Active Storage for Media
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VOLUME 24, NO. 12 • MAY 31, 2006

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Searching for Tech Trends at NAB

Mobility, Web delivery and new media recording advance

by Craig Johnston

LAS VEGAS

Vendors at the 2006 NAB were there to sell specific tools for specific jobs. Speakers at sessions offered both solutions and direction. But taken as a whole, NAB can be an indicator of what's hot and what's not; the trends of the industry.

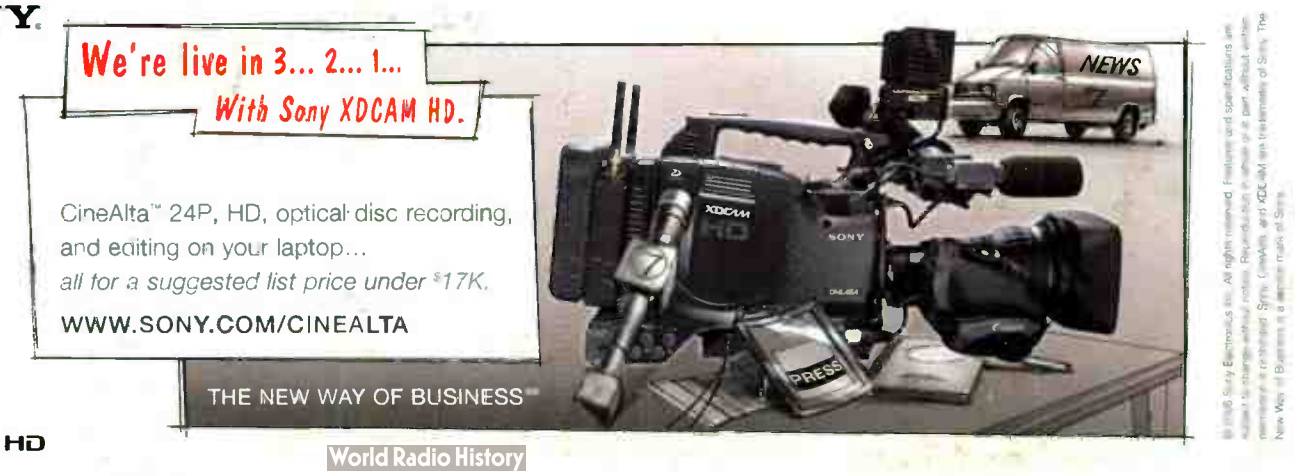
For starters, NHK gave everyone a look at 20 plus years into the future when it showed Ultra High-Definition Television for the first time outside of Japan. At four times both the horizontal and vertical resolution of HDTV, 16 high-def screens could be shown on the 30-foot screen.

Today's version of high-def was also seen in abundance, foretelling equipment that will be better, cheaper and smaller.

In the camera area, CMOS sensors continued to make headway against the entrenched CCD imagers. Ikegami introduced a new multi-format CMOS imaging sensor that was demonstrated imaging at 720/120p and 1080/60p.

The sports events coverage market is certainly an innova-

TRENDS, PAGE 30



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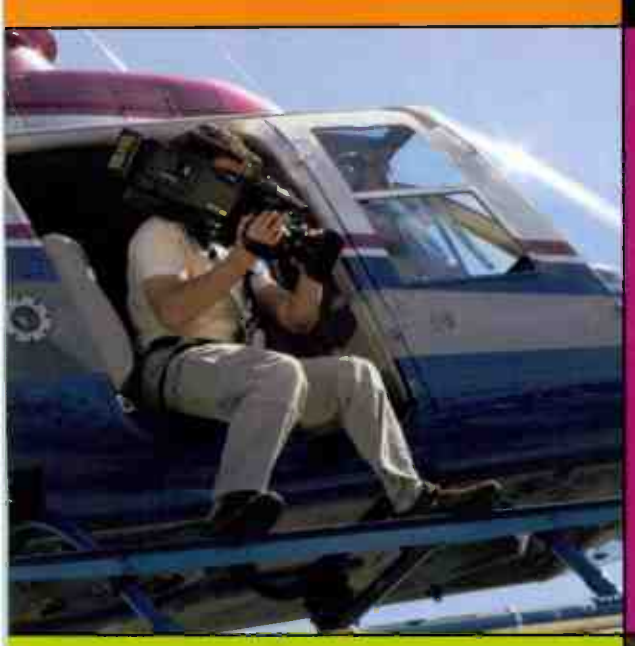

Shake things up - When breaking news hits, don't let it knock you for a loop. P2 withstands shock up to 1,500 G and vibration up to 15 G – ensuring you'll get the shot no matter how bumpy the ride.

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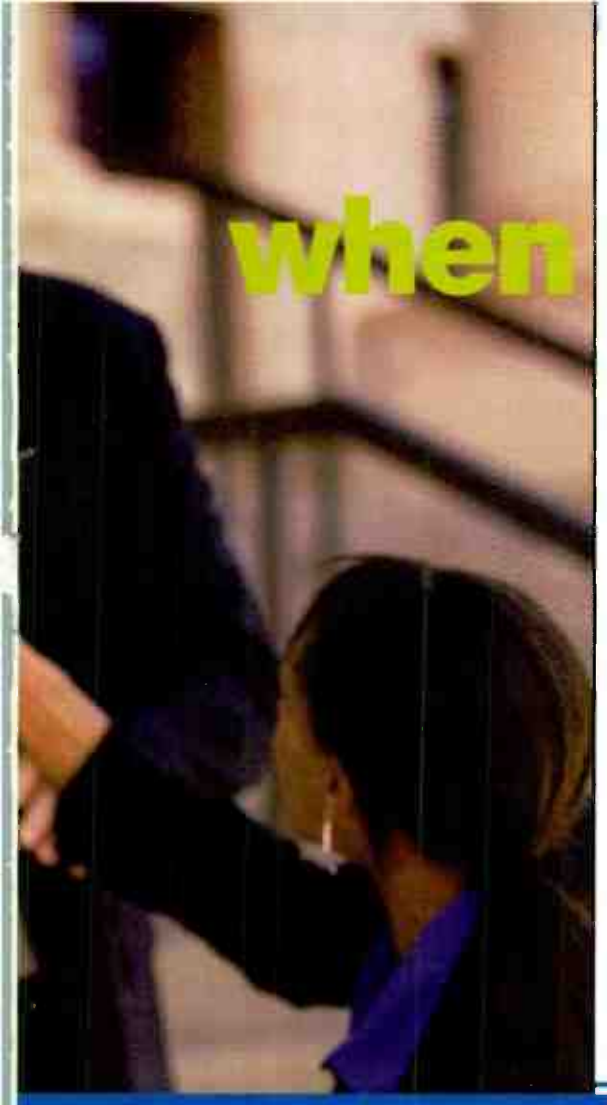

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AJ-HPS1500
P2 DVCPRO Studio Recorder
It's a highly versatile, solid-state recorder/player for the broadcast or production facility, with G-bit Ethernet, USB 2.0, IEEE 1394 (AVC), HD-SDI and SD-SDI input/outputs. The recorder offers five P2 card slots and two industry-standard slots for removable hard disk drives.

AJ-HPM100
Mobile DVCPRO HD P2 Recorder
Fully equipped with a six-slot P2 drive, a 9" widescreen LCD monitor with built-in stereo speakers, a jog/shuttle dial and function buttons, and an SD card slot, it operates on either AC or DC power.

World Radio History

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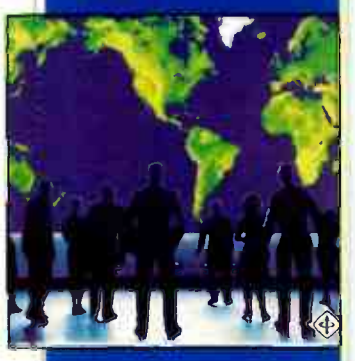

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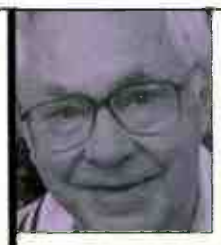

Charles W. Rhodes

Digital TV

The January 1954 issue of "Proceedings of the Institute of Electrical and Electronic Engineers" was a special issue devoted entirely to the NTSC .... it was considered a marvel of technology to pack red, green and blue video signals into a 6 MHz channel... Page 20

Will Workman

Inside Broadband

Suddenly noticing that the United States ranks 16th internationally in broadband adoption, federal lawmakers are finally taking a serious step toward updating the creaky Telecommunications Act of 1996. Whether this amounts to a step forward, backward... or down a deep hole is still unclear. Page 24

Mary C. Gruszka

Audio By Design

Let's look at one more microphone specification—sensitivity. Sensitivity tells us how much open-circuit (unloaded) voltage the microphone will produce under a specified (acoustic) sound pressure level presented at the diaphragm of the mic. The frequency of the test signal is 1,000 Hz. Page 26

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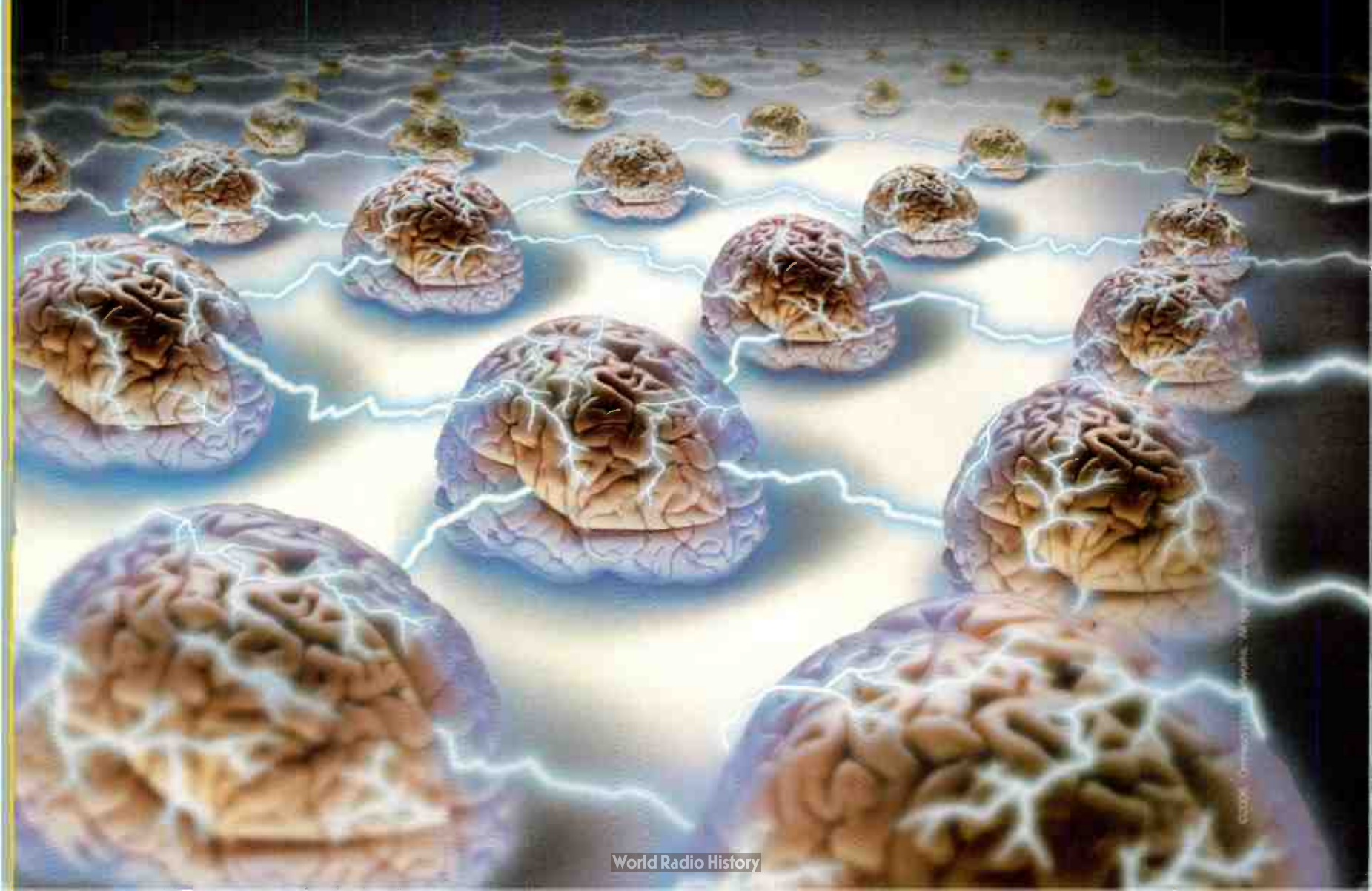

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FROM THE EDITOR

The Next HD Battle

The launch of HD DVD in April had all the muted fanfare that greeted the introduction of the original DVD format in 1997. Back then, there was still some question as to DVD's path—many saw it as a replacment for the VCR, while others, in particular the computer industry, looked to DVD's immense storage capacity as replacing CD-ROMs. Interestingly enough, in a **TV Technology** article in 1997, a reporter wrote: "Although the initial market for DVD will involve dedicated DVD players that look to replace VCRs, computer types want to be able to not only use the huge storage capacity of the DVD-ROM variation, but also to play back the video streams contained on a DVD video disc and eventually to be able to encode and write such discs."

Little did the industry know that the opposite happened: DVD took off as a replacement for the VCR. But, other than in the professional arena, where Blu-ray discs are gaining ground through such platforms as Sony's XDCAM, other storage technologies including USB sticks and cheap standalone hard drives have stunted the use of DVD as a storage-only medium for consumers.

Now that DVD has established itself as the home entertainment medium of choice, however, what's in store for the next generation? Could it be that the "next generation" of kids will drive the adoption of hi-def DVD?

Don't be surprised. While it's parents that usually make the decisions when it comes to home entertainment gear, the kids have more of a voice than ever. For years, we've known that Bill Gates' real motive for developing the Xbox videogame console was to gain a foothold in the home entertainment hub. (Whether Microsoft's efforts will succeed on other fronts, such as cable and IPTV, remains to be seen). When Xbox 360 was launched late last year, it was heralded as the most advanced gaming device yet, with graphics that demanded HDTV to get the full effect. It's still too soon to determine what impact Xbox 360 has had on the sale of HDTV sets, but the introduction of Sony's Playstation 3 (PS3) later this year, with the inclusion of a Blu-ray hi-def DVD player, could clarify the picture (so to speak).

Many people balked when Sony announced the price tag of PS3 at E3 last month, ($499 for the 20 GB hard drive, $599 for the 60 GB version). What many of them didn't realize was that the most expensive part of PS3 was the Blu-ray hi-def DVD player (estimated at $350 OEM). Sony has a big stake in the success of Blu-ray; while Microsoft has its toe in the competing HD DVD standard (Microsoft plans to offer an HD DVD option for Xbox 360 later this year).

Toshiba was the first on the market with HD DVD players in April, with the cheapest players going for approximately $500. The lack of available content at this point is natural. It will take awhile for the industry to ramp up production of popular movies for the format. However, the competition between the two formats could also take its toll as well.

We can't tell at this point who will win the hi-def DVD battle, however, the sophistication and evolution of videogame consoles toward becoming all-in-one home entertainment hubs will continue to have an increasing influence on the success and adoption of HDTV worldwide. And whether it's Xbox 360 or PS3 that lands on kids' wish lists this coming holiday season, their choices could have a big impact on the outcome.

Tom Butts
Editor
tbutts@imaspub.com

LETTERS

Send to Editor, TV Technology at e-mail *tvtech@imaspub.com*

Better Than You Think

Dear Editor:

I just read the April 24 issue and must wholeheartedly disagree with Arthur Schneider's letter regarding the quality of today's TV programming ("It's Still Junk").

As an avid TV viewer, I think there is more good quality programming being offered than ever before. Sure, I agree there is lots of junk, as well (bad reality shows and shopping programs top my "never watch" list). But we have a lot more outlets from which to choose, with all of the many cable networks now available. (It can't all be great programming!)

Many feature-film quality (technical quality, as well as aesthetic) programs are offered on both network and cable channels. Episodic dramas like "Lost," "24," "The Sopranos" and "West Wing," high-end reality shows such as "Survivor" and "The Amazing Race" and even half-hour comedies like "The Office" and "My Name is Earl" top my viewing list, among others. In fact, sometimes it seems that there are too many good shows to watch and I find myself limiting my viewing choices, so as not to spend too much time in front of the tube.

We just need to discern (and ignore) the junk! Things are not getting worse. They're getting better!!

Ed Fraticelli
Pittsburgh

Short Squatty People

Dear Mario:

You struck a nerve on one of my top pet peeves, the "oval circle" syndrome ("Aspects of Loveliness: Fix It? Heck No!" April 24).

Program originators are also to blame, along with the public that is willing to accept it as "normal."

One major cable caster (initials TNT), stretches all of their SD content on their HD channel and labels it "HD." Sure, some sports programming and a few movies are in true HD, but all of the breaks are nonlinear stretches. Can't stand to watch it, especially when the camera pans. Do they think they are really fooling us?

The ultimate insult is an upconverted SD widescreen letterbox spot that gets stretched, black bars on top and bottom with short squatty people!

Keep up the good work!

Gary Wachter
Dallas

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Warner Bros. Deals With BitTorrent

LOS ANGELES

The Home Entertainment Group of Warner Bros. will use BitTorrent P2P technology to deliver video content. The announcement came on the heels of an agreement between BitTorrent and the Motion Picture Association of America to check film piracy and promote innovation in online content distribution.

"BitTorrent has made the leap in creating a legal partnership that respects the value of intellectual property. This has provided us with a next-generation platform for the distribution of our films and TV programs," said Kevin Tsujihara, president of Warner Bros. Home Entertainment Group.

The new delivery system will provide legal content to customers both on a video-on-demand and electronic sell-through basis coinciding with DVD release schedules.

Startup date for the service is set for this summer, with more than 200 Warner Bros. titles being offered, including television series, new releases and catalog favorites.

Distribution

KARE Launches Local HD News

MINNEAPOLIS/ST. PAUL, MINN.

On April 27, KARE 11 News became the first local news program in Minnesota to be broadcast in HD. In preparation, the station purchased a new HD equipment package and constructed the operation's first completely new news set in 15 years.

KARE is one of a minority of local broadcasters to go HD for local news. The station said that the changeover began with its 5 p.m. news. Aside from the Twin Cities viewers with HD sets, the KARE news operation is counting on analog viewers to notice a distinct difference, too.

"Even non-HD viewers will get a better image," said News Director Tom Lindner. "And our new set is beautiful—very modern, yet mindful of where we live and who we are."

Local viewers wishing to learn more about HD are being directed to KARE 11's Web site, *www.kare11.com*. As a preview, the station aired a special locally produced program the night preceding the local news launch, shot entirely in HD, entitled "Rolling on Three Rivers."

KARE's new HD news set.

Local

Microsoft TV Certifies Modulus ME6000

SUNNYVALE, CALIF.

The Modulus Video ME6000 HD MPEG-4 AVC encoder has been certified for the Microsoft TV IPTV Edition software platform.

The Modulus Video ME6000 is a real-time, HD AVC video encoder that uses extensive processing power to deliver the benefits of the AVC toolkit, including support for picture-in-picture functionality. Designed to deliver full resolution HD for IPTV, satellite and broadcast, the ME6000 delivers its video stream using IP or optional ASI, making it easy to deploy into an existing video delivery infrastructure, according to the company.

"The combination of Microsoft TV and the Modulus Video ME6000 brings the immersive quality of HD video and a compelling feature set, including PIP functionality that is exactly what today's viewing audience expects," said Phil Corman, Microsoft director of worldwide partner development.

Modulus Video Chairman and CEO Bob Wilson said, "We have had tremendous interest from many telcos around the world."

MPEG-4

SBE Awards Battison

LAS VEGAS

John Henry Battison, a broadcasting engineer whose achievements and service span nearly seven decades, was honored by the Society of Broadcast Engineers with the presentation of the organization's Lifetime Achievement Award in a special April 25 ceremony during the April NAB conference.

Battison was born in England, and became interested in broadcasting as a youth. He admitted to a fascination for watching the early BBC transmissions of John Logie Baird's 30-line mechanical television images.

"I was quite often too 'ill' to attend school on those days when the television broadcasts took place," said Battison, now 91 years old.

He constructed his own television receiver and spent a fair amount of time perfecting it.

After completing his early education, Battison joined the research staff of Ekco, an English radio and television manufacturer.

After serving in the RAF during World War II, he came to the United States and began his career in American broadcasting. In the early 1960s, the Institute of Radio Engineers and the American Institute of Electrical Engineers merged, motivating Battison to call for a separate organization representing broadcast engineers. In 1963, with the help of his family, he sent membership invitation letters to nearly 5,000 radio and television chief engineers. This led to the founding of the Society of Broadcast Engineers and Battison became its first member. The organization has now grown to more than 5,700 members worldwide.

Battison has authored 15 technical books and written more than 500 technical articles for publication and today serves as technical editor for Radio Magazine.

According to John L. Poray, SBE executive director, Battison was selected for the award in secret balloting done last fall by the organization's board of directors. He received the NAB Engineer of the Year award in 1998.

Honors

Tivo Loads Up New Features

ALVISO, CALIF.

TiVo Inc. is loading its boxes with dual tuners and an ad-search feature.

The TiVo Series2 DT DVR is billed as the first standalone dual-tuner DVR (although South Africa's Altech has a dual input machine on the market there).

The dual tuner machine allows recording two shows at the same time and incorporates built-in Ethernet and USB ports for connecting to home networks.

"We've been hearing from our subscribers that they wanted a TiVo DVR that could record two shows at once," said Jim Denney, vice president of product marketing at TiVo. "With the TiVo Series2 DVR, we've delivered that capability to our customers at a very affordable price."

Other features available in the new Series2 machine include the ability to transfer programs to laptops or portable video players for viewing on the go and provisions for scheduling recordings from any location with an Internet connection.

The ad-search feature—TiVo Product Watch—allows searches for advertising from more than 70 advertisers and 100 leading product brands in up to five categories including automotive, entertainment, financial, lifestyles and leisure.

After locating the desired advertising information, TiVo subscribers can have it delivered to the "Now Playing" section of the TiVo service. The option to receive content directly from a specific company on an ongoing basis is available.

"TiVo Product Watch will, for the first time, enable TV viewers to get commercial information about a product... when they want it, rather than through traditional TV advertising, where a viewer has no control of what as comes on when they are watching a program," said Tom Rogers, President and CEO of TiVo.

At launch time, General Motors, Sony Pictures, Lending Tree and Kraft Foods are included as premium advertisers. Examples of content that can be pulled range from cooking demonstrations from Kraft Foods to a presentation on various types of mortgages from Lending Tree, as well as movie trailers from Sony Pictures.

DVR

World Radio History

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World Radio History

SGI Files Chapter 11

MOUNTAIN VIEW, CALIF.

Silicon Graphics Inc., a developer of high-performance computers, filed Chapter 11 Bankruptcy protection May 8. The company reached an agreement with its bank lenders and debt holders to reduce its debt by about $250 million. SGI said it will file a reorganization plan and expects to emerge from Chapter 11 within six months.

"By having a prearranged, negotiated deal, it will allow us to accelerate the process. It's business as usual and we remain in operational control," said SGI Chairman and CEO Dennis P. McKenna.

In the 100 days before the filing, the company said it assembled a new management team; came up with $100 million in annual savings with an additional $50 million underway; and implemented a plan to reposition its products. SGI has about 1,800 employees worldwide, and this announcement did not include layoffs. However, about 250 employees were laid off in March.

Upon confirmation of the reorganization, the new common stock of the company will be issued to the holders of SGI Senior Secured bonds. The company said all existing SGI common stock and the unsecured subordinated debentures will be cancelled and receive no recovery.

SGI received interim approval from the courts May 10 to use $70 million it received from a group of its bondholders for day-to-day operations.

The filings were made in the U.S. Bankruptcy Court for the Southern District of New York.

Business

AccuWeather Acquires WeatherData

STATE COLLEGE, PA.

AccuWeather Inc. has purchased WeatherData Inc. The move will add advanced radar and mobile technology to the AccuWeather portfolio.

WeatherData specializes in weather risk management consulting and severe weather forecasting. Key technologies now available to AccuWeather as a result of the acquisition include SkyGuard, a comprehensive enterprise system for weather risk management; SelectWarn, an advanced, on-air radar system; and Storm Hawk, a handheld GPS-based weather monitoring and forecasting device. Storm Hawk provides real-time weather radar and detailed information to PDAs.

"We expect to integrate these new capabilities into our AccuWeather offerings to deliver even stronger solutions that help keep people safe and help businesses protect their property, continuity and bottom line," said Dr. Joel N. Myers, founder and president of AccuWeather.

WeatherData will continue to operate in Wichita as WeatherData Services Inc., and Founder Mike Smith will continue as CEO. WeatherData previously sold its Newspaper division to AccuWeather in 2002.

Acquisition

PBS Taps SES Americom

LAS VEGAS

SES Americom scored a long-term contract with PBS to provide transport for the network's Next Generation Interconnection System.

"NGIS represents one of the most significant projects ever undertaken at PBS, a complete paradigm shift in how we're going to distribute content and programming to the public television community," said Ed Caleca, senior vice president of technology and operations at PBS. "Our migration to a digital, nonreal-time file distribution system requires the robust, reliable coverage and quality service that SES Americom can deliver to meet the current and future strategic needs of PBS.

The planned NGIS file transfer service is scheduled to begin later this year. The agreement with SES Americom maintains transponder capacity on the AMC-1 and AMC-3 satellites already in use by PBS for program delivery. It will add transponder capacity on three additional SES Americom satellites, including AMC-23 located 172 degrees east longitude, allowing direct feed service into American Samoa and Guam PBS stations for the first time.

Alliance

Griffin Launches HD Chopper

OKLAHOMA CITY

Griffin Communications LLC announced the launch of its newest addition, a Bell 407 helicopter equipped with an HDTV newsgathering platform. The helicopter will be based at KWTV here and joins the group's Bell Jet Ranger helicopter in use by Griffin stations KOTV and KWBT in Tulsa, Okla.

"The addition of Skynews 9 is a significant advantage for our viewers and the state," said Griffin Communications president and CEO, David Griffin. "Not only does it fly faster than any other helicopter in the state, but with its HD cameras, it is gathering severe storm and tornado pictures for viewers in crisp, stunning detail."

The new chopper can fly at speeds up to 20 percent faster than any other newsgathering helicopter in Oklahoma and has been dubbed "the sports car in the air." The craft contains a nose-mounted HD camera using the Flir Systems UltraMedia gyro stabilization technology. The Griffin HD helo represents the fifth HD chopper in U.S. ENG.

As Oklahoma has been dubbed "tornado alley," Griffin placed emphasis in the use of the helicopter in weather-related reporting.

"Oklahomans have grown to depend on our ability to show them the location and magnitude of storms," he said.

Both of the Griffin helicopters are equipped with onboard GPS mapping to aid in pinpointing the exact location of storms and breaking news events. They are also fitted with high-gain directional antennas for long-range live transmissions.

HDTV

LCD Pioneer Nets $500,000 Prize

CAMBRIDGE, MASS.

James Fergason, an innovator in liquid crystal technology, was recently honored with a $500,000 award from the Lemelson-MIT Program for his work in that field.

James Fergason was recently honored for his research on liquid crystal technology.

Fergason began experimenting with liquid crystals in 1958 at Westinghouse Research Laboratories. His work resulted in items ranging from mood rings to flat-panel television displays.

"James Fergason's inventions are directly responsible for the creation of a multibillion dollar liquid crystal display industry that employs millions of people around the world," said Merton Flemings, director of the Lemelson-MIT Program, which presents the annual award. "But those are not his only contributions to society. He is also a staunch advocate for independent inventors and has dedicated countless hours to this cause. We recognize his outstanding achievements in the awarding of this year's $500,000 Lemelson-MIT Prize."

Fergason is not the discoverer of liquid crystals, nor the first researcher to experiment with them. He said that the was "the first guy who saw what they were really good for."

Initially, Fergason was interested in using liquid crystal technology for indicating temperature changes. He took an interest in the field, discovering previously unknown properties of the crystals. In 1966, Fergason discovered the twisted nematic field effect of liquid crystals. In effect, this meant that an electric current could change the liquid crystal's structure in such a way as to make the crystal function as a practical light valve. This was the key in utilizing them for today's liquid crystal displays.

Fergason holds more than U.S. 130 patents and more than 500 foreign patents for his work.

The Lemelson-MIT Program was founded by Jerome H. Lemelson at the Massachusetts Institute of Technology in 1994. Its goals are to enable and inspire young people to pursue creative lives and careers, particularly in the area of invention.

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Pentagon Channel: Not Just for Military

AFRTS offshoot expands distribution, programming

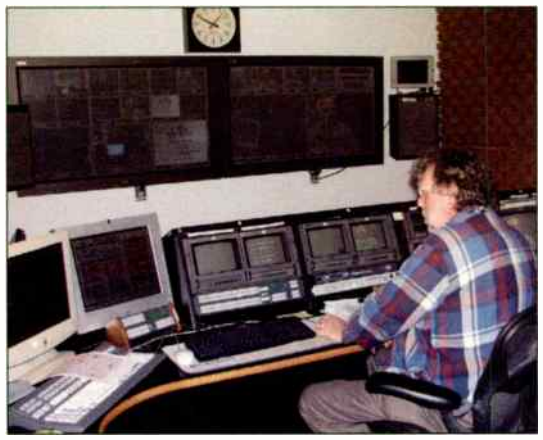
by James E. O'Neal

ALEXANDRIA, VA.

It's 0700 hours, (7 a.m. to civilians) and in a rather nondescript office building hugging the western bank of the Potomac, a rather unusual television operation is just beginning its broadcast day.

This is the Pentagon Channel, an offshoot of the sixty-something year old American Forces Radio and Television Service. The service is unusual; as unlike most everything else the federal government or military does with television, the programming is available for anyone who wants to watch, and despite its name, the channel does not originate from the Pentagon.

Historically, viewing of mainstream AFRTS programming has been and is still restricted to overseas military venues. Not so with this latest addition to the military's "bouquet" of satellite—distributed global television services. The Pentagon Channel is "open" to anyone who wants to view it and is seen officially at more than 300 U.S. military installations. The organization even has a marketing department to help place the service.



The Pentagon Channel is reconfiguring and expanding its facilities to move to an all-digital plant.

"We have placement with 15 of the top 25 cable service providers," said Maxine Teller, director of distribution for the Pentagon Channel. "We aggressively pursue placement and are there on Cox, Comcast, Time Warner and many others."

The channel is also available on the Dish satellite network. Verizon's FiOS fiber broadband delivery system has been delivering the Pentagon Channel since the first of the year. It's also available in the clear to backyard Ku-band dish owners who have a receiver that is DVB-S capable.

"This is the only military broadcasting that has such a large audience in the United States," said David Cloud, Pentagon Channel chief engineer. "In addition to satellite and cable, we are also streaming programming on the Internet and provide Podcasts from right here."

Cloud is quick to point out that even though the channel is widely available, few people outside military circles know about it.

The Pentagon Channel is one of eight video programming services transmitted by AFRTS (there are 12 radio channels that ride along with television on the satellite paths). Due to licensing agreements with content providers—major networks, sports and news channels and the like—the other seven are provided only for overseas viewing by U.S. troops.

The Pentagon Channel service started out as just a news package prepared only for viewing within the Pentagon, hence the service's name. The feed was delivered to the Pentagon via a dedicated fiber link for distribution on the in-house RF system. The Alexandria group packaged news stories and fed them out to this limited audience. The concept was welcomed, and demand grew for additional feeds and coverage. A decision was made to launch it in mid-2004 as a full time channel with widespread availability.

Program elements can come from literally anywhere in the world that the Department of Defense has a presence.

"We carry 'Freedom Journal Iraq' on a daily basis from Baghdad," Cloud said. "We get daily newscasts from Germany, Korea, Japan and Afghanistan. Domestically we take in a lot of programming too—Ft. Riley, Ft. Hood and other military bases around the country put together stories for local base consumption, but we air them around the world on the Pentagon Channel. We get a lot of interesting stories from Nellis Air Force Base, home of the Thunderbirds. Programming comes from everywhere.

"We start up at 0700 hours and run live for 12 hours. The next 12 hours come off the server," Cloud said.

MOVING TO DIGITAL

Engineering services play a big role in making all of this happen, and the Pentagon Channel's infrastructure is no different from most other broadcasters when "digital transition" is mentioned.

"We're a hybrid digital/analog plant," Cloud said. "About 80/20. We've been making great strides to transition."

The facility has six Sony PDW-530 XDCAMs and a like number of Avid Adrenaline Media Composer edit suites. These are networked with a 100-drive Avid Unity server and a smaller Unity server used only for spot length content. Playout is via Avid's Airspeed. Everything is tied together with 2 GBb Fibre Channel networking. In addition, the operation has 20 Avid Newscutter XP seats for desktop editing applications.

These PC applications are a bit more involved than in most broadcast environments.

"One of the biggest issues in government agencies, but not unique to government, is that of separate IT systems," Cloud said.

For security reasons, the broadcast networking cannot be a part of the general office IT infrastructure. The Pentagon Channel facility maintains its own IT system, separate from that of the military's.

Cloud thinks that the situation is going to become more interesting in a few more years.

"We have been 'BRACed' [Base Realignment And Closure]," Cloud said. The activities of American Forces Information Service (parent organization of the Pentagon Channel) are being combined with those of the Naval Media Center, the Soldier's Media Center and the Air Force News Agency.

"We're all supposed to be consolidated by 2010. As we move into a combined environment, the issue will be that of a common IT infrastructure. We're going from 200 people to 700 people. Everyone is going to want to look at content from their desktop and right now, (because of the separate network requirement) we're looking at two computers per desktop."

FUTURE IS IT-BASED

Regardless of this and other complexities that accompany the Information Age, Cloud thinks that the future of broadcasting is tightly wrapped around IT.

"We are looking to fully exploit file-based methodology," he said. "We're moving away from videotape and expanding file transfer—Podcasting, streaming—we're working with various distributors to get VOD content to cable providers."

The Pentagon Channel's television plant was constructed before the "digital dawn," and as with most television plants nowadays that are more than a few months old, the facility is in the process of being expanded and reconfigured. One of the newest additions is an audio and video production suite constructed exclusively to accommodate military PSA production work. Cloud remarked that this newest resource has been kept busy since it was first switched on a few months ago.

Innovative Technologies Inc., a Washington D.C. area broadcast and visual systems integration firm, has worked closely with Cloud to make the Pentagon Channel a reality. Humberto Irizarry, business development manager for ITI described some of the most recent additions.

"We integrated Sundance automation into their existing operation and also installed a Pesa 144x144 router," Irizarry said. "This was similar to performing brain surgery without an anesthetic; we had to integrate the new systems functionalities while the Pentagon Channel, which operates on a 24/7 schedule, continued to broadcast its programming."

Irizarry gives a lot of the credit for the project's success to Cloud.

"This is probably the best example of how the government can work with a contractor," Irizarry said. "Dave had the vision and brought us in to meet his project needs and goals. Working very closely under his direction, ITI was able to complete the project on schedule and within budget."

Another ongoing project is the upgrading of the channel's graphics facility. Cloud has purchased two Apple G5 servers that will provide a couple of TB of RAID array storage strictly for the graphics operation. ■

"We're moving away from videotape and expanding file transfer—Podcasting, streaming—we're working with various distributors to get VOD content to cable providers."

—David Cloud, Pentagon Channel

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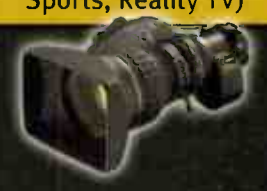

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World Radio History

DITs Make Their Mark on the Set

Digital Imaging Technicians fill a valuable role, but will technology make them obsolete?

by Craig Johnston

HOLLYWOOD

The film world has long had a well-established and defined set of job functions, such as director of photography (DP), camera operator and camera assistants. The functions performed in these positions are necessary whether the movie is being shot on film or in high-definition video.

However, several years ago, electronic cinematography pioneers found themselves needing someone on the set who understood the technical part of the video process. This position evolved into the Digital Imaging Technician (DIT), which formally became an International Cinematographer's Guild, IATSE Local 600, crew function.

AREA OF EXPERTISE

The actual duties of the DIT can depend greatly on the DP's technical acumen, said Jeff Cree, high definition video system market development manager at Band Pro Film & Digital and who has long been a technical consultant to filmmakers working with video.

"If you work with somebody that has a little better video background, they're very good at explaining what they want, and you just follow their suggestions," he said.

Dale Hunter, who has worked as a DIT for a number of years, put the opposite case a little more bluntly. "Older DPs tend to shy away from the electronics. It's like, 'that's your area, you take care of it.'

"Some of them are very into it... 'what can we do?', playing with knobs, buttons and so forth."

Most recently Hunter has worked as a DIT with Director and Cinematographer Robert Rodriguez on his "Spy Kids" movies, "Shark Boy and Lava Girl," and "Sin City."

Joshua Gollish, a DIT with the Canadian IATSE Local 669, sees his job as being an invisible enabler. "My role is to make transparent the transition to digital for filmmakers and the artists."

DITs must be versatile and knowledgeable enough to fill multiple roles.

Gollish, who sought out experts in the fledgling field in 2000 and 2001 as well as taking a five-week union class that covered both film and digital, said that only half of the job is technical.

"Ultimately there's a certain skill-set that cannot be trained, and it's part of the on-set etiquette," he said. It's not a matter of taking things back to the shop and fixing things, it's making sure things are working when it's time to shoot each scene.

"If you're always fixing something you're not doing your job, because it's not your job to show the maladies of the system on set."

That's not to say technical knowledge is unimportant. "We went over the cameras from the ground up, from the optical block to the end, which outputs SD-HDI, the electronics level, understanding the capacitors and circuits and all of that."

Gollish said in his experience there is some confusion, production-to-production, over who a DIT reports to and where they work.

"On the feature that I'm working on now, I'm in the sound truck, the engineering truck, because we have so much equipment on the camera truck I can't fit on it. But typically on TV shows I'm on the camera truck." Cree said he has found that individuals with years of background as video controllers on single and multi-camera video productions make some of the best DITs.

"They have a much better idea of the video flow, and as far as camera setup, where more and more of the DITs are being asked to do specialized looks, custom setups for the camera systems, and because of their background in video control, they seem to be better at accomplishing that. Their sense of color and how to get there."

He contrasted that knowledge with those who have only learned to set the camera up by the numbers. "If you just learn it by rote, that this cable needs to be hooked to there, and I put this number in the camera to give myself a basic look, that doesn't serve you quite as well.

"Many of the DITs vary what they do based on what their base knowledge is, and they stay within their comfort zone."

VANISHING BREED?

Neither Hunter nor Gollish believe the DIT position is long for this world. They point to changes in the technical acumen of the DPs and the simplification of new camera systems as the reasons the position will someday vanish.

"I think it's a temporary position," said Hunter, "meaning at some point in the future you're really not going to need a DIT because people will, as they get used to it, learn the technology, there's not going to be such a need for a person like that."

Gollish pointed to new equipment. "The camera department ultimately, in 10 years, will want a simple system, and that's what the manufacturers are drafting."

Where with the early HD cine equipment, the DIT needed to help paint the video during shooting, cameras like Grass Valley's Viper Filmstream capture the raw pixel output so that a colorist in post-production can manipulate the image.

One training program for the aspiring digital imaging technician is through the Santa Fe Workshop, which teaches digital cinematography workflow, technical processing, signal integrity and strategic thinking and familiarizes participants with HD tools from the latest cameras to specialized peripherals.

But as Cree noted, "There's no way that you can teach a DIT everything he needs to know in a five-day workshop." ■

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World Radio History

National Press Club Gets Digital Makeover

New facilities mean 'functionally, we can do anything'

by Sanjay Talwani

WASHINGTON

The National Press Club may be best known in television for its luncheons, where newsmakers wax ponderous on the events of the day. But beyond that podium seen as you surf past C-SPAN, the club hosts 2,000 events annually at its historic location just blocks from the White House.

That means a demanding clientele with world-class needs, so the venerable club has built an advanced format-friendly production center and studios that accommodate everyone else's equipment and can handle multiple projects simultaneously.

"What we created is basically a turnkey solution for events," said Howard Rothman, director of multimedia services for the Press Club. "It's a forum for people who have something to say."

"Functionally, we can do anything," he said

The National Press Club aired its first live production from its new Broadcast Operations Center in February.

Working with the club and the historic National Press Building's owners, Chuck Heffner, director of applications engineering for Professional Products Inc., based in Gaithersburg, Md., devised an infrastructure designed to deal with the varied equipment clients bring in. So from Betacam to DVCAM to DVDs, the club can handle most any format and transfer media from format to format, for air or archive.

"The amount of conversion that goes on between formats in the technical core is significant, and it's transparent," Heffner said. "It's designed to be efficient and flexible—which accommodates the operation's myriad requirements."

The club sends its productions directly to the networks and C-SPAN (with which it has an especially close relationship) and can also send media around the country and around the world for interactive productions (such as interviewing subjects in a remote studio) using fiber or satellite, and burn DVDs of the entire event for the client.

At the heart of the system is a Ross Synergy 2 standard definition digital video production switcher with internal DVEs and remote control of the routing switcher.

Audio is driven by an Allen and Heath 3800 series audio mixer and a Telos TWOx12 telephone hybrid audio console with four lines in and two discrete channels out for air or to the on-air talent over IFB. If someone's doing a show with a live feed from a studio in another part of the country, producers can send audio and video back there without them having to hear their own audio.

