hauling cables, monitors and extra equipment that always seems to find its way into a satellite truck.

To provide maximum flexibility and reliability, we determined that each of our four trucks would come with full dual thread. We also had LNR exciters installed to

allow for future compressed digital transmission. All four units are equipped with a 215 horsepower, turbo-charged Cat diesel engine and a 20 kW generator also powered by a turbo-charged diesel engine.

In addition, we included the proprietary Wolf Coach cable-driven mast in our specs, two Complex units and a Betacam SP editing setup. After taking possession of the vehicle, our technicians installed a GVG Model 100 switcher. Later this year we plan to install a microwave transmitter, power amp and dish.

The truck is equipped with a 486 computer and an HP Ink Jet printer and modem. This setup is ideal for writing scripts, and is linked via modem to the DCM newsroom computer system. We installed the NBC Digital News Express communications package, and thus we receive four voice or data channels when used through an NBC News Channel. The truck is also equipped with three cell phones.

We added DeLorme Map Expert to our software collection. This package continuously displays longitude and latitude on all maps. We built a spreadsheet that calculates azimuth and elevation for all the satellites. The spreadsheet approach makes updating easy as satellites are added, deleted and moved.

Extra rack space in the edit area was converted to storage using rack-mount storage drawers. We find that it is the perfect place for software, microphones, adapters, IFB belt packs, intercom belt packs and other assorted necessities. Wolf Coach also provides ample cargo space in readily accessible belly boxes. Operators and users alike have lauded the amount of space inside and the configuration of equipment. Work surface, storage space and the ability to both feed and edit without crawling all over each other are all attributes we appreciate.

A MULTIPURPOSE UNIT

During the infamous Susan Smith trial in Union, S.C., our Power Truck served as a core news vehicle. We used it primarily for NBC News Channel feeds. Our unit also served as an additional edit bay for news packages, a live report source and a backup source when an ENG signal failed due to atmospheric.

It was in Union that the dual-path HPA configuration proved invaluable. We were able to supply several outside clients with simultaneous feeds while retaining our primary focus as a work place for news.

Wolf Coach goes the extra mile in attention to detail and function. The company even supplies a fold-up aluminum ladder for roof access. In addition, because all system integration is done in-house, the company provides a true turnkey product.

We have had our unit on the road for close to a year, with no major problems to report. We are really quite pleased with the vehicle. ■

Editor's note: Sim A. Kolliner has been director of broadcast operations at WYFF-TV in Greenville, S.C. since 1993. He has more than 25 years experience in broadcast engineering and operations. His wife, Mary F. Kolliner, is owner of Eagle Eye Images, which incorporates free-lance TV engineering services, photojournalism assignments and computer project services. She is a longtime veteran of both radio and TV engineering.

The opinions expressed above are the author's alone. For further information contact Wolf Coach (telephone: +1-508-791-1950; FAX: +1-508-799-2384) or circle Reader Service 32

BUYERS BRIEFS

CTE International of Italy has available a 1 W UHF microwave studio-to-transmitter link that operates in the 1.5 to 2.7 GHz range. The system has an optional low-pass filter and provides very low audio distortion and intermodulation. Modulation is F3 that meets or exceeds CCIR recommendations. For further information, circle **Reader Service 37**.

RF Technology's UPL Series of transmitters is available from 1.2 to 15.5 GHz with a dual audio subcarrier and mic/line switching capability. Small enough to mount on a camera, backpack or tripod, the unit is full frequency agile, weather resistant and very rugged. For further information, circle **Reader Service 39**.

The SLRX-A satellite receiver from **Electronica Industriale** features high sensitivity, easy tuning, a synthesized L.O. and selectable IF bandwidth. The unit also boasts a high reliability rating in a 1 RU package and real-time LED monitoring. Power consumption is only 30 W with an outside converter. For further information, circle **Reader Service 41**.

Electronica srl provides MMDS links in the 2.3 to 2.7 GHz band using a full-band upconverter, high-level post amplifier and a spurious suppression network.