THE BACK ROOM

Two Clarity 46-inch LCD monitors each display up to 8 different SDI sources across their 1920x1080 screens. Heffner says advantages of the LCDs over CRTs were a one-day installation for LCDs (versus about a week for CRTs), plus the LCDs are cheaper, consume less power, and produce 30 percent less heat than CRTs. For any producer who wants to check the true CRT picture, one of the workstations does have a 17-inch unit. An Avid Deko 1000 two-channel editor handles the CG and graphics functions and enables fast edits and real-time effects.

An Avocent AMX 5000 KVM (keyboard, video, and mouse) switcher lets any workstation control any of the production system's computers, and thus many other functions from prompters to monitors. PPI first deployed such a system in its 2002 construction of WJLA, across the river in Roslyn, Va., Heffner said. There, engineers are 250 feet from their studio and can't be running back and forth all the time.

The fourth-floor broadcast operations center also has two studios, one of which can be split further in two, for a total of three.

Another nearby room holds a technical operations center with camera controls and shade functions and a manual quality control station where an operator can see all the facilities outputs and signals. The area also holds multiple VTRs of various types for dubbing, aided by two Snell & Wilcox TBS-180AV frame synchronizers, and an Evertz MSC5600 master reference and timecode generator.

The cost of high-quality conversion products has dropped significantly in recent years, Heffner said. "Basically it's garbage in, quality out."

The TOC is built around a Ross 64x64 NK series SDI and stereo analog audio routing switcher, and a Ross Geneos control system, as well as an Evertz 7707 series fiber transmission system.

The TOC also has an Avocent KVM user station that is connected to the Internet, so PPI can do some diagnostics from its Gaithersburg headquarters about 30 miles north of town.

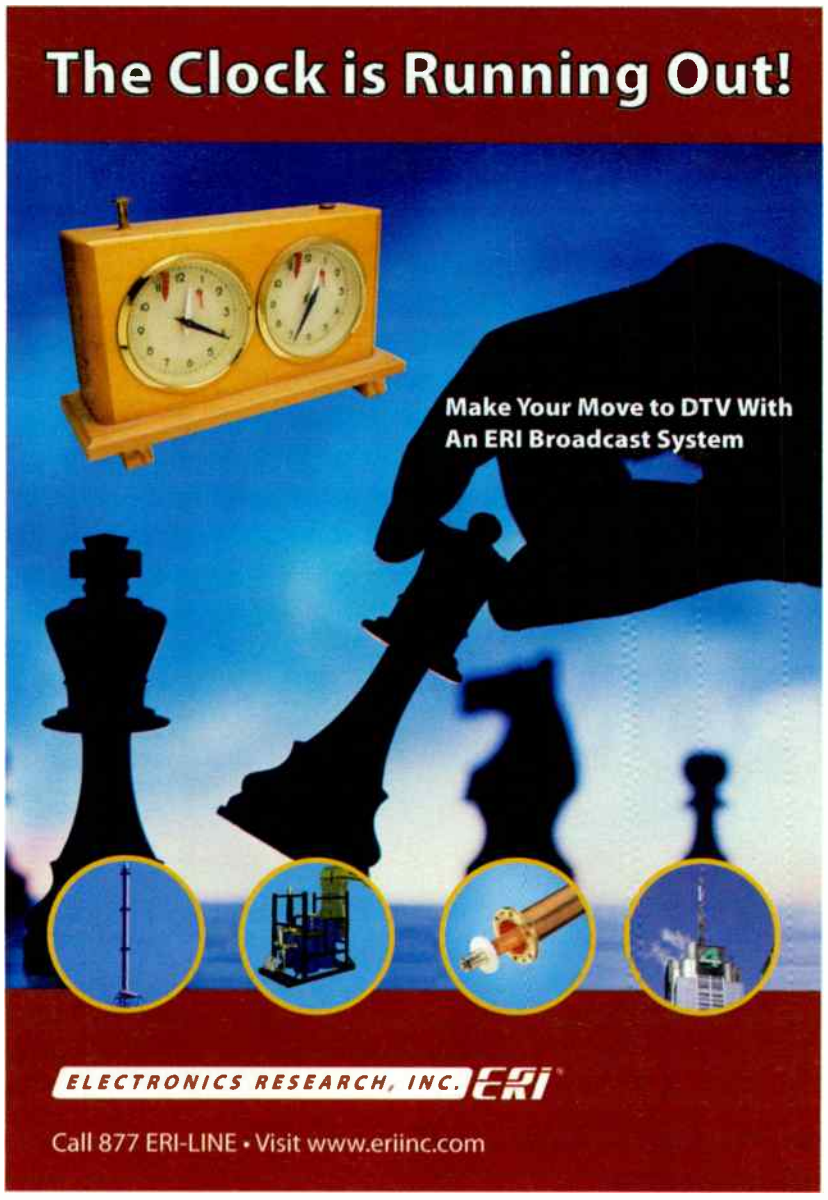
HOME FOR NEWSMAKERS

Visitors to the Press Club for its luncheons, press conferences, and special events tend to come to building's 13th floor. It takes over 500 feet of Triax to connect down to the fourth-floor studios and operations centers. The 10 large press conference rooms, the main luncheon hall, and the studios all have hard-wired junction boxes with multiple video, audio and Triax lines. Clients can bring in their own cameras and just plug in.

What's more, the cabling extends to the Marriott hotel next door, another site for high-level events with newsmaking bigwigs. Conference rooms in that luxury hotel are also hard-wired to the club, so people can plug their cameras in and send media to the club's BOC and off to the networks.

So far, says Rothman, response to the club's new facility has been "out of control." Eventually, the facility reconstruction will enter a second phase, with more edit bays, set storage for clients who want to hold regular weekly or monthly events, more archiving capacity with a searchable database of content, and other upgrades.

For clients, the Press Club now provides one-stop shopping for a newsmaker (or public relations outfit) to get the message out. Rothman notes that in previous eras, clients would have to bring in crews, then go to a studio to edit, and then send the media over satellite back to the network. Now, that's all in-house at the Club. ■



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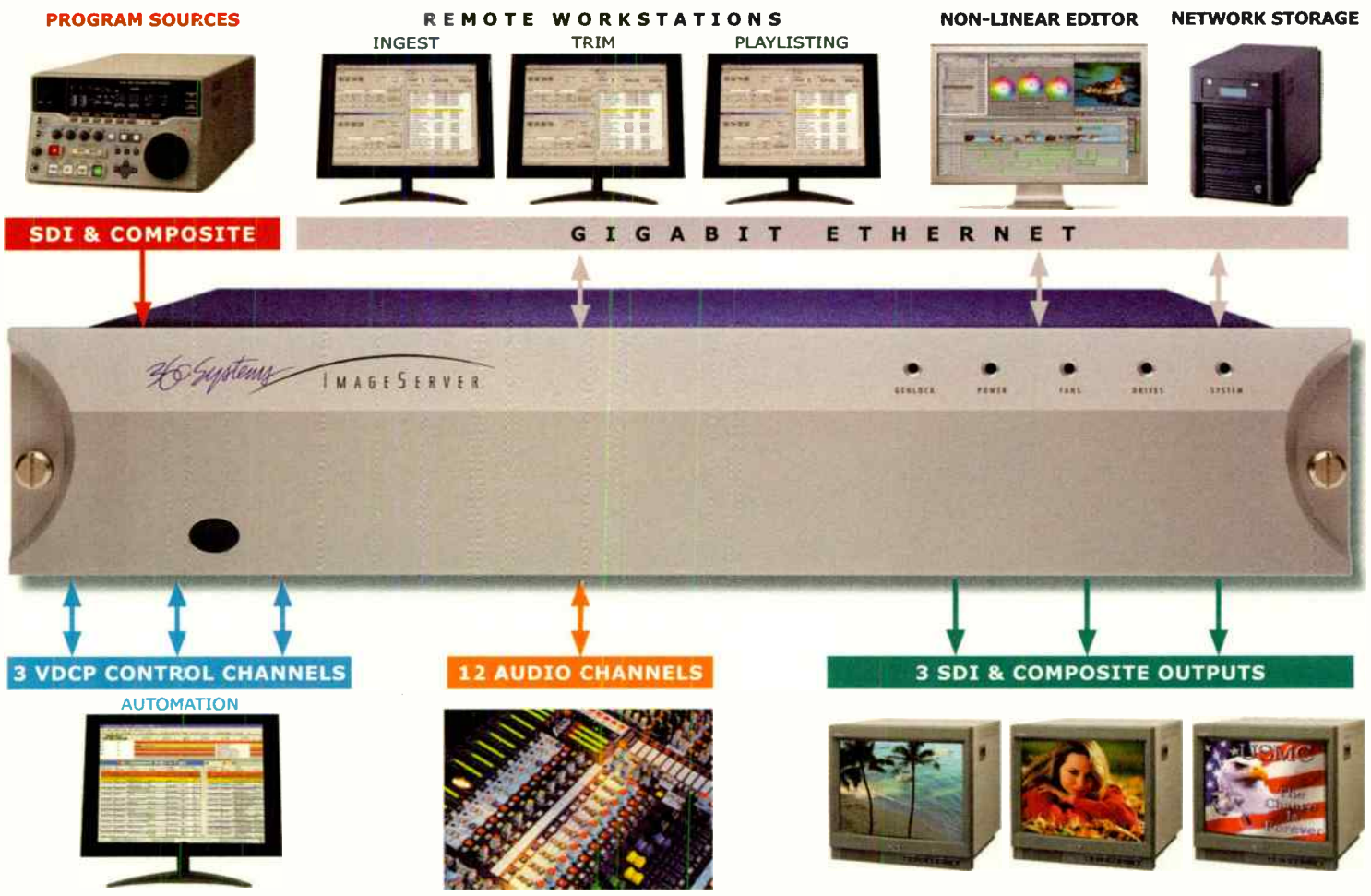

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World Radio History

Mitsubishi Touts Laser TV

New 1080p DLP aims for late 2007 debut

by John Merli

HUNTINGTON BEACH, CALIF.

It's hardly a compliment to be called a lightweight, except if you happen to be a 62-inch rear-projection 1080p laser TV.

Consumer electronics giant Mitsubishi now hopes to combine the inherently large size of a rear-projection unit into a sleeker, lighter-weight product and pack it with enough advanced technology to out-dazzle the rest of the HD pack, although consumers may have to wait a while to see this next-gen version of DLP for themselves.

Since last winter, Mitsubishi has been trickling out details of what it unofficially is calling "Laser TV," citing it as a breakthrough in existing DLP (digital light processing) that it believes will eventually move HDTV one step further to perfection cosmetically and technologically, through the use of colored lasers.

DLP, a registered trademark of Texas Instruments, traditionally uses white-light mercury bulbs. Mitsubishi's new system, instead, uses separate red, green and blue semiconductor lasers in combination with an HD chip, which those who have seen a real-world demo (mostly dealers and Mitsubishi employees) say provides richer and more complex colors and hues, and noticeably more distinct HD clarity and depth-of-field.

This is a non-working mock-up of a 62-inch 1080p "Laser TV" from Mitsubishi that could be on the market by late 2007.

Mitsubishi contends that lasers also prompt a more realistic manifestation of "black" than current DLP, plasma, LCD or CRT screens. Lasers purportedly shut off totally when not needed, frame-to-frame, creating a more natural blackness. (In contrast, today's DLP mercury bulbs do not completely blink off, according to Mit-subishi.) Today's DLP units without colored lasers already produce at least 16 million color variations, including 124,000 shades of gray, according to TI.

SOPHISTICATED LIGHT

The key component of non-laser DLP technology is an optical semiconductor (a Digital Micromirror Device or "DLP chip"), invented by TI nearly 20 years ago. It has called the chip "probably the world's most sophisticated light switch," with up to two-million hinge-mounted microscopic mirrors less than one-fifth the width of a human hair.

When the DLP chip is synchronized with a digital video signal, light source and projection lens, its flexible mirrors reflect digital images to a screen. The microscopic mirrors can reflex (blink on and off) a few thousand times per second. Much of TI's proprietary technology will be used with Mitsubishi's Laser TV, but source lighting from mercury bulbs will be replaced by the lasers.

It appears there is only one working Laser TV screen in existence for demo purposes for now; Mitsubishi is hesitant to show it off at trade shows because it still lacks suitable cabinetry and other non-technical aesthetics. A non-working cosmetic sample (see photo) of a 62-inch unit—along with the sole working screen demo—were featured at Mitsubishi's annual line show for dealers at its Huntington Beach, Calif., headquarters in April.

"We did display a working sample that was not in a finished cabinet [to] prove that we could produce a good HD picture in a finished cabinet using our laser technology," said Marty Zanfino, director of product development at Mitsubishi. Zanfino said the 62-inch diagonal screen will boast a depth of only about 10 inches and not require very much framing around the screen because advanced plastics will replace glass components in the rear projector, making the large unit lighter. (Plastics have replaced heavier glass casings in some current DLP products, as well.)

Consequently, he said, today's typical heavy-duty screen frames will not be necessary, and may be no wider than an eighth of an inch. The lighter overall weight will allow for a lower center of gravity; nearly the entire frontage can be devoted to screen surface. Thus, the Laser TV units will occupy a more compact footprint and allow sleeker cosmetic designs that could set the product apart from the rest.

But HDTV is usually about the picture—not weight or even design—and Mitsubishi is confident this is where Laser TV will excel.

"The color gamut is significantly larger because the lasers are so intense," Zanfino said. He compares its optimum video quality as being equal or superior to 35mm film. Zanfino said although prices will not be announced until the product is released, when asked, he acknowledged that Laser TV probably will start off somewhat higher-priced than today's DLP and plasma units: "We'll see, but lasers cost more than mercury bulbs."

DECISIONS, DECISIONS

Some of today's 62-inch DLPs from Toshiba and others start at about $3,500, including shipping. (Shipping weight for several current DLP units is nearly 150 pounds) Because they are rear-projection systems, DLP and "large screens" are usually synonymous. The new Laser TV units, too, are not expected to be smaller than perhaps 52 inches, although it's quite possible the majority of Laser TV units initially manufactured will be closer to 62 inches.

Although DLP is only one segment of the growing HDTV market, at least 75 manufacturers have shipped an estimated 10 million DLP units since 1996, according to TI. Considering the fact that Mitsubishi's Laser TV is on track to not reach retailers until late 2007, consumers who know that Laser TV is coming will have to decide whether to postpone their HD purchases at least a year-and-a-half and hope it's worth the wait. Yet once in the home, Laser TV may be around for awhile: Mitsubishi claims its colored lasers will last far longer than mercury bulbs.

Mitsubishi is betting its innovative Laser TV will add enough value for consumers to take notice with their eyes, and their wallets. ■

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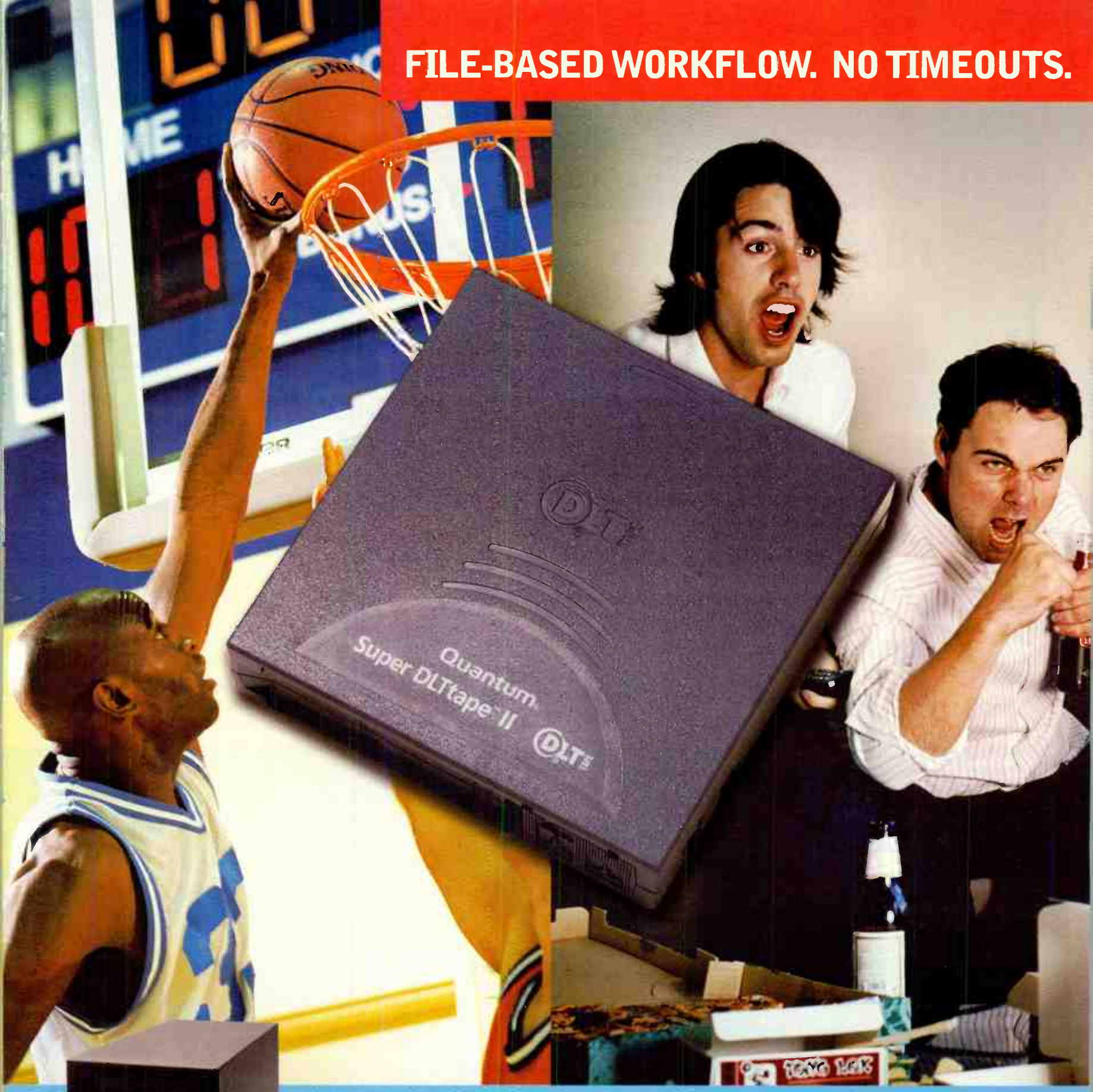

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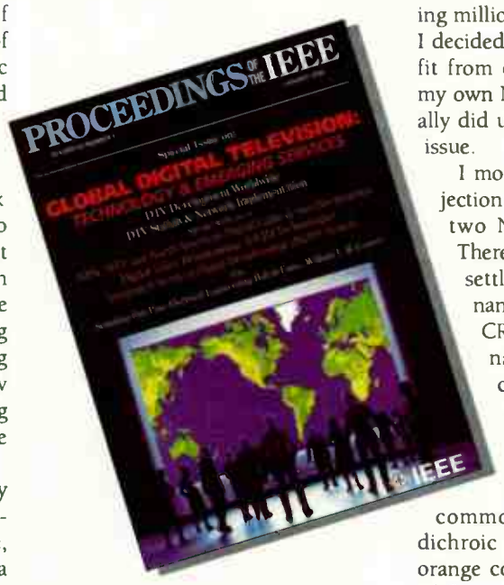
World Radio History

DIGITAL TV | Charles W. Rhodes

Television Reception History Repeats Itself

The January 1954 issue of "Proceedings of the Institute of Electrical and Electronic Engineers" was a *special issue* devoted entirely to the NTSC compatible color television system adopted by the FCC. At that time, it was considered a marvel of technology to pack red, green and blue video signals into a 6 MHz channel in such a way that the millions of TV receivers already in homes could continue to operate without any modification, rendering good picture quality while permitting broadcasting in glorious color to new receivers in the hands of "working millionaires" as Bob Hope once quipped.

I immediately purchased a copy for $10 and began to study this marvelous new technology. At that time, the price of this special issue was a strain on my budget so that buying one of these early NTSC receivers was out of the question. I wasn't a working millionaire, but I was working, so I decided that my career would benefit from designing and constructing my own NTSC receiver, which I actually did using the information in that issue.



IEEE's January issue on Digital TV is a keeper.

I modified my Emerson rear-projection TV console to accommodate two Norelco video projectors. There wasn't space for a third, so I settled on displaying the luminance signal on both projection CRTs while feeding the chrominance signal to a push-pull chroma demodulator and recovering the I component. The +I chroma went to the grid of one CRT, the –I signal to the other. In the common light path I mounted a dichroic mirror which reflected the orange colored Y+I modulated light, while it transmitted the Y-I blue modulated light.

Both images arrived at the screen and were laboriously registered. I couldn't reproduce pure red, green or blue, but on the other hand, flesh tones looked natural, and there were no green or purple people on my screen. This project may have lead to my being hired by Tektronix and what followed was a wonderful career building instrumentation for NTSC, PAL, PAL-M (Brazil) and SECAM applications.

SEQUEL PUBLISHED

Now, 52 years later, the IEEE has published its sequel in the same publication. This is the January, 2006 Special Issue on "Global Digital Television: Technology & Emerging Services." This issue covers not only the ATSC DTV system but the European and Japanese DTV systems, DVB-T and ISDB-T, as well. I urge my readers to order a copy of "Proceedings of the IEEE," volume 94, number 1, for January 2006. If you don't have the January 1954 special issue, you can probably obtain one over the Internet. I still have mine. It jump-started my career.

I immediately turned to the paper on DTV receiver implementation beginning on page 119 by several well-known authors. I was pleased to see DTV receiver performance dis-

HISTORY, PAGE 22

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World Radio History

INSIDE BROADBAND — Will Workman

Senate Looks to Rewrite Telcommunications Act

Suddenly noticing that the United States ranks 16th internationally in broadband adoption, federal lawmakers are finally taking a serious step toward updating the creaky Telecommunications Act of 1996.

Whether this amounts to a step forward, backward, into a wall or down a deep hole is still unclear. The only certainty is that it'll be at least another year before we see a new law.

A series of recent legislative moves has culminated in the release of a massive Senate draft bill that represents an amalgamation of previous bills, updating laws covering everything from video to satellite to broadband communications. It immediately became the flash point for a roiling rift between those for and against the issue of net neutrality, as well as a range of other contentious concerns including municipal Wi-Fi, digital broadcast video piracy, Universal Service Fund reform, and the role of the FCC.

Dubbed the Communications, Consumer's Choice and Broadband Deployment Act, the bill was reported out of the Senate Commerce Committee, headed by Ted Stevens (R-Alaska), indicating it will likely become the foundation for a final compromise with any House version that emerges.

The frisson generated by the bill arises out of its proposed broadband landscape rearrangement in the middle of the political season.

There's clear polarizing on net neutrality. On one side are Democrats following the cue of a newly formed "Save the Internet" coalition, which includes the gamut of freedom-loving groups, representing everyone from librarians to gun owners, as well as heavy net content hitters like Google and Amazon.

They argue for strong language barring network operators from exercising newly developed flow controls to offer bandwidth preference to some content (i.e. those willing to pay) over others.

They are currently being steamrollered by Senate Republicans led by Stevens, whose Senate Commerce Committee reported the bill. The GOP counterargument is that the Dems are just a gaggle of Chicken Littles, squawking about a problem that hasn't yet happened while hindering what's simply good business.

Lining their pockets are telco and cable operators—hardly public darlings. Their reasoning goes: we built it; we own it; we should be allowed to grant special status to content as we see fit.

LIFE IN THE FAST LANE

OK, so it's not that simple. A content provider that, say, offers movie downloads certainly falls into the bandwidth hog category, and it seems quite reasonable to allow operators to guard against network degradation. After all, high-bandwidth broadband services need to be economically viable, telco and cable execs argue.

As much heat as this bill has generated, it's not going anywhere anytime soon.

But what if you're a VoIP Vonage subscriber, and your cable operator gives preference to its own VoIP service, allowing yours to degrade?

The Internet-huggers say that's one of their biggest worries. Invoking the public interest model, Rep. Ed Markey, a Massachusetts Democrat, warned that no net neutrality "would break with the entire history of the Internet." No Chicken Little there (and maybe he should check his facts with Al Gore).

Markey's attempt to tack on protective language was shot down in the days leading up to the Senate bill's release, by Republicans arguing that such measures were too premature.

And though the FCC last year released a set of "principles" relating to net neutrality, the bill does not grant the FCC any specific enforcement power—another area sure to be fought over.

Net neutrality may not be the only potential bill-killer.

This bill in one fell swoop would eliminate the raft of unfair state laws (greased with cable and telco money) banning low-cost or free municipal Wi-Fi networks. Some language will still protect private operators by requiring open bidding for public network contracts, but you can be sure money will be spent to overturn this section.

Less controversial is a section turning the FCC loose on digital video satellite and over-the-air radio receivers allowing users to digitally record (i.e. pirate) signals. New receivers would not be able to copy any flagged signal. Bill language, however, does allow for home-network sharing of digitally recorded broadcasts.

Other clauses that should garner bipartisan support: a revamp of the Universal Service Fund that would set up an account stimulating broadband service for "unserved areas," and a freeing of unused analog broadcast TV spectrum by 2009.

I'M JUST A BILL

As much heat as this bill has generated, it's not going anywhere anytime soon. With November looming, both sides are taking the pulse of voters to see if there's any traction on any of these issues.

In the last go-round a decade ago, the initial draft bill took nearly two years to become the Telecommunications Act of 1996. Back then, lawmakers such as bill proponent James Exon (D-Neb.) vowed that the "information superhighway" would not turn into a "red light district," and promised the bill would "help protect children from being exposed to obscene, lewd, or indecent messages."

MySpace was just a pipe dream back then; now it's reality—a child predator paradise, according to overblown media accounts.

Politicians this time around had best refrain from oversimplifications, and voters need to wise up as well. No law can "fix" the problems of the Internet.

What a good law *can* do is create a clear, level playing field that fosters real competition, looks ahead far enough to leave new technology development paths open, and gives true enforcement powers to the FCC.

Then, maybe, we might move up the broadband deployment charts instead of down.

Will Workman is a former editor of telco industry publications. He is now working on his PhD in mass communications. He can be reached care of ***TV Technology****.*

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World Radio History

AUDIO BY DESIGN | Mary C. Gruszka

Understanding Mic Specs: Part 3, Sensitivity

Let's look at one more microphone specification—sensitivity. Sensitivity tells us how much open-circuit (unloaded) voltage the microphone will produce under a specified (acoustic) sound pressure level presented at the diaphragm of the mic. The frequency of the test signal is 1000 Hz.

A condenser mic, because of its internal pre-amplifier, will generally provide a greater output than a dynamic mic, for the same sound pressure level.

In the past two parts of this series on microphone specifications we used two example mics, and will continue with them here.

Example Mic 1, a supercardioid dynamic used for vocals is rated at –51.5 dBV/Pa (2.6 mV). Mic 2, a cardioid condenser mic designed, according to its manufacturer, more for instrument pickup, vocals, and choral groups, has a sensitivity spec of –41 dBV/Pa. This calculates to just under 10 mV/Pa. (dBV means decibels referenced to 1 Volt.)

The reference sound pressure level (SPL or Lp) is one Pascal (Pa), which is the same as an Lp of 94 dB (or what we used to call 94 dB-SPL). Be careful in noting the reference level in comparing mic specs, especially those from older mics. Older sensitivity specs often used 74 dB-SPL as a reference.

The inverse square law says that for every doubling of distance from the mic, the level will drop 6 dB.

An Lp of 94 dB is the level of someone whispering very close to your ear, according to consultant and microphone and loudspeaker expert, John Eargle.

The sensitivity rating of –51.5 dBV/Pa of the dynamic mic (Mic 1) indicates that it is a good choice for a strong vocalist holding the mic very close to his or her mouth. (I mean "strong" in terms of vocal abilities; the mic isn't that heavy to hold.) This mic has a steel meshed windscreen dome, which keeps the vocalist's mouth, at a minimum, one inch from the diaphragm.

But how do we know that? Let's look at some calculations using the sensitivity number.

INVERSE SQUARE LAW

Let's assume that at one inch from the diaphragm we are in the free field of the mic where the inverse square law starts to apply. The inverse square law says that for every doubling of distance from the mic, the level will drop 6 dB. (The farther away we are from the mic, the better inverse square law applies.)

Let's make another assumption that with an Lp of 94 dB applied at one inch from the diaphragm, the output level of the mic is –50 dBV. (In the near field, very close to the diaphragm, is an indeterminate zone where the inverse square law does not apply, but selecting –50 dBV at one inch away for a mic with a sensitivity of –51.5 dBV/Pa is not an unreasonable assumption. It will also serve to make our calculations easier.)

Let's say our singer is producing a sound pressure level in the mid-frequency range of 114 dB at one inch from the diaphragm.

What is the output voltage from the mic? Remember that an Lp of 94 dB produced an output of –50 dBV. An Lp that is 20 dB higher will then produce an output that is also 20 dB higher, or in our example, –30 dBV. If this same singer keeps producing this same sound pressure level, but moves back two inches from the diaphragm of the mic (doubling the distance), the output will drop about 6 dB to –36 dBV.

Move back to four inches from the diaphragm (another doubling of distance), and the output from the mic will drop another 6 dB to –42 dBV. Move back another doubling of distance to eight inches, and the output from the mic will now be –48 dBV. (See Table 1.) Table 1 also calculates the output level of Mic 2 with the singer at varying distances from the mic.

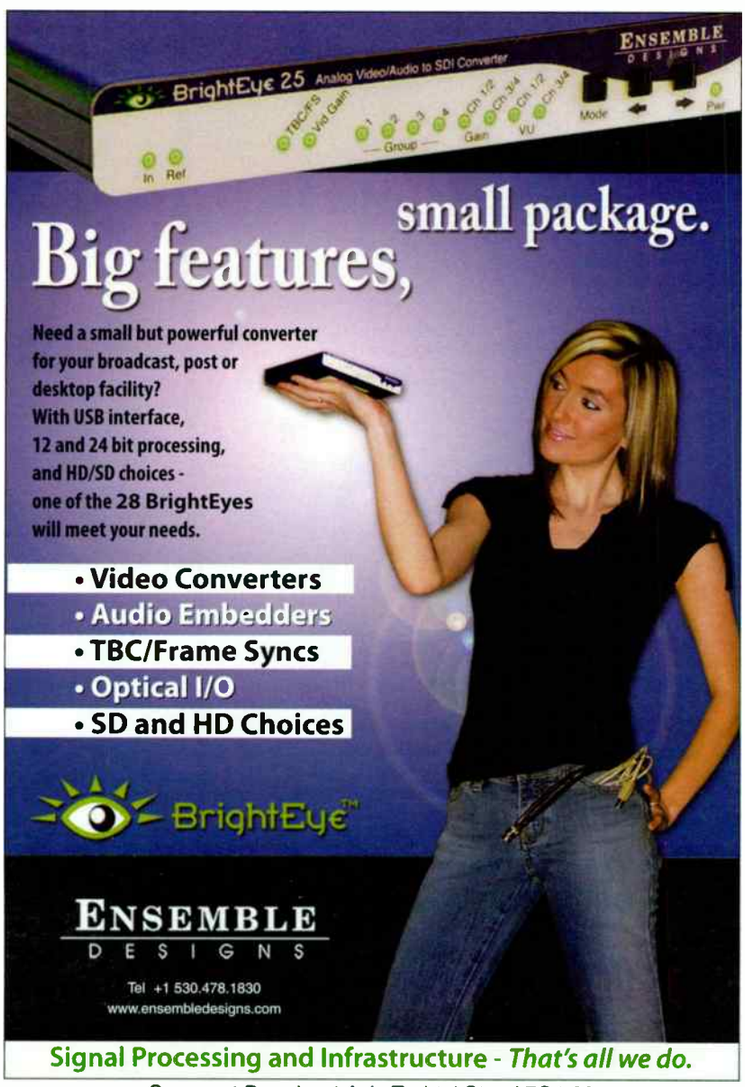
Most audio consoles will provide at least the needed 50 dB of gain for Mic 1 to be "worked" at eight inches. But not all. To save on costs, some boards designed for rock bands don't provide a lot of mic preamp gain.

If an audio console only provided at most 40 dB of mic preamp gain, a singer would have to be no further than about three inches from the diaphragm of Mic 1, or about 2 inches from the top of the windscreen. Otherwise the audio console would not have enough preamp gain to bring up the mic level to the nominal line operating level. As the singer gets farther and farther from the mic the drop in level becomes very apparent.

WHEN IN DOUBT...

It's a good idea to read through any user or application guide that the microphone manufacturer supplies. For Mic 1, its application guide suggests using it with "lips less than 6 inches away or touching the windscreen, on axis to microphone." In this situation this mic produces a "robust sound, emphasized bass, and maximum isolation from other sources." This corresponds with the sensitivity specs we looked at here, as well as the polar and frequency responses we looked at in previous columns.

Mic 2, which is "hotter" (has greater sensitivity) can be placed eight inches or a little more away from the sound source in our example and still have enough level to be used with this particular audio console with a maximum of 40 dB of mic preamp gain. The application guide for Mic 2 gives a variety of uses



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including close mic'ing of acoustic instruments and electric guitar amplifiers. This mic can also be used at a greater distance from the sound source—above drums and percussion kits and for orchestras, choirs and wind ensembles. Again the specs themselves provide a good indication of these uses.

When using hotter mics, note at what level the mic input to the audio console overloads. Especially in close mic'ing situations, mics like Mic 2 may actually provide a higher level than the mic input can handle before it distorts. That's why these types of mics often have a built-in attenuator to lower the output. Mic 2 has a switch to insert a 15 dB attenuator.

Distance from mic diaphragm. (Vocalist produces an Lp of 114 dB one-inch from diaphragm, then maintaining that same level, moves away from the mic diaphragm to the indicated distances.)	Corresponding microphone output (Mic 1)	Corresponding microphone output (Mic 2)
1 inch	–30 dBV	–20 dBV
2 inches	–36 dBV	–26 dBV
4 inches	–42 dBV	–32 dBV
8 inches	–48 dBV	–38 dBV

Table 1: Output level of example Mic 1 and Mic 2 with a vocalist at varying distances from the mic diaphragm.

Distance from mic diaphragm. (Talker produces an Lp of 104 dB one-inch from diaphragm, then maintaining that same level, moves away from the mic diaphragm to the indicated distances.)	Corresponding microphone output (Mic 1)	Corresponding microphone output (Mic 2)
1 inch	–40 dBV	–30 dBV
2 inches	–46 dBV	–36 dBV
4 inches	–52 dBV	–42 dBV
8 inches	–58 dBV	–48 dBV
16 inches	–64 dBV	–54 dBV

Table 2: Output level of example Mic 1 and Mic 2 with a talker at varying distances from the mic diaphragm.

Now let's see what would happen if this mic was used by a talker who wasn't particularly trained in giving speeches, and is using this mic on a podium, where it's 16 inches from his mouth. Let's assume that this person produces an Lp of 104 dB one inch from the mic diaphragm. See Table 2 for the mic output levels with the talker at varying distances from the mic diaphragm.

Right away we see that, if we use Mic 1 for this talker, we will need an audio mixer with over 60 dB of mic preamp gain. Audio consoles with 60 dB or even more mic preamp gain used to be very common (almost standard one could say) for broadcast applications. But with broadcasters using audio consoles designed for different markets such as sound reinforcement or home studio recording, that's not always the case anymore.

So pay close attention to how much gain is available in your mic preamps (outboard or within the audio mixer/console) and how much you will need for your chosen mic used at a certain distance from a sound source emitting a certain level. The mixer with 40 dB of mic preamp gain would probably be good enough for mixing a rock band, but probably not suitable for mixing voice-overs.

If you need to place a mic at a distance from a sound source, you will need one with higher sensitivity to get enough output level.

There are some other issues in using cardioid or supercardioid mics at a distance from the talker. In a previous column, we noted that the farther away the talker is from the mic, the less low frequency response the mic will have. If these mics were used at a distance of 16 inches, as in our example, the talker would no longer have the same full-bodied sound he would have if he were closer to the mic.

If this podium setup were also used for sound reinforcement, care would have to be taken to place the loudspeakers far enough away from the mic to obtain enough gain before feedback.

Knowing and understanding these and other mic specifications can open the way for more creative microphone applications.

Next time you watch the president of the United States make a speech on one of his travels, take a look at the mic setup. On the podium are two Shure SM57 cardioid dynamic microphones.

These mics are very commonly used for drums, guitars, guitar amps and other instruments, and often vocals. But with a sensitivity spec of –54.5 dBV/Pa (1.9 mV), we would expect them to be used in more close-up applications, not at about 18 inches from the president's mouth.

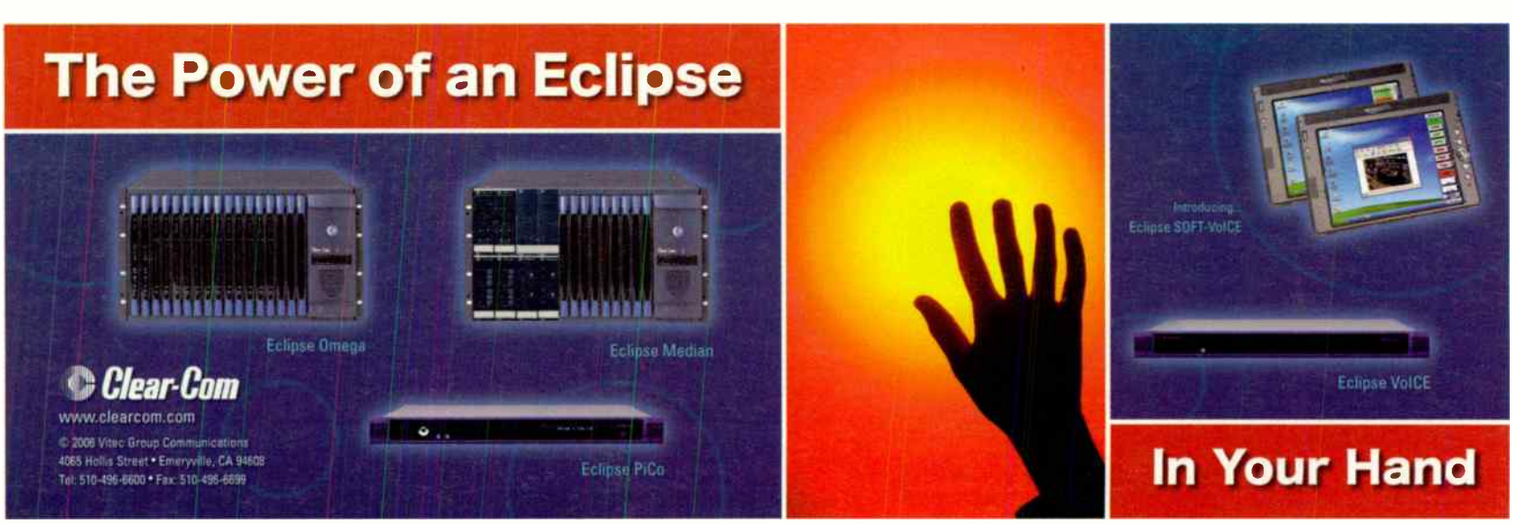
So why the SM57? Because they are rugged, says Michael Pettersen, director of applications engineering at Shure. They work in extremes of temperature and humidity and can withstand vibration. After flying in the cargo hold of Air Force One, they can be immediately set up and working. You can't say that about condenser mics, even though they have the advantage of higher outputs.

But what about the low sensitivity? The White House Communications Agency takes that into account by using an audio mixer with very high-gain mic preamps. They also place the loudspeakers far enough away from the mics so they can get good gain before feedback. The president, being a practiced speaker, can project his voice, so that too helps with getting a good level.

In addition, only one of the mics is sent to the sound reinforcement system to avoid the phase cancellations that would occur if the two were mixed (the other is used for recording), but they can be swapped if one should fail.

There's a treasure trove of information in good microphone specifications. Studying them and then experimenting with the mics themselves can provide a wonderful education in microphone usage.

Mary C. Gruszka is a systems design engineer, project manager, consultant and writer based in the New York metro area. She can be reached via ***TV Technology****.*



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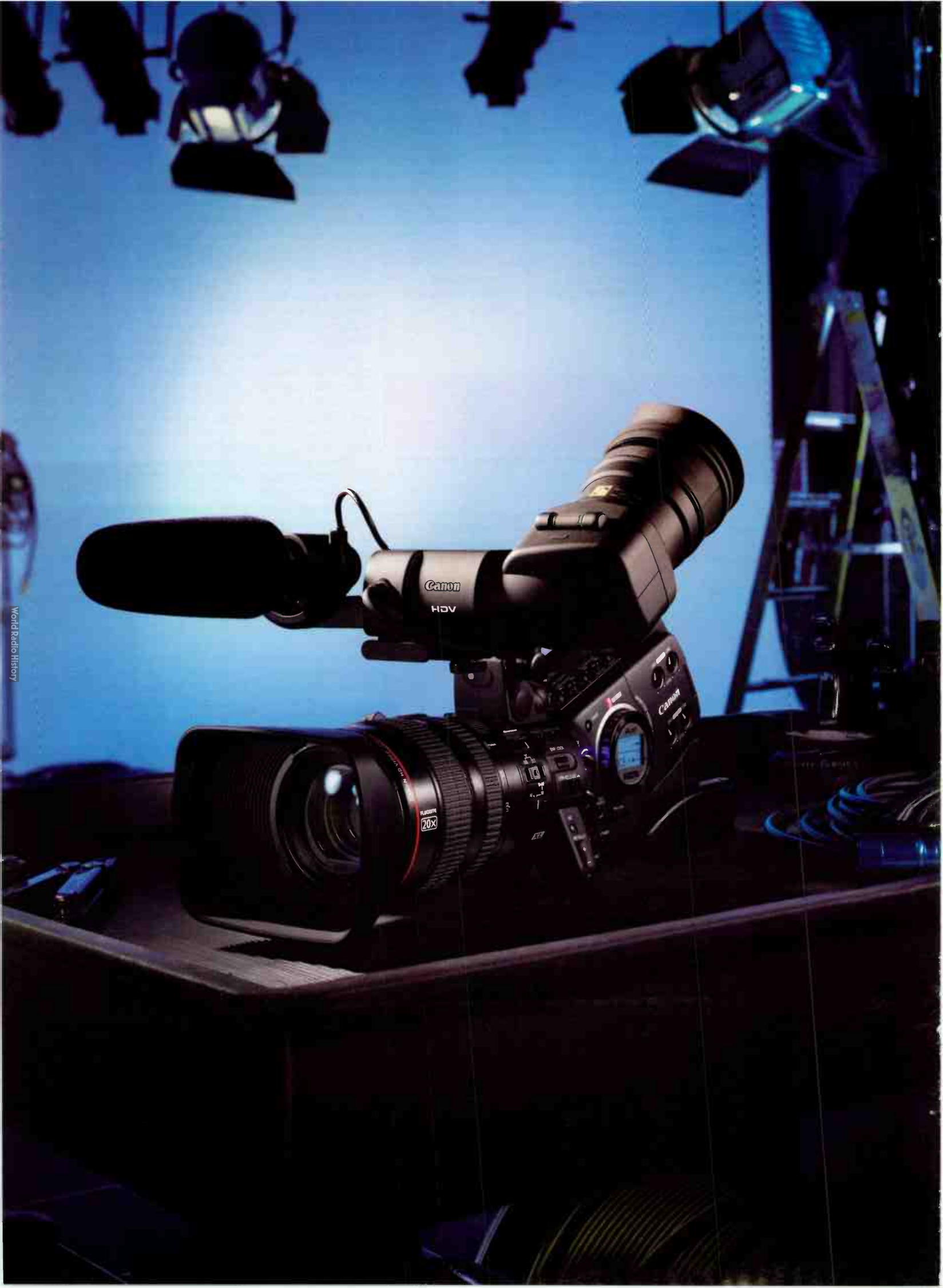

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Trends

CONTINUED FROM PAGE 1

tion driver, and Sony set a new benchmark for cameras capable of both slo-mo and regular game coverage with its 3-times slow motion HDC-3300 camera system.

On the outer-edge of such slow-motion imaging is Vision Research's phantom HD, featuring a single CMOS imager that can capture high-definition video at up to 1,000 fps for up to one second.

In a world where smaller is better, Iconix introduced a roughly 1.5-inch by 1.5 inch by 2-inch 3-CCD high-definition camera. It weighs 2.5-ounces and takes 1/3-inch C-mount lenses.

ENG RECORDING

There seemed to be no clear winner in the ENG camcorder three-way race between recording to optical disks, solid-state media or removable hard drives. All three technologies are continuing to make sales.

Panasonic now faces more competition in the solid-state recording camp from Grass Valley's Infinity Series camcorders. These record directly onto non-proprietary, readily available Compact Flash memory cards. Media costs had been viewed as a barrier to solid state acquisition.

HDV is racing ahead. While it seems like we first heard about the HDV format just a year or so ago, JVC showed a second generation of HDV camcorders, imaging with 720/60p capability.

Panasonic did not step into HDV, and took every opportunity to remind buyers that its DVCPRO HD recording format compresses each frame's information separately, rather than the interframe compression utilized by the competition.

One of the formats that Grass Valley's Infinity cameras can record in is JPEG 2000, a wavelet codec. Red Digital Cinema and Silicon Imaging also introduced high-definition wavelet recording technology aimed at the electronic cinematography market.

AUTOMATION SOLUTIONS

Workflow continued to be a catch phrase of those proffering devices designed to let stations do more with less. Typical was Omnibus' ITX master control automation system, where instead of plugging together physical peripheral devices such as switchers, routers, CGs, servers and the like, they're all included in the Windows-based software.

Convention attendees from small and mid-sized markets found their automation requirements being addressed as well, with products such as Sundance Digital's FlexEvents. This package helps organize all of the secondary graphic events touting upcoming shows, news flashes and so forth.

For video productions requiring collaboration, Avid introduced Interplay, which connects editors using the company's Media Composer systems to asset management, workflow automation and security control.

In display devices, Panasonic definitely had a showstopper with its 103-inch plasma flat screen home-theater monitor, but video professionals could look at an anecdotal indicator of the progress of professional grade LCD flat screen displays.

In years past, camera makers have shied away from using LCD panels to display the output of cameras in their booths, as the slower LCD refresh rate yielded to strobing when cameras were quickly panned. This NAB saw more cameras outputting to LCD monitors in those booths, an indication we may finally see flat screens that out perform evaluation-grade CRTs.

The concept of a television station as an IT facility that just happens to do video was backed by a slew of networking tools designed to distribute video and audio over IP networks.

And it wasn't just IP at the video facility. IPTV World was a new addition to this NAB, in recognition that IPTV networks are already being built as competitors to cable and satellite delivery to the home.

One sign this is all happening now was the fact that Microsoft's not-all-that-small booth was still doing shoulder-to-shoulder business on Thursday afternoon, as the exhibition hall was ready to close its doors.

WEB AND MOBILE TV

Broadcasters are getting serious in their quests for new revenue streams through mobile TV. NAB hosted a Web and Mobile Development Conference aimed at content creation, and a Mobile Video and TV Forum that concentrated on how to make money from it.

You know that Broadcasters (and in particular, manufacturers) are taking mobile TV seriously when broadcast equipment powerhouse Harris introduced a new TV transmitter platform specifically designed for broadcasting to mobile devices. Likewise, one of the drivers behind Grass Valley's acquisition of Thales last year was to gain access to its IPTV solutions, and in particular, its transmitters, which will be used by Qualcomm's MediaFLO, in a deal that was announced shortly after the show. Rohde & Schwartz announced a similar partnership, providing its test and measurement gear to monitor the quality signal of MediaFLO.

Other real world products aimed at mobile TV were at the show, including Vizrt's Viz|3G, which allows content providers to deliver its graphics to any device designed to receive multimedia. Viz|3G lets the designer design content once, and graphics are rendered locally in a resolution that fits each display device.

With technology somewhat along the same lines, Snell & Wilcox showcased Helios, a new a software-based video content repurposing platform that turns video content into a high-quality, low-bit-rate video stream for mobile TV appliances.

While IPTV and Mobile TV are designed to let large operators deliver content, as broadband to the home becomes the rule not the exception, there were predictions that Internet TV will allow content providers to make an end-run around media gatekeepers and deliver their productions directly to viewers.

Audio may be getting an upgrade as well. With home theaters offering not just large screen viewing but sophisticated surround audio, NAB hosted the 5.1 Pro Audio Pavilion, a one-stop-shop for engineers wanting to bone up on producing 5.1 surround sound.

Producing newscasts in 5.1 is certainly some years off, but Holophone showed its H3-D Microphone that can provide high-quality stereo sound to an ENG camera's audio tracks now, but at the same time embed 5.1 audio so that when archive material is used 10 years from now, there'll be surround sound available.

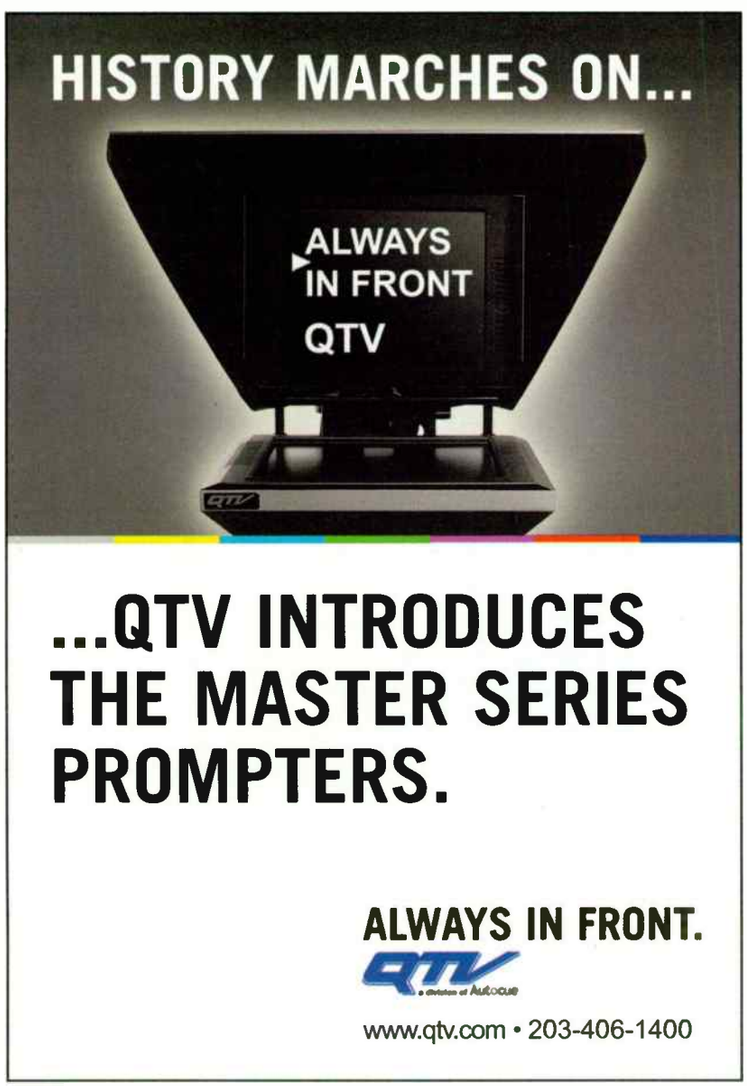
DISASTER PREPAREDNESS

Disaster operations, with Hurricane Katrina as the centerpiece, were on many minds at NAB. The RTNDA ran a session in which local New Orleans news executives related harrowing happenings and some lessons learned.

On the technical side, group-owned stations in the path of Katrina found they could move their master control operations to sister stations safe distances away. Networking tools have now appeared to better allow this "forced central casting" to save the bacon.

Another approach to staying on the air during a disaster was the MCR200 "master control room in a box" from Venue Services Group. It's a rollaway shipping-cased rack with all the equipment a station would need to set up shop in a safe place and ride out the storm.

Natural disasters weren't the only kinds of devastating events that vendors offered survival from. Storage failure protection was also on the list. RAID protection may be a thing of the past if Omneon's MediaGrid scalable storage technology catches on, with its ability to recover files lost in a node failure much faster than with RAID. ■



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NAB 2006 PRODUCT REVIEW

Cameras

by Craig Johnston

High-definition cameras, big and small, made their debut at the 2006 NAB.

At the golly-gee-whiz end of the spectrum, NHK demonstrated ultra high-definition TV, with 16 times the resolution of "standard" HDTV. While NHK estimates consumer viewing of such images to be 20 or more years off, there was plenty of here-and-now HD to see.

Canon made a number of announcements about the XL H1 HD camcorder, including support from Adobe, Avid, Canopus, CineForm, Focus Enhancements and Miranda.

The company also showed PC-based console software, which creates a CCU for the XL H1. Swapping set-up information from one PC to another allows balancing of multiple XL H1s for multi-camera shoots.

Grass Valley blazed the way in solid-state camcorder field recording technology, with its Infinity Series digital media camcorder, which records to both CompactFlash media and removable hard drive, the Iomega REV PRO.

The company also showed an HD Wireless Camera System for Grass Valley HD cameras that allows untethered movement of portable cameras for spread-out sporting and other events.

Grass Valley, which designed its HD OB cameras to work over triax, unveiled its Mixed Operation Box (MOBox) to allow the use of fiber-optic cabling. MOBox works in conjunction with a companion compact base station in the truck, interfacing with three cameras in 2 RU of space.

The company also premiered its Extended Range Triax Adaptor, a new version of the HD triax adaptor. This technology extends the operating range of a camera from 3,300 to 5,000 feet.

Photo: Bob Kovacs

Freelance cameraman Mark Haleston takes a closer look at the Grass Valley LDK6000 HD wireless camera.

Hitachi debuted the HD two-piece, compact, DK-H31S HDTV camera, designed for high-end surveillance, robotic studio and sports applications. It is available in either 1080i or 720p.

The company also added functionality to its previously shown Z-DR1 dockable tapeless recorder by unveiling four, eight and 16 GB solid-state

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Go Native with 1920 x 1080

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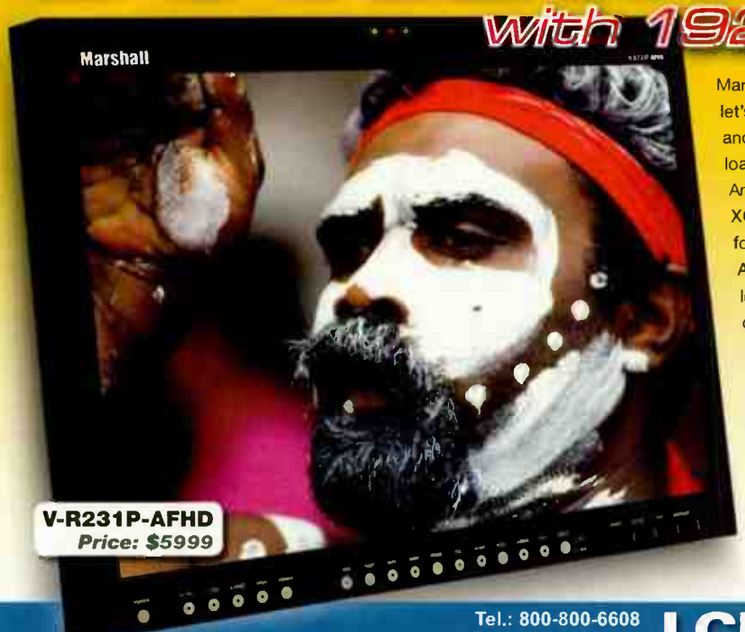

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Lenses

by Craig Johnston

The trend in new lenses at this year's NAB was towards wider-angle coverage and slightly lower prices. Attention was clearly paid to HDV camcorders as well.

LENSES

ARRI introduced a new line of five Ultra 16 lenses to accompany the company's new ARRIFLEX 16 Super 16 film camera. The lenses range in focal length from 6mm to 14mm and are treated with ARRI's T*XP coating for resistance to flare and ghosting.

Canon Broadcast & Communications unveiled a new line of economical HD optics, dubbed the HDgc (general class) family of lenses. Specially engineered for tapeless HD camcorders, the HDgc line features Canon's best optical features and digital operational tools, including Shuttle Shot, Framing Preset and Speed Preset. HDgc lenses include the KH21ex5.7 IRSE telephoto, the KH10ex3.6 IRSE wide-angle, the more economical KH20x6.4 KRS (1/2-inch HD CCD) and the KJ20x8.5B KRS (2/3-inch HD CCD).

Canon also introduced the HJ18ex28B IASE Super Telephoto HD lens, a portable lens with a focal-length range of 28 to 500 mm (to 1,000 mm with built-in 2X extender).

Photo: Bob Kovacs

Michael Limon of Limon Video Rental tries out the new Fujinon HA16x6.3BERM HD ENG lens on the Fujinon camera set.

Photo: Bob Kovacs

Ron Veto of The Slider (L) discusses features of the Canon HDGC 21x lens with Dayana Villagomez of Canon.

Carl Zeiss, shown in the **Band Pro** booth, presented its new 17-112mm T1.9 Telephoto DigiZoom lens, designed for digital cinema and other high-end high-definition video applications. The 6.5x lens shares many features with the Zeiss DigiPrime family of lenses.

Fujinon introduced three new lenses for Sony's XDCAM HD camcorders. These 1/2-inch lenses offer users a choice in focal length and price. The HS16x4.6ERM is a high-quality, high-zoom ratio, wide-angle lens with 2x extender; the XS13x3.3RM is a super wide-angle lens; and the XS17x5.5RM is a more cost-effective standard focal-length lens with high magnification.

Fujinon also debuted the HA27x6.5ESM HD studio lens, featuring the highest magnification (27X) and the widest angle (6.5mm) currently available on the market. The company also announced the XA66x9 HD box-style lens to fill a gap in the range of HD lenses designed for sporting and other venue events.

Innovision Optics introduced the HD Mini Probe, designed especially for the Panasonic AG-HVX200 and DVX100/B, Sony HVR-Z1U and HDR-FX1, and similar DV camcorders with non-removable lenses. The Mini Probe's periscope attachment lets operators shoot from an ultra-low perspective.

P+S Technik presented Skater Scope, a compact snorkel lens system, which can be tilted up or down 105 degrees, and pivoted a full 360

LENSES, PAGE 56

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Camera Support

by Craig Johnston

Attendees looking for new technologies in camera support saw a number of developments, with more and more equipment for HDV camcorders, voice-recognition and wireless teleprompting, huge cranes and some interesting moves in robotics.

ROBOTICS

Cambotics showcased its robotic camera system, featuring the 700XY Robotic Pedestal with optical targeting navigation. An optional 700LX system allows local, servo-assisted manual control of the camera.

The company also showed the 700UI user interface, incorporating joysticks, focus knob and touch-screen for setting up shots.

Frezzi featured its modular Total Control Robotic Pan & Tilt Camera System, designed for easy transport and quick set-up. The pan-and-tilt head supports up to 15 pounds, and the control system is designed to store as many as 255 different shots per camera. Frezzi's control system interfaces with the Cambotics line of robotic pan/tilt heads. Frezzi also showed its Stablecam support and power system.

Fuji Television showed off its S-Dash Super High Speed Robotic Pan/Tilt head system, designed to be operated either from a joystick or a pan-bar assembly. It is capable of pan-and-tilt velocity of 360 degrees per second.

Media3 Ltd. debuted its "Technology To Go Live," a transportable version of its BureauCam remote live shot system. Designed for use by non-technical personnel, "Technology To Go" features a touch-screen interface and precision robotic camera positioning control.

Photo: Bob Kovalls

Terry Steyn of the DV Shop demos the Frezzi Stablecam camera support and power system.

Shotoku Broadcast Systems updated its robotic pan-and-tilt line with the production model of the TG-19, supporting a maximum payload of 154 pounds, and putting the electronics of its TG-17C head, including pan, tilt and lens functions, inside the head itself.

The company also added the TI-12 "I-Height" pedestal, without X-Y tracking, and the TR8B robotic control system, designed as full-featured but simple to operate.

Photo: Bob Kovacs

Tony Iwamoto of Shotoku (R) uses a Shotoku TP-90 pedestal and TE-23 pan-tilt head to point a camera at Mai Takahashi, a freelance reporter from Japan.

Telemetrics unveiled its new PTO-LP-S3-VS Virtual Set Pan/Tilt Head Integration system, interfacing with its PT-LP-S3 Pan/Tilt Head. It was shown operating with the Orad virtual set system in both company's booths.

The company also showcased its new LWP-HOU Weatherproof Camera Housing, designed specifically for broadcast applications in demanding environments.

Vinten introduced its new Fusion Range, which bridges the gap between and joins legacy Vinten Autocam and Radamec robotic equipment. Fusion controllers can control both legacy products as well as the new Fusion robotic equipment.

In addition to the Fusion controller, the company also introduced the Fusion FH100 robotic head and FP145 robotic pedestal.

PEDESTALS

Cartoni, in the **Ste-Man** booth, displayed its new compact, portable P-90 pedestal, designed to support camera/lens combinations up to 200 pounds and covering the entire range of studio and OB configurations.

The two-stage column performs an on-shot stroke of 2.5-feet with a smooth movement. It features a crab position for narrow doorways.

CAMERA SUPPORT, PAGE 46

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Batteries & Lighting

by Craig Johnston

In the battery department, there were breakthroughs in high-capacity batteries and increased attention paid to making Li-Ion batteries legal for air travel.

16x9 showed its Coco-DVL Power Converter, designed to interface between battery, camera and accessories. Snapped in place between the camera and battery, it allows power to be drawn for wireless mic receivers or other devices.

Amita Technologies unveiled its Li-Ion Polymer batteries, which it claims can withstand 1,000 recharge cycles. The waterproof batteries come with Anton/Bauer or Sony V-mounts and feature a five-step LED capacity indicator.

Anton/Bauer introduced its ELIPZ battery system, allowing videographers to mount a high capacity lithium battery on the bottom of handheld DV and HDV camcorders. The mount not only allows the battery to power the camera, but can be used to run an on-camera light as well.

Frezzi showcased its 100 Wh Lithium Ion battery, the largest allowable Li-Ion battery for airborne transportation, and a 200 Wh Li-Ion battery, both with either an A/B or V-lock mount. Simultaneous dual chargers and a compact single-battery charger are available for both batteries.

IDX showed off its new A-E2H1 Battery Adapter that allows the Canon XL H1 high-definition camcorder to be powered off IDX long-life Endura Li-Ion batteries.

Photo: Bob Kovacs

John Pesuit of Creative Film & Video checks out Anton/Bauer's EILIPZ battery and EGRIPZ camera handle system.

Photo: Bob Kovacs

Amanda Martin of IDX (L) explains the company's E10 Powerlink camera battery to Robert Calmus of Marathon Petroleum.

The company also featured a new portable battery check. The pocket-sized TK-E1 checks seven key battery functions and supports nearly all Endura batteries utilized in ENG/EFP production.

Jadoo Power Systems, which supplies hydrogen fuel cells to power video equipment, introduced the FillOne refill station, an economical refilling device for its fuel cells.

Also new from Jadoo is the PowerBase, a sleek support stand that prepares Jadoo fuel cell power units for use in the field or on the bench.

The company also unveiled its N-Stor360 canister that delivers 360 Wh of energy.

Nebtek showed its Li-Ion Battery Adapters, designed to upconvert 7.2 V to 12 V to utilize consumer-style batteries to power professional equipment.

PAG USA introduced a new V-Mount compatible L95 Time Battery, joining L95 models with Anton/Bauer and PAGlok mounts. The 14.8 V 6.5 A-h pack has a capacity of 95 Wh and weighs 1.64 pounds.

The company also showed its compact two-channel V2 Charger, designed for PAG and Sony V-Mount Li-Ion batteries.

Swit Electronics introduced its S-8170S Li-Ion camera battery, a dividable 158 Wh battery that can be separated into two 79 Wh units to meet International Air Transport Association regulations.

The **Steadicam** division of **Tiffen** introduced its new Steadicam Power Cube, dual 6000 mA-h Li-Ion batteries co-developed with battery maker IDX. It provides both 14 and 28 V directly from the battery. Tiffen touts it as the world's first IATA-compliant Li-Ion battery pack.

World Radio History

LIGHTING EQUIPMENT

For those of us who grew up in television with tungsten lamps, it's hard to believe that LEDs and fluorescent tubes would play such a big a role in lighting.

16x9 showed its Lux-DV Camera Light, a tiny 20 W source with flip-down dichroic filter.

ARRI Lighting Products introduced what it terms the most powerful HMI light on the planet, the ARRIMAX 18/12. It is 50 percent brighter than a 12 kW PAR and sports a lens-less design and arc-like shadow quality. The ballast features auto detection between 12 and 18 kW operation.

Balcar presented its single 55 W tube Monolight, a dimmable fixture that can be lamped for daylight or tungsten. It weighs three pounds with the ballast built in, and can be controlled manually, via DMX or by phase control.

Bron Kobold showed all-weather 200 W and 400 W fixtures in both open-face and PAR configurations, and the DW800 multipurpose fixture that can be used as open-faced, PAR and bare-bulb for illuminating a soft-box.

Chimera showcased its new speed-ring collar for its softboxes, featuring quick-release technology that allows the softbox to be collapsed to move through doorways and other narrow openings.

Cinemills brought its Filmgear light fixtures to the United States for the first time. They sport an array of daylight HMIs in PAR and Fresnel design, and a line of tungsten Fresnel fixtures.

The company also has two- and four-foot fluorescent fixtures in two- or four-tube configurations.

DeSisti Lighting unveiled the C.S.T 250 F fixture, capable of using either 3,200 K or 6,000 K hot restrike lamps, The fixture is available as a Fresnel, PAR or broadlight, has a universal integral ballast and can be controlled via DMX.

The company also showed a pole-operated yoke for ellipsoidal fixtures, developed in conjunction with ETC.

Electronic Theatre Controls showcased new lamps for its Source Four ellipsoidal fixtures, a 14, 70 and 90-degree lens tube.

The company also featured its Congo Light Board, which offers complete control of any fixture. including conventional lights, moving lights and LEDs.

F.J. Westcott debuted its Spiderlite TD3 fixture, capable of handling tungsten or fluorescent screw-in lamps for quick changes in color temperature. Each of the three bulb sockets is independently controlled, allowing fast changes in lighting characteristics. It is designed to illuminate a soft-box.

FloLight unveiled its line of fluorescent lighting fixtures, available in daylight or tungsten balance. Fixtures are available in either bank-switchable or dimmable versions, and use the small diameter T-5 tubes that allow for smaller and more densely packed fixtures.

Frezzi took the wraps off its Mini DV Universal lights and light kits. The battery-powered lights are designed to be mounted on small DV and HDV camcorders or on stands such as the Universal DV Stick, which can also be used as a monopod. Universal light kits include fixtures, batteries and chargers.

IDX premiered its X3-Lite, an on-board camera light utilizing high-powered LEDs at a daylight color balance. It provides 300 lux in a 40-degree beam at three feet.

Industry Advanced Technologies showed its Lightening Rail DC light support system, designed for drop ceilings. The units attach to the T-bar in any drop ceiling, and allow the light to be located anywhere along the 4-foot bar.

K5600 featured its Joker-Bug bare-bulb lineup of lighting fixtures, including its best-selling Joker-Bug 800, which is finding increasing use inside the Chimera Light-Bank. The fixture uses an 800 W MSR/SE daylight single

LIGHTING, PAGE 50

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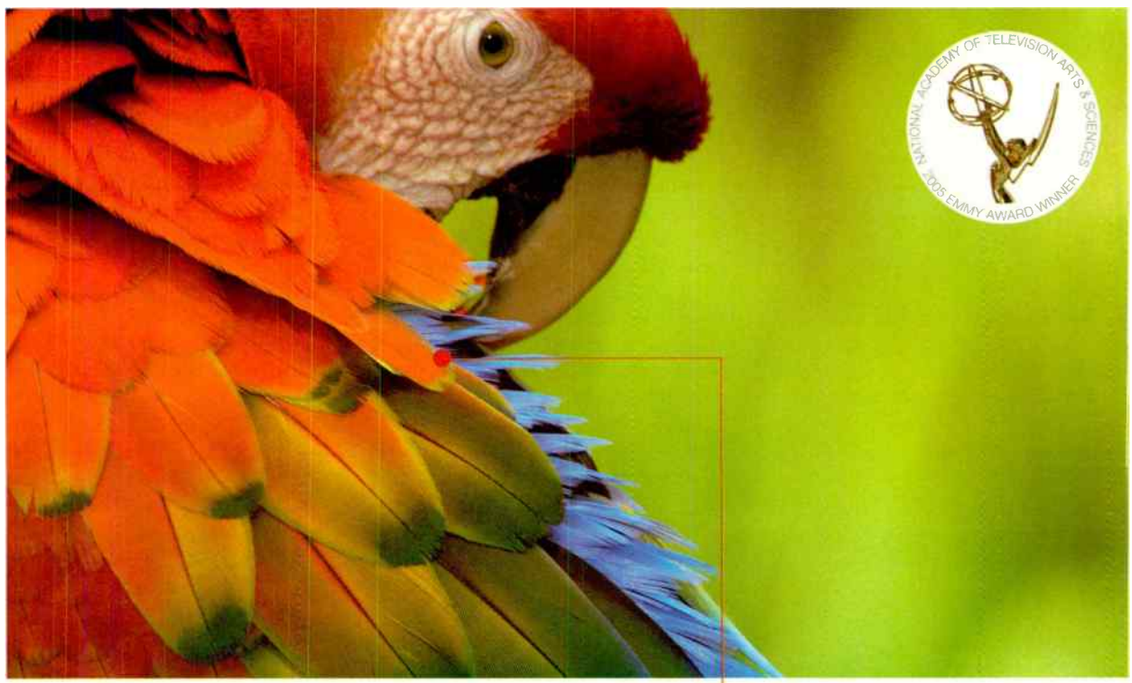

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Automation

by Susan Ashworth

From automatically ingesting and then editing material to controlling equipment in the backroom, NAB2006 offered a host of new automation technologies designed to handle nearly every part of the broadcast process.

BEHIND-THE-SCENES

360 Systems debuted a new Remote Workstation Interface that provides IP control of an Image Server 2000 from one or more workstations.

Adtec Digital featured the adCode media ingest station, designed for MPEG-2 encoding and reviewing content from multiple sources and provides control of VTRs via RS-422 or FireWire.

AVECO showcased its Astra automation system, which controls processes and devices from ingest through broadcast; as well as the Procon automation system, which controls and manages ingest and playout operations of video servers.

Axel Technology S.R.L. spotlighted its Digi-TV digital broadcasting automation system.

Burk Technology featured the company's broadcast facility control systems including the GSC3000 and VRC2500.

Centaur Storage partnered with Telestream on an integrated solution to provide fully automated, all-digital file transfer of Centaur-delivered advertising content to broadcasters' on-air servers.Centaur-delivered content is transferred from a PC with Centaur Spot Exchange to the station's commercial play-to-air server via Telestream's FlipFactory TrafficManager workflow automation application.

Comprompter exhibited the new NewsKing NEXT automation solution and demonstrated the capabilities of the NewsKing Newscast Automation system, which can control each of the production devices used during a broadcast presentation, including still store, character generator, close captioner and robotic camera.

Controlware Communications System displayed the OpenBroadcast software suite, which offers management, monitoring, scheduling, switching and billing solutions for media companies. The company's two network management software systems—NetSwitch and EasySwitch—allow broadcasters to move video and media between locations and manage resources and bandwidth.

In addition to showcasing new automation solutions like the Digital Transfer Agent, an automated interface that moves programming from a third-party content delivery system to a server, **Crispin** announced it is offering a series of pre-configured entry-level automation packages called Crispac that combine the company's RapidPlayX software with servers from Grass Valley.

Photo: Bob Kovacs

James Brown of DTG (L) discusses the company's XE Automation system with Bob Curry of WHUT/Howard University.

Davicom, a division of Comlab, featured the next generation of the Davicom MAC remote control system.

DCIT displayed the PROVYS Tvoffice. This integrated information system provides playout automation, transmission evaluation and content management, among other features.

Digital Transaction Group demonstrated the capabilities of its new Intelligent Transfer Technology. This technology integrates with the Pathfire content distribution system and allows automated transfers of digital file-based content. With the company's Xe automation system, material can be automatically dubbed with timing

AUTOMATION, PAGE 42

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Automation

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data. DTG also showed the latest in featureset enhancements for Xe automation, with the unveiling of a new interface enabling last minute changes and information to be generated and displayed on-air.

DNF Controls showcased a new "as-run" log option for the 3040P/DL playlist play-out and on-air automation backup system. Also shown was a new addition to the DMAT sports controller family.

Eyeheight Ltd. featured the company's Play-out Application Suite, which combines all master control functions, and allows all MC operations to be managed from a standard PC.

Florical Systems displayed a host of new and existing solutions. These included the AirBoss on-air presentation solution and a new join-in-progress feature as part of the AirBoss; a new Breaking News feature; and a Traffic Assist feature, which works with a station's traffic and automation systems to provide production detail for on-air operations.

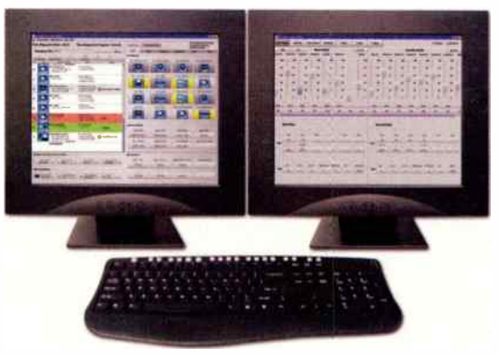
Fjord Media showcased its Fleetmaster Control System, designed to control Fjord solutions.

Harris featured an enhanced version of its D-Class play-out automation solution. New features include the ability to exchange play list and as-run data, as well as new interfaces to the Harris' H-Class content delivery solution, which offer tighter delivery to scheduling, media ingest and digital asset management features.

U.K.-based automation provider **IBIS** demonstrated its "IBIS Highlighter," an intelligent broadcast tool designed to enable the fast turn around and management of sports events, studio-based programming and outside broadcasts. It can be used within an existing video server network and captures all associated metadata from the sporting event, studio transmission or OB and their highlights, retaining that data for use by third party systems.

ILC had the newest version of MaxView on display. This network management solution consolidates management of multi-technology hybrid networks into one view and enables direct control of network devices.

Version 3 of the **Leightronix** NEXUS automation system was demonstrated in the company's booth. The latest version includes WebNEXUS, a Web interface for creating and managing digital video slides as well as upgrades to WinNEXUS, which now includes a playback looping feature that can automatically fill gaps in schedules with selected MPEG video programs or clips.



Ross OverDrive

MassTech introduced its MassDR disaster recovery system at the show. MassDR is an automated solution that duplicates material cached from the on-air video server, typically 24 to 48 hours of current content, ensuring there is never a disruption of the on-air presentation.

MicroFirst was at NAB with its DAS 3200 multichannel digital automation system. The company also exhibited other solutions, including the DAS NLS near-line storage control system.

Netia spotlighted its Nodal Master, a software solution for controlling routing gear and processing equipment. Also shown were U-Share, a network management system that can automate the exchange of video and audio from a source site to different destination sites, and the Hypercast encoding service, which performs transcoding and transfers among FTPs and LANs.

OmniBus Systems launched its OmniBus iTX technology, an SD/HD system that offers automation, ingest, editing and content management functionality. The company also demonstrated the newest version within the OmniBus Colossus automation suite, which features a new, scalable redundant architecture and can handle HD, SD and IP streams. In addition, OmniBus demonstrated the K2 Inception, a play-out solution that combines Grass Valley technology with key features of the Colossus automation system.

Omneon debuted its ClipTool Pro application, which enables users of the Omneon Spectrum media server to monitor and control playout and record functionality via an easy-to-use graphical user interface. The software's sub-clipping function makes it easy to create new partial clips and throw away unwanted "tops" and "tails," thus freeing up storage on the media server.

Pro-Bel highlighted new features for its Morpheus automation and media management system, which now includes a media browse facility to allow easy access to media across a facility or facilities.

Ross released Version 4.0 of its OverDrive production control system, which can now control Avid Deko and Vizrt graphics systems, among other new features.

In addition to showcasing its Titan, Intellisat, NewsLink, Seeker and FastBreak NXT automation systems—and in the midst of providing the automation muscle for the NAB-HD pavilion—**Sundance Digital** showcased several new automation systems and features. FastBreak NXT XPress is an entry-level automation solution for program playback and commercial insertion; FlexEvents is a module that enables groups of secondary automation playlist commands to be organized into named macros. Sundance also demonstrated a revamped Web Inventory feature that allows users to access automation system playlists and database information.

Telestream featured a number of media automation solutions, including the new GraphicsFactory, a software system that automates graphics assembly. The company also showed its FlipFactory solution, a technology for automating transcoding-based media workflows. In addition, there was FactoryArray, a management option for workflow automation products.

New Web-centric automation systems from **Tightrope Media Systems** included Cablecast 4.4, a station automation system designed for government or community access channels. It offers a Web interface, an integrated program library, and support for live and VOD streaming.

Wegener featured the iPump system for time shifting of programming in a 24/7 environment. The technology supports 4:2:2 video decoding and SDI.

Wide Orbit was on hand to showcase new traffic, sales and billing, promotion and automation software.

IN THE NEWSROOM

Associated Press launched ENPS 5, which offers journalists new features for desktop editing, the ability to monitor content at remote sites or sister stations and new features for searching for specific files or ENPS items. New

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Key Features	Your System	Vertigo XG	Vertigo XG
Video Formats	☐	☑	SDI or HD/SDI inputs with A/B switching in a single or dual channel configuration
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Audio	☐	☑	AES - 16 embedded and 8 discrete stereo channels
Graphics Layers	☐	☑	Unlimited layers for multiple animations, tickers, crawls, and DVEs
Clip & Graphic Formats	☐	☑	Support for MOV+alpha, AVI+alpha, WMV, MPEG, DV, DivX, plus over 150 image file formats
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Automation

CONTINUED FROM PAGE 42

features were also released for the SNAPfeed newsroom system.

Autocue introduced QSMART, a newsroom system designed for small-market broadcasters. The company also exhibited its QSeries suite of newsroom production and automation systems.

Avid Technology unveiled the Avid iNEWS Command system that integrates with any newsroom computer system and provides tight control over play-out devices. The system can be integrated to provide full fail-over protection to automatically switch to a backup play out source.

BitCentral featured the Precís News Production System, a browser-based system that offers integrated management of video assets from acquisition to air. New for 2006 is the Précis 3.0.

Compprompter showcased the NewsKing NewsRoom System (NRCS), which is built on a foundation of Microsoft Windows, SQL and Word. The system's XML Rundown feature provides instant access to assignments, scripts, wires and archives. Other companion newsroom automation systems on display included the SchoolMaster closing and cancellation package and the VoteMaster XL election automation system.

In addition to showing its DaletPlus News Suite, **Dalet Digital Media Systems** also launched the OpenMedia plug-in suite that inclues OpenMedia Ingest, a plug-in that allows for place holder creation and line bookings from OpenMedia into a video server; OpenMedia Logger, which gives users simultaneous access to the same source materials; and OpenMedia OnAir, a plug-in module that allows users to send rundown instructions as well as retrieve status information about the broadcast for eRegie, a Dalet feature that allows news directors to conduct news programs without the aid of paper printouts.

Digital Broadcast spotlighted the company's NewsBank automated newsroom system.

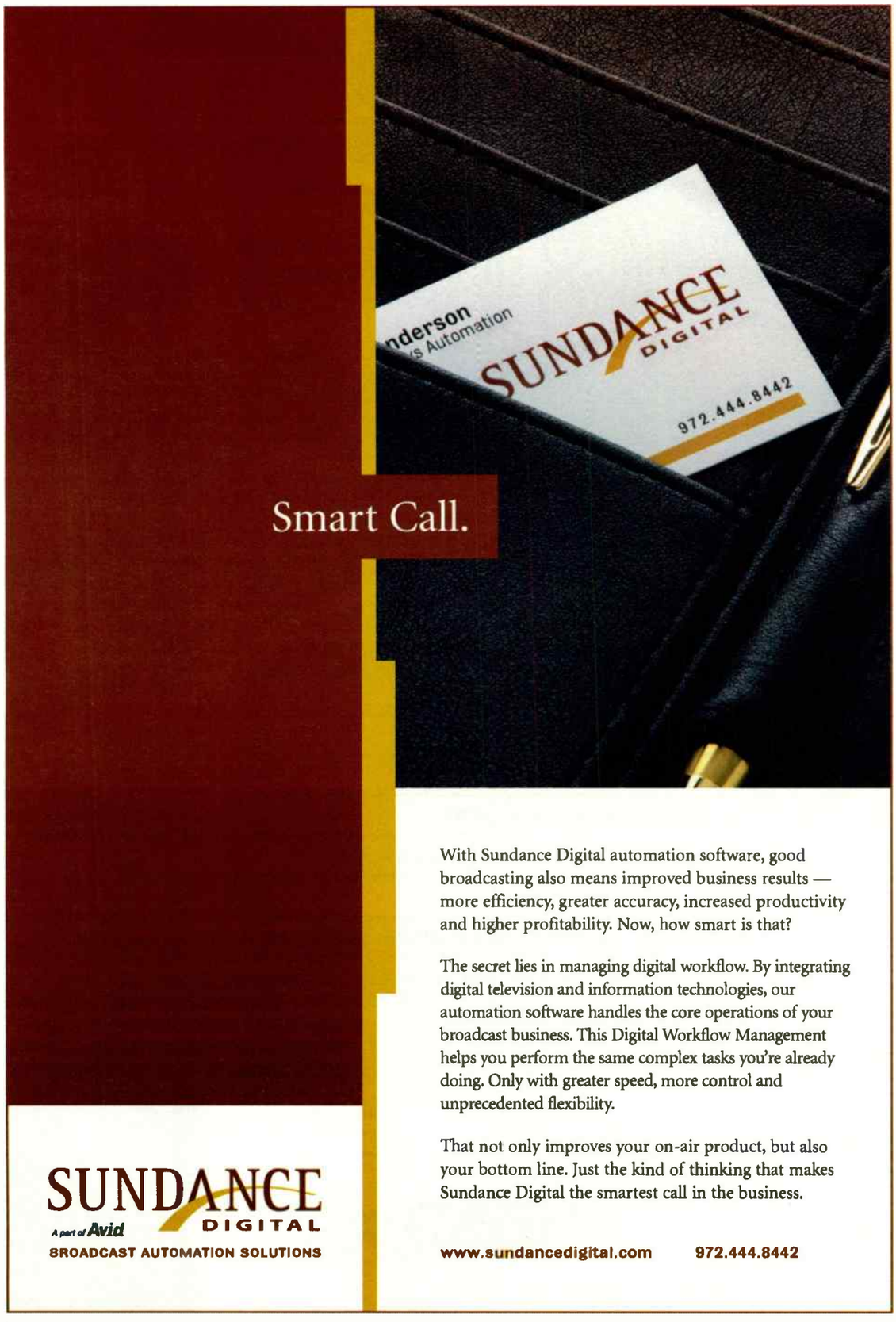
JustEdit featured vsnnews, a news management system that allows text and video to be edited in the same application and offers run-down planning, assigning of resources, text editing, material ingest, storage and cataloging. The companion vsnnews XL solution allows hundreds of users to simultaneously edit audio and video news. vsnwires, which allows users to access news wires, create rundowns, edit text, browse and edit video, and work with archive content, was also on display.