The heart of the system is the EM2327 upconverter that remodulates a 470-869 MHz signal to the 2.3-2.7 GHz range. Conversion gain is rated at 30 dB, ±1 dB. For further information, circle **Reader Service 45**.

Standard Communications has introduced the MT830IBR Agile Omni global VU aeries satellite receiver. The unit meets RS-250C and CCIR-567 performance standards, and operation between DOMSAT, INTELSAT and regional satellites is easily achieved. Manual, automatic or computer control of all vital functions and settings for C/Ku-band at full/half operation is provided. For further information, circle **Reader Service 46**.

The Micro T ultra-portable video microwave transmitter from **Microwave Radio** operates in the 2 or 6 GHz bands, delivering full broadcast performance. Measuring 9.5 x 12.7 x 5.1 cm and weighing less than 2 lbs., the system provides 1 W output power, with power consumption of 18 W.

The unit provides a standby/transmit switch, channel select and offset, power LED and transmit LED switches. As well, two synthesized audio subcarriers are switchable between mic and line inputs. For further information, circle **Reader Service 55**.

Teko Telecom offers a line of anodized aluminum parabolic antennas in power ratings ranging from 2 to 18 GHz.

The series ranges in size from 1 to 1.5 meters and are available in standard or fine-adjustment tuning.

Production radomes are delivered on request for use in strong winds or icy conditions.

For further information, circle **Reader Service 58**.

IRTE has available a full line of microwave and mobile systems for advanced electronic newsgathering.

The company manufactures parabolic antennas for radio relays from 400 MHz to 21 GHz. Parabolic systems are also available for transmission reception.

In addition, the company manufactures analog and digital microwave relays from 10 to 14 GHz.

For further information, circle **Reader Service 62**.

Continental Microwave has gained INTELSAT type approval for its Portable (flyaway) 1.5-meter SNG antenna.

The SNG-104T provides easy registration in that performance data no longer needs to be submitted to either INTELSAT or EUTELSAT. In addition, the system operates at 75.7 dBW uplink EIRP due to superior side-lobe performance.

The system also boasts a sturdy carbon fiber design that retains its shape even under harsh environmental conditions.

For further information, circle **Reader Service 64**.

USER REPORT

Super Pod Is Up, Up and Away

by Eric Dausman

Director, Broadcast Operations and Engineering
KGW Northwest NewsChannel 8

PORTLAND, Oregon

The Providence Journal Company made a commitment in September 1994 to lease a helicopter to support the newsgathering efforts of KGW, Northwest NewsChannel 8 in Portland. The station had leased a helicopter for a couple years in the mid-1980s, but then decided this money could be better spent on other needs.

The news competition is different now, and using a helicopter distinguishes a station. Thus, we entered into an exclusive lease of a Hughes 500D helicopter.

MOVING UP

Everyone remembers the problems with early helicopter systems, such as the pictures often breaking up and the fact that they were full of multipath. No one at KGW wanted this type of system. We spoke to all the major manufacturers of helicopter systems, and finally settled on NSI for several reasons.

First, NSI has a long experience with helicopter systems, as most of its technology comes from the old Nurad product line. Secondly, NSI was preparing to ship the Super Pod, with many advanced features added. Lastly, we owned a 10-year old



SKY 8 takes to the air with the NSI Super Pod.

Nurad Superquad II receive antenna that could easily interface to the new NSI MC5 control system.

Installation of the equipment in the helicopter was done at Columbia Helicopters near Portland. It had FAA-certified airframe and avionics technicians on hand to perform the necessary modifications to our newly leased helicopter. The installation instructions for the system were fairly plain and simple.

Columbia also installed audio, video, two-way radios and microwave systems to our

specifications. "Sky 8" has two permanent cameras: one inside for the talent and one mounted in a remote-controlled ball on the nose of the aircraft. In addition, there are preview and program audio and video switchers, a Beta SP VTR, a 2 GHz receiver and two UHF and one VHF two-way radios for communication.