KDDI R&D Laboratories showcased the workings of NewsStory Viewer, a news video story segmentation system that extracts features from MPEG news video streams online and automatically segments the video into stories.

Octopus Newsroom Trading highlighted the Octopus5 newsroom computer system, which features an enhanced news desk module and a new story-grouping feature. Other new products included the Octopus Field Reporter, a field news production center; Octopus Video Twister, which can be used with the newsroom system for encoding and transcoding high-resolution files into low-res videos for mobile broadcasting or desktop video preview; and Octopus Track, which handles newsroom resource planning and cost tracking.

Rushworks was on hand to demonstrate its new Newsrush newsroom automation system, that combines a simple script creation tool with a comprehensive automated playback system.

Video Technics exhibited NewsFlow, an all-digital tapeless newsroom system, with new features including an Adobe plug-in update that provides compatibility with the Adobe Premiere Pro Version 2.0 non-linear editor. ■



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wait 'til you see the rest . . .

MRC's award winning encoder-modulator, MTX4000, recently took home the TV Technology STAR Award at NAB2006. The MTX4000 is a new companion unit for ENG/OB Van transmitters, offering an array of unique features that answer broadcasters' demands for improved workflow and performance. The MRX4000's design supports not only SD/HD encoder technology, but also IEEE 1394, USB 2.0, and Ethernet from the ENG/OB van. The MTX4000 provides operational flexibility that enables ultra robust COFDM transmission when conditions are difficult, or industry standard QPSK/QAM for highest throughput in more stable conditions. Other impressive features include:

- Two-way IP connectivity extends the studio network
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- Live. real time encoding, or live streaming of pre-encoded material

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MICROWAVE RADIO COMMUNICATIONS

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Camera Support

CONTINUED FROM PAGE 36

Sachtler premiered a new C III Pedestal, designed for quick and easy set-up. The operator can check for correct air pressure in the column with a simple glance at the built-in pressure gauge, and the pedestal includes a robust dolly and steering ring. It is available alone or as a system package with the company's Video 15 SB fluid head.

Shotoku launched its TP-90 pneumatic pedestal, designed to handle camera payloads of more than 132 pounds. The TP-90 features a three-stage column with a 37.2-inch vertical stroke. Safety features include a new column lock and easy-to-reach brake ring.

Vinten upgraded its Quattro-L and Quattro-SL pedestals to include an improved column balance profile to reduce user fatigue, and column height marker strips for help with repeat shots. Also included is an improved column safety latch and simpler trim weight stowage. In addition, the Quattro SL (small-based pedestal) has an added single point actuator cable guard and an improved break operating profile. The Quattro SE also has similar features with the addition of positional encoders.

TRIPODS & HEADS

Cartoni, in the **Ste-Man** booth, premiered its HiDV fluid head, designed for the latest DV cameras weighing up to 11 pounds. It's compact and lightweight, and features a continuously variable fluid damping system on both pan-and-tilt movements and a variable counterbalance feature that accommodates all existing DV cameras.

Gitzo, shown in the **Bogen** booth, introduced the G2180 Fluid Head, featuring a new design with a curved handle that is fully adjustable to any angle for video applications. Supporting payloads up to 8.81 pounds, the unit is made from a lightweight technopolymer material and weighs in at slightly more than one pound, allowing for easy transport.

Libec premiered its LS-38(2A) Advanced Fluid Head and two-stage tripod system, designed for precise pan-and-tilt and featuring a sliding camera plate with 44mm of movement. The head and leg system weighs 11 pounds and is designed to carry cameras from eight to 18 pounds.

The company also showed its LS-100(2A) system, designed for a payload to 50 pounds and featuring a tilt range of plus or minus 90 degrees.

Manfrotto, with displays in the **Bogen** booth, introduced its 526 Pro Fluid Video Head, designed for cameras up to 35 pounds and featuring four different fluid settings, variable counterbalance springs, and a 100mm ball.

The company also introduced the 560B Fluid Monopod, touted as the world's first monopod with fluid cartridges. It is designed to allow smooth panning and image capture in any environment, and carries compact mini DV and HDV cameras.

Miller Camera Support unveiled its Sprinter II tripod, with three-stage legs with controls co-located on the upper leg clamp that can be simultaneously controlled with one hand. It features a rugged mid-level spreader with an adjustable center hub for quick fine-tuning of the tripod.

Also new from Miller are redesigned Arrow 25 and 30 heads, featuring upgraded knobs and lighting systems.

Sachtler introduced new Video 18 SB and Video 20 SB fluid heads, making its newest head technology available for heavier ENG cameras. The Video 18 SB features 10-step counterbalance and a payload of up to 40 pounds, and the Video 20 SB features a 12-step counterbalance and a maximum payload of 55 pounds.

Shotoku previewed its SH 100 Perfect Balance ENG Fluidhead, featuring a 44-pound maximum payload, and continuous counterbalance and pan/tilt drag. It sports a 100mm ball, and will be available soon.

Slik Broadcast took the wraps off its DST-32 lightweight tripod and head assembly capable of carrying a camera payload of up to eight pounds. The two-stage legs feature a mid-level spreader and a 60mm ball.

The Tiffen Co. showcased its Davis & Sanford line of tripods and fluid heads, featuring the Carbon Lite V12 tripod and head. It has a two-pound capacity and features three-section carbon fiber legs for light weight.

Vinten teamed with teleprompter maker **Autoscript** to bring together teleprompter and tripod designs that are conveniently packaged, reliable, fast to set-up and simple to use. Both systems use the purpose-designed Vinten Vision iScript pan-and-tilt head with its unique platform, significantly reducing the amount of time and effort it takes to attach a conventional prompting system. Included is a preset counterbalance system tailored for the prompter system. Both systems are offered with the Autoscript GoPrompt 12 solution with a newly designed "speed mount" hood/bracket.

Photo: Bob Kovacs

Michelle Bourse (L) and Brett Manyluk of Manyluk Consulting learn more about the Sachtler Artemis camera stabilization system from Bob Jones of The Vitec Group.

STABILIZERS

16x9 introduced the TurtleX, designed for DV and HDV camcorders weighing up to 10 pounds. The TurtleX employs an overhead support arm, back support bar and hip belt to transfer the static load from the arms and shoulder muscles down to the hips, where it is more easily supported.

Glidecam showed off its V25 Series stabilizer, capable of carrying cameras from 10 to 25 pounds and designed for standard or high definition portable cameras and camcorders. The unit can be controlled either right- or left-handed, and has integrated 12 V wiring.

MK-V took the wraps off its new MK-V AR camera stabilizer system, with camera rotation that can either maintain a level horizon during moves, or rotate through 360 degrees as desired, and can be programmed to return to any chosen horizon. It is also motion-control capable.

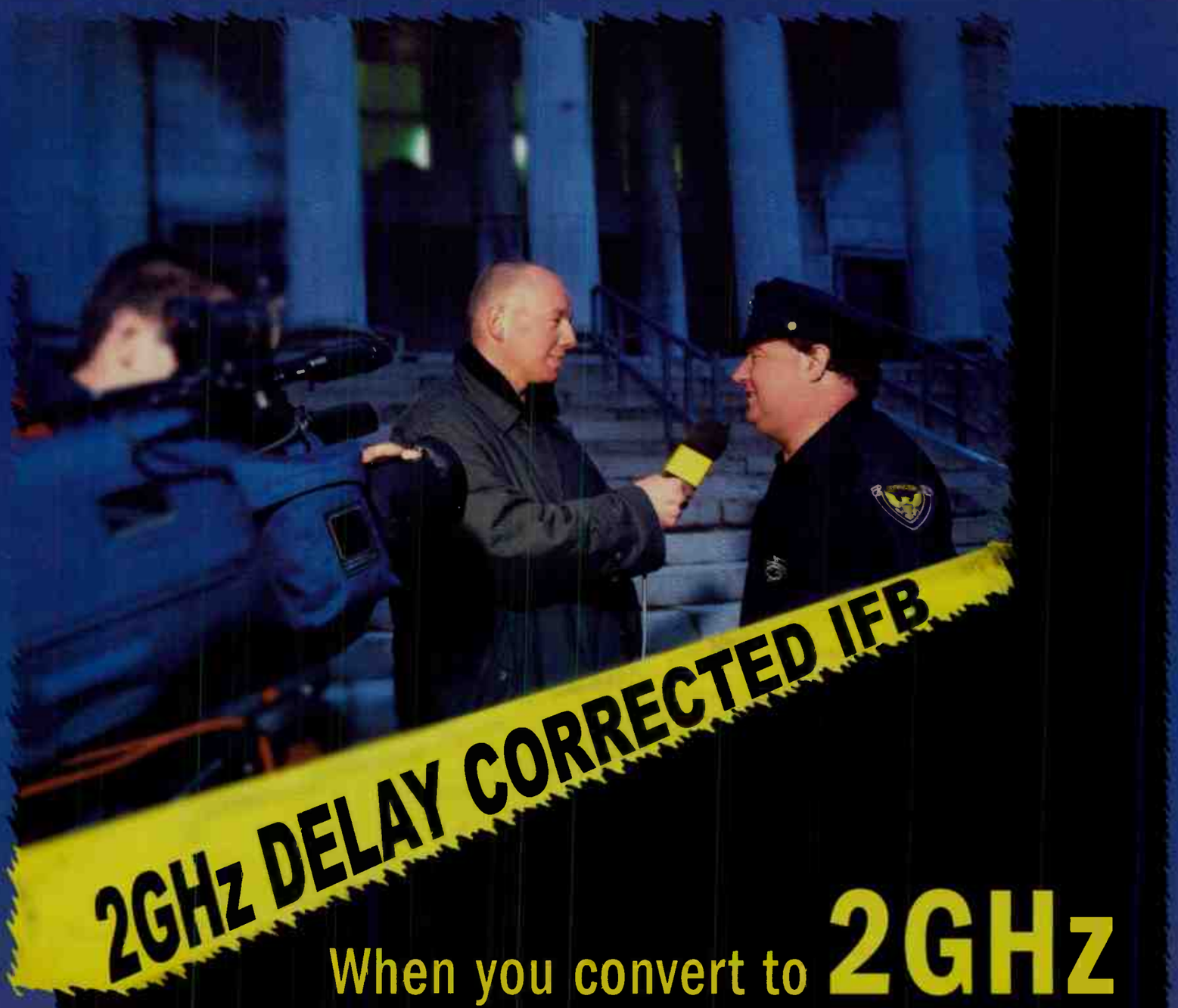
The Orbiter shoulder-mounted, camcorder support system made its debut in the **PAG** booth. It provides a balanced and stable shooting platform for handheld camcorders, with freedom of movement enabled by a three-axis mechanism that allows the operator to pan, tilt and roll, smoothly. Adjustable straps secure the Orbiter and camcorder assembly to the waistbelt.

Sachtler announced a new member to its Artemis stabilizer family, the DV

CAMERA SUPPORT, PAGE 48

PAG Orbiter

World Radio History



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Camera Support

CONTINUED FROM PAGE 46

Pro, which completes the line from Mini-DV to HD and film camera stabilizing systems. The DV Pro is specially designed for professional MiniDV cameras, HD-DV cameras and DV cameras.

Steadicam from **Tiffen** unveiled its new Ultra² camera stabilizer, featuring an HD/SDI ultra-bright 16:9 monitor, a stiff camera mounting stage, deeply integrated tilt head and a wider range of adjustment than on previous models.

The company is also marketing a new Steadicam Power Cube from IDX, featuring new dual 6000 mAh batteries to handle any camera's power requirements.

Varizoom showed two stabilizer systems. The Aviator sports a dual-dynamic arm for more range and a quick release dovetail camera plate for rapid set-up. It is designed for cameras from two to 15 pounds. The company also featured the Navigator, a semi-stabilizer system with optional integrated monopod, designed for cameras under 10 pounds.

DOLLIES, JIB ARMS & CRANES

ATS Communications presented its new Cool Cam HDV, featuring a larger, taller camera basket to accommodate most new HDV camcorders. The camera head features a new motorized pan/tilt system for more controlled moves, and the joystick and LANC controller have been relocated.

The company also featured its Cool Cam XL Pro HD, available for the Iconix HD-RH1, Sony HDC-X300/310, or Panasonic AK-HC1500.

Calumet Photographic unveiled the UniTrack Cambo, a flexible track system making tight corners possible. The system features the foldable UniTrack, an adjustable UniTrack dolly and flight carrying case.

The company also showed four video booms, including a telescoping model for DV and HDV cameras.

Camera Turret Company showcased its PT20 and PT24 remote pan/tilt heads, designed to handle 20 and 30-pound camera payloads atop a jib arm. The company also showed its 300 Series and 4000 series jib arms.

Cammate Systems showcased a new double-bearing slip-ring head and a new U-head. The crane company announced it would introduce a telescoping crane in the next year.

Chapman/Leonard featured its 32-foot Hydrascope, a wheel dolly-mounted telescoping crane capable of operating entirely under water. Payload capacity is 187 pounds and it features 360-degree rotation, Preston lens control and wheels or joystick controls.

The company also showed a 15-foot version of the Hydrascope and a Vertical Super Vibration Isolator.

Egripment introduced its Vertical Column, with smooth enough telescoping to allow rising motion to be used in on-air shots.

Also new from the company is the Hothead XL, which gives the camera operator complete remote control of all functions of TV or film cameras, while allowing him or her to pan-and-tilt through a full 360 degrees at varying speeds.

EZ FX Jibs unveiled a new jib pedestal, designed with all-terrain wheels and a low-mounted towing cable to keep from upsetting a rigged jib arm. It features a 100mm receptacle and an adjustable center column.

Innovision Optics premiered its Bird's Eye, a new lightweight portable camera support column that combines a smooth-moving robotic pan-and-tilt head with a modular telescoping column system that tops out at 16 feet. It can be quickly deployed and carries a camera payload up to 10 pounds.

Carolina Rodova performs rhythmic gymnastics at the Technocrane booth. The crane used to capture her performance is at the far right.

J.L. Fisher showed an array of new accessories for its camera dollies, including a Dolly Jack for tire changes, accessory carts, utility trays, a Waffle Adapter and a Swingable Seat.

Libec showcased its new TR-320 dolly track, with accessories available for curved rails to make 90 and 180-degree curves. The track is designed for easy setup and mobility.

Microdolly Hollywood showed a new Suction Mount kit, designed to be stronger and more flexible for mounting cameras to automobiles and other irregular surfaces.

OConnor debuted its TrakPed HD pedestal, with an offset quad wheel design for quietness and seamless movement through curves and over track joints. It is designed for quick set-up and easy transport, and can carry the company's 2060HD fluid head.

Panther Dollies & Cranes announced it is establishing a West Coast office in Burbank. The company showed its Foxy camera cranes and its Galaxy man-rideable crane, touted as the highest manned crane in the world.

The company also showed its Classic Dolly line.

Polecam, in the **Ste-Man** booth, showed its new FishFace submersible head, a fully submersible pan & tilt head and camera housing sold as an alternative head for the rig. The housing, good to a 13-foot depth, will accommodate the standard definition cameras sold with Polecam, and suitable remote head high definition cameras, including the Iconix multi-standard HD remote head camera.

Porta-Jib introduced its new Porta-Slide tripod-mounted mini-dolly track and mini-dolly, allowing cameras weighing under two pounds to do dolly moves of up to four feet. Panning the tripod head while dollying gives yet another axis of movement for the shot.

Rocket Corp. showed its Spring Stabilizer Mount in three sizes, for up to 33, 66 and 88 pounds. It is designed to reduce camera vibrations when mounted on a camera crane.

Technocrane announced improvements to its telescoping crane that allow it to give extremely accurate positioning data to allow it to be used for shooting on virtual sets.

TELEPROMPTING & CAPTIONING

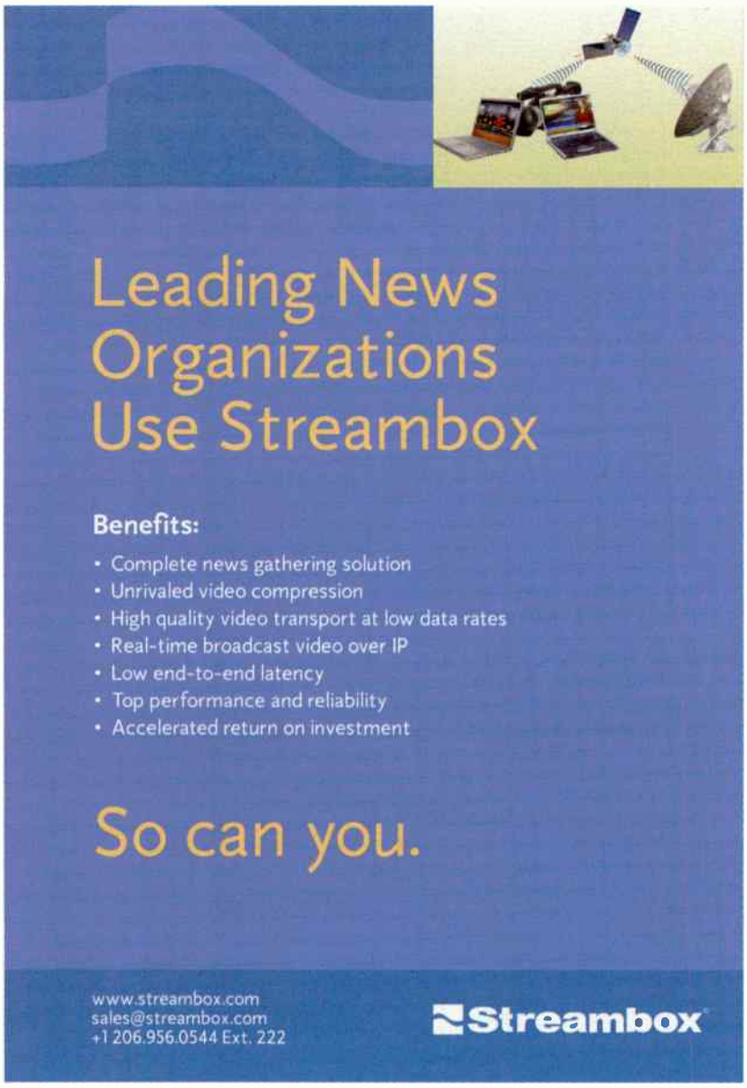
Audio Video Design showcased a new closed-captioning capability in its EasyReader Dual-Screen software for Windows 2K/XP. EasyReader independently mirrors the computer's output to the prompter while leaving the operator monitor non-mirrored.

The company also showed a new design for its AV15CA stand-alone prompter.

Autoscript unveiled the VoicePlus addition to its Win Plus software, allowing the prompter to recognize by the talent's voice where he is in the script and keep the reading line at the appropriate place in the copy.

The U.K. company also introduced the GoPrompt-15, a new, self-contained, completely wireless prompting system which features a 15-inch high-brightness screen designed to bring studio-

CAMERA SUPPORT, PAGE 51



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Broadcast Engineering Magazine - Engineering Excellence Award
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Broadcast Engineering Magazine - Pick Hit
Axciter ATSC Exciter-Modulator

Television Broadcast Magazine - Top Innovation Award
Axciter ATSC Exciter-Modulator

2005

Broadcast Engineering Magazine - Engineering Excellence Award
Mt. Wilson Project, the industry's largest analog/DTV multi-transmitter system

Broadcast Engineering Magazine - Pick Hit
"Dual Use" digital/analog transmitter technology

TV Technology Magazine - Star Award
As a leader in DVB-H transmisison systems

Television Broadcast Magazine - Top Innovation Award
"Dual Use" digital/analog transmitter technology

2004

Digital TV/Television Broadcast Magazine - Top Innovation Award
Innovator HX, the first VHF transmitter design of the 21st century

2003

Broadcast Engineering Magazine - Pick Hit
DTxA2B Distributed Transmission Adaptor

Digital TV/Television Broadcast Magazine - Top Innovation Award
DTxA2B Distributed Transmission Adaptor

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World Radio History

Lighting

CONTINUED FROM PAGE 39

ended discharge lamp.

Kino Flo took the wraps off its VistaBeam Studio Luminaires, in 600 and 300 W configurations. They are designed to illuminate large areas with softlight, and come with a DMX control system. They can use daylight or tungsten balance tubes.

Ko Yong Photo premiered the Visio Magicolor LR-300 LED array fixtures, designed to generate a wide range of colors. Each fixture sports 36 LEDs, and can be controlled by the LR300 Remote Controller, styled like a television remote control.

KW/2 presented the DT432 dimmable backlight, designed to illuminate Duratrans on a studio set. They are priced between consumer fixtures and studio fluorescents.

The company also showed the LF154 fixture, designed for videoconferencing.

Litepanels unveiled production models of its 1x1 fixture, a 1 square-foot array of LEDs, with models for daylight balance spot and flood, and tungsten balance floor. Six interchangeable slide-in conversion and diffusion filters are available in various configurations for more flexibility.

The company also showed daylight and tungsten versions of its Ringlight mini, which has three switchable zones of LEDs around the circle.

Lowel Light Mfg. Inc. showcased the Lowel Ego fixture, designed as a softlight source that employs two 27 W full spectrum screw-in fluorescent lamps. The fixture sits on the tabletop and is intended for product and portrait lighting.

Matthews Studio Equipment showcased its Road Flags, portable 4-by-4-foot flag panels in easy-to-assemble frames including a single scrim, silk diffusion and a solid flag, packed into a lightweight case for easy portability.

The company also showed its silver and gold Colornetts, designed to slightly raise or lower color temperature of a light source.

Mole-Richardson introduced a new 1,200 W Daylite PAR fixture with an integrated ballast power supply, making it more convenient to set up and move. The fixture uses standard 1,200 W HMI or MSR lamps with G38 bases.

Photo: Bob Kovacs

Anders Johansson of Media Teknik in Sweden (L) and Christine Galerne of K5600 enjoy a break under a Chimera lit by a K5600 Joker Bug 200.

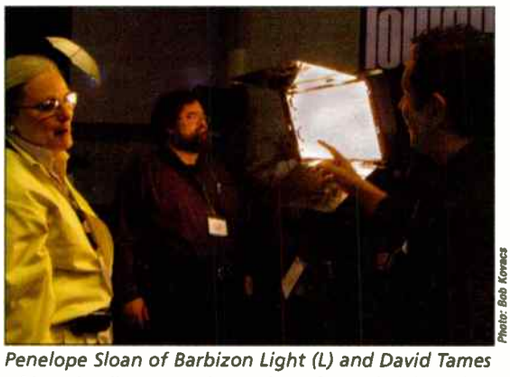

Photo: Bob Kovacs

Penelope Sloan of Barbizon Light (L) and David Tames of Imagine listen to Eric Drucker of Lowel Light as he explains the company's Caselight 4.

The company also premiered a 250 W tungsten and daylight Combo PAR, which can change color balance by changing the bulb.

Photoflex unveiled an upgrade for its starlite ql fixture, adding a pan-and-tilt swivel with a handle. The fixture accommodates bulbs up to 1,500 W and is designed to illuminate the company's OctoDome nxt softbox.

Sachtler presented its Director II Universal Ceramic 250 W luminaire with a new daylight bulb, featuring 75 percent lower power consumption and 75 percent less heat generation. The lighting unit automatically selects all voltage levels from 100-260 V, a convenience when shooting internationally.

The company also debuted two new 1,200 W Director II Universal HMI luminaries, featuring built-in ballast and a choice of either a PAR or Fresnel lens.

Swit Electronics showcased its new S-2000 Camera Light, which combines four LED lamps to deliver daylight balance light at 12 W power consumption.

Techni-Lux premiered the Palco 3 White LED fixture, incorporating 42 white LEDs and seven amber LEDs to allow the source to match any color temperature from 3,000 K to 10,000 K. The fixture is designed to sit on the floor for background lighting, or the light head can be removed and stand-mounted.

Photo: Bob Kovacs

Richard Perry of American Audio Visual (L) listens as Gary Thomas of Videssence describes the company's fluorescent studio lights.

Tokina showcased its MEDIALight Fluorescent Light Banks, available in either a basic or DMX-controlled version. The DMX version features an LED panel on the back to read brightness level and other functions, and 256 steps of brightness from 10 percent to full illumination.

VFGadgets showed off its kicklite 6, a lightweight six-LED light system designed as a dimmable tungsten source that can be clamped around a camera's mattebox. It is powered by a small, dedicated 12 V power supply that can accept battery power from 12 to 24 V.

Videssence presented its Power Key Series, single and four tube fixtures that can focus the beam spread at 60, 70 or 90 degrees. The fixtures use the 55 W Biax lamp and can be purchased with ballast to operate on 120 or 230 VAC. ■

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Camera Support

CONTINUED FROM PAGE 48

standard readability to field operations.

Autoscript also introduced a Wireless Foot Control and the iScript tripod in conjunction with Vinten.

Computer Prompting and Captioning Co. featured the company's MacCaption-DV and MacCaption NLE/MPEG technologies, for in-house captioning of programming and utilizing software encoding techniques.

Listec Video showed its new LV8 prompter, designed for handheld and other portable applications. The company also showed its 17-inch HiBrite teleprompter for outdoor productions requiring prompters.

Mirror Image debuted a new free-standing 15-inch LCD prompter for tripods unable to hold both the camera and teleprompter assembly. The free-standing prompter comes with a 6-foot stand.

Portaprompt introduced its Nanoprompt, an on-camera laptop prompting system that offers special software and rigging to set up a prompting system in the field.

Photo: Bob Kovacs

Dilip Som of CPC (L) demonstrates the company's CaptionMaker 700NLE captioning system to Brad Starkey of Georgetown Post.

Prompter.com showcased a 15-inch hi-brightness teleprompter, yielding 1,000 nits of light and weighing less than 14 pounds. It accommodates video and VGA signals.

The company also unveiled a quick-mounting prompter plate that slides on the tripod for quick balancing between camera and prompter.

Prompter People showed off a new version of its Flip-Q software. Flip-Q reverses the prompter script while keeping it left to right on the prompting control laptop. The new software makes script manipulation easier, and supports foreign languages.

The company also unveiled its Convertible 9, designed for cameras all the way down to DV size.

QTV/Autocue introduced its Professional Series, a lower-cost range of teleprompting equipment designed for corporate, church and other non-broadcast video producers. QTV's higher-end line is now titled "Master Series," and the company expects to have new prompting software by IBC.

Telescript unveiled its ReflеX wireless prompting platform, which can function via RF, Bluetooth or wireless network. It incorporates the ReflеX Table PC as a wireless 8.4-inch LCD teleprompter, allowing for quicker set up. The company also announced its In Studio line of universal mounting head HD prompters.

CASES

Cinebags unveiled its new DV backpack, designed for DV and HDV camcorders. It features padded, customizable compartments, waterproof material and a tripod strap. It's available in the company's distinctive gray and black, with orange webbing and zipper pulls. The company also introduced a laptop bag.

Making its NAB debut, Dutch-based **ComRade** introduced the desertSuit camera cover, with white material designed to protect a camcorder from water and dust. The company has a full

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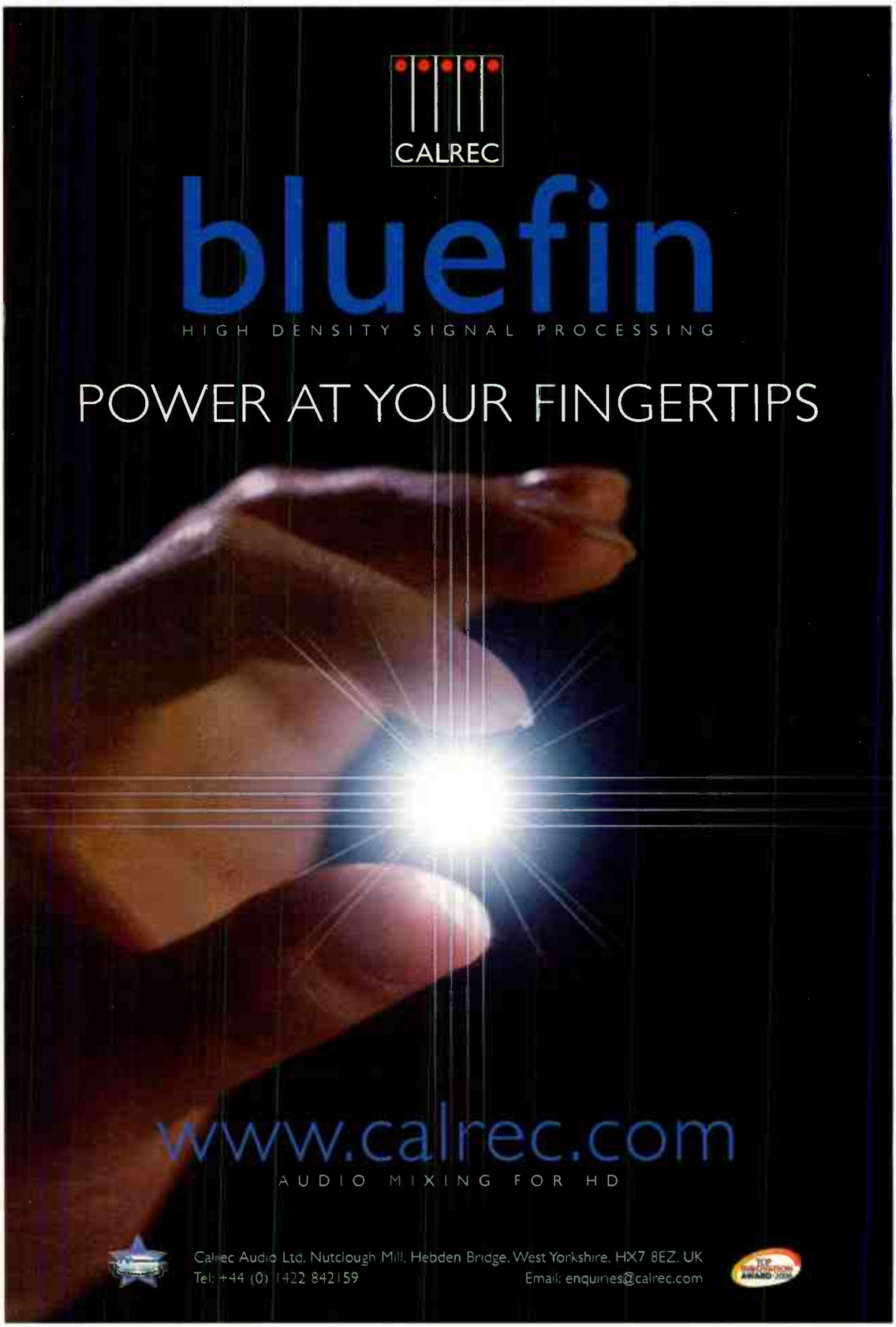

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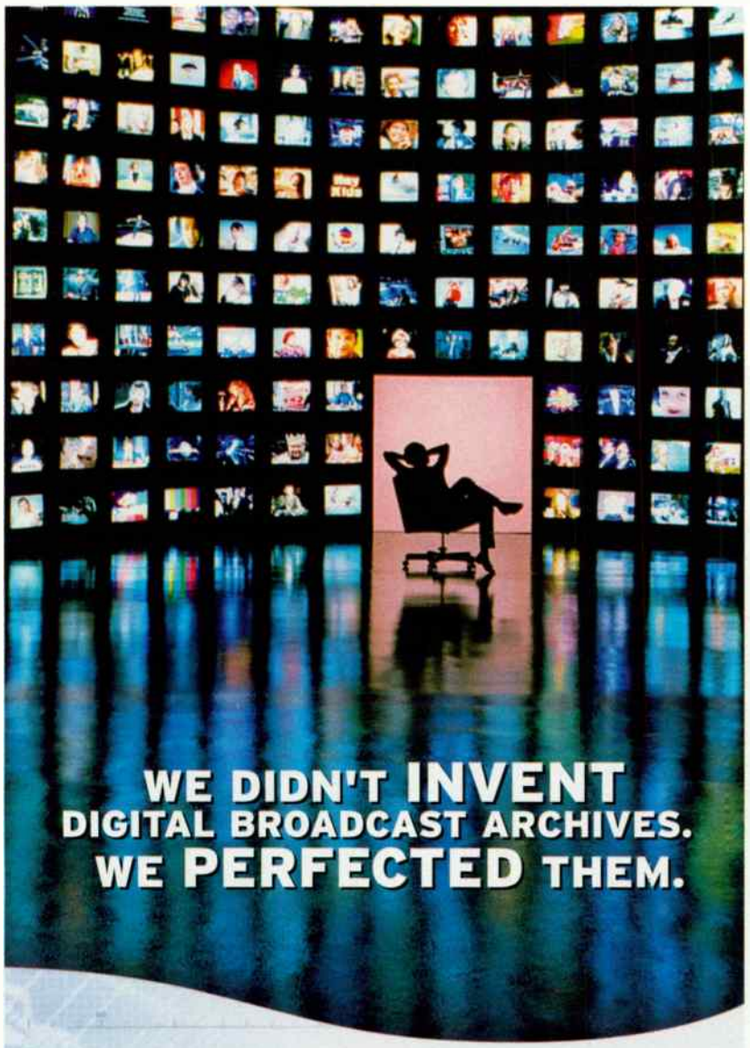

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Cameras

CONTINUED FROM PAGE 32

Mediapac cartridges, and demonstrated 160 GB hard disk storage. The recorder was developed in partnership with nNovia and Audavi.

Hitachi also premiered its TU-CX-Z4 Digital Triax for SDTV system, which offers longer cable length without requiring a change in cable type used.

Ikegami Electronics introduced a new multiformat CMOS imaging sensor that is the centerpiece to the company's HDK-79EC/HS. Imaging was demonstrated at 720/120p and 1080/60p.

Photo: Bob Kovacs

Jeffrey Deutsch of Elysium Productions tries out the Ikegami HDK-79EC HD portable camera.

Another CMOS-based camera from Ikegami was the HDK-79EC, designed to work with docking-style fiber and triax adapters. The company also showed the CMOS-based HDL-40C box-style multiformat POV camera.

In addition, Ikegami showcased a new HDK-79EX II for production and the HDK-75EX for studio applications; the HDK-725/725P for 720p production and studio applications; and the HDL-40 and HDL-40p compact, self-contained box-style HD cameras in 1080i and 720p, respectively.

Ikegami also showed its tapeless HD camcorder, the HDN-X10 HD Editcam along with the standard definition DNS-33W Editcam camcorder.

JVC brought two new HDV camcorders to the show. The GY-HD250U professional camcorder is a feature-rich HDV model, with 60p capabilities, genlock and studio options with a CCU, Cinema Gamma, an HD-SDI output and a composite video input for pool feeds.

Also introduced was the GY-HD200U, a niche HDV camcorder aimed at film schools and rental houses with a stock of cinema prime and zoom lenses. It has the same form-factor as the previously introduced GY-HD100U, but comes with a 60p encoder. To accommodate film lenses, there is an optional ARRI Positive Lock mount adapter available. The unit also features "Image Flip" to compensate for picture reversal by the prime lens.

The GY-HD200 can also be equipped for the ENG news market with its ability to use professional 14.4 V batteries.

JVC gave itself a boost in the HD ENG market by demonstrating the ability to take an encoded signal directly from its HDV camcorder and microwave it, eliminating the need for a costly additional encoder at the send site.

Panasonic introduced its first full-sized shoulder-mount camcorder for P2, the AJ-HVC2000. Targeting the newsgathering market, the camera uses 2/3-inch HD CCDs, 14-bit A/D processing, has five P2 card slots to increase record time and can be switched between 1080i, 720p and standard definition formats.

The company also debuted a studio VTR-like AJ-HPS1500 P2 Station, with a familiar shuttle-jog knob to allow viewing and cuts-only editing of up to five P2 cards at a time. It also showcased a field version of the P2 Station, the AJ-HPM100 P2 Mobile Recorder / Player.

Panasonic also showed its AG-HVX200 HD camcorder, which can deliver images in 1080/60i, 1080/24p, 1080/24pA, 1080/30p, 720p (at various frame rates), 480/60i, 480/24p, 480pA, 480/30p and can record in DVCPRO HD, DVCPRO50, DVCPRO and DV formats.

SUPER SLO-MO

Sony showcased its new XDCAM HD cameras at NAB2006. The PDW-F330 and PDW-F350 both offer true 24p recording in SD or HD, interval recording, and slow shutter. The F-350 additionally offers true variable frame rate recording. Both cameras carry the CineAlta brand.

A new HDV camcorder was also unveiled at the Sony booth. Targeting professional videographers, the HVR-A1U offers many of the same features as the Sony HVR-Z1U in a more compact size. The HVR-A1U features a 1/3-inch 3-megapixel CMOS imager.

Sony's studio-style HDC-1000 and HDC-1500 portable native 1080/60p high-definition cameras also made their debut at the show. These can deliver both 1080i and 720p in high quality. The camera image processing algorithm permits an over-sampled 720p signal.

Sony also introduced its HDC-3300 Super Slow Motion HD Camera System, which images at three times the standard rate and uses three 2/3-inch high speed progressive CCDs

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that enable recording at 1920x1080/180i or 150i as well as 1280x720/180p or 150p. Playback of captured material at the standard frame rate achieves a ballet-like quality, as 30 full frames are seen each second. The slow motion system is capable of outputting in SD as well.

Sony upgraded its HDW-F900 CineAlta camera to the HDW-F900R, featuring a more compact and lighter chassis, HD-SDI outputs and new accessory boards for slow shutter, image inversion and down conversion with 3:2 pull-down.

Photo: Bob Kovacs

Nina Ramos of the San Francisco Film Festival takes a Panasonic AJ-HPC2000 P2 camcorder for a test drive.

ARRI returned with an upgraded D-20 digital cinematography camera. The camera's single CMOS imager is the size of a 35mm film frame, allowing the camera to use standard film lenses.

New this year was a technology demonstration showing the ability to capture raw data from the sensor onto a Quantel recording device, and a lightweight Flash Mag that attaches to the top of the D-20 and can record 10 minutes of material at 4:4:4 and 15 minutes at 4:2:2.

Iconix featured a tiny form-factor HD-RH1 3-CCD high-definition camera. The camera head is roughly 1.5-by-1.5-by-2 inches, weighs 2.5 ounces and takes 1/3-inch C-mount lenses. It is tethered to a small CCU which can reside up to 10 feet away. The unit can output in 1080i, 720p and 1080/60p.

21st Century 3D showed a new version of its side-by-side two camera 3D system, the 3DVX3, with the cameras moved closer together. The company has incorporated new Seagate drives to allow capture of uncompressed data from the camera sensors. Viewing requires active-3D glasses.

Photron had none of its cameras in the booth, as they were all out on shoots. The company did announce that it has developed the one-piece ultima APX-RS, touted as the world's fastest megapixel video camera. It provides 3,000 full color frames per second at 1,024 x1,024 pixel resolution, and has a top speed of 250,000 fps, with a one-microsecond shutter.

The company also has the ultima 512, capable of 32,000 fps and high G-rated for operation in extreme G-environments.

Red Digital Cinema gave a carnival barker's demonstration at its NAB booth. The company touts an HD camera with a 35mm, 11.4 megapixel sensor capturing video at up to 60 fps, recording RAW or 2x over-sampled HD in 4:4:4 or 4:2:2.

Vision Research showed two unusual cameras, the phantom HD and the phantom 65. The HD has a single CMOS imager that captures high-definition video at up to 1,000 fps in an on-camera buffer that holds up to one second, and then downloads that video for playback.

Photo: Bob Kovacs

Pedro Silvestre of Verite Broadcast Solutions tries out the Sony HDC-1500 HD Dual-Link Camcorder at the Sony camera set.

The phantom 65 is designed to replace 70mm film cameras, and uses a 10 megapixel SR-CMOS sensor to capture a 4096x2440 pixel image at up to 125 fps. Both cameras feature 14-bit A/D processing. ■

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Camera Support

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lineup of covers and cases in its standard gray and blue color scheme.

Hardigg showed an expanded Storm line of cases, including a new attaché-size case designed for carrying a laptop. Foam padding protects the computer from impact damage, and the air and watertight seal protects it from the elements.

KATA bags, shown at the **Bogen** booth, introduced a new series of Camera Glove covers for a range of cameras including XDCAM and Varicam.

The company also showed its Palms soft-sided, reinforced cases, featuring an aluminum pole handle to allow balanced carrying when the bag's center of gravity is off-center.

Pelican Products introduced new cases designed for computer equipment. Its foam padded, watertight cases have been designed for specific computer pieces, such as the Apple G-5.

The company also showcased new top-loading cases.

Porta Brace, K&H Product showed its new Safeguard Field Production Vault, a watertight, high-performance hard-resin case for transporting and protecting TV production equipment. They are hard-sided, foam lined, and some sport wheels.

Tiffen showed its Domke line of camera and equipment bags, featuring "bomb-proof" steel snaphooks with welded steel rings as the primary closure. The bags have configurable interiors and come in a range of colors.

Zero Halliburton debuted 14 new colors for its 21-inch Zeroller aluminum cases. The new colors are designed to make it easier for airline travelers to spot their luggage on baggage carousels.

MISCELLANEOUS

Troll showed its TrollCamHD weatherproof camera enclosure, featuring a sealed camera compartment with heat exchanger cooling, an air-barrier instead of windshield wiper, and an air-blast to clear droplets from the anti-reflective glass window.

Noblét showcased its Aerial Camera Trolly, featuring fully wireless operation and two models, for indoor and outdoor use. Both models feature self-contained motor, pan-and-tilt head, batteries and chargers, and remote control unit. The NCT1 outdoor model rides a single cable for ease of set-up, and the NCT2 indoor model rides dual cables for stability.

P+K Technik showed its Skater Mini low-level desktop camera dolly system, featuring precision wheel alignment settings and a positive lock brake system to keep the unit from moving when stopped.

Photo: Bob Kovacs

Rachel Fontana of Spider Support Systems gets a lift from the company's Spider Pod Riser system.

Spider Support Systems returned with its portable tripod riser and standing platforms, designed to quickly raise a camera position above the crowd. By separating the two units, Spyder has isolated the camera from vibration from incidental movements by the operator.

VFGadgets.com displayed the Pro-Gripper Quad, a car-attachment rig for lightweight mini HDV and DV cameras. It features four suction cups and telescoping arms to allow shooters to position a camera anywhere outside of a vehicle. ■

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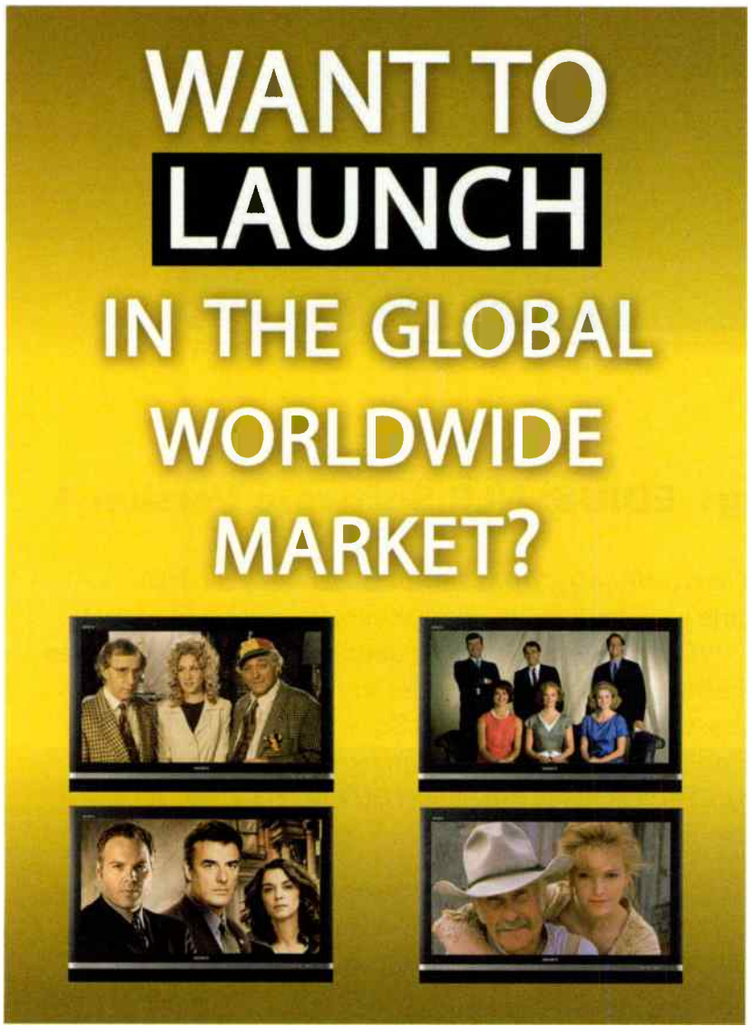
Lenses

CONTINUED FROM PAGE 34

degrees. The T5.6 lens covers a full 35mm frame of film, and comes in a video version for SD and HD with a B4 camera mount.

Thales-Angenieux replaced its 15x zoom lens with a new 19x lens, the 19x7.3AIF, extending its range at both the wide-angle and telephoto ends. The lens comes in three configurations: HD, SD, and a new economical line denoted as "HD-E." The lens features digital controls, with all functions visible on an LCD screen next to the handgrip.

Other new lenses in the HD-E line from Angenieux include the wide-angle 10x 5.3 AIF HD-E and the wide-zoom 26x7.8 HD-E broadcast lenses.



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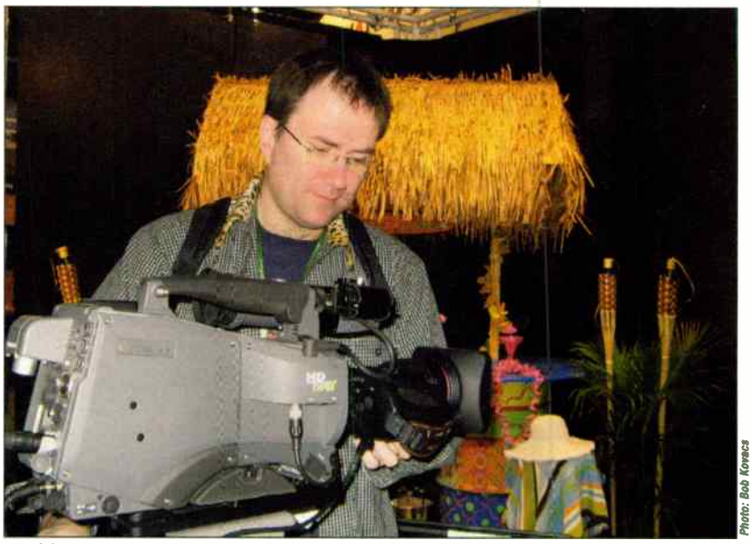

Photo: Bob Kovacs

David Daniels of Bent Image Labs takes a closer look at the Angenieux 19x7.3 AIF HD ENG lens.

FILTERS & MATTEBOXES

Balcar showed a Cokin mattebox and filters designed for HDV camcorders. The company also showed wide-angle lens converters for HDV cameras.

Chrosziel, shown in the **16x9** booth, premiered its 5.65x5.65 HD Mattebox, made especially to work with the new 5.65x5.65 filter size. The unit's filter stage houses two independently rotating 5.65x5.65 filters, and is compatible with zoom lenses as wide as 4.5mm or primes as wide as 5mm, without vignetting.

Formatt Filters, shown in the **Bogen** booth, unveiled five new filters specifically geared to HD: HD Clear Soft Effects filters, HD Neutral Density filters, Clear UV HD filters and Circular Polarizer Filters.

The Tiffen Co. introduced Digital Diffusion/FX Filters designed for DV cameras. The Digital Diffusion/FX filters improve the subjects' appearance without evidence of filtration, and are similar to the popular Tiffen Black Diffusion/FX without the internal dot pattern.

The company also introduced Foxi, a remote focus and iris control for Panasonic HVX-200 and AG-DVX100B camcorders. It switches easily between auto and manual control.

Schneider Optics showcased its new Century Universal HD Compact .8X Wide Angle Converter, designed to add 20 percent wider coverage throughout the zoom range for camcorder lenses with 72mm lens fronts.

The company also exhibited a .6X Wide Angle Adapter designed for the Canon XL H1 camcorder.

VariZoom showcased tripod handle-mounted Lanc controllers for lenses on Sony, Panasonic and Canon DV and HDV camcorders, as well as controllers for Canon and Fujinon zoom lenses.

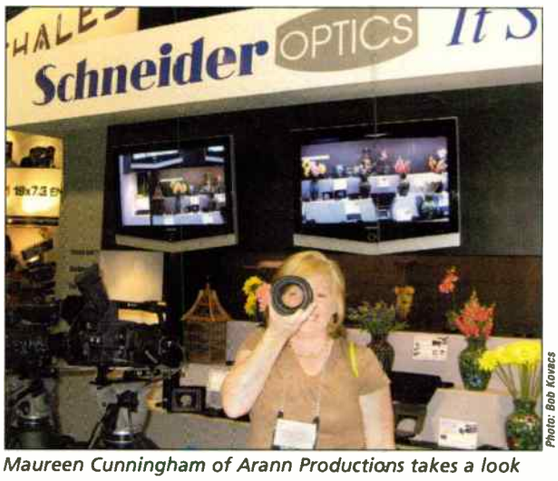

Photo: Bob Kovacs

Maureen Cunningham of Arann Productions takes a look at the world through a Schneider Optics teleconverter lens.

LENS ACCESSORIES

16x9 Inc. unveiled Zoe DVXL, a universal remote zoom control designed to work equally well with Sony and Canon LANC camcorders, as well as Panasonic cameras with a Cam Remote input, such as the HVX-200 or AG-DVX100B. The technology offers stepless zoom control, ultra-smooth ramp-up and precise manipulation.

Vocas, shown in the **Pro Source** booth, unveiled the MFC-1 Manual Focus Controller, designed for cameras from DV-size to professional highend models. It features a rotational stop that is especially handy for DV cameras with indefinite rotating focus rings.

The company also introduced the MB-450, a five-filter matte box designed for SD and HD lenses. ■

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Monitors

by Jay Ankeney

There were monitors designed for broadcast applications of all kinds gleaming out from many booths at NAB2006, yet this year, due to cost and environmental concerns, the trend was away from CRT designs toward alternative technologies like LCD and LCoS.

The LFMD-WQ30 from **2s2/ Display Integration Technologies** is actually a ruggedized version of a 30-inch Apple Cinema LCD display, capable of true 2K resolution (2560x1600) and is operator programmable from a PC via RS-422.

Incorporating single-chip DLP technology, the c50 50-inch rear-projection HD cube from **Clarity Visual Systems** provides 1024x768 resolution at a 1500:1 contrast ratio.

A touch screen on the RX-802TA 8-inch monitor from **CoolTouch Monitors LLC** lets you use your finger as a mouse to select functions on an outboard computer via the USB connector. CoolTouch also had their 7-inch XP-701W, a 2400 x 480 LCD monitor in a watertight enclosure for remote productions.

Boasting a 1920 x 1080p native screen resolution and Dual-Link HD-SDI inputs, the 42-inch model 21425 LCD monitor unveiled by **Data Check** has a high 1200:1 contrast ration and 6.5 ms response time.

The 8.4-inch HDM-EV85 HD monitor from **Ergo Ventures** was designed specifically for HDV camcorders with 16:9 aspect ratio, 1024x768 resolution and a 180 degree rotation for anamorphic lens usage.

With their new 47-inch Vutrix Professional Broadcast TFT LCD Grade 1 reference color HDSDI flat screen display (1920x1200), **FrontNICHE** provides TruMotionHD 1080i adaptive de-interlacing to maintain optimal image sharpness, FineEdge dynamic directional interpolation to eliminate jaggies, and Reality Expansion technology for 10 to 16-bit image processing.

Ikan's low-cost V7000 LCD monitor provides 16:9 and 4:3 aspect ratios, 1440 x 234 resolution, horizontal and vertical flip and can be fitted with an optional sun hood.

Photo: Bob Kovacs

Antonio Palillo of Panasonic (L) discusses the company's T-LH2600W 26-inch LCD HD monitor with Antonio Petrucci of On-Air in Italy. The monitor below is Panasonic's BT-LH1700W 17-inch LCD HD monitor.

Although they intend to supply CRT monitors as long as they can, including the new HTM-1505RA(Z) 15-inch rackmount studio monitor, **Ikegami** was also featuring LCD displays at NAB2006, including the HLM-900P 8.4-inch battery operated field unit and the HLM-2200R multiformat model.

The display on the **J-LAB** 15.4-inch LCD field monitor has a 1920x1200 pixel density, resembling a broadcast CRT monitor. Complete with a true HD viewfinder, this lightweight monitor ships in an indestructible Pelican mini briefcase.

JVC Professional Products Company stayed in the CRT league by introducing the TM-1011GU 10-inch portable color CRT utility monitor and the TM-1051DGU 10-inch monitor with dual SDI inputs. But they also displayed the new DLA-HRM1, a 48-inch HD reference monitor with a 3,000:1 contrast ratio and full 1920x1080 resolution using three chip D-ILA (Direct Drive Image Light Amplifier) technology, JVC's proprietary version of LCoS.

The LM6015 TFT multiformat monitor from **Kroma Telecom** boasts very low power consumption, making it suitable for both studios and remote vans needing 1024x768 pixels resolution in a standard 19-inch rack mount.

A new 23-inch native resolution 1080 HD monitor was the flagship of **Marshall Electronics**' NAB presentations. It used their TFT-MegaPixel system, along with higher resolution LCD/TFT panels selected to make the most out of SD and HD SDI signals.

The huge 57-inch display that was part of **NEC**'s MultiSync 90 large screen LCD series loomed over the Convention Center floor. It featured IPS technology-based modules and a 12-bit look-up table for improved color breadth and depth. The unit also offers ColorComp for enhanced brightness, and black level adjustment to more closely resemble the black levels of a CRT.

Panasonic introduced a 26-inch HD production quality LCD monitor, the BT-LH2600W, with a true 16:9 wide-screen panel (1366x768) and the industry's lowest delay. The BT-LH2600W features two auto switching SD/HD SDI inputs, and a split screen/ freeze frame function for scene comparison and critical color matching (live input vs. freeze frame). The monitor offers a 700:1 contrast ratio and is compatible with multiple HD/SD formats including 1080/24PsF, 1080i, 720p, 480p and 480i.

As a leader in evaluation-level CRT monitors, **Sony**'s upgraded BVM-A series incorporated several enhancements including the addition of a single input card that auto-detects SD and HD serial data. Targeted as a replacement for Sony's BVM-D9 CRT monitor, Sony's new 9-inch LMD-9050 can display 720/50p signals. In addition, five two-piece LCD LUMA monitors were displayed. These featured ChromaTru color processing technology based on color space conversion and white balance adjustment.

The Grey Owl line of LCD monitors from Germany's **Tamuz** are capable of 1080p and 2K resolutions. They feature three inputs for SD/HD SDI or VGA, automatic alignment and calibration using the PM 5639-T probe and are remotely controllable via IP or 10/100base T Ethernet.

Occupying only 3 RU, the LCD-560X3S from **Tote Vision** contains three 5.6-inch LCD monitors with SDI input/output that can be tilted 90 degrees for optimum viewing. A single regulated power supply energizes all three monitors.

The new 24-inch and 46-inch LVM series of HD/SD professional LCD monitors from **TVLogic** can present 1080p or 4:4:4 RGB images thanks to their Dual-Link HD-SDI inputs. Intended to be CRT replacements, TVLogic's LVM series also feature an automatic color calibration utility to match multiple LCD displays.

Photo: Bob Kovacs

Chris Shaw of Wohler (L) explains a feature on the company's Touch-It monitor to Devid Clunn of Modern Videofilm.

Wohler Technologies presented a clever little "Touch-It" touch screen video monitor with two 7-inch LCD screens. Touch one of the 12 thumbnail images on the left monitor and it becomes full motion video on the right screen, making the Touch-It, in effect, a mini A/V switcher. Wohler was also showing off its Daylite Series of LCD panels designed to be viewed in sunlight conditions. ■

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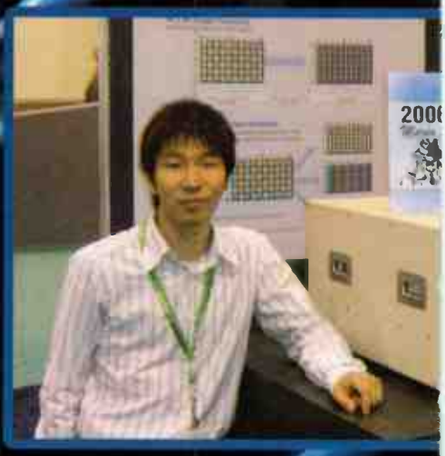

LAS VEGAS

Ah, Las Vegas. Where else would you find a woman's near-naked derriere blown up to about two stories high on the side of a hotel in what's now promoting itself as a family-friendly city?

Ah, NAB. Where else would you find Panasonic, the company that told us tape was dead back in 2004, introducing not just one but two new tape-based camcorders, as well as a new VTR, in 2006?

I don't mean to pick on Panasonic. I like their stuff (and they introduced a P2-based camcorder, too).

I also like the Infinity camcorder, and I thought the demo of its Rev Pro disk pack playing immediately after being removed from a hot oven, a freezer, the inside of a dust-filled vacuum cleaner, a snow bank, and under a tire that just ran it over was danged spiffy. But "non-proprietary" media? There is exactly one source in the world for Rev Pro disks, and that's Grass Valley. What's "proprietary" media—videocassettes chained to their manufacturers?

UNDER THE RADAR

So, when it comes to picking a camcorder this year, I decided to skip Infinity and P2 and even Sony's 4:4:4 digital-cinematography mockup (which is also supposed to record on videotape). I also skipped the vapors of the Red tent. I picked Silicon Imaging's SI-1920 HDVR.

If you ain't heard of them, that ain't their fault. Their client list for HD cameras includes Dalsa, IBM, Kodak, and Sarnoff. The new camcorder uses a 2/3-inch imager fed from a film lens. With a 35mm lens you use only the central (best) part. Add a touch-screen, over- and under-cranking from a frame a minute to 72 fps, four-hour recording on hot-swappable drives, wavelet compression of raw RGB data to 96 Mbps, and a price closer to an HDV camcorder than to HDCAM, and it's a winner, I do declare.

CHEAPER IS BETTER

Now, then, it'll probably take a while before everyone's using Silicon Imaging camcorders. Meantime, Sony, alone, has sold a quarter-million 1/3-inch HDV versions. P+S Technik's Mini35 has allowed 35mm lenses to be used on 1/3-inch camcorders for years, but it usually costs more than the camcorder (and I'm including even Panasonic's HD P2 model). Enter Redrock Microsystems. There ain't a single HD camcorder (and I'm counting the $800 consumer Sanyo) that costs less than their basic M2 Cinema Lens Adapter.

Add all the accessories, and you're still below Sony's lowest price. And I

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can't swear to have done extensive testing in the five seconds I spent looking at it, but it seems to me this just might be a case of cheaper-is-better. It's another winner, I do declare.

COMPUTER PROMPTING

So you're going on a shoot with either a Redrock-equipped small camcorder or an SI-1920 HDVR, and you need a prompter. There have been plenty of prompters for small camcorders before, including one with a paper roll, but they've all got a small drawback for a one-person shooting rig—a second person to run the prompter and a wire between the two of you.

Enter Portaprompt's Nano-Prompt. Like other small prompters, it mounts to the front of a camera, adding around four pounds. It doesn't need a connection to a computer because it is a computer, complete with wireless link to a tiny transmitter the talent can use unobtrusively to advance the text. And you can use the computer for anything else you want, too. I do declare another winner.

GOOD THINGS IN SMALL PACKAGES

The Nano-Prompt transmitter is about the size of the lock/unlock transmitter on a set of car keys. The Ricsonix Blue wireless-mic transmitter is smaller, but it's easier to replace the battery.

This is the latest product from the same guy who came up with last year's winner, the Pin-Mic, so you can expect a version soon where the Pin-Mic plugs right into the transmitter, and you can't see a thing. How does he get it so small? It uses Bluetooth, and it's a winner, I do declare.

3-D PAPER

This wasn't the year of HD. This wasn't the year of digital TV. If I had to make NAB2006 the year of something, I'd say 3-D—everything from NHK's 3-D HD LCDs to the two 3-D sessions in the four-session Digital Cinema Summit. My favorite was ChromaDepth 3D from American Paper Optics.

Most 3-D involves complicated dual images and convergence and stuff like that. ChromaDepth just involves keeping bluish stuff in the background and reddish stuff up front. The glasses are cheap, and it works as well for on-air promotions as for mailings and Web sites. I do declare another winner.

SIZE MATTERS

If you use some 3-D process other than ChromaDepth, you might get some color fringing. Heck, if you shoot HD with a 1/3-inch camcorder you might get some color fringing. It's called chromatic aberration, and it's tough to get rid of in the best of lenses, never mind the one that comes built into an $800 camcorder. But camcorders ain't getting bigger and more expensive; they're getting smaller and cheaper.

In NHK's Ultra Hi-Def system (16 times more pixels than 1920x1080), size and money weren't a problem, and they still had chromatic aberration. So Astrodesign came up with the VP-8400 processor to eliminate it. Electronics get smaller & cheaper. Maybe we can expect lens-fixing chips in future camcorders. It started here, and it's a winner, I do declare.

ONE-MAN NEWS

So you shoot your story with your corrected-lens camcorder, and you bring it back to the station. In New York, L.A., Chicago, or Philadelphia, someone's going to edit it, someone else will introduce it, and a crew will shoot the introducer and cue up the edited clip. But in Mzuzu, Malawi, where the gross domestic product was $600 per person last year, maybe a one-person TV station would be a good idea.

Rushworks, which has previously introduced complete master-control facilities (including playback systems) built into an inexpensive keyboard, now has Newsrush. It lets the same one-person shooter and editor add all the necessary cues for news-studio automation at an affordable price. It's another winner, I do declare.

BETACAM UPGADE

Such television as there is in Malawi is 625-line. Television in the U.S. is 525-line. Grass Valley's Infinity will record in both, but Sony's Digital Betacam won't. Or will it?

Multi-Speed Engineering will "upgrade" Digital Betacam decks to handle either standard or even 24-frame. Settings are stored in non-volatile memory, so switching between standards is instantaneous. It's neat, and it's a winner, I do declare.

FLASH MEMORY

So, yes, there was a lot of videotape at NAB2006. There were also a lot of disks, from the tiny drives used in the SI-1920 HDVR to Omneon's giant Mediagrid. But just about the only flash memories you could find mentioned outside the thumb drives that some manufacturers offered with their press releases on them were in a few camcorders from folks like Grass Valley, Hitachi, Ikegami, Panasonic, and, if the vapors didn't get to you, Red. And then there was Toshiba's On-Air Max.

It looks like a video server. It works like a video server. Heck, it is a video server, with up to eight inputs and 15 outputs. It uses flash memories instead of disks, but that doesn't make it too expensive, and Toshiba says it's the best selling video server series in Japan. I do declare it's a winner.

ALMOST THERE

So you capture. You record. You play. And you look at it on what? The CRT ain't dead yet, but if you're trying to buy high-end CRT monitors, you have my condolences. I really, really liked the JVC/Teranex 46-inch D-ILA product, but 46 inches is a bit much for most of the places where I use monitors.

eCinema Systems and Cine-Tal had some good looking LCDs as regards color and contrast, but when it came to motion rendition, FrontNICHE's LCD versions (six-inch up to 57) blew me away. Okay, they ain't quite up to CRT, but they're being made and sold, which is almost more than I can say for that other technology. They're a winner, I do declare.

Say, I just thought of something. If the NAB show is so technologically advanced, how come we walk around it with bags of paper? Come to think of it, if we're in this high-bandwidth, instant-access business, how come over 100,000 of us fly to Las Vegas to walk through dozens of miles of aisles?

Here's my recommendation. Let's have NAB2007 via broadband connection. Or maybe a thumb drive.

Mario Orazio is the pseudonym of a well-known television engineer who wishes to remain anonymous. E-mail him at Mario_Orazio@imaspub.com.

(Clockwise from top left) Ari Presler, CEO, Silicon Imaging; Taku Tsukamoto, one of the designers of the VP-8400, Astrodesign; Rush Beesley, president, Rushworks; Ralph Edwards, North American distributor (L) and Stephen Bone, principal, both of frontNICHE; Ric Creaser, inventor (L) and John Coffey, president, both of ricsonix; Craig T. Jones, principal, American Paper Optics; Makoto Honda, chief specialist, Toshiba; James Hurd, chief revolutionary officer, Redrock Microsystems; Jim Keating, technical director (L) and Steve Slade, software engineer, both of Portaprompt. Not pictured: Multi-Speed Engineering.

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Asset Management

by Susan Ashworth

Whether it's a clip of a high-speed car chase, monthly sales information or trafficking data, the new media asset management solutions showcased at NAB were designed to do one thing—help users find what they need faster.

Among the most significant developments in asset management was unveiled by **Avid Technology** at NAB2006. Avid Interplay is touted as the industry's first workflow engine that combines integrated asset management, workflow automation, and security control into one single system, for post-production and broadcast facilities. Interplay connects teams to a shared-data and media backbone and smoothly manages the flow of projects from completion using security and revision control.

BitCentral showcased its OASIS file share programming system, which allows station groups to share story data and video.

Blue Order presented the latest enhancements to the Media Archive media asset management solution, including enhanced import and export capabilities. The company also offered a sneak preview of Media Archive 3.1, which allows for the management of master data and the integration of third-party tools.

Crispin gave NAB attendees a tour of its NewsCat digital archive and catalog system, which gives users access to archived and low-resolution proxy video through a browser-enabled system. The company also showed its Digital Transfer Agent, an interface that moves programming from third-party content delivery systems to a video server, as well as the Archive Manager and CTS suite of applications.

Avid Interplay

Dalet Digital Media Systems showcased the DaletPlus News Library, a media asset management and archive system designed for news that uses the MOS protocol and MXF file format to interface with legacy systems, and the DaletPlus Media Library, a media asset management system for multi-location production and playout.

DRM Networks demonstrated its media asset management solutions, including Media Manager 3, a content management solution that allows users to transcode content, manage workflows and distribute files.

EOS International showcased its EOS.Web scalable media access management solution, which allows users to search and order clips, keyframes, audio, transcripts and digital media assets.

Florical introduced Acuitas, an asset management solution that allows a station to share media between stations, transfer assets over a wide area network and rejoin in-progress programming with the click of a button.

Front Porch Digital featured the DIVAdirector, a Web-based content management application, as well as version 2.0 of DIVAnet, now offering advanced content replication, disaster recovery and business continuance functionality across multiple facilities. Also new was DIVArchive 5.0, which adds broader interoperability with key partner systems, enhanced performance for network-based API clients, file system interface refinements and enhance error messaging. Front Porch also introduced DIVAcomplete, a complete digital archive solution, DIVAworks, a turnkey single-chasse unit tailored for first-time users of archiving systems and DIVAmonitor, which enables remote monitoring of DIVArchive and all connected broadcast/storage devices.

Harris Corp. demonstrated innovations in digital content management and delivery with its digital newsgathering solutions, which include NewsNet. The company also showcased its H-Class Content Delivery Platform and Application Suite, which allows media companies to combine workflow and business processes into a system that handles content from creation to consumption.

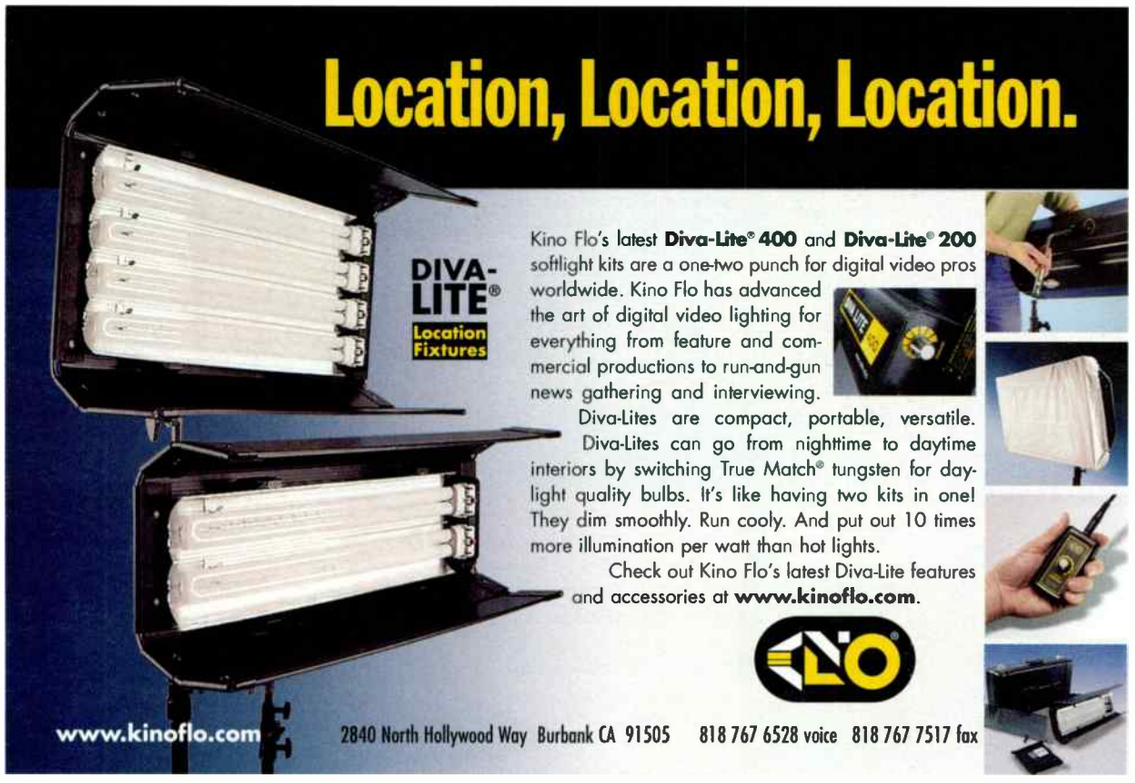
IBIS launched IBIS Highlighter, a news and sports management system designed to enable fast turnaround and management of sports events, studio-based programming and outside broadcasts.

Infosys Technologies demonstrated how its digital asset management and intellectual property management solutions, combined with Microsoft Connected Services Framework and Microsoft Windows Media Digital Rights Management, enable media companies to better manage media assets and metadata.

JustEdit displayed its lineup of vsn content management products, including the vsnnetsharer and vsnmacsharer systems, which allow users to search for materials stored in video servers. Other solutions on display included the media asset management module known as vsnarchive, which allows users to access and browse low-resolution video online.

MassTech launched MassLogger Gateway, a 2 RU chassis that expands the ability of MassLogger by providing a powerful management and control interface for external devices, such as a DVD library, tape archive or network attached storage. MassLogger Gateway

ASSET, PAGE 64



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Asset

CONTINUED FROM PAGE 62

also provides an interface to the MassStore media lifecyle management and archive solution, allowing users to integrate logged content into their existing archive infrastructure.

Maximum Throughput featured its Sledgehammer 2.5 solution, which gives users enhanced control over digital content through the post-production process; and Xstoner 2, an application for content manipulation and interconnectivity between devices.

mSoft gave visitors a glimpse of VisionClip Version 2.0, a digital asset management server system for managing video and graphics media, and the MusicCue Version 4.0 asset management system.

Nesbit Systems unveiled Preview+, which adds video proxy files to the information managed by the Nesbit Systems Media Library System. The proxy files (MPEG-1, MPEG-2, WM9 or MPEG-4), provide frame-accurate representations of digital content.

Netia showcased several of its media asset management solutions, including Hypercast Warehouse, an asset management platform that allows users to centralize, share and view media files, convert source files into various formats, and transfer them to storage. Other solutions include the Magnesium data centralization and management system; Hypercast Editor, a software solution that allows users to segment, index and catalog media files; and Manreo Café, which can trigger recording via image recognition schedule transmission.

Nextamp unveiled its content tracking solutions that include NexTracker, which monitors content integrity, tracks airtime sales and manages broadcasting rights.

Omneon showcased ProBrowse, which allows users to create and view low-res versions of material within an Omneon Spectrum system. ClipTool, which is used to monitor and control playout and record functionality, was also on display.

OmniBus Systems launched the OmniBus iTX, a wide-reaching technology that includes basic content management features and is designed to replace the functions of a broadcast master control and play-out system in a single software application.

Other solutions in the booth included the OmniBus OPUS Sports & News Logging system, which allows for logging, sorting and accessing of live and recorded events. The company also unveiled new features within the OPUS Content Management and Workflow System, which include clip genealogy and archivist keyword metadata.

Pathfire displayed several systems, including the Browser DMG, which is geared for tracking advertising and syndicated programming; DMG Traffic Connect, which allows users to access metadata within media; Pathfire Central Archiving system, which allows remote users to search, preview and request content; and the Pathfire Direct content distribution solution.

Pro-Bel announced the launch of Morpheus Media Browse, a system that allows users to browse low-resolution copies of content, and integrates an application known as "Xcode," a high-speed transcoder that streams files from material source, performs a transcode to Windows Media 9 format, and then stores the low-res version.

Prophet Systems showcased Acuitas, its station asset management tool used to transfer media from site to site over a wide area network.

Proximity demonstrated its artbox workgroup, a software package designed specifically for small broadcast and post-production companies. Workgroup features a single searchable media catalog with thumbnails, proxies and metadata of video and stills content that can be shared across multiple users.

ScheduALL announced a partnership with Konan Digital, a media asset management provider, to provide a new tapeless workflow solution that merges the workflow and schedule management capabilities of ScheduALL and the

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media asset management expertise of Konan DigitalArc products. The company also showed its Media Connection Services and ScheduALL for the Web.

SintecMedia showcased its OnAir sales and traffic management system, which is now being used by HDNet to manage the network's key operational needs.

Software Generation Ltd. unveiled its redesigned data archive and management software, known as FlashNet6.

Solid State Logic, following its merger with Broadcast Devices, unveiled the MediaWAN platform, including the MediaWAN Gravity scalable broadcast production system, and MediaWAN Backhaul, for automatic remote ingestion.

Sony introduced HDX-change, a cross-platform hardware/software suite that will enable collaboration through file sharing and edit decision list exchange between NLEs as well as network browsing of proxy matrial, direct Web authoring and overall asset management.

Specialty Data Systems highlighted eBroadcast solution, a Windows-based broadcast software traffic and billing system.

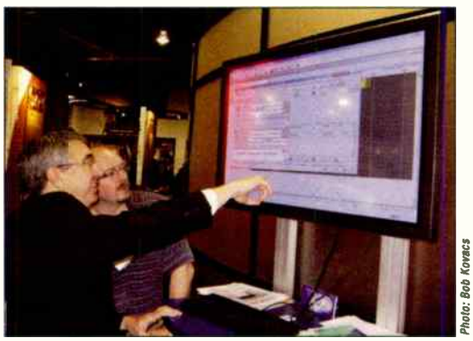

Photo: Bob Kovacs

Dave Legow of ScheduALL (L) explains a feature of ScheduALL content workflow management to Duncan Blair of the Toronto Maple Leafs Network.

Studio Network Solutions demonstrated its new Postmap software, designed for locating, tagging and tracking media files and metadata on SAN, LAN or removable storage.

Stratacache featured the OmniCast Media Scheduler, designed to aid in the authoring of media.

Sun Microsystems featured several solutions, including the Video Asset Management System, and the Media Asset Management Reference, the latter of which offers new features designed to improve workflow and integration with third-party solutions.

VCI introduced Orion, a sales, traffic and accounting management tool.

VertigoXmedia, which was acquired by Miranda Technologies at the beginning of the show, showcased the Xstation media platform, which controls clips, promos, logos and other branding elements. The company also showed Version 3.7 of the Xmedia asset management system, which is designed for creating, managing and airing broadcast graphics.

VideoBank displayed the VB Live encode/logger, which allows users to capture low and high-rez video, add data elements, and search and view events while encoding is still in progress.

Volicon featured the Observer multichannel broadcast monitoring system, which allows users to record, store, search, retrieve and export media in real-time using closed-caption information. Version 3.0 features a new closed-caption display feature and new support for Sundance and Harris automation solutions.

Wegener showcased its Compel network control system that gives users control over the delivery of TV and radio programming received over satellite and terrestrial paths. The company also introduced a new Web browser interface for local asset management within the iPump media server and featured the MediaPlan, which ingests, encodes, tracks and archives news information as digital assets.

Xytech Systems Corp. unveiled the latest version of Enterprise, with enhancements that include new modules for shift scheduling, article management and quality control. Version 8.5 of Enterprise also includes upgrades to the existing article and resource functions. ■

openGear

an open-architecture, control system ready, terminal gear platform, designed by Ross Video, available to everyone.

Ross Video is proud to introduce openGear, an exciting new concept in broadcast terminal equipment solutions. openGear is based on an open-architecture, control system ready 2RU modular frame, designed to accommodate up to 10 cards.

A wide variety of openGear cards are available from terminal equipment vendors supporting the openGear platform allowing facilities the freedom and flexibility to choose the best technology for their particular application.

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TV TECHNOLOGY
STAR 2006
Superior Technology Award Recipient

With more than 1,400 exhibitors at NAB2006, there was no shortage of innovative technologies. The TV Technology STAR Award judges scoured the halls of the LVCC searching for the best of the best. So without further ado, here are this year's STAR Award recipients...

Adtec
Ron Johnson, vice president of sales and marketing for Adtec, accepts the STAR Award for the Edje 4111. Until now, one thing has been missing from digital signage: high definition. Adtec breaks this barrier with its Edje 4111HD, an affordable digital player that stores and plays out a variety of formats, including most popular SD and HD formats. The unit can even upconvert SD to HD. At $2,500, the Edje 4111HD takes digital signage to the next level.

Anton/Bauer
Anton/Bauer's President Alex DeSorbo accepts the STAR for ELIPZ. When it comes to small-format cameras, there are frilly accessories, and there are must-have accessories—this is the latter. While you could choose either the EGRIPZ camera grip or ELIPZ battery/mount system separately, together they mean that you can control that little HDV guy as tightly as a full-sized, old-line camera, and you can keep shooting all day, even with an add-on camera.

Autoscript
(L to R): Autoscript President Michael Accardi, Managing Director Brian Lartner, Andres Lambourne, chief executive of SysMedia, and Peter Carey, group financial director for Autoscript, accept the STAR for the Voice-Plus voice activated software, which allows the prompter to be run unmanned. The prompter compares what the anchor is saying with what's on the script, and keeps the reading line in the proper position for the reader.

Avid
(L to R): Jonathon Howard, manager of broadcast system design for Avid Technology and David Schleifer, vice president of broadcast for Avid, accept the STAR for Avid Interplay, an innovative workflow engine that can make all of the material in a given production securely available to everyone on the production team. Interplay takes nonlinear editing up to the level of nonlinear collaboration.

Calrec
John Gluck, sales director for Calrec, accepts the STAR for Bluefin. Several years in development, Bluefin provides up to 200 percent more processing power in 92 percent less space and at no extra cost. Retrofit-able to all existing Calrec Alpha consoles, the Bluefin high density processing system provides 480 equivalent mono signal paths and is capable of providing 78x full 5.1 surround channels on one card.

Canon
By waiting until now to introduce its first HDV camcorder, Canon, the pioneer of DV acquisition, was able to add the kinds of features that make big-format shooters much more comfortable with smaller gear. Classic Canon ergonomics, coupled with pro features like genlock, time code in and out, an SDI HD output and FireWire-enabled remote control make the XL H1 HD camcorder the choice for seasoned professionals.

Chyron
(L to R): Brian Cooper and Michael V. Pope, software engineers for Chyron with the STAR Award for Lyric Pro. Chyron has added every imaginable feature and functionality for high-end on-screen graphics to its Lyric Pro CG application. Thanks to Chyron's interFuse technology, a Chyron system running Lyric Pro is able to handle nearly anything a designer can dream up, and can apply even complex changes on-air immediately.

Cobalt Digital
Gene Zimmerman, president of Cobalt Digital accepts the STAR for the Cobalt Digital HD-8090 multistandard converter. Noted for its quality level and versatility, the HD-8090 features 12-bit analog input sampling and accepts just about any video format: analog component, analog composite, and SDI in SD & HD. The processing circuitry uses a VCXO filter to keep jitter down to a minimum and there is a full set of processing parameter user controls.

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Doremi

Ramzi Shakra, managing director for Doremi, accepts the STAR for the LiveEditPro profanity cleaner and commercial insertion application. Doremi has finally delivered a very workable product to cover the now necessary evil in live broadcasting. The application allows a variety of options in "bleeping" the offensive portion of the show (pre-recorded clip, black or pattern (slide), as well as audio cover selections too.

Fast Forward Video

Mark Playdon, sales director for Fast Forward Video accepts the STAR for the NDT 200, a tiny DDR for field recording and playback. Using standard Serial-ATA 2.5-inch laptop hard drives, the NDT200 will run on a wide range of DC voltages and fits nearly anywhere. And if the hard drive fills up, you can swap to a new one in the field and continue recording. If you need a tiny field recorder with unlimited recording time, the FFV NDT200 may be what you need.

FOCUS Enhancements

Matt McEwan, senior product manager for FOCUS Enhancements, accepts the STAR Award for the FireStore FS-100, a small hard drive designed to work with the new Panasonic AG-HVX200 P2 camera. Weighing about one pound and only 1.5 inches thick, the FS-100 allows users of the HVX200 to use the camera as a direct-to-disc recorder until the capacity and price of P2 cards become more economical.

FOR-A

FOR-A President Susumu Hotta accepts the STAR for the FA-900, an extremely full featured up/down converter with a very large feature set. Color correction and noise reduction aspects are impressive, as well as a rather unique control system which changes color with the mode of operation selected to quickly key the user as to what has been selected. Plus, it's a great value!

Grass Valley Sapphire

(L to R) Jean Macher, director of multimedia product marketing and Jacques La Mancq, product manager for Thales, accept the STAR for the Grass Valley Sapphire. Sapphire solves the issues of inserting spots or clips into a real time transport stream — a new solution for the all file-based digital workflow. It's also useful in live (on the fly) insertion without decoding to baseband video.