AUTO PILOT

"Sky 8" emerged from the shop ready for testing in January 1995. The NSI Super Pod is fully automatic. By simply entering in the coordinates of the receiver, an on-board GPS always indicates via the NSI system what the bearing is to the receiver. A compass tells the NSI system what the heading of the helicopter is at any given time. The NSI on-board computer must then calculate the correct antenna position and steer the antenna to the receiver.

A modem in the Super Pod computer sends the reverse heading of the antenna to the receiver. The direction of the antenna is fed into the MC5 computer at the receive site, and the antenna is turned into the heading being sent by the helicopter. When the microwave path is established, the modems can communicate and the system subsequently works with very little operator intervention.

The operator at the MC5 control screen in the master control room only needs to find the helicopter with the Superquad receive antenna and verify that the "Auto Track" control signal is sending good headings. Next, the operator pushes the "Track On" button on the touch screen, and the receive antenna will then follow the helicopter wherever it goes. This feature is very important to KGW, as our primary receive antenna is three miles from downtown. (It would be very difficult for an operator to keep the receive antenna on a moving target that close.)

Early flight tests showed that the NSI Super Pod system was working, but that the antenna got lost in turns. This was not a good sign, as we could not reliably circle a target and keep the antenna pointing toward the target receiver. The GPS was clearly sending out correct data, so we determined that the compass NSI provided was not working properly. NSI engineers working with the compass manufacturer decided that there were too many errors for reliable operation of the compass.

NSI replaced the compass with another brand and rewrote the software in the computer to interface properly with it. Again, this compass worked fine some of the time, but in tight turns it got lost and output erroneous bearings. Hence, the antenna would not stay pointed to the receiver in all situations.

NSI engineers abandoned the efforts with the "new and improved" digital compasses and, after some consultation, decided to use the gyro compass made by Bendix King. We received a new computer, antenna system, Bendix King gyro compass and control panel for the Super Pod. The new system was then installed and has since worked well.

PICK YOUR MODE

The Super Pod is supplied with a control panel that allows operation of the antenna in three different modes. Operation is fully automatic in the "auto" position. The antenna is positioned with input from the GPS and gyro compass. In the "semi-auto" position, the antenna ignores the GPS guidance, and will aim the antenna based on the gyro

The Super Pod is

supplied with a control

panel that allows

operation of the antenna

in three different modes.



compass input only.

The last position is "manual." With this the antenna is positioned wherever desired, relative to the nose of the aircraft. These three operating positions aid in troubleshooting problems and provide a way to get a story on the air in the event of failure of the GPS or gyro compass.

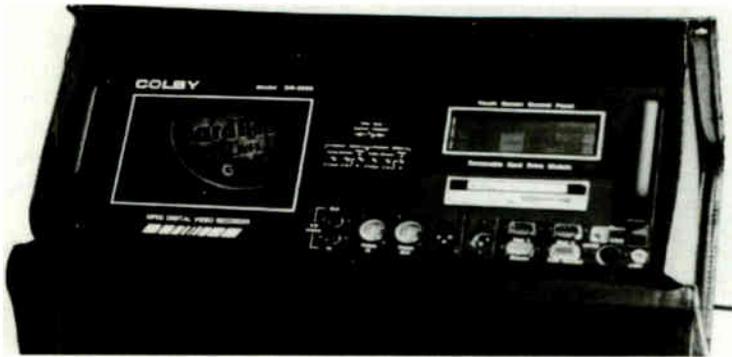
One other problem with the system involved the new design of the antenna, which was occasionally steering the wrong way. Our technicians inspected it and determined that when the antenna was pointing off, the Bendix King gyro compass was also indicating the wrong bearing. The placement of the Bendix King "flux gate" seemed particularly critical. After experimenting with various locations the technicians found a location on the compass that worked. The system was fully operational again.