Grass Valley Infinity

Jeff Rosica, vice president of global marketing and strategic business development for Grass Valley, with the new Infinity camcorder. The new Infinity series camcorders record to REV PRO drives, Compact Flash memory cards or USB sticks, allowing the videographer to buy off the shelf recording media for tapeless acquisition—a huge breakthrough for solid-state media recording.

Grass Valley EIDUS Pro 4

Hiroshi Yamada, president of Canopus, accepts the STAR Award for the EDIUS Pro 4, which features native editing and realtime processing of uncompressed SD, HD, HDV, DV. It also offers multicam editing with up to 8 cameras, EDIUS Speed Encoder for HDV for fast HDV video output and I/O support for standard definition Sony XDCAM and SD/HD Panasonic DVCPRO P2.

Holophone

(L to R): Jonathan Godfrey, CEO and Michael J. Godfrey, president and founder of Holophone, receive the STAR for the H3-D 5.1 surround microphone. Based on Holophone's patented H2-PRO, the H3-D is a portable and economical 5.1 multichannel surround sound microphone. Though the surround sound it captures may well not be used on the air today, the archival footage will maintain the encoded surround sound that can be used in the future.

Iconix

(L to R): Daniel P. McGuire, CEO and Charles Rotbart, executive vice president, receive the STAR Award for Iconix's HD-RH1 POV HD camera The HD-RH1 is a 1/3-inch 3-CCD HD video system that can shoot 720p, 1080i and 1080p at all standard frame rates, including 1080p/60. This will allow HD images from places that were previously impossible to locate a camera head.

Innovision Optics

Mark Centkowski, president of Innovision Optics, accepts the STAR for the MiniProbe Specialty Lenses, which mount on non-removable lenses for HDV cameras from Sony and Panasonic. The Mini Probe's unique periscope attachment lets operators shoot from an ultra-low perspective. Featuring a 19-inch (48.3cm) long lens barrel with a diameter of just 1.4-inches (36mm), the HD Mini Probe is guaranteed to be compatible with most DV camcorders.

InPhase Technologies/Maxell

(L to R): Steve Kitrosser, chairman of the board, InPhase Technologies, and Patricia Byrne, national marketing manager for the Maxell Professional Media Products Groups, accept the STAR for the world's first commercial holographic data storage product. InPhase Tapestry has a capacity of 300 GB and that enables broadcasters to record 2,100 minutes (35 hours) of broadcast-quality video on a single disk at a transfer rate of 20 Mbps in less than 4.5 hours (250 minutes).

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JVC
(L to R): Bob Mueller, executive vice president/chief operating officer, and Jack Faiman, vice president of business development for JVC Professional Products Co., accept the STAR from TV Technology Editor Tom Butts for the DLA-HRM1U 48-inch reference monitor, the first reference monitor to use JVC's renowned D-ILA technology. It reproduces highly accurate representations of a wide variety of signals making it suitable for most HD applications.

Linear Acoustics
(L to R): Deborah McAdams, managing editor of TV Technology, presents the STAR to Linear Acoustic President Tim Carroll and Vice President of Engineering, George Smith, for the LA-5448, an AC-3 multi-input synchronizer and rate shaper. Without recording the AC-3 stream, the LA-5448 normalizes and corrects the AC frames at a rate equal to or below 448 kbps and produces an output that is devoid of errors—perfect for broadcast, cable, and satellite.

Microwave Radio Communications
(L to R): Jacqueline Roy, marketing communication specialist for Microwave Radio Communications and Dan McIntyre, vice president for MRC, accept the STAR for its IP Over ENG with HD. MRC's IP Over ENG provides file transfer protocol capability in the ENG link, allowing people on remote assignments to transmit fully edited content in the form of digital files back to the station server via microwave.

Network Electronics
Hans Hasselbach, chief sales and marketing officer for Network Electronics, accepts the STAR for VikinX Sublime. The latest version of the company's popular VikinX line of routers offers the kind of flexibility and expandability broadcasters expect from Network Electronics. Sublime not only offers the powerful control features inherent in VikinX, it also allows users to future-proof their facilities by featuring 3 Gbps dual link HD.

Nucomm
John Dulany, director of sales and marketing for Nucomm accepts the STAR for the Campac 2. Nucomm's Campac 2 is a compact HD/SD DVB-T-compliant COFDM microwave transmitter that accepts a variety of video formats and can be upgraded to encode MPEG-4/H.264, allowing for a 30-40 percent reduced bitrate. The unit can be controlled using a PDA or PC from up to 100 feet away. The system transmitted flawless 34 Mbps MPEG-2 HD for NAB-HD.

NVISION
Chuck Meyer, president and CEO of Nvision accepts the STAR for the NV8288 router. Nvision demonstrated 3 GHz operation and a very small profile router with a very large input/output capability at greatly reduced power consumption (as compared with anyone else's router in this size arena).

Omneon
Dan Marshall, senior vice president, worldwide sales for Omneon, accepts the STAR for the MediaGrid. The fact that MediaGrid can replicate content without RAID technology, can be dynamically configured to increase protection and/or access to content makes it ahead of the class to any other television server. The fact that it uses no proprietary components (off-shelf computer equipment) clinches the deal.

OmniBus Systems
Ian Fletcher, chief technology officer for OmniBus Systems, receives the STAR iTX. iTX ingests nearly any video format, store files in nearly any digital format, provide master control switching and mixing of files, perform character generation, and play out the signal in nearly any format using its internal automation system. Using off-the-shelf disk drives, iTX can be expanded for as much storage space as needed. All this fits into 1 RU per channel.

Panasonic
Robert Harris, vice president of marketing and product development for Panasonic, accepts the STAR for the AJ-HPC2000, Panasonic's first shoulder-mount camcorder for the P2 format. The AJ-HPC2000 is a 2/3-inch HD camcorder that features five hot-swappable P2 card slots for continuous recording, plus a loop-recording analog/SDI/HD-SDI video input with embedded or nonembedded audio input, making it an effective link for pool feeds.

PESA Switching Systems
(L to R): PESA Switching Systems' President/COO Steve Miller, Keith Bond, vice president of engineering, and QuStream Corp.'s President and CEO Frederick L. Godard, accept the STAR Award for PESA's DRS distributed routing system, which features a multiformat audio router that scales from 64x64 in 1RU up to 2048x2048 in a 36RU, offering unparalleled flexibility in a distributed routing environment.

Pixel Instruments
(L to R): Chris Smith, director of marketing and Mirko Vojnovic, director of engineering and operations, receive the STAR for the Liptracker Lip Sync Analyser, which measures the lip sync error in a program stream by comparing the relative timing of selected sounds in the audio (called audio mutual events or MuEvs) with the mouth shapes (video MuEvs) that create them. Then it matches the audio and video into perfect sync.

World Radio History

Prime Image/Editware

(L to R): Elizabeth Fjeldheim, vice president of marketing for Prime Image and Jay Coley, president of Editware, accept the STAR for the Time Tailor Post HDISD, a fully automated system designed for editing program and/or segment times to fit into new time slots. Time Tailor Post HDISD removes video frames automatically and undetectably without comprising the integrity of the program.

RF Central

Jeff Winemiller, general manager for RF Central, accepts the STAR for the RFX-MDR-PC. The RFX-MDR-PC connects to a PC's USB port to display the digital microwave signal on the PC's monitor. The laptop in the news truck becomes a microwave confidence monitor and the truck operator can now assure the studio that yes, the transmitter is on and working. When you have to get the shot up right away, anything that gives you confidence in your signal is a good idea.

Ross Video/Cobalt Digital/Ward-Beck

(L to R): Gene Zimmerman, president of Cobalt Digital, Jeff Moore president of Ross Video and Michael Jordan, director of sales for Ward-Beck accept the STAR for openGear. openGear is based on the open-architecture 2RU openGear modular frame designed by Ross. Cobalt Digital and Ward-Beck are also part of openGear, which allows users to select products without the required investment in multiple frame standards.

Snell & Wilcox

(L to R): Steve Higgins, research and development manager and Bruce Devlin, vice president of technology for Snell & Wilcox, accept the STAR for Helios, a software complement (for MPEG encoding) to Memphis and Asteroid, which aids and supports proper MXF file and scaling of HDISD and other formats.

Sony

Sony could have chosen to simply update its venerable DSR-25 and add HDV capabilities. Instead, they re-engineered the deck, dubbed it the HVR-M25U HDV/DVCAM Recorder-Player, and added features that make the M25 the one deck you'll need for all your DV, DVCAM and HDV work. HDISD downconversion, external timecode and that handy front panel LCD round out this production workhorse.

Techni-Lux

Ted May, technical sales for Techni-Lux, accepts the STAR for the Palco 3. This weatherproof fixture is fully dimmable and through mixing white and amber LEDs it allows a change in color temperature from 3,000K to 10,000K. By interchanging the LED lens banks, it can be used as either a key or fill light. It can be controlled by DMX, and is capable of strobing or lightning effects.

Telestream

David Heppe, president of Telestream, accepts the STAR for GraphicsFactory, a new graphics software solution that features HD or SD inserts/keys and "tags" files without baseband decoding GraphicsFactory solves issues in daily workflow for TV station "bag and tag" operations and provides template-driven changes for similar video background with variable tags.

Troll Systems

Chris Noski, mechanical engineering manager for Troll Systems accepts the STAR for its Waterproof Camera Enclosure. This is one of those ordinary products that serves a seemingly pedestrian function in an elegant way. The Troll enclosure features a blast of high-pressure air to clean the window, plus a cooling system that does not directly expose the camera to outside air and the camera without directly exposing it to dust-filled, outside air.

USDTV

(L to R): Adam Glass, project lead for USDTV and Bob Lewis, chief engineer of USDTV's network operations center, accept the STAR Award for the USDTV AVC dongle. Designed to transition current USDTV subscribers from MPEG-4 to AVC, the AVC dongle features a USB 1.1 connection. Users can plug this little contraption in to the existing USDTV box and receive AVC content without having to wait for a truck roll and a box swap.

Wohler

(L to R): Carl Dempsey, executive vice president and David Johnson, chief operating officer for Wohler, accept the STAR for Touch It. Actually a mini A/V routing system, Touch It can replace a bank of 12 confidence monitors in a 3RU chassis. Tap on any of the 12 thumbnails of A/V inputs on the left LCD screen and they appear on the right side 7-inch LCD in full size. Touch It can also be used to switch between multiple cameras.

World Radio History

Cable

CONTINUED FROM PAGE 70

rugged OpticalCon cable connector for mobile applications.

Pomona Electronics featured its XLR Triple Binding Post, an XLR male or female plug with three binding posts atop to allow easy split out of signals for testing or other purposes. The device can be purchased with or without an integrated RJ11 jack.

Photo: Bob Kovacs

Julie Zhu of Kings Electronics is handy with the company's 2065-10-9 75-ohm BNC connectors.

Stratos International showcased its Hx1080 broadcast camera connector, featuring two single-mode fiber channels, two power and two signal electrical contacts. The connector is fully compatible with SMPTE 311M cable, and features advanced expanded beam technology.

Switchcraft showed its Grouped MidSize RGB Series of video patchbays, high-density models with jacks grouped into RGB, RGBS, and RGBHV layouts. The panels are available in 1RU, 1.5RU and 2RU versions, with jacks rated from DC to 3 GHz.

The company also featured an RS-422 patch bay and a Studio Patch Series for digital audio workstations.

Trompeter introduced a new three-piece F connector, with a center pin much like a BNC connector. Standard BNC tools can be used for installation. The company also introduced a fully enclosed female F connector socket.

White Sands Engineering unveiled its Mini-RG59 one-piece connectors featuring 15-second termination time. The connectors use White Sands' beryllium copper spring seizing mechanism inside the fixed contact that captures the conductor with more than 150 grams of holding force. The connector union can be tested before crimping.

FIBER

Canare showcased a customizable 16-channel fiber-optic multiplexer in a 1RU package. It features a CWDM wavelength grid.

Communications Specialties debuted the Pure Digital Fiberlink 7250 Series digital fiber optic system, designed to transmit RGB resolutions up to UXGA and stereo audio over two single mode or multimode fibers.

DAWNco introduced its fully pre-connectored fiber optic cable, featuring its Pulling Eye, designed for pulling fiber optic cable assembly through dry conduit without putting a strain on the connector itself.

FiberPlex showcased the LightViper Series for audio transport via fiber. The 1832 send and receive modules are designed for mic and line level analog inputs, and the 4832 modules are designed for AES3 digital inputs.

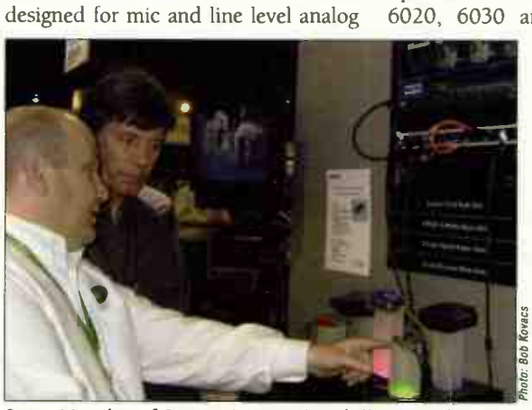

Photo: Bob Kovacs

Peter Munday of Stratos International discusses the company's fiber optic products with Phillipe Laurent of Grass Valley.

Gefen debuted all-fiber HD cables for EMI-protected HD digital video. The pre-cut lengths, ranging from 30 to 330 feet, have terminated DVI male-to-male connectors.

Gefen also announced that it will soon add fiber HDMI cables to its product line up.

Gepco International introduced HDRA, a hybrid electrical and fiber component distribution rack, which allows distribution of hybrid fiber interconnects over separate electrical and single-mode, fiber-optic cables.

Kramer Electronics unveiled four optical DVI cables, models 6010, 6020, 6030 and 6050, capable of sending DVI signals from 33 feet up to 164 feet without the need for repeaters. All the new cables comply with the HDMI interface standard and are HDCP-compliant.

Multidyne introduced a new member to its RGB-5000 series of fiber-optic transport systems. The RGB-5000 CWDM laser features 18-channel point-to-multipoint

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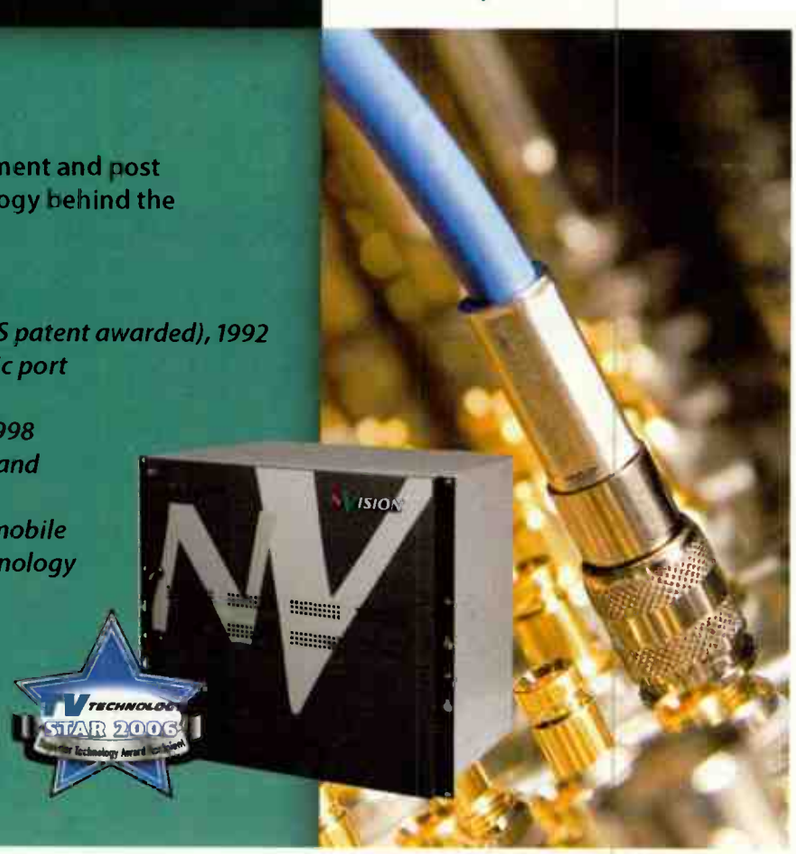
THE FIRST large-scale HD-SDI router (US patent awarded), 1998
THE FIRST integrated multichannel master control switcher and multiformat router, 2003
THE FIRST large scale digital video router small enough for mobile trucks, the NV8288, recipient of the 2006 TV Technology STAR award for technical innovation



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switching, providing a total analog bandwidth of up to 500 MHz.

Multidyne also showcased its HDM-2000 Fiber Optic Extension Cable, which extends the distance limitations of HDMI digital video signals to 100 meters and supports resolutions of up to 1600x1200.

Ryhahn Williams of Gepco shows off some of the company's audio cables.

Opticomm took the wraps off the Optiva, a modular fiber optic transmission platform with selectable configuration functionality. Customers can list their requirements on the Opticomm Web site, including video, audio and data signals, as well as connectors desired and other parameters, and receive a unit design and quotation.

Telecast Fiber Systems introduced Mini-eXpanded Beam Optical Connectors, employing precision lenses to optically expand the mating interface area between connected fiber beams. The fiber light beam is expanded approximately 2,000 times its original size.

NETWORKING

Aastra Digital Video showcased its VideoRunner video networking system, designed to solve the problems of multi-protocol media networking. It combines contribution-grade video and audio signals with high-speed data networking.

Artel featured its DigiLink 4000 digital video transport system, housing four of the company's DLC single channel multi-rate transceivers to send four HD signals up to 100 kilometers from a 1RU box. It provides high-speed interconnection between modules.

Harris Corp. rolled out NetBoss EM (Element Manager) to support the Harris Video Networking and Microwave Solution, a point-to-point transport system that combines the Harris' NetVX video networking and Truepoint microwave digital radios.

Media Links showed off the MD2500-HD270 coax system, designed to compress and transport HD-SDI signals over 270 Mbps networks with low latency. It utilizes slice-based MPEG-2 encoding which adds less than 10 milliseconds of end-to-end delay to the video signal.

Path 1 demonstrated new Version 3.0 software for its Vx8000 multi-port IP video gateway. The upgrade features greater error-correction, monitoring and reporting necessary for transporting video over the public Internet.

Path 1 also showed its NDX software tool for testing public Internet links.

Pathfire showcased Direct, its newest digital content distribution platform that allows simultaneous movement of either live or store-and-forward content from one location to another. The flexible platform enables networks, broadcasters with remote bureaus or station ownership groups to monitor, gather and disseminate breaking news stories and other content from remote locations.

Pleora Technologies unveiled its EtherCast IP Studio suite to allow distribution, capture, recording, archiving or playback of digital video via standard PC and Ethernet hardware.

RTComUSA showcased its DS-99M DVI Multiplexer, which enables switching of multiple DVI sources from host computers in distant locations. It offers 9x9 channels. Also shown was the DS-1818M DVI Multiplexer, which features 18x18 channels. ■

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World Radio History

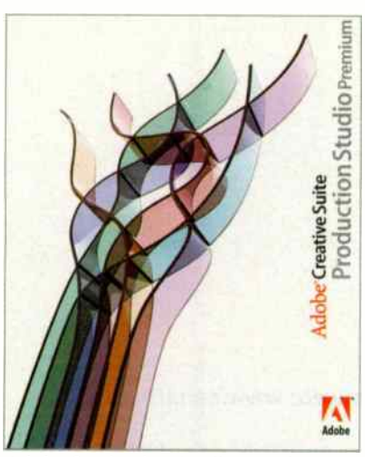
Editing

by Jay Ankeney

Exhibitors of NLE systems at NAB2006 proved they had successfully conquered HD editing and were looking for new mountains to climb by competing in features and efficiencies all the way up to 4K resolutions. And to everyone's surprise, there was even a new linear system introduced.

HD OctoFlex from **1 Beyond/1st Design** is the first eight-processor workstation to support all Windows XP applications in uncompressed 2K and 4K resolutions. The company also unveiled the 1st Design IntelliRaid FC-XPR, the first intelligent video storage system with Raid 6 protection that allows for two drive failures with no data loss.

Adobe showed its Adobe Production Studio. The Premium version combines Adobe Premiere Pro 2.0 for editing, After Effects 7.0 Professional for effects creation, Photoshop CS2 for image manipulation, Adobe Audition 2.0 for audio and Adobe Encore DVD for authoring. All feature Adobe Dynamic Link to interchange files without intermediate rendering.



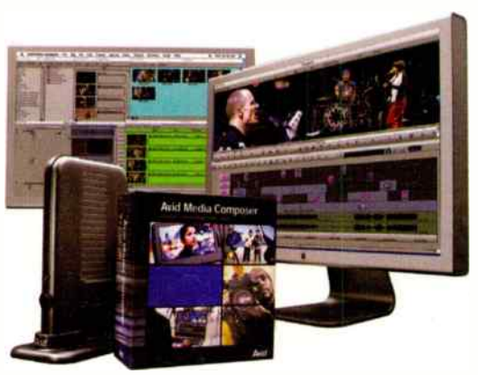
Adobe Production Studio Premium

The **Apple** pavilion featured the new Final Cut Studio 5.1, a "universal version" of its video production suite, now running on PowerMacs, and the new Intel Macintosh platforms that deliver two and a half times the performance, when running on the new 17-inch MacBook Pro notebook computer. Apple's latest release of Final Cut Pro was featured in a technology preview, cutting Sony XDCAM HD material and JVC's ProHDV 24p recordings.

Under their theme "Creating the Whole Picture," **Autodesk** featured the changeover of their post-production systems to the Linux operating system; however, they will continue to support the SGI versions. Also exhibited were 10-bit RGB versions of Discreet Flint and Smoke, along with Discreet Inferno, which now offers five times the performance of previous SGI platforms, such as the Onyx 2.

Apple 17-inch MacBook Pro

Avid Technology unveiled new software-only versions of Media Composer for both Mac and PC laptops or desktops. Avid's DS Nitris was shown with new Version 8 software for digital intermediate work via Dual-Link 4:4:4: hardware connectivity. On the formerly Pinnacle side of things, the latest version of the Avid Liquid Chrome HD family now has new effects tools and greater output capabilities including Web streaming formats.



Avid Media Composer Software

With an unprecedented eight Dual-Core AMD Opteron processors, the new **BOXX Technologies** APEXX 8 workstation demonstrated superior performance across 16 processing cores to facilitate 2K, 10-bit work on digital intermediates. APEXX 8's extremely quiet architecture can accommodate over 7 terabytes of local storage.

There was even a new linear (tape-based) edit controller introduced by **Editware** at the show. The LE-2000 was Editware's response to requests for replacing Sony's discontinued BVE-2000 edit controller. The LE-2000 uses a familiar Sony BVE style Control Panel with direct keystroke access to upper level functions.

Grass Valley showed off the new **Canopus** EDIUS Pro Version 4.0 multiformat HD editing software, featuring multicam support (up to eight cameras), nested sequence editing, improved trimming tools and parameter-based keyframe control for color correction.

Hybrid editing of HD and SD is only the starting point for the new D3-Edit HD8 system from **Dayang**. It includes hardware-accelerated real-time 3D page turns, a complete color correction toolset and built-in 3D CG graphics for titles and animations.

Digital Vision showed a 17 processor Nucoda Workstation for digital

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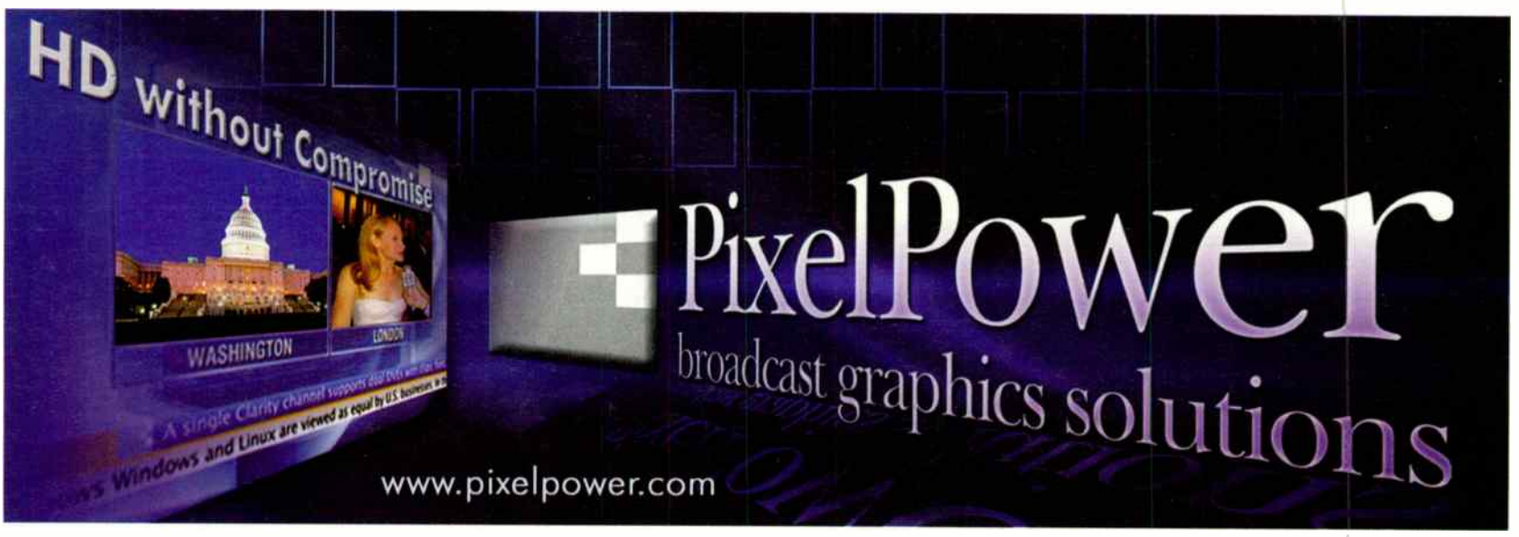

World Radio History

Storage & Recording

by Susan Ashworth

The promises made before NAB were indeed true: the newest generation of servers are handling a greater number of formats and standards; recorders are giving broadcasters instant access to uncompressed 2K, HD and SD data; expanded storage systems are offering previously unheard of archive capacities. A multitude of storage, server and video recording technologies at NAB2006 were indeed faster, smarter and more adept than previous iterations, all in an effort to help broadcasters get the work done faster and more efficiently.

SERVERS & STORAGE

360 Systems introduced a new broadcast server named Image Server MAXX with features including the ability to perform MPEG-2 transfers in different forms. The company also introduced the Image Server Select, a three-playback channel video server designed for the pro A/V market.

Adtec Digital introduced the new Soloist 4111 HD, a digital media server for MPEG 4 H.264, MPEG-2 and VC-1 high-definition and standard-definition media playback.

Avid Technology showcased the Unity ISIS (Infinitely Scalable Intelligent Storage) server system, which features an open architecture supporting both Avid and other clients. It is expandable to 64 TB.

Avid also announced its Open Storage Initiative that allows customers to run third party applications on Avid storage systems, and by offering massive increases to its entire storage line. Users can use any third-party Mac OS X or Windows XP content creation tool with the Avid VideoRAID and Avid Unity product lines.

Archion Synergy Plus

Archion came to NAB to showcase its newest product, Synergy Plus, a storage solution for post-production facilities that integrates into one of the post world's most often used systems—the Avid Unity. The Synergy Plus solution has been designed to expand and enhance an existing Avid Unity storage system by transforming it from a mirroring software platform to a hardware RAID-based storage system.

Asaca put its technologies to the test in the NAB-HD Pavilion this year, showcasing two storage components: the new OSVault network archive server and the TeraCart BD library. The OSVault network attached storage solution can be configured with either a multiport GB or 10 GB Ethernet interface, allowing users to scale up to 48 drives per tray or 24 TB per server. The TeraCart BD can provide up to 100 TB of network attached archival storage. The company also announced the addition of the TeraCart DL disk library.

Photo: Bob Kovacs

Ron Johnson, vice president of marketing of Adtec Digital, poses with the company's SD/HD digital video players.

Designed to address the growing HD graphics market, **Chyron** showcased the XClyps HD/SD graphics clip server. XClyps can be configured to operate with one or two independent channels, each with synchronized video, key and audio outputs. The XClyps monitor and control option allows for control of clip assets over local and wide area networks.

Ciprico showcased its MediaVault 4110 and 4210 RAID arrays and introduced the newest solution from that line, the MediaVault 4440.

Crispin Corp. featured Archive Manager, which provides broadcasters near-line storage of media that can then be integrated into an automation system. An integrated hierarchical storage management feature within the Archive Manager allows users to store and retrieve files on demand.

DataDirect Networks exhibited its family of S2A storage systems, which are able to deliver from 700 Mbps to 3 Gbps of sustained throughput. The family of storage systems is designed for real-time post collaboration or multistream delivery in HD broadcast, HD post and mastering, CGI, as well as 2K and 4K digital intermediate applications.

Digital Broadcast launched the MediaVault, an archiving system based on Blu-ray technology with storage capacities that range from 2 TB to 35 TB. The company also featured its MediaFire play-to-air server, which offers built-in automation and direct interfaces to media delivery services.

Digital Rapids showcased the integration of its StreamZ family of real-time media encoding servers with the Capsa video archiving solution from DiskStream Inc.

Doremi Labs featured the DCP-2000 digital cinema server, which plays DCI-JPEG2000 digital movies at

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World Radio History

Storage

CONTINUED FROM PAGE 75

up to 250 Mbps, as well as its line of MCS servers, including the new MCS HD server, which features two independent HD record and two play channels with shared storage.

EVS put its server systems to the test at NAB as it showcased its next-generation XT series server and companion solutions. The company demonstrated its XT[2] production and playout server; the Xfile, Xstore and mediaXchange storage, archive and gateway solutions; and related software applications. The company also demonstrated the compatibility of its XT[2] production and playout server with Sony's new 3x HD Super Slow Motion camera system.

Exanet showcased its network-attached storage solution, the ExaStore NAS, which offers unlimited scalability, the company said, and is comprised of off-the-shelf hardware components.

Exavio featured its ExaMax 9000 I/O Accelerator, which is scalable from 128 GB up to 1 TB, and was built to increase the efficiency and performance of existing SAN storage solutions. The system can expand to 36 2 GB Fibre Channel ports in one chassis to support various post environments such as uncompressed HD and 2K and 4K digital film resolutions.

Front Porch Digital launched DIVAnet 2.0, a companion networking component of the company's DIVArchive technology. DIVAnet allows media firms to network an unlimited number of separate DIVArchive systems and replicate content, recover files in a disaster and offer business-continuance functionality between connected sites. The company also showed the DIVAworks archive management appliance.

GlobalStor Data showcased its ExtremeStor line of storage options. New is the iNAS feature, which offers small and medium enterprises a choice of 12-, 16-, 24- or 36-bay systems that can be configured with either 250 GB or 500 GB hot-swappable SATA drives.

Grass Valley featured its K2 Media Server and Client storage system at NAB2006, and announced that the system now integrates with the EDIUS nonlinear craft editor in an effort to bring new workflow options to news, sports and post-production environments. Grass Valley also announced a collaborative development effort with Avid to provide interoperability between the Grass Valley Infinity Series of IT-based camcorders, recorders and media with Avid's nonlinear editing systems.

Harris introduced the NEXIO XS, a modular transmission server that supports SD and HD, and offers integrated agile software codecs and with a range of compression formats in a 3 RU frame. The NEXIO SX features software-based codec technology, integrated editing applications and front-panel access to drives.

Omneon MediaGrid

IPV Ltd. showcased its SpectreView server, along with a digital asset management solution from Artesia Digital Media Group, a combination that is designed to allow co-located broadcast production teams to collaborate more effectively.

iQstor Networks debuted the iQ2880 4 GB Fibre Channel storage system, designed for HD digital post production, nonlinear editing, VOD, content creation, digital intermediate work and IPTV productions.

Justedit came to the show with its vsn (short for Video Stream Networks) solutions, including vsnmatic, a multiformat play-out and video server; and vsnstorage, a lower-cost shared storage solution.

Leightronix exhibited new video server solutions at NAB, including the NEXUS multichannel server, which now offers the WebNEXUS Web interface for creating and managing digital video slides via the Internet. TCD/NX, the company's newest video server, was also on display. This multichannel video server offers digital video messaging capabilities and can be controlled by the Leightronix TCD/IP network managed video system controller.

Masstech Group Inc. showcased its range of integrated nearline and archive solutions for broadcast and content management applications, including MassDR, an automated storage backup solution that offers a database that manages the storage of evergreen content.

Maximum Throughput Inc. launched MAXcluster, a clustered storage solution to support real-time I/O streams.

Along with its Tera Store and XNStore storage systems, **NVerzion** showcased the NcontroLite server and spot play-out software package.

The big news in the **Omneon** booth was the launch of its MediaGrid active storage system, which is designed to handle very large digital media files. The new system, which combines grid storage and grid computing through connected storage servers, offers centralized, shared, scalable storage.

Omneon also introduced a new MediaDirector component—the Spectrum MediaDirector 4204—that's designed to double system bandwidth to support higher channel counts and higher IP throughput. High-definition was also a focus for the company, as the Omneon Spectrum system now supports the Avid DNxHD format. The company also unveiled the MirrorTool application, which gives facilities using redundant Spectrum servers an automated tool for copying ingested and edited media files from one server to another.

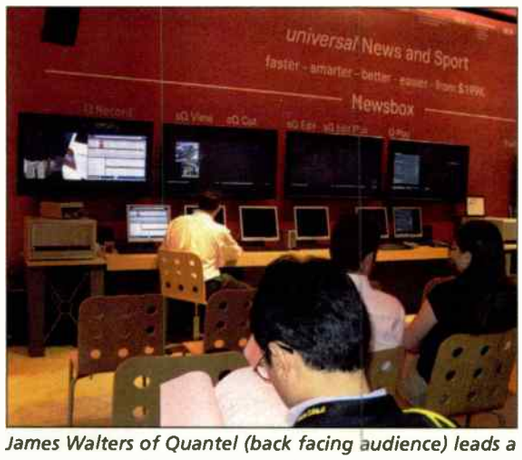

Photo: Bob Kovacs

James Walters of Quantel (back facing audience) leads a presentation of Quantel's Newsbox.

OmniBus Systems showcased the Omnibus K2 Inception, a play-out solution offering one to six channels that combines the benefits of the Grass Valley K2 server and key features of OmniBus Colossus automation software. The company also showed the OmniBus iTX solution, which can act as a video server as well as master control, graphics and logo inserter with automation, ingest, editing and basic content management functionality.

Quantel worked with **Pathfire** to

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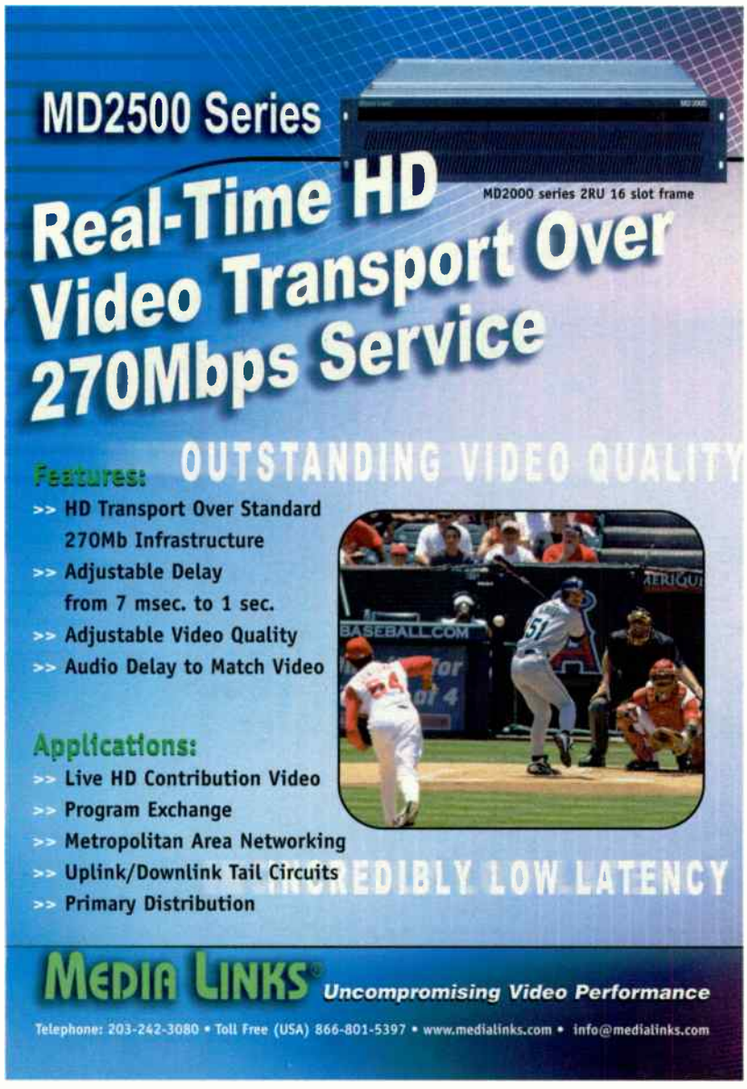

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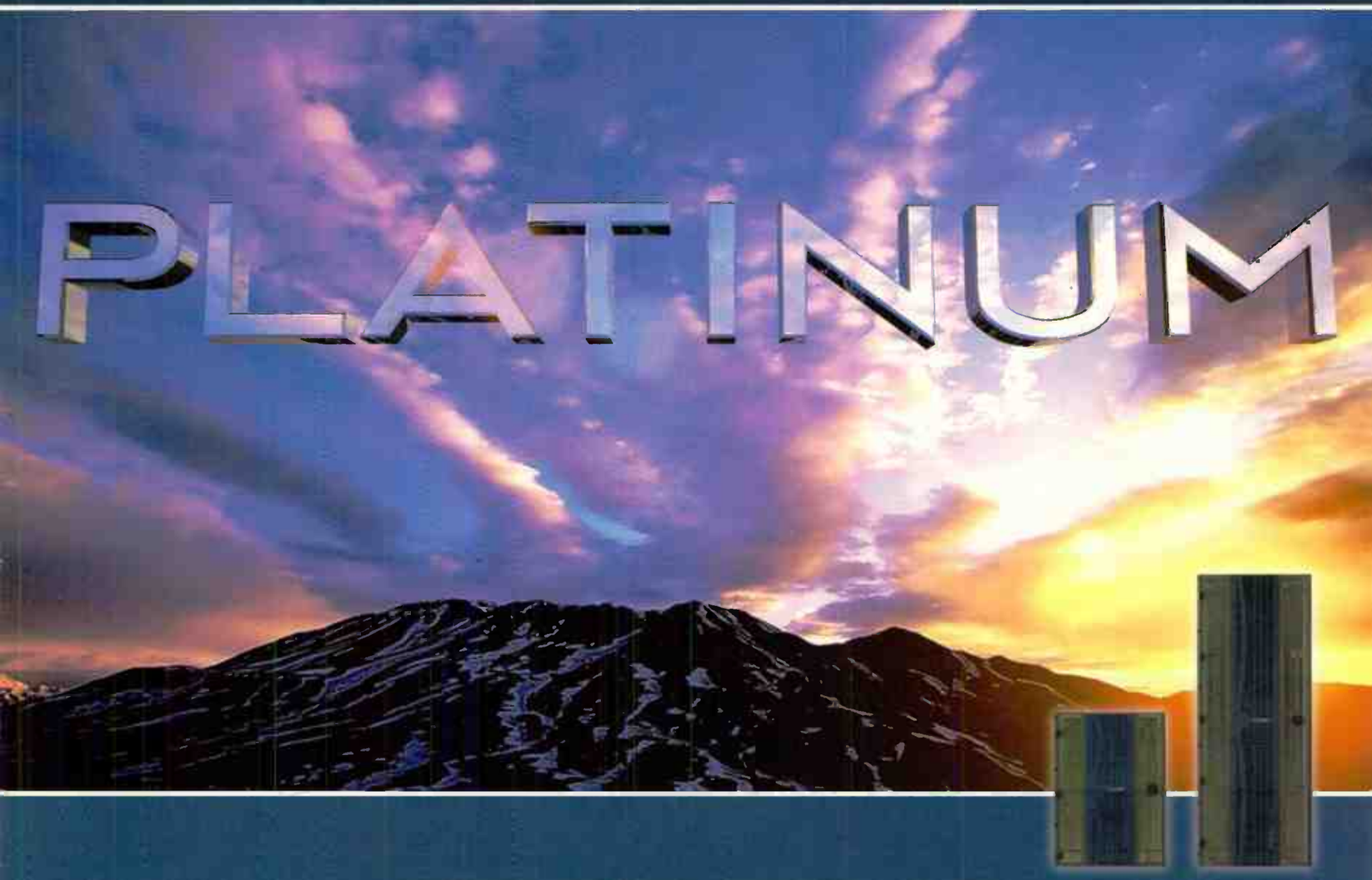

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World Radio History

Editing

CONTINUED FROM PAGE 74

intermediates up to 4K. It supports the full range of Nucoda data-centric software including Nucoda Film Master, Nucoda Film Cutter, Nucoda Data Conform and Nucoda DVO Image Processing tools.

The latest version of the 4K-capable DI workstation, Clipster, from **DVS Digital Video Systems** can provide output with JPEG2000 compression for Digital Cinema applications. Clipster now features Spycer, a new content management system that "spies out" project data on up to hundreds of terabytes of storage through a simple search process.

Harris VelocityX

Edirol debuted the DV-7DL "Direct Linear" NLE, featuring a manual T-bar for making tactile effects between sources. The DV-7DL PRO also includes on-screen vectorscope and waveform monitors and double audio effects for applying sfx combinations to audio clips.

The new VelocityX software-only introduction from the Leitch division of **Harris Corp**. incorporates the same user interface as its VelocityQ and VelocityHD without the dedicated video hardware. VelocityX features flexible codec support including HDV, integrated multicam editing, and easy visual reference with the EyeCon View feature.

KDDI featured new native H.264/MPEG-4 AVC editing and watermarking software, as well as the company's MPEG Edit Studio Pro, which offers Long GOP capability.

Moving into broadcast post with multiformat HD and multicam ingest and editing capabilities, the new **Lightworks** Alacrity MR retains the special ergonomic jog/shuttle control that has helped make Lightworks the choice of Oscar-winning film editors. Lightworks Alacrity MR comes with real-time effects, including color correction and chroma/luminance keying and a 3D DVE.

The new Casablanca Renomee Plus from **Macrosystem** is a simple, plug-and-play "editing appliance," capable of editing 1080i or 720p with their latest Smart Edit 5 software. The switchable hard drive can even load Windows to allow the Casablanca Renomee Plus to double as a PC for effects work with software such as PhotoShop.

Quantel eQ FX

Designed to optimize Adobe Production Studio software on Windows, the **Matrox** Axio LE provides full resolution, multilayer editing of HD and SD video, graphics and effects, including HDV and DVCPRO HD. The Axio LE also offers mixed format multicam editing and accelerated export to DVD.

Media 100, a division of Boris FX, announced new 10-bit uncompressed HD and SD editing using AJA OEM video cards. Their flagship product, Media 100 HD Suite, with Version 11 software, runs on the Power Macintosh platform and provides full 2D and 3D compositing and titling

Quantel's new eQ FX comes with 160 minutes of HD workspace, built-in TimeMagic hardware and the QColor package of color correction software and dedicated controls. Also debuted was Pablo, Quantel's newest real-time 4K color correction system that pulls a continuous 1.5 gigabytes of data from disks.

Sony showed its new XPRI NS line of multi-format nonlinear editing systems based on the XPRI software platform. The XPRI NS family includes a laptop field editor, a proxy editor for journalists and a high-resolution finishing editor. XPRI NS is now an integral part of Sonaps, Sony's news production system that provides ingest, production, play out and content delivery functionalities with shared access to content and system resources.

xm/Edit featured Traffic for Final Cut Pro, a project management companion that provides a visual node-based user interface and performs tasks that are sometimes not possible with standard timeline based approaches in nonlinear editing. ■

World Radio History

Storage

CONTINUED FROM PAGE 76

demonstrate how the company's two solutions—Quantel's sQ server and Pathfire's Digital Media Gateway—can be used to create an automated digital IP-multicast distribution system to create a more collaborative workflow within a facility. Quantel also launched Newsbox HD, a self-contained server-based system that allows users to ingest material, view rushes, choose shots, edit stories, review finished clips and play them to air.

SeaChange International introduced the MediaLibrary 6000, a transmission storage system designed for small- and mid-size broadcasters and other content producers. The MediaLibrary 6000 offers IP-network capability and the ability to offer centralized, online access to each stored media file. The system scales from 730 GB to as high as 12 TB and offers fault-resilience without mirroring.

A number of solutions made their NAB debut from **SGI** this year, including the SGI Altix 4700 server, a 64-bit Linux system that allows users to configure any combination of blades—such as CPUs, coprocessors, memory, storage, I/O and graphics—as their needs dictate. A companion RASC RC100 blade for the Altix 4700 was also on display. The company also showcased the SGI InfiniteStorage

SGI InfiniteStorage 10000

6700 solution, a 4 GB Fibre Channel storage system that offers 2.5 Gbps throughput. According to SGI, the system is ideal for digital cinema applications and SAN-based digital content infrastructures. For large storage needs, SGI also exhibited the InfiniteStorage 10000, a high-density disk storage system for users with extremely large storage requirements.

Software Generation Ltd. unveiled a redesigned data archive and management software, known as FlashNet6. This software has been designed around a clustered architecture, which can scale from a single archive server to an infinite number of I/O nodes, with all nodes connected directly to a storage device via Fibre Channel.

Sony showcased its PetaSite automated tape library, which offers from 60 up to nearly 3,000 tape slots in a single PetaSite library. Sony also showed the PDJ-A640 cart system, a new addition to the XDCAM Professional Disc product line.

Studio Network Solutions demonstrated the globalSAN X-4 shared storage system, which provides 1.6 TB of RAID storage.

On the heels of its acquisition by Avid, **Sundance Digital** came to NAB to showcase its offering of network attached storage solutions that are available in a range of standard RAID configurations and capacities.

After its acquisition of StorageTek, **Sun Microsystems** came to NAB to showcase what it termed a comprehensive hierarchical storage management solution that's based on the Sun StoreEdge and StorageTek Flexline product families. These product lines are

STORAGE, PAGE 80

World Radio History

Storage

CONTINUED FROM PAGE 79

designed to reduce storage management complexities and improve performance.

Vela came to NAB to launch its MediaAdvantage 5000, a high-density server that allows operators to choose a combination of video inputs or outputs. The MediaAdvantage is being used by Media Archive Systems in their mobile encoding lab to archive tape and film media.

Video Technics showcased a new family of Apella media servers at NAB, including the low-cost Apella LCS; the standard-definition Apella SDS media server; and the multiformat, multichannel Apella HDS media server. The expanded family lineup—each housed in a 3 RU chassis—is designed to offer a simpler conversion to digital for news productions, spot insertion, transmission and master control.

Volicon, a provider of recording, archiving and streaming digital video, announced a partnership at NAB with Front Porch Digital. The solution will offer Front Porch Digital users of the DIVArchive system an optional interface from the Volicon Observer, allowing for increased media storage capacity.

Video Technics Apella Media Server

Wegener spotlighted the iPump media server line, which integrates satellite reception and file server operations into one unit for increased productivity and efficiency.

RECORDING

AheadTek featured the DJR-22 video head drum assemblies for Betacam SX VTRs.

Digital Rapids showcased the CarbonHD 1.0, a multiformat HD/SD video encoding and playout DDR.

Doremi Labs featured the NuggetPro HD video player, which plays HD MPEG-2 4:2:2 video up to 80 Mbps, features SDI, HD-SDI and DVI outputs and handles up to six channels of analog or digital audio. Doremi also showcased its line of V1-HD video disk recorders.

Grand Vitesse Systems GVS9000 4NXU

DVS Digital Video Systems introduced a new product line—the Pronto2K.2 and ProntoHD.2 disk recorders. The company's current disk recorders—the Pronto2K and Pronto HD—allow instant access to uncompressed 2K, HD and SD data. The new arrivals offer additional features, such as the ability to handle corresponding rendering so that in addition to hard cuts, transitions are supported as well. A new chassis also offers the users enhanced storage capacity.

Focus Enhancements announced that several of its recording solutions would soon be shipping, including the FireStore FS-C, a portable DTE recorder; and the FireStore FS-M, an MPEG digital disk recorder. The company is now shipping its FireStore FS-100, a portable DTE recorder designed for the new Panasonic AG-HVX200 P2 camera.

Fast Forward Video featured the new NDT 200 portable DVR, which includes a removable 2.5-inch hard disk drive, large display panel and touchpad GUI. The drive is designed as a drop-in replacement for tape-based recording devices and is designed for freelance producers, outside broadcasters, and surveillance and security organizations, among others.

Photo: Bob Kovacs

Gib Johnson of HomePort (L) listens as Paul Tetreault describes a feature on the Fast Forward NDT 200 video disk recorder.

Grande Vitesse Systems unveiled the GVS9000 4NXU, a digital video recorder that offers 10 hours of uncompressed HD recording. The system has the ability to simultaneously write, edit and share 16 uncompressed SD or HD data streams with fiber for SAN or gigabit over NAS networks in a live environment.

Grass Valley demonstrated the third-party networking prowess of its Infinity family of solutions, which includes the Infinity digital media player/recorder. This IT-based ENG/EFP recorder uses removable disk-based and solid-state media.

Hitachi showcased the 160 GB hard disk storage capabilities of its Z-DR1 dockable digital recorder. The Z-DR1 uses Mediapacs, which are aluminum-encased Hitachi hard disks, and range between 40 GB and 120 GB in capacity. The company also introduced new 4 GB, 8 GB and 16 GB solid-state Mediapac cartridges.

IBIS featured the Highlighter, a companion to the Omneon video server platform, which allows the capture of content from up to six live feeds at one workstation.

mediaproxy featured the Enigma 6.0 logging solution, a server-based recording system that offers compliance recording and logging with flexible browsing capabilities and is designed to replace intensive use of VHS recorders.

Maximum Throughput introduced Sledgehammer, an uncompressed dual-stream HD digital disk recorder.

Merging Technologies featured the VCube HD-2K disk recorder, which offers uncompressed 1920x1080 HD video resolution and can handle more than 30 different SD/HD formats. The system can be used as a HD VTR replacement, a 4:4:4 recorder, a frame store, an SD/HD digitizing station or as a 24fps screening system.

NL Technology showcased the SAT Proxy solution option for NL Technology recorders and Ikegami DNG disk-based cameras, which allows users to create Windows Media content as a proxy while simultaneously recording hi-resolution video with matching timecode and metadata.

Panasonic launched the AJ-PCD20, a new five-slot P2 solid-state memory drive. This internal/external drive is designed for high-speed file transfers

World Radio History

of 25 Mbps DVCPRO or 50 Mbps DVCPRO50 into nonlinear editing systems and servers. A user can mount five 8 GB P2 cards simultaneously and access the content on all five cards for continuous editing of recorded clips in a sequence. As an internal drive, the AJ-PCD20 can be installed in a standard bay drive enclosure and via a USB or IEEE 1394 interface, can connect via a computer to a station's local area network. The AJ-PCD20 can also work as a standalone external drive in the field.

Panasonic also introduced the new AJ-HPM100, a mobile P2 solid-state memory recorder. The unit features a 9-inch widescreen LCD monitor, six-slot P2 drive, an SD card slot, jog/shuttle dial, P2 deck-like playlist editing functions, stereo speakers and AC/DC operation.

Quantum introduced its SDLT 600A professional video drive, which features a tape-based file system and networked-attached storage with MXF capabilities. Each 300 GB capacity tape holds more than six hours of 100 Mbps HD content and the networked SDLT 600A system allows for direct access by every workstation and server on a network.

QuVIS showcased its Encore disk recorder, a real-time HD and SD recorder and player.

Sony unveiled a host of new videotape and digital deck solutions, including the HVR-M25U and HVR-M15U digital HDV videocassette recorders, which offer HDV 1080i, DVCAM and DV SP recording and playback capability, and are switchable between 60 Hz and 50 Hz. Sony also introduced a DVCAM studio hard disk recorder called the DSRDR1000A, which offers 12 hours of recording time, simultaneous record and playback, and an iLINK connector. Two new XDCAM HD decks were also launched this year—the PDW-F70 features MPEG HD recording with DVCAM material playback compatibility; the PDW-F30 is an XDCAM HD viewing deck that plays back 1080/60i, 50i and true 24p, 25p and 30p with compatible play back of variable frame rates. The company also introduced the portable PDW-R1, a professional field recorder.

Zaxcom introduced the ZFR100, a recorder that can record up to 12 hours of audio directly onto a 2 GB flash memory card. Designed for use as a backup recorder or transcription recorder, the ZFR100 has the ability to receive time code through an RF link directly from a video camera, allowing the unit to sync up with the camera and record only when that camera is rolling.

Videomagnetics was at the show to discuss repair and full service offerings for DVCPRO VTRs and other recording technologies, as well as the company's line of replacement recording heads.

RECORDING MEDIA

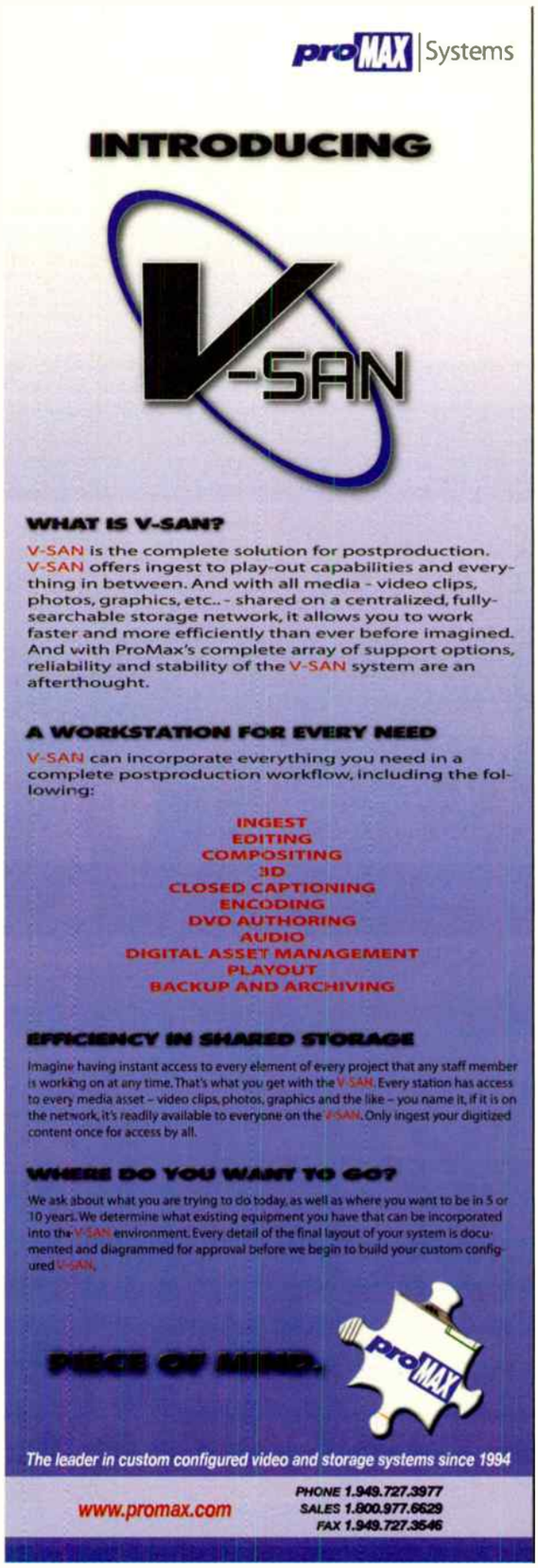
Grass Valley featured the REV PRO drive and disk media for the Grass Valley Infinity line of solid-state tapeless products, and announced that the solution is now being delivered as a standard feature in the latest versions of Grass Valley's NewsEdit XT and Canopus EDIUS NLE system.

Maxell showcased a range of recording media this year, including its DVD-R Plus series of recordable DVDs. The company displayed its next-generation optical formats, including Blu-ray, HD DVD and new holographic recording media.

Primera Technology joined forces with TDK to introduce what it calls the first inkjet-printable Blu-ray disc media.

Quantum introduced the Super DLTape II data cartridge, which is designed for use with the new Quantum SDLT 600A video drive. A single cartridge provides more than six hours of 100 Mbps HD content with transfer rates of up to 288 Mbps.

TDK showcased a line of HD recording media solutions, including a prototype recordable Blu-ray disk with 100 GB capacity. The company also showcased its professional disc media for XDCAM HD and XDCAM, as well as the newly formulated Pro Grade HDV. ■



World Radio History

Satellite & Remote

by Claudia Kienzle

At NAB2006, the spectrum of new products designed to support microwave, ENG, satellite, and remote transmission expanded dramatically. As many broadcasters were on the lookout for new digital gear for the 2 GHz BAS transition, others were looking for equipment that will maximize bandwidth, ensure signal integrity, and integrate multiple functions into compact solutions.

SATELLITE

ABE Elettronica SpA introduced the DME-1000/SL, which houses a digital modulator for DVB-S or DVB-DSNG, and up to four MPEG-2 encoders and a multiplexer for satellite uplink purposes.

Agiosat Global Communications, GMPCS, Mackay Communications and **Stratos** all demonstrated BGAN (Broadband Global Area Network) systems, which provide journalists with the ability to stream live video feeds, phone service and high-speed network connectivity, all through a lightweight, laptop-sized terminal. BGAN systems allow journalists to file stories and do live stand-ups from practically anywhere in the world with a minimum of equipment.

DAWNco displayed the Starlook MPEG-2 satellite channel identifier, an all-weather, dish-mounted satellite fiberlink, and a satellite feed selector switch for 950-1450 MHz signals, allowing satellite receivers to receive feeds from several different antennas.

e2v Technologies introduced the StellarCool line of high-power satellite communications amplifiers for 400 W Ku-, X- and C-band, and other applications.

Intelsat launched Ampiage, a new satellite-based content delivery and management service for North American multiple system operators seeking to upgrade to MPEG-4 and for telcos looking to enter the IPTV market. Intelsat also promoted its contract with MediaFLO USA for providing satellite capacity and bandwidth on the Intelsat Americas-8 satellite for live A/V streaming, short-format content and IP datacasting to wireless operators in the United States.

Newpoint Technologies showed its new Compass solution for automated configuration and management of remote satellite transmissions.

Radyne ComStream highlighted AVC MPEG-4 SD and HD encoders, as well as its DVB modulator and demodulator for DVB-S. This technology provides a 30 percent bandwidth savings. Also shown was a DVB MPEG-2 IRD.

SES Americom demonstrated distribution of digital, HDTV and VOD services for broadcast and cable clients, as well as its IP-PRIME network, a centralized, satellite-delivered IP television delivery system that permits telcos to bundle traditional standard and HD television programming on a single line with their voice and broadband services.

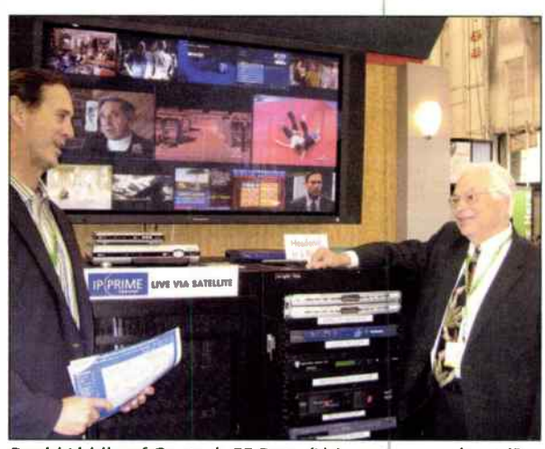
Scopus Video Networks displayed the UE-9218, its latest DSNG solution, which enables significant bandwidth savings by integrating DVB-S2 modulation and upconversion technologies, enabling a smooth transition from MPEG-2 to MPEG-4 encoding. Also displayed was the Scopus IRD-2900 family of MPEG-2 DVB-S2 receiver/decoders.

Streambox released the SBT3-7500, a next-generation video transport solution for mobile SNG that offers MPEG-2 quality at a 75 percent lower data rate.

SWE-DISH launched the FA150K Two-in-One fly-away satellite terminal. The unit consists of the new FA150K Lite antenna and the compact, rugged IPT suitcase. Also introduced was the new DA150K podless vehicle mount military satellite terminal.

Wavestream Corp. unveiled a compact 25 W Ku-band deck power amplifier for flyaway Satcom terminals, as well as new block upconverters for Satcom terminals.

Wegener introduced the Unity 550 satellite receiver for enterprise networks, an enterprise-level media receiver for multi-site business TV and private satellite networks.



David Liddle of Contech EF Data (L) learns more about IP Prime satellite channel multiplexing from SES Americom's Bill Berman.

Photo: Bob Kovacs

Scopus UE-9218

MOBILE & ENG

ABE Elettronica SpA unveiled the DML series of digital microwave links for fixed and mobile applications The DML series operates in the 10-14 GHz bands, but will soon be available for use in other frequency bands.

Allen Avionics introduced several new custom passive electronic components including precision LC filters, digital delay lines, video delay lines,

SATELLITE, PAGE 84

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World Radio History

Satellite

CONTINUED FROM PAGE 82

amplitude and phase equalizers.

Broadcast Microwave Services debuted new features for all of its 2 GHz COFDM products, including a simplified menu system for its new Truck Coder II digital/analog ENG microwave system. This simplifies the operation of technically complicated microwave equipment for non-technical workers, without sacrificing functionality. Also shown was the CentralDeCoder II COFDM digital central receive-site decoder, and the FieldCoder II portable COFDM transmitter and digital media transport package.

DB Elettronica introduced the MLP line of portable analog or digital TV microwave links; and also the MDTL line of digital TV microwave links.

Frontline Communications focused on HD with nine trucks, including two large SNV units and a DSNG Sprinter that all had HD capabilities. The Sprinter SD/HD DSNG included the latest in mobile HD and DNG technology, including a Vertex 1.8-meter antenna system, HD/SD encoder and IRD and SD/HD laptop editing.

IRTE SpA showed new digital microwave links and COFDM microwave links.

Microwave Radio Communications unveiled many new products for HD-ENG, including the MTX4000 multi-mode modulator and companion unit to the CodeRunner 2. The technology offers advanced LDPC error correction for contribution-quality HDTV at 10 Mbps to 12 Mbps rates with MPEG-2. Also shown was the SCM4000 single-carrier modem, featuring data rates up to 105 Mbps and providing support for HD-ENG. MRC also exhibited the PTX-Pro fully integrated single box transmitter.

Moseley Broadcast showed the Event HD ENG Link, which provides users with options of multiple HD or SD video for DVB-ASI with data rates up to 85 Mbps.

Modulation Sciences unveiled the new PRO-3 channel receiver with delay correction for the 2 GHz BAS transition. The PRO-3 has three built-in options to correct and minimize delays introduced during digital transmissions. Modulation Sciences also successfully tested the new 2 GHz DRL (Data Return Link) channels to deliver IFB to field news operations.

NSI (N Systems Inc.) added features to its MC5 remote control system, making it easier for the ENG control system operator at the studio to transition to digital ENG. These features include a viewer that combines RF signal analysis and real-time video monitoring as an on-screen diagnostic tool for the MC5 master workstation at the studio. NSI also showed the NuPod Smart Antenna system for deployment on a mast-less ENG vehicle.

Nucomm demonstrated the CamPac 2, a lightweight HD/SD COFDM microwave transmitter for wireless camera applications for sports coverage and ENG. The transmitter accepts various video formats from SDI, component and composite to DVB-ASI for repeating applications.

Photo: Bob Kovacs

Jeff Daubert from RF Central tries out the seat in a Formula One car at the company's booth. The car uses a COFDM video transmitter similar to the technology used by RF Central in its microwave products.

Nucomm also showed the Newscaster CR6D central receiver, which is available as a totally integrated unit equipped with a 4:2:2/4:2:0 MPEG decoder, DVBT-compliant COFDM and (NTSC/PAL) FM demodulator. VSB or QAM modulation formats are available for higher data rate requirements, such as HDTV. Also shown were ChannelMaster portable microwave transmitters available in single band, 2, 7 or 13 GHz or dual-band 2 and 7 GHz configurations.

Peak Communications showcased its new DBU200 dual hot-swappable block up and downconverter units that are compatible with L-band modulators and frequency converters. They provide block conversion to/from C, X, Ku, wide-Ku and DBS-bands.

RF Central displayed its complete line of RFX digital microwave equipment, including the RFX-HD-CMT HD cam-

World Radio History

era-mount transmitter with camera control system, making any portable HD camera completely live, with less than a two-frame delay. Also shown was the RFX-CMT COFDM camera-mount transmitter, which turns any news camera into a live wireless system. Additionally, RF Central exhibited the RFX-PHT COFDM portable high-power transmitter that turns any vehicle into a mobile ENG/OB unit.

This ENG truck for KVOA in Tucson, Ariz., was built by Shook.

Shook Mobile Technology exhibited its "Roadrunner" ENG vans.

Television Engineering Corp. introduced its Express ENG and DSNG trucks; the TEC MicroSat ENG and DSNG (Ford E350 or Dodge Sprinter) vehicles; and the TEC Eagle Eye camera system, which includes 16x zoom lens. This system mounts atop the ENG truck mast and offers variable speed pan/tilt movements for smooth on-air operation.

Wegener showcased its new iPump broadcast news distribution solution, which allows 24-hour news operations to combine elements of digital asset management with satellite network control.

Photo: Bob Kovacs

Mark Doan of Gray Television (L) gets a presentation on a Wolf Coach Mini-Sprinter ENG truck from Peter Deary of Wolf Coach.

Will-Burt announced the new D-TEC II Safety System, for use with telescoping masts. It provides alternating current and sonar detection for improved operational efficiency and safety.

Wolf Coach showed mobile turnkey telecommunications systems of all sizes for TV production, ENG and SNG. These ranged from fully capable SUV platforms to high-end uplinks.

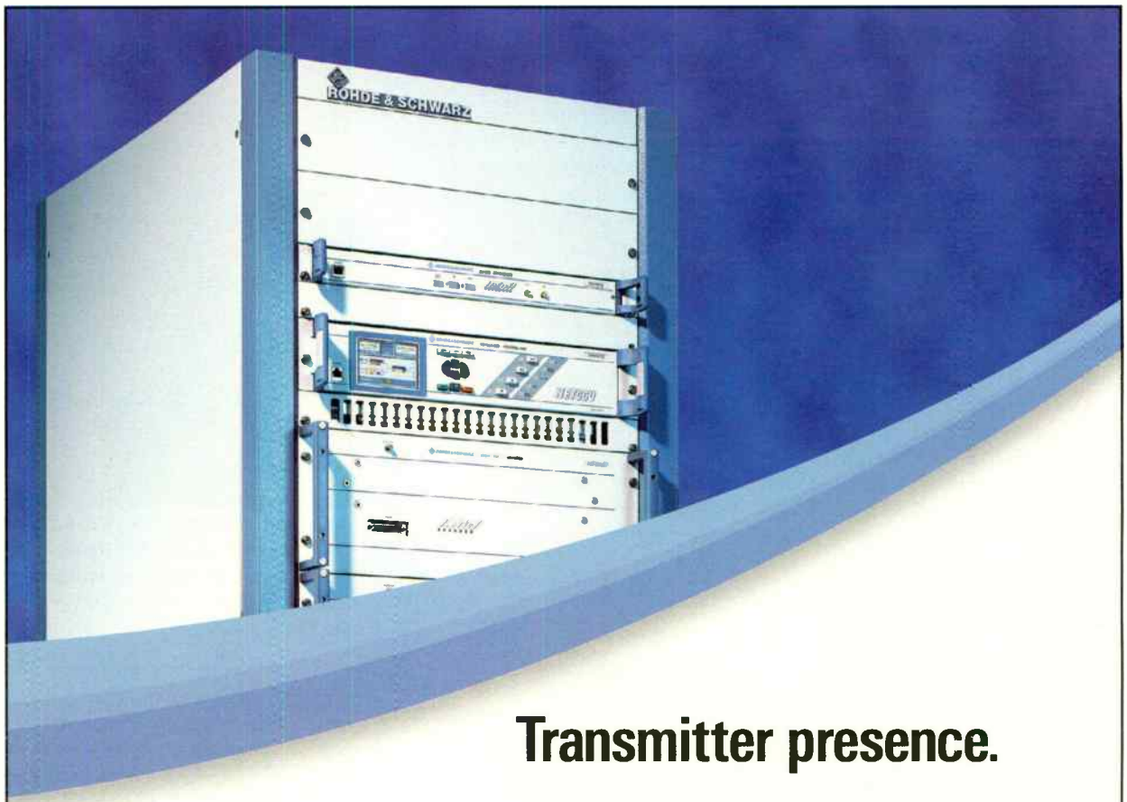
REMOTE

Aastra Digital Video showcased the Model 300 HD IRD for 4:2:2 contribution-quality video; the ENC-S21 MPEG-2 encoder; the ENC-A11 H.264 MPEG-4 encoder; and the VideoRunner Video Networking Solution.

BGS displayed a switch box for tower site locations, which provides tower-specific and emergency contact information to tower crews.

Paradise Datacom featured the Evolution IF or L-Band high-speed modem; and Evolution modem redundancy switch.

Troll Systems provided live demonstrations of its new SkyLink Airborne Antenna Systems and TouchStar line of ground control systems. These systems offer comprehensive and flexible control for broadcast equipment, and feature communications options, monitoring tools, and expansion capabilities. ■



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World Radio History

Routers & Switchers

by Susan Ashworth

NAB2006 showcased the newest generation of switchers, routers and master control solutions that make the complex back-room business of running a broadcast facility look seamless and simple.

PRODUCTION & MASTER CONTROL

Brick House Video unveiled the Callisto line of production switchers including the Callisto-F, a single RU switcher designed for master control, backup units and ENG trucks. New features include an embedded audio module providing silent audio switching and mixing facilities, with a built-in audio delay.

For-A introduced the HVS-500HS Hanabi one M/E switcher that accepts HD, SD, HDV and DV formats and comes with 10-bit 4:2:2 internal processing.

The highlight in the **Broadcast Pix** booth included SLATE 100, a low-cost video production switcher and computer workstation designed as a studio-in-a-box solution.

Broadcast Pix also showed the newest software available for the company's Broadcast Pix switcher. The GUI in the newly released Version 4 makes it easier for a single operator to put together a polished video clip. The company also introduced Clip Import software, which enables MPEG, DV and other compressed clips to be converted for use by the Broadcast Pix switcher.

Four firms joined forces to introduce Studio Ensemble, a compact broadcast system that includes a production switcher, server, character generator and media command center. The Studio Ensemble solution shares the name of the four-member consortium that designed it: **Echolab**, **360 Systems**, **Avitech** and **Compix Media.** Echolab provided its Opera 3408 dual-format production switcher for the project. Echolab also showcased its Nova range of SDI switchers as well as the Optima series of digital switchers.

Photo: Bob Kovacs

Alex Hobson of For-A (center) explains the company's HVS-500HS Hanabi production switcher to Steven Williams of Native Image (L) and Bob Bolling of RBL Engineering.

Grass Valley introduced seven new configurations for its Kayak line of switchers, bringing the total number of Kayak switchers to 16. The new lower-cost switchers operate at SD mode but can be upgraded to full HD/SD mode. A new larger control panel for Kayak features three M/E banks and 32 cross-points per row and are available in either white key or color key versions. A new six-channel RAM recorder feature offers more internal HD storage than any other switcher on the market, according to Grass Valley.

A new "MatchDef" feature for Kayak D/SD switchers eliminates the use of a separate keyer to upscale, downscale or cross-scale different video formats. It can be used in both SD and HD mode.

Grass Valley also introduced the Ignite HD integrated high-definition acquisition and production platform. The expanded Ignite HD platform now includes a series of robotic cameras and an updated programmable controller.

GlobalStreams featured the GlobalStreams X1, an integrated four-input production switcher, character generator, framestore and chromakeyer.

A range of both large and small production switchers was on display from **Ikegami** this year, including the HSS-3000 full-size production switcher and its smaller counterpart, the HSS-300. The HSS-3000 can input HD or SD signals, and offers a total of 96 inputs and 64 outputs. The HSS-300 is available in 1 and 2 M/E versions.

Ross Video spotlighted the Synergy SD digital production switcher, which includes an upgraded device control interface and support for the newest version of OverDrive, the Ross production control system. The company also featured the Synergy MD/X SD and HD production switchers, which now offer support for standard definition at 525 and 625 lines and high definition at 720p, 1080i and 1080psf.

Snell & Wilcox displayed a new feature set for the company's Kahuna production switcher. Designed to give switcher operators an easier way to create transitions with sound effects, the new Cliptrax feature allows users to store audio content within the switcher so that transitional animations can be played out with audio. Another new feature is IMPAKT, a suite of 3D DVEs.

Photo: Bob Kovacs

Jay Kirtley of Intinciti (R) gets a demo of the Echolab Opera 3408 production switcher with Studio Ensemble from Paul Meyer of Echolab.

Sony introduced a new multiformat switcher processor, the MVS8000A, which is capable of accommodating from 2 to 4 M/E banks and comes with 2 M/E, 17 inputs, 24 outputs and two power supplies.

ROUTING SWITCHERS

Avocent displayed the AMX5000 8x32 KVM switch matrix which supports high bandwidth video up to 1,000 feet from the server.

World Radio History

Evertz featured the Quartz Xenon routing line, which became part of the company's permanent line after it acquired the U.K.-based master control manufacturer Quartz in last year.

Harris Corp. jumped into the large routing market with the introduction of Platinum, a line of multiformat routing switchers for large routing applications. The system provides signal routing up to 256x256 in 15 RU of space and 512x512 in 28 RU and can support video and audio formats from analog to HD in the same frame. The Platinum is unique, the company said, because it requires no separate centralized controller.

Photo: Bob Kovacs

Steve Miller of PESA Switching Systems (L) shows off the company's Cheetah high-density routing switcher to Mike Buchanan of Bittree.

Laird Telemedia showed the company's LTM-DV4X1A FireCut Plus 1394 DV switcher.

JLCooper Electronics featured the Gangway 16, a 16-port RS-422 16-point gang roll switcher.

Knox Video Technologies showcased its line of routing switchers, including the RSII SDI, a 16x16 SDI routing switcher that is offered with or without digital audio, and with optional front-panel, IP or with standard RS-232 control.

Kramer Electronics spotlighted its VS-162AVRCA, a 16x16 A/V matrix switcher, which features multiple sync options, and can be controlled via a front-panel touch switch, by the serial RS-232 and RS-485 ports or with external dry-contact push-buttons.

Miranda showcased the Pres-Station compact master control switcher and channel-branding panel.

Network Electronics debuted the VinkinX Sublime line. This series of small and medium sized routing switchers are available in a range of matrix sizes and signal formats and are designed to address the need for 3 Gbps single link HD video switching.

Nvision highlighted the introduction of the NV8288 digital video router, a small profile, large capacity 3 Gbps-capable platform designed for use in video production trucks and small-space applications. The company also showed the NV9000-SE router control system and the CR series of compact router systems.

Attendees to the NAB-HD pavilion got a first-hand look at the Cheetah 64x64 HD frame routing switcher, part of **PESA Switching Systems'** line of routing switchers. Systems on display in the PESA booth included the Cheetah 1024XR, a two-rack system that supports signal routing for SDI, HD and ASI in either coax or fiber I/Os; and the new Cheetah 512XR, which can be configured to 512x512, non-expandable 1024x128, or 512x256. New fiber option cards for Cheetah routers and a new 2048x2048 audio router in 3 RU were also displayed.

Pro-Bel featured a re-engineered version of Masterpiece, the company's master control switcher, a 2RU system that features HD DVE, audio mixing and Dolby E encoder options.

Ross Video showcased its line of routing systems, including the new 72x72 multiple definition NK series routers, as well as the basic line of NK Series compact routers.

Attendees saw several new routers from **Sierra Video Systems**, including the Sierra multiformat routing switcher designed specifically for NLE facilities. The switcher is an 8x8 matrix model in a 3 RU frame that routes SDI video, composite video, S-Video, component video and RGB signals. The company also unveiled several Lassen routing switchers, including an HD model.

Sony spotlighted its new hybrid routing switcher line, the IXS-6000. The two router models, the IXS-6600 and IXS-6700, support standard and high definition video, AES digital audio and also offer RS-422 control. The new routing switchers can be used with the company's MVS and DVS series production switchers or as a standalone router.

TVOne featured the 1M-400 line of 400 MHz analog switchers, which are available in 8x8 and 16x16 matrices, with larger sizes available soon. The switcher supports both composite and component video and allows switching of both in the same frame. Stereo audio in either balanced or unbalanced formats is also accommodated.

Utah Scientific Inc. launched the new MC-400 master control switcher and channel-branding module system, which fits into the output slot of a UTAH-400 router. The company also showed the KP-400 dual-channel key processor and the UCP-MM multi-mode router control panel. Utah Scientific also announced a new interface to Ross Synergy digital production switchers, which makes router sources more easily selectable from the Synergy HD or multiple definition system control area. ■

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World Radio History

Audio

by Sanjay Talwani

NAB2006 blew down the walls with new features for audio equipment, more flexibility, and increased digital storage, all in increasingly rugged and compact packages. Companies big and small cranked up their finest in the quest to capture, process, monitor and mix the audio of tomorrow.

STUDIO CONSOLES/ MIXERS

Axia introduced several new drop-in models and studio accessory panels for the Element control surface.

Calrec unveiled its Bluefin signal processing system, providing 200 percent more processing power in 92 percent less physical space. Bluefin provides 480 equivalent mono signal paths and is capable of providing 78x full 5.1 surround channels—all available on one card. Calrec also showcased its Alpha, Sigma and Zeta System Plus consoles and Hydra networking.

Fairlight showed the multiconfigurable Constellation Anthem digital audio console that unites all recording, mixing and editing functions into one console.

Harrison introduced the X-Range of audio DSP products, including the X-Range DSP PC, which can accommodate 64 fully resourced digital mixing channels at 32-bit or 32 channels at the optional 64-bit rate. The X-Range Monitoring system uses floating point processing running on dual Opteron processor PCs to handle all multichannel surround monitoring formats, and the X-Range MADI Ethernet router is a 64-bit digital floating-point integrated MADI Gigabit Ethernet router.

Smart AV released Version 1.5.1 software for its Professional series of consoles, supporting audio engines including Nuendo 3.2. Also in beta release is the Mediamatrix Nion engine.

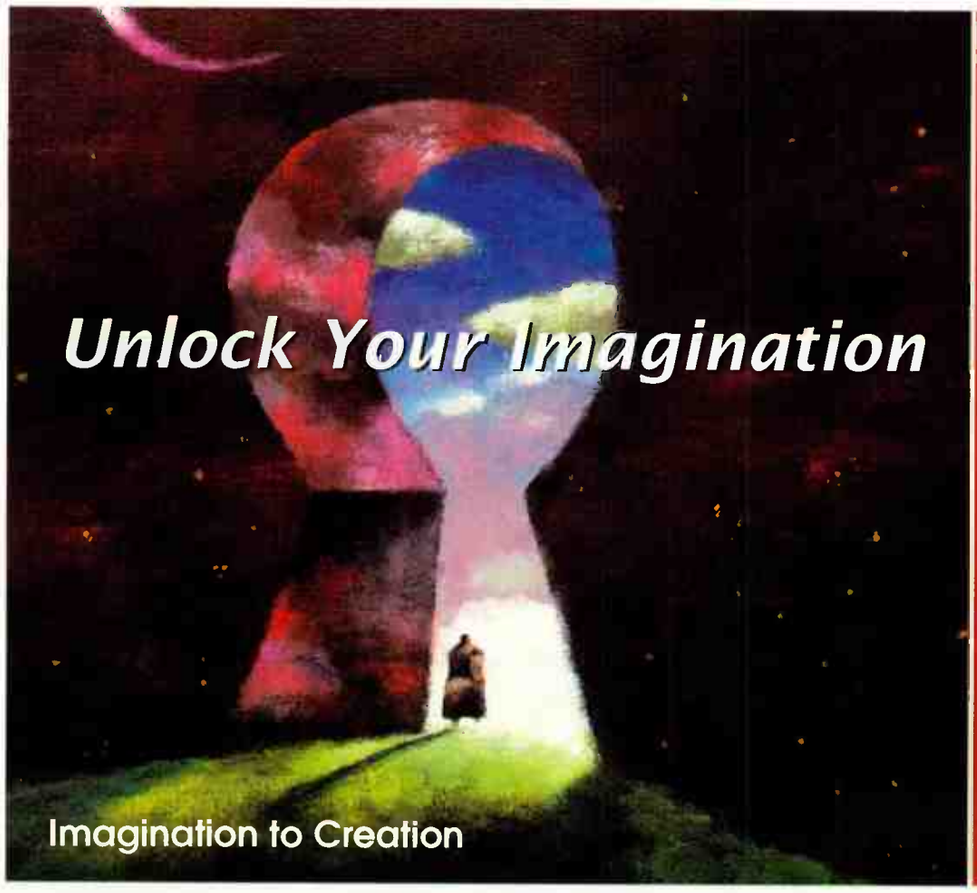
Studer launched the compact Vista 5 digital live broadcast and production console, making Vistonics technology available at a lower price for live TV and local television news production. The 32-fader desk consists of 20 channel strips, optimized for input channel operation, and 12 additional versatile strips for operating output and input channels.

The new Modular Resource Sharing Engine, or MORSE, from **Solid State Logic**, offers sharing abilities for the SSL C100 console.

Also new from SSL was Version 3.2 of the C200, including new GPI con-

Photo: Bob Kovacs

Ian Dittbrenner of Yahoo! Music (L), Hanson Hsu of Delta H Design (seated), Brenda Martin of Esterline and Tim Wolfe of PMC Technical Sales (R) listen as Ian Staddon of Studer explains a feature on the Studer Vista 8 TV audio console.



Introducing the low cost addition to the Hanabi family of switchers: The HVS-500HS multi-format HD/SD switcher.

HVS-500HS "1M/E HANABI"

This versatile new switcher can handle everything from editing and in house studio applications to outside broadcast and live production. The main chassis and control panel have been combined into a compact self-contained unit, making it ideal for small trucks and fly packs. But, best of all, the surprising low cost of the HVS-500HS makes it an easy choice for multi-format production.

- Functional in HD or SD format modes
- Analog and SDI input/output options can be selected from
  - Analog component/RGBs (PC)/composite I/O board
  - HD/SD SDI I/O board
- Up to 8 HD/SD SDI inputs are possible; up to 12 total inputs possible
- PGM/PVW/AUX output available
- One DSK comes standard, and one keyer is available as an option
- Optional up conversion and frame synchronization card

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World Radio History

trol possibilities that offer remote control of a wide range of external equipment, as well as a new DAW Control option.