While this experience did not originally "work out of the box," the end result was fine. NSI did not let us down and assisted us until all problems were resolved. The fully-automated, hands-off operation that was promised was ultimately delivered, and Sky 8 is indeed making a difference for KGW Northwest NewsChannel 8. ■

Editor's note: Eric Dausman has been director of operations and engineering for KGW Northwest NewsChannel 8 since 1991. Prior to this position, he worked for NBC in New York for five years, where he held the positions of director of broadcast operations and core projects, and later, director of engineering and operations for WNBC.

The opinions expressed above are the author's alone. For further information contact NSI (telephone: +1-410-964-8400; FAX: +1-410-964-9661) or circle Reader Service 33

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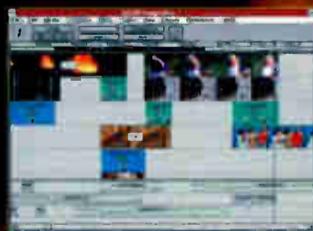
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USER REPORT

BAF SNG Covers New Terrain

by Steve King
Chief Engineer
WHNT-TV

HUNTSVILLE, Alabama

WHNT-TV is owned and operated by The New York Times Broadcasting Services. Located in the Tennessee Valley, Huntsville is a very competitive market — in addition to its VHF stations it has an all-UHF market with five high-power UHF stations (four network affiliates and one public station).

As a result of its aggressive approach to local news, WHNT made the decision in 1994 to add an SNG Ku-uplink truck to the market (and to our fleet.)

FULLY REDUNDANT

Because of our situation, we needed a truck that was fully redundant and easy to use, requiring minimal training. We needed service from the vendor 24 hours a day, seven days a week. Finally, we wanted an SNG truck that would not wear its operator out before getting to a destination. After much research we chose BAF Communications to provide the vehicle.

BAF met all of our needs and then some. It is very easy to differentiate what we like and dislike about the truck: we like everything. Operator training takes about three days. The baseband and uplink equipment is very easy to operate. The drawings and schematics are easy to follow, as they cover all the details (every wire is labeled).

I was very impressed with the quality of the solid aluminum, welded construction BAF body and the mounting of the body to the chassis. This will allow for easy replacement of the truck when the time comes.

Skylink 19, WHNT's SNG truck, weighs in at 19,600 pounds. The truck is built on a heavy-duty Ford 800 chassis with a 230 horsepower Cummins diesel engine, air ride suspension, air-suspended drivers and bucket seat.

The RF package includes dual exciters with auto switching, a microprocessor controlled exciter and a TWTA routing system to select between phased-combined, single-path or dual-path mode.

Baseband inputs include six camera-to-video inputs and six mic-to-line inputs, a two-channel IFB and a two-channel intercom system. The I/O panel accommodates anything from teleconferencing to audio mixing for an outdoor concert.

Skylink 19 is a five-rack truck. It has two racks with identical equipment for paths one and two. Path two also feeds a 2 GHz microwave transmitter. It has one rack solely dedicated to monitoring, with its own input switcher for the monitoring of any input or output without interfering with the uplink in progress. Another rack houses all the RF equipment, and the last rack has all the editing equipment. Not only does each path have its own switchers and audio mixers, but there is also a production audio board and video switcher mounted in the console. In addition, there are video and audio patch panels for any necessary configuration changes.

ON SITE AND ON TIME

The terrain in northern Alabama and southern Tennessee consists of mountains and valleys, with occasional stretches of flat ground. This wreaks havoc on microwave live shots. Many major towns in our coverage area cannot be covered by microwaves. But with Skylink 19, we can get a shot from anywhere the sky is visible. ■

Editor's note: Steve King is chief engineer at WHNT-TV in Huntsville, Ala. He has been in the broadcast industry for 22 years.

The opinions expressed above are the author's alone. For further information contact BAF Communications (telephone: +1-407-324-8250; FAX: +1-407-324-7860) or circle Reader Service 66.

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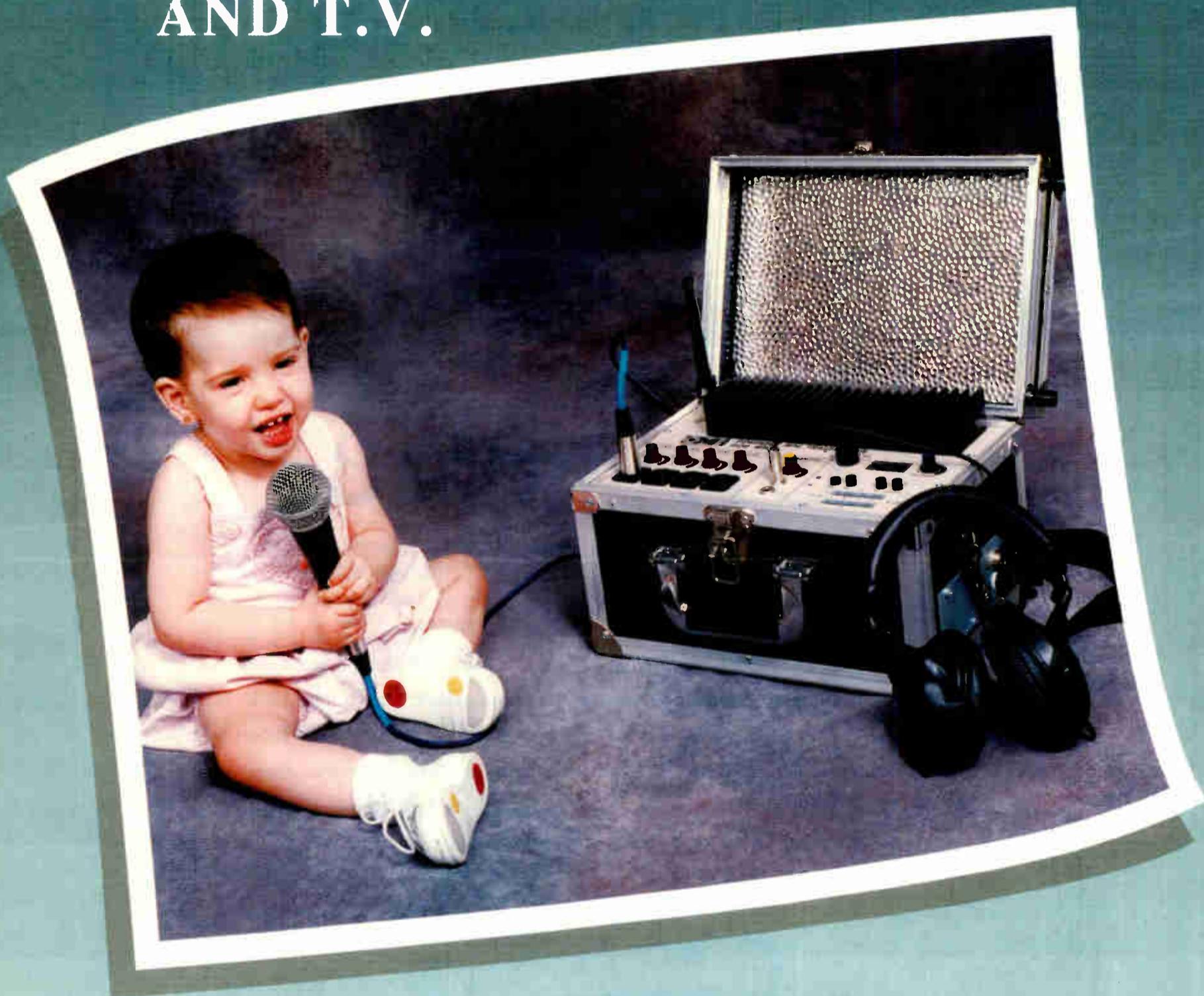
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