Also new from SSL was the C300 Master Studio System. Targeting film production, the C300 is a compact, assignable console for fast and efficient sweetening and mix creation.

Wheatstone showed the D-7 on-air and production console, which is targeted for small and medium markets and mobile broadcasting. Also new at NAB was the D-12 TV audio console with the same features as the D5.1 in a smaller footprint.

AUDIO WORKSTATIONS

Merging Technologies featured Version 5.0 SP1 of the Pyramix Virtual Studio DAW 5.0 firmware that expands its capability from 64 to 128 I/Os.

Introduced at the **Yamaha** booth, the M7CL mixing console inherits the feature set of the PM Series in a user-friendly 32- or 48-channel format. Also new at NAB was the DME Satellite Series of audio processors, and new mini I/O cards.

Euphonix showed the System 5-B audio mixing system, which got a new control surface with higher-resolution displays and new touch-sensitive knobs. Euphonix also displayed new options for its Max Air digital audio mixing system.

James Tunnicliffe of Euphonix (L) demonstrates the company's 5-B digital audio console to Kurt Gorman of Phasetek.

AUDIO RECORDERS

AudioScience spotlighted the ASI6600 series sound cards, which feature a PCI Express interface, eight stereo outputs, four stereo inputs, and more.

Sound Devices showed MixPre, 302 and 442 field mixers, along with two new additions to the 7-Series audio recorders.

The 702 and 702T two-channel recorders record on Compact Flash only and share the same field-tested chassis design and sound quality of the 722 and 744T digital recorders.

Tascam presented the HD-P2 HD portable stereo recorder which records to Compact Flash and features up to 192 kHz/24-bit recording. It provides two XLR mic inputs with phantom power.

Zaxcom introduced the new ZFR100, an ultracompact broadcast-quality recorder that can record up to 12 track-hours of audio directly to a 2 GB flash memory card.

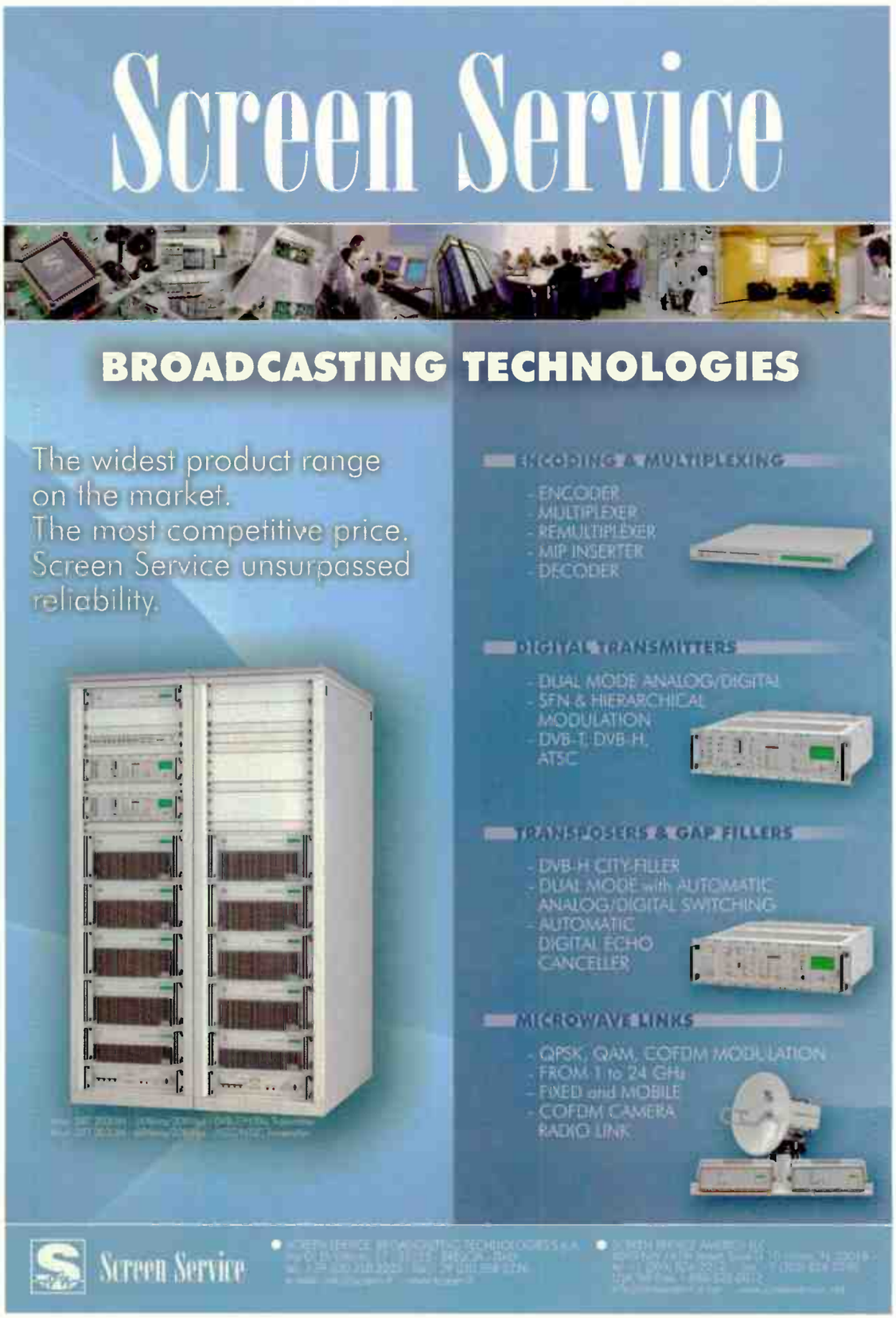
AUDIO PROCESSING

Dolby exhibited its new DP600 Program Optimizer for automated file-based loudness correction as well as the DP561 decoder module, for integration with media products from other companies.

In addition, the compny rolled out Dolby Media Producer, a professional suite of software DVD and high-definition disc mastering tools, Dolby Media Producer includes Dolby Media Encoder, Dolby Media Decoder, and Dolby Media Tools. The suite provides content creators with comprehensive audio mastering capabilities for packaged media applications.

Evertz showed modular Dolby-E codecs for supporting Dolby metadata throughout facilities to the AC3 encoding process.

AUDIO, PAGE 90



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Audio

CONTINUED FROM PAGE 89

Graham-Patten introduced two ADLY-4AES Audio Delay units, the latest in its SoundPals line. The ADLY-4A with balanced AES3 I/O, and the ADLY-4B with unbalanced AES3id I/O, each offer up to eight channels (four AES pairs) of inputs and delayed outputs.

Independent Audio/Cedar Audio USA featured Tools Version 3.2, which adds four new processes to make state-of-the-art restoration possible with Cedar's Pro Tools.

DK Technologies introduced Version 5.0 software for its MSD600M and PTO600 series of audio meters, now with a graphics loudness display.

Junger Audio featured Level Magic, which uses a new algorithm to adjust audio to the correct level. Also, the new C8403 dual mode HD/SDI SDI interface is an eight channel audio embedder and de-embedder card for all standard HD/SDI format signals.

Kramer Electronics introduced the VA-256D multifunction, multiformat tool for signal delay, conversion and repeating. The unit comes equipped with 1 S/PDIF input and output on RCA connectors and 1 optical input and output on Toslink optical connectors. The VA-256D is also multiformat capable, handling EIAJ, CP-1201, IEC60958, AES3 and S/PDIF signals encompassing all the popular broadcast and DVD standards such as Dolby Digital, EX, DTS, ES and PCM with audio sampling rates of 32kHz, 44.1kHz, 48kHz (standard DVD) and 96kHz (DTS 96/24).

Linear Acoustic AEROMAX-TV

Linear Acoustic unveiled the AEROMAX-TV Digital Television Audio Processor dynamics unit for 2-channel main plus SAP audio with front-panel display and controls plus Ethernet remote control. Additionally, along with Coding Technologies LLC, Linear developed an aacPlus Surround encoder and decoder to accommodate Dolby-E Metadata format directly throughout the broadcasting transmission chain.

Linear Acoustic also debuted the MetaMAX Bitstream Audio Processor, which enables audio to be transmitted the way producers intended while protecting consumers from loud commercials and programs. Located at the point of transmission, MetaMAX is a 5.1-channel DTV audio processor that operates completely in the compressed domain, and protects dynamic range while controlling loudness.

Merging Technologies featured Pyramix software, which has been expanded in Version 5.0 from 64 to 128 I/O, with improved media management and libraries, transport and machine control and timeline and editing.

Orban demonstrated the Optimod-TV 8382 digital audio processor. The 8382 controls program dynamics to maintain a comfortable range for the typical home viewer, and, using its built-in CBS Loudness Controller, it tames subjective loudness to prevent commercials from becoming overly obtrusive.

RDL showcased the RU-ADL2 Professional Audio Delay which features separate time delays for two audio outputs along with other features.

Sonifex showed off a range of new products, including the RB-DS2 stereo audio delay synchronizer, which resynchronizes audio to video following delay processes. New Soniflex offerings also included the RB-PA2 dual stereo phono RIAA equalized preamplifier and the RB-ML2 stereo microphone and line level limiter.

Symetrix displayed the six-function 528E voice processor and the AirTools 6200 dual-channel digital voice processor, with two discrete audio pathways capable of processing microphone or line-level sources, independently or as a stereo pair.

MICROPHONES & HEADPHONES

Audio-Technica unveiled its compact and comfortable ATH-PRO700 SV Professional Monitor Headphones for broadcast, studio, production, voiceover and DJ applications. Also featured in the Audio-Technica booth was the AT2020 Cardioid Condenser Microphone, a low cost mic with professional sound quality, for podcast production and studio and remote broadcast applications.

Azden exhibited the company's low-noise, 3-channel FMX-32 battery-operated field mixer that can be attached with provided hook and loop fastener.

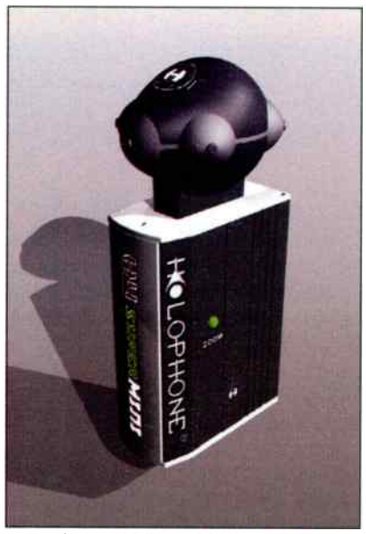
beyerdynamic showed the MMX1 headset with condenser microphone that features a closed headphone and cardioid mic pickup, ideal for multimedia applications.

Also spotlighted was the TG-X 48 dynamic microphone that features a supercardioid polar pattern and an integrated pop shield.

Remote Audio displayed the "Ear Bud," which has a swivel ear hook for either ear and a 3.5mm mono plug molded into a right angle and is ideal for IFB applications.

Sanken exhibited the 1.25-inch COS-22 dual-channel lavalier mic for high-quality unobtrusive area mic'ing.

DPA Microphones showed the new 12 cm 4090 and 4091 mics with an omnidirectional condenser capsule and 3-pin XLR connector for use with 48 V phantom powered systems.



Holophone H4 SuperMINI

New in the **Holophone** booth was the new H3-D microphone, a 5.1 Surround Sound mic based on the Holophone H2-PRO. The company also unveiled the H4 SuperMINI, a 5.1 camera-mountable surround microphone.

Kramer Electronics introduced the VP-100A 106, a high-performance mic amplifier/distribution amplifier that converts a balanced mono microphone input to two high-level balanced mono line outputs.

Kramer also demonstrated its 904 stereo power amplifier.

Lectrosonics XSDT

Lectrosonics showed the XSDT, or "eXtra-Super-Damn-Tiny," which it claims to be the smallest mic in the world. It's self-contained, including a nearly microscopic condenser microphone element, battery and RF transmitter using proprietary Digital Hybrid Wireless technology.

Neumann introduced the TLM 49, a classic 1950s-style retro microphone, with the K47 capsule used in the M 49 and U47 mics.

Neumann TLM49

Remote Audio highlighted the HN-7506 High Noise Environment Headset Monitor, which provides extreme isolation from outside noise using Sony MDR-7506 drivers and special baffling.

Sennheiser exhibited the SK 5212 wireless microphone system, featuring a 36 MHz tuning window with access up to 7,200 UHF frequencies in 5 kHz steps.

Shure showed the KSM9 condenser mic featuring dual-diaphragm construction and switchable cardiod/supercardiod versatility.

Several new microphones debuted in the **Sony** booth at NAB2006. The new ECM-322BC and ECM-322BMP headset microphone systems are designed for highly sensitive and clear sound pickup in corporate, educational, house-of-worship and live sound applications. The ECM-BMP system is also available in a UWP-X5 headset/wireless package which includes a body-pack transmitter and a plug-in wireless tuner module.

Sony also expanded its Electret Condenser Microphone series with the eight-inch ECM-673 "Short" shotgun microphone for high-quality sound capture in field and audio environments. Sony also debuted the new WRT-8P plug-on transmitter targeting wireless microphone capabilities in ENG and field production.

WIRELESS AUDIO

Avlex displayed the Mipro MA-909, a 16-frequency agile wireless mixer, as well as the Mipro MR-90 Wireless ENG Receiver, a 100-frequency agile receiver.

World Radio History

Schulze-Brakel mic screens

Remote Audio showcased the Miracle Whip Antenna for wireless mic use that is designed to withstand the rigors of on-location production without bending or breaking.

Sennheiser introduced the new NET1 Network System, a hub for up to 10 Sennheiser wireless systems that automatically configures frequencies for all connected components and portable units through wireless sync.

Zaxcom highlighted its TRX900 and TRX990 digital wireless transmitters, with built-in IFB receivers and up to six hours of internal recording.

MISCELLANEOUS

Acoustical Solutions introduced four levels of Recording Studio-in-a-Box, which are customized kits for creating a variety of acoustic environments. Also new is the Commonwealth Collection of acoustical wall panel designs.

Remote Audio featured the BDSv2 Battery Distribution System, which allows up to six devices to be powered from a single battery.

German firm **Schulze-Brakel** was on hand with an extensive line of decorated mic windscreens.

Studer showed the company's Call Management System that interfaces to most private branch exchanges.

INTERCOMS/IFB

Remote Audio featured Speak Easy, a 9 V battery-powered speaker small enough to be easily hidden. It interfaces with the Remote Audio push-to-talk Boom Box and is available with an optional front-mounted volume control.

Riedel Communications introduced its new generation of Artist Intercom systems, which now allow all frame sizes to use the same type of controller and clients cards, significantly reducing expansion costs and the need for spare pooling.

Riedel also debuted Connect IP, a 19-inch unit that allows for matrix to matrix connections, from matrix to control panels and distribution of audio lines over IP, as well as Connect Solo, which combines two analog POTS telephone hybrids in just one half rack unit, and Connect Duo, which provides intercom interfaces via ISDN and public telephone networks.

Clear-Com demonstrated the complete Eclispse family of digital matrix intercom platforms, including the compact Eclipse-PiCo, which is ideal for mobile production, with 36 full-duplex communications and four wire ports in a 1 RU frame; the mid-sized Eclipse-Median; and the powerful Eclipse-Omega, with the highest port density of any available system.

JK Audio demonstrated its Four IFB Phone Bridge, which is a four-way phone line interface listen-only IFB. Also shown was the RIU-IP remote IP interface.

Production Intercom showcased its 4-ounce TR-1, a rugged and lightweight IFB. The company also exhibited the DMH948 all-in-one headset; broadcast announcer stations and the FR4000 Half-Duplex wireless system.

Telex Communications displayed Digital Matrix intercom systems, RadioCom wireless intercoms, as well as two-wire intercoms, broadcast headsets and earpieces

JK Audio Phone Bridge

Trilogy featured Mercury, the company's advanced IP Audio Communications system, which enables instant two-way, multichannel voice communications between any number of individuals or groups linked via LAN or WAN. ■

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PRODUCTS & SERVICES SHOWCASE

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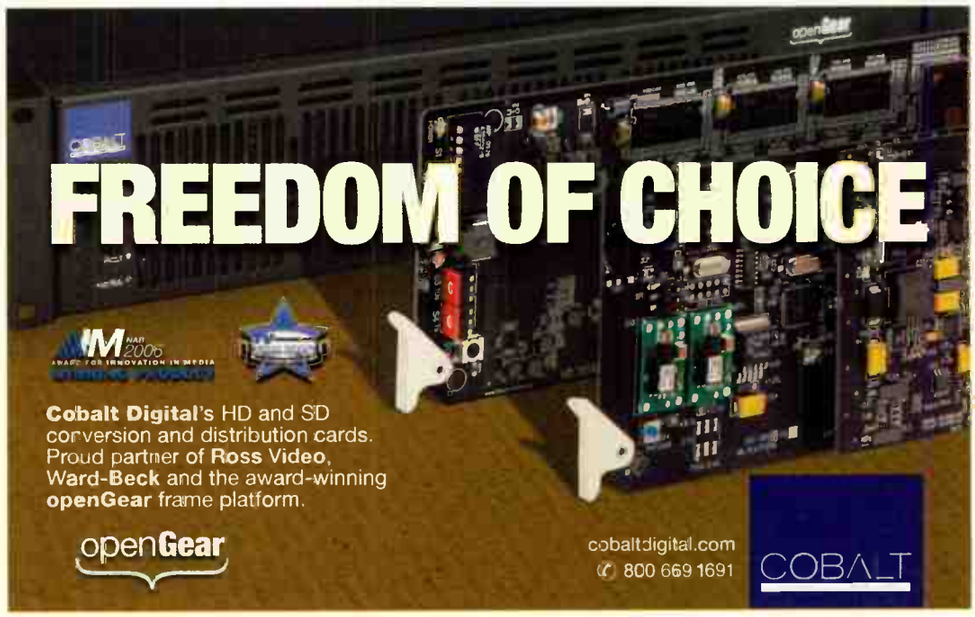

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World Radio History

Signal Processing

by James E. O'Neal

As has been the case for quite a few years now, signal processing ranks as the largest NAB product category. The ever-increasing multiplicity of formats spawned by the digital revolution continues to drive vendors to produce more and more processing devices each year.

As signal processing cards have become more sophisticated and multifunctional over the years, this has created a somewhat staggering number of different edge connectors and card trays. There has been some progress in achieving a standardization of sorts in this area.

ENCODERS & DECODERS

Adtec Digital demonstrated adCode, a media ingest station providing MPEG-2 SD encoding from a variety of sources. Also shown was the Edje 2100 real-time distribution encoder.

The latest version of Agility Broadcast software-based real-time HD encoding system was rolled out by **Anystream** at the show. Version 6.0 features a new grid encoding architecture for increasing efficiency in IT-based workflows.

Camplex Corp. showed the CP-701 and CP-301C technologies for multiplexing professional and industrial grade camera control functions and power onto a single 75 Ohm cable.

Envivio demonstrated the 4Caster B3 and HD3 live encoding systems for SD and HD IP video creation. They are designed for high quality video at low video bit rates.

Grass Valley launched a new MPEG-4 encoder for its modular ViBE line of encoders. When implemented in a single chip, the new module will achieve HD-quality video at bitrates as low as 4 Mbps. The new plug and play single chip version will be available at the end of 2006. The MPEG-4 encoder uses Grass Valley's new Advanced Compression Processor, also announced at the show.

Photo: Bob Kovacs

Emily Dubs of Grass Valley (L) explains the company's solution for mobile television to Kevin Moore of Eurotek Ireland.

Harmonic showcased the latest products for ultra low bit-rate MPEG-4 AVC (H.264) and MPEG-2 SD/HD encoding, as well as multi-service encoding technology for delivering CBR and VBR MPEG-4 AVC.

Hitachi Kokusai Electric America Ltd. featured the TU-CX-Z4, a digital triax system designed for all makes of cameras, providing uncompressed HD video and audio over long cables.

Inlet Technologies showed the newest releases of Fathom and Semaphore platforms for encoding

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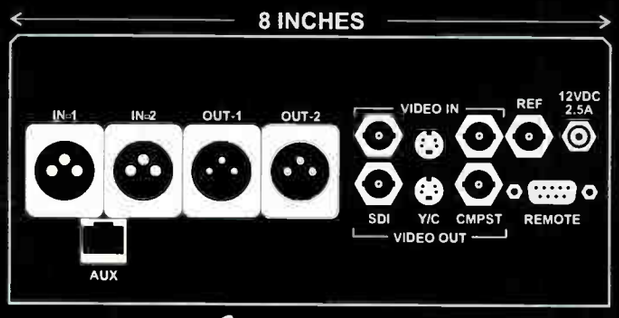

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BUF TECHNOLOGY

World Radio History

video content and supporting both AVC (H.264/MPEG-4) and WMV (VC-1).

IPV Ltd. partnered with **Artesia Digital Media** to present an integrated solution for delivering frame-accurate content over IP networks. Products used were IPV's SpectreView and Artesia's DAM.

Ligos demonstrated MediaRig Mosaic, an IP-based system which replaces up to 12 hardware MPEG decoders and allows service providers to create and provide program guide and navigation channels.

Also in the Ligos booth, Linx Electronics, now known as **DTV Innovations,** marked its NAB debut. The company featured its Digital TV Conversion System, an integrated solution that combines the Ligos MediaRig Encoder with DTVI's own Dynamic PSIP Pro software, all in a single 1RU PC system.

Media Excel Inc. featured the company's SoftStream HERA 3000, a real-time H.264 encoder/transcoder system for high quality compressed video over IP, mobile TV and digital signage applications.

NTT Electronics Corp. showed the HVE7100 high definition TV encoder which supports both DVB-ASI and IP applications. It provides AVC/H.264 high profile level four support of the AVC/H.264 standard.

Optibase demonstrated its AVC H.264 MPEG-4 high definition encoding technology that provides IPTV operators with the capability to deliver uncompromised HD quality without infrastructure upgrades.

Popwire AB introduced Ingest Engine Engine, for importing tape-based video into digital high resolution formats, including DV25, uncompressed 4:2:2 and MPEG-2 I frames only.

Tiernan, a **Radyne** company, showed the HE4000 high definition/standard definition encoder, featuring 1 Mbps to 160 Mbps encoding rates and built-in up and down-conversion.

In addition to the openGear line of cards and card frames, **Ross Video Ltd.** announced a new version of the ADC-8032B decoder, which has been redesigned for improved performance.

DVB-S2 was the focus at the **Scopus Network Technologies** booth as the company exhibited its new DVB-S2 system, based around the UE-9217/9218 universal encoder and IRD-2900 receiver/decoder for contribution and distribution of digital broadcast content.

Sencore highlighted the Atlas MRD3187A, a modular receiver /decoder, that uses the Modulus Video AVC codec to support dual MPEG decoding applications and featuring new interfaces for DVB-S2, COFDM, DVB-CO and IP applications.

Tandberg Television launched the EN5940 DSNG, which combines MPEG-4 AVC HD encoding technology with the latest generation DVB-S2 satellite modulator for satellite news-gathering applications.

Tightrope Media Systems showed the ENC Series of MPEG-2 encoding technology, which can operate in a standalone configuration, or as part of the company's Cablecast automation system.

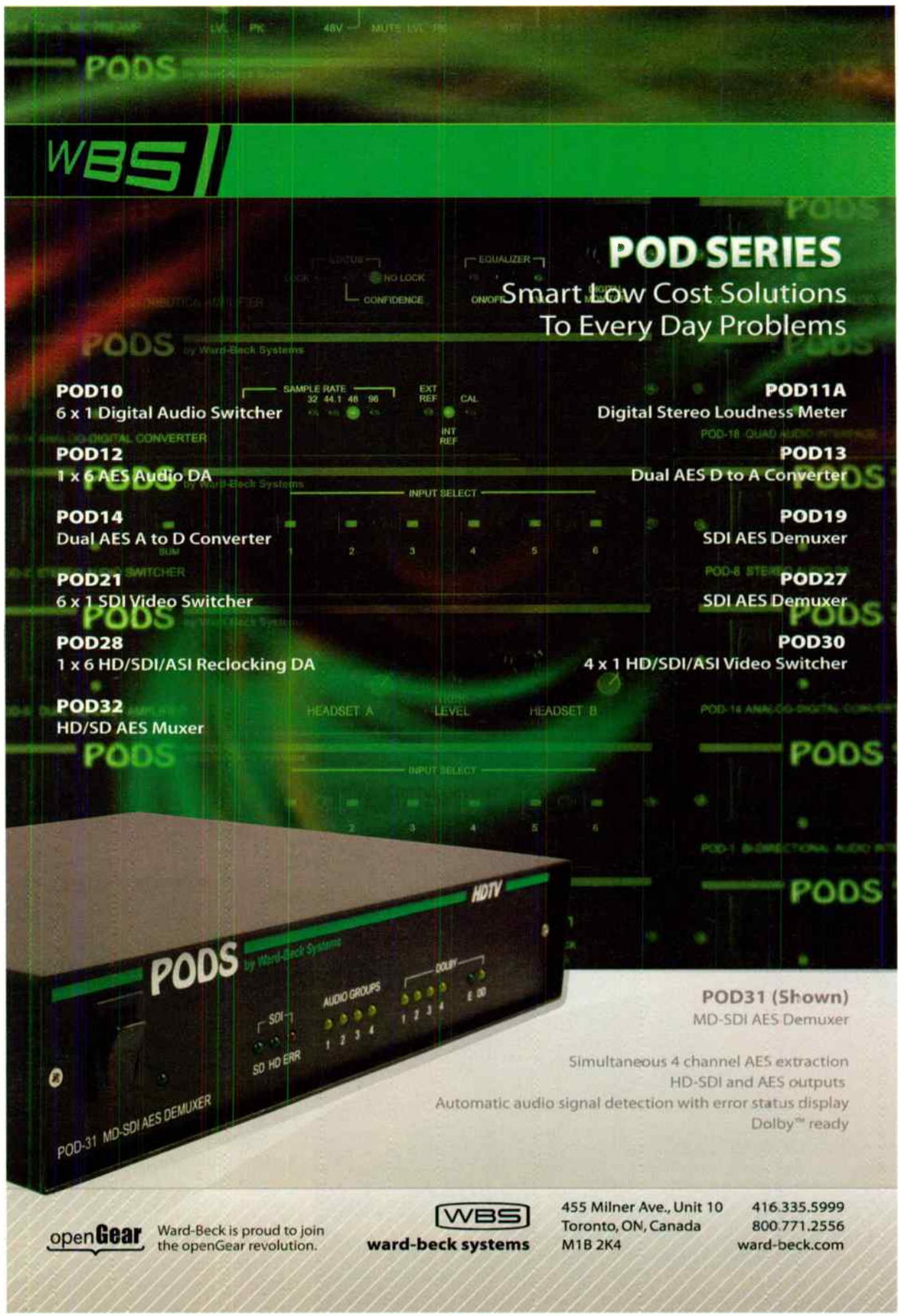
Vcom Inc. exhibited the Vcom CableVista Edge Decoder for MPEG decoding, modulating and upconverting of as many as 24 NTSC/PAL channels and providing baseband and RF outputs.

VideoBank featured the company's VB Live Encode/Logger, a video capture, encoding and logging device providing high and low resolution video along with data tagging.

Vela showcased its Argus high definition encoder, which features frame-accurate 4:2:0 and 4:2:2 encoding and support for all ATSC standards.

Volicon exhibited the Observer broadcast monitoring and logging system, running the new 3.0 software release, which provides a number of new features including closed captioning support.

SIGNAL PROCESSING, PAGE 96



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Signal

CONTINUED FROM PAGE 95

DIGITAL PROCESSING

Communications Specialties Inc. announced the Pure Digital Fiberlink 7250 series of all-digital RGB transmission components, supporting UXGA resolution and stereo audio and utilizing two single or multimode fiber strands.

Crystal Vision demonstrated the Safire HD chromakeyer, as well as ViViD HD video delay and LKEY HD linear keying technologies.

DVEO exhibited the new FireBridge HDV to DVB-ASI converter, which features FireWire connectivity and is tested to work with most brands of transport stream multiplexers.

e-mediavision.com launched X-View SD and CV monitoring technology, which is based on the X-View multi-image display processor system for creating high resolution virtual monitor walls.

Nine new products in the Brighteye lineup were featured in the **Ensemble Designs** booth, along with 11 additions to the Avenue product line, including an SD/HD/ASI electrical to optical signal interface.

Photo: Bob Kovacs

David Wood of Ensemble Designs (L) discusses the company's Bright Eye 45 processor with Danny Miller of NBC News.

Evertz demonstrated the latest features in its MVP series of multi-input, multiplexing display processors, now available in configurations with more than 1,000 inputs and 50 display outputs.

Fjord Media AS showed the Free4 open platform modular, multipurpose frame system combining processing, conversion, distribution and routing of SD/HD SDI, AES and RS-422 signals.

For-A exhibited several new products, including the MC-10AD analog to digital converter for converting both SD and HD analog signals into SD or HD SDI signals.

The new IMD-1 from **Image Video** provides for video UMD/tally with embedded audio metering/demux.

Kramer Electronics debuted the VP-413 and VP-415 video scalers, designed to accept composite or S-Video and provide computer graphics output resolution. Both feature 3D deinterlacing and 3D comb filtering.

KTech Telecommunications introduced the HAC-1000, an HDV to ASI converter for mounting directly on cameras. Also featured was the DVM-2000 GigE decoder with 40 channel capacity.

Laird Telemedia introduced the LTM-6000D standalone media converter, designed for all formats, including DV, SDI, S-Video and composite and featuring timecode insertion.

Media Links demonstrated the MD6000 system for transporting a variety of video signal types over existing SONET/SDH and IP networks. It provides forward error correction and differential delay adaptation.

Network Electronics exhibited the SDI-IP-GTW gateway, featuring very low latency and a built-in frame synchronizer for transmitting uncompressed SDI over IP.

The **Fortel** division of **PESA Switching Systems** showed the FS-550 HD frame synchronizer with an optional legalizer and color corrector. The card is designed for the FRM-503 or FRM-501 trays.

Prime Image demonstrated the Time Tailor HD/SD processor that allows the runtime of video programming to be shortened in real time, thus creating availabilities for inserting other materials.

Ross Video has partnered with both Cobalt Digital and Ward-Beck in creating a series of "openGear" modules and corresponding card trays. Any of each manufacturer's cards in this series can be used in card trays from the other equipment providers, reducing the tray count and allowing system designers to pick the best product for the job without having to include additional card trays in the project equipment list.

Snell & Wilcox showed the latest additions to its IQ Modular series of signal processing devices. These include a synchronizer /decoder and up/down/cross converters.

Telecast Fiber Systems Inc. launched the latest generation of G2 CopperHead camera-mounted fiber optic transceivers with digital processing, available in configurations for several camera applications.

Video International Development Corp. featured the new Aspect Pro 10 aspect ratio converter as well as the Sync 2000 frame synchronizer and noise reduction unit.

Wegener announced the availability of the company's Compel network control system for managing hybrid networks, allowing operators to control delivery of television and radio over satellite and terrestrial paths.

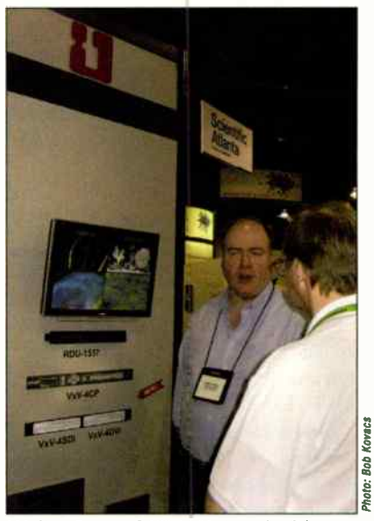

Photo: Bob Kovacs

Walter Raps of CSTV Networks (L) gets a demo of the Image Video VxV-4DVI quad-split processor, RDU-1517 tally display and VxV-4CP control panel from Gerry Blaney of Image Video.

FILE & FORMAT CONVERSION

Astro Systems Inc. showed the SC-2055, a scan converter featuring interchangeable interface options and designed for dual link SD/HD SDI and analog component video.

Axon Digital Design (distributed by Nvision) launched the Synapse TWINS 2HS10, a new HD to SD downconverter methodology providing two conversion channels per card and featuring dual power supplies.

Blackmagic Design featured Multibridge Pro, a standalone format-agnostic bi-directional analog/digital converter with the flexibility to become a capture system, breakout box and play-out system when coupled with a PC or Mac.

Cobalt Digital demonstrated the HD8021 up/down/cross converter. It can convert from 720p to 1080i and vice versa. It also can convert 24 frame video to 60 frame with 3:2 pulldown.

Gefen introduced new DVI to SDI conversion technology that provides DVI video from SD or HD SDI signals and providing format scaling of multiple resolutions up to 1080p.

Grass Valley featured the Canopus ADVC700, which provides bidirectional analog/DV conversion for both Microsoft Windows and Mac OS. The ADVC700 features a 19-inch rack mountable design and support for LTC timecode and external synchronization.

Harris showcased new features for its **Leitch** X75 M-PATH multiple path up/down/cross converter and synchro-

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nizer, including MPEG-4 monitoring streaming, video to audio (V2A) timing measurement, eight AES I/O with a 32-channel audio option and an integrated Dolby-E encoder option.

Snell & Wilcox showcased the Quasar HDTV upconverter, which incorporates Ph.C motion estimation technology from the company's long established line of standards conversion equipment.

Also new from Snell was Helios, a software-based conversion platform that automatically converts, under control, video, audio and metadata to any required format in a single "anytime" pass.

Telestream featured the latest in the series of FlipFactory file conversion products, including Flip4Mac, which includes new software to allow MXF content from the Sony XDCAM system to be directly ingested into Final Cut Pro 5.

Teranex exhibited the "1RU," a new dual channel, low-profile DTV format converter with an array of audio and video I/Os and designed to ingest any feed, synchronize it, and convert it to the desired SD or HD output.

TV One demonstrated the new C2-7300, a dual-channel motion-compensated SD/HD conversion unit that also does television standards conversion, audio and video processing and switching of a large variety of signal types.

STANDARDS CONVERTERS

Brick House Video Ltd. exhibited the Proteus standards converter, which features an advanced motion adaptive conversion algorithm, aspect ratio conversion and lip sync correction.

Crystal Vision showcased Up-and-down, a single board unit for up-down- and cross-converting video formats. The board features adaptive motion compensation and aspect ratio conversion.

Miranda Technologies displayed the XVP-811i HD/SD up, down and cross converter, which features management of aspect ratio conversion with embedded control signals and 5.1 to 2.0 sound downmixing.

Pro-Bel debuted the new CIFER standards converter from its **Vistek Electronics** acquisition. Developed jointly with **Digital Vision,** CIFER converts between all primary HD standards, as well as converting to and from SD video.

Snell & Wilcox demonstrated the new Kudos Plus line of compact standards converters and synchronizers for SDI, composite and component video, with options for DV and audio.

Video International Development Corp. spotlighted the M/V Bridge XL standards converter, featuring advanced motion vector estimation.

CLOSED CAPTIONING, SUBTITLING & SIGNAGE

Computer Prompting & Captioning Co. demonstrated MacCaption-DV and MacCaption-NLE/MPEG software-based closed captioning technology with speech recognition enhancements for live applications.

GlobalStreams Inc. showcased the latest developments in the Studio 4000 and 8000 systems which provide a variety of graphics titling, text effects and formatting in addition to serving as switchers and a host of other production tools.

Keywest Technology featured the newest developments in the MediaXtreme product line, including Media POD that supports creation, scheduling and playback of digital signage displays.

Link Electronics Inc. exhibited a variety of closed captioning technology, including the HDE-3000 platform, which is designed for both captioning and graphics generation in HD and SD.

Softel USA Inc. spotlighted Swift 5 technology for captioning decoding and subtitling applications. Also featured was Swift TX for automated caption and XDS transmission.

Triveni Digital showcased the latest developments in the SkyScraper system for point-to-multipoint digital content delivery for signage, push VOD, educational programming and other applications.

CONTROL & COMPUTER PERIPHERALS

AJA Video featured capture cards in both Kona (Mac) and Xena (Windows) product lines. These allow capture of a very wide variety of video types and formats.

DNF Controls showcased the DMAT-O-EZ sports event controller that facilitates slow motion replays and highlight list creation and playout to air with minimal operator keystrokes.

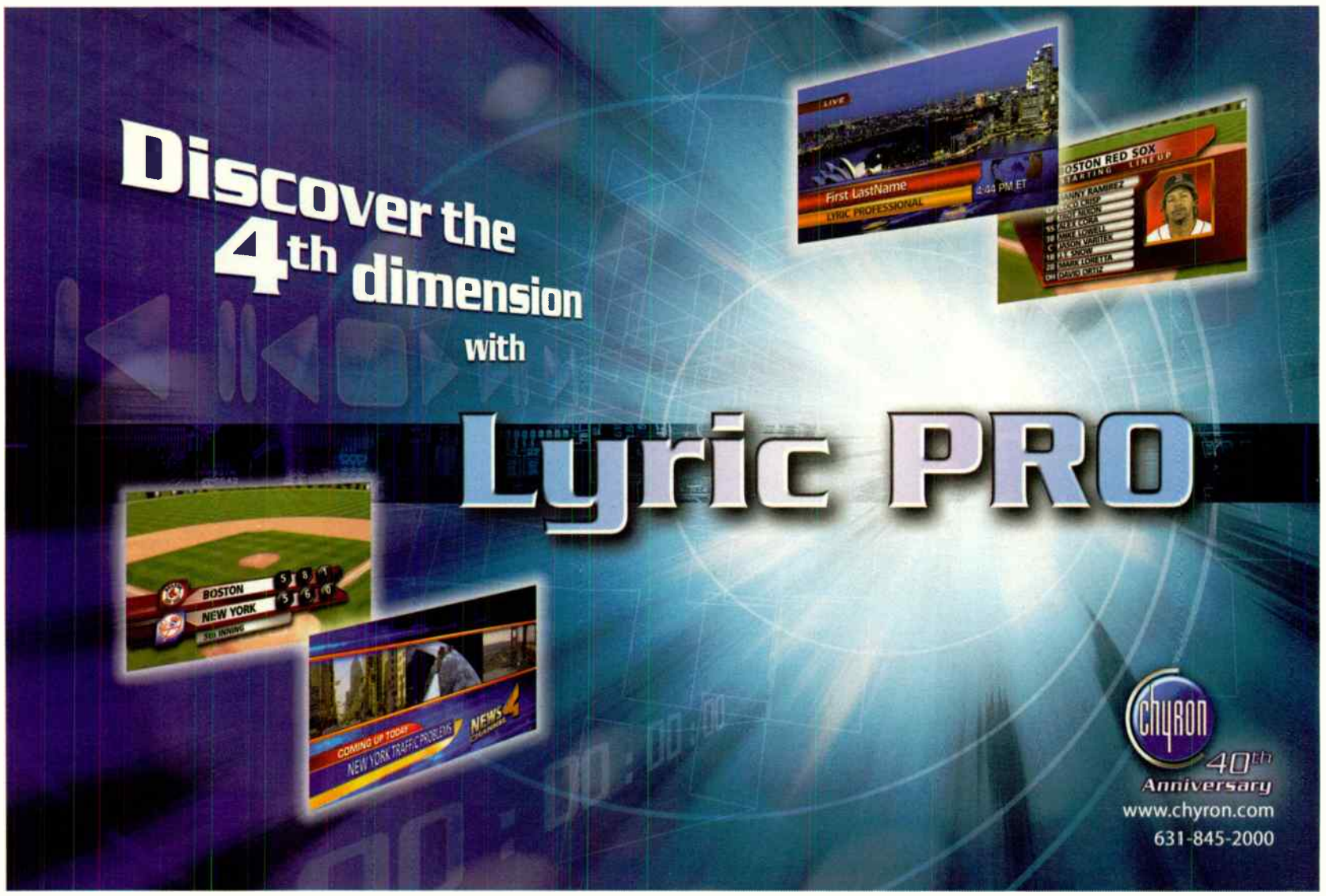
DVEO featured the latest developments in connection with the FireCaster, a real-time delivery system for HDV-originated MPEG-2 streams from Sony Z1U and JVC 100U cameras.

TELECINE & COLOR CORRECTION

Celco featured the Firestorm 2 low cost digital film recorder that can output a high resolution film frame in 1.8 seconds and works with any resolution up to 4K and beyond.

da Vinci Systems featured the company's Resolve family of products, including Resolve FX, Resolve DI and Resolve RT for visual effects, digital intermediate and real-time 2K processing applications.

STORAGE, PAGE 98



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Signal

CONTINUED FROM PAGE 97

Digital Vision unveiled the DVNR 2K RGB, a new image processing workstation providing real-time video processing for noise, grain and scratch removal applications in 2K, 1080, 576 and 480 line uses.

Eyeheight debuted the keyEyesMDi linear keyer for 1080i, 720p, 625 and 525 applications. It generates matte overlays for graphics suite and presentation studio applications.

Imagica showcased Imager HSK, a CMOS sensor-based 35mm scammer for converting film to 4K/2K. It features an LED illumination source and runs at the rate of 1 fps for 4K and 3 fps for 2K.

Nextamp unveiled the latest developments in the field of TV content tracking and protection for broadcasters, movie studios, post houses, labs and distributors.

Quantel launched its new Pablo next generation color corrector at the show, exhibiting the new product in a dedicated viewing theatre within the Quantel booth. Pablo features genuine realtime 4K operation and Quantel's TimeMagic technology.

DATA BROADCASTING & WEBCASTING

Fraunhofer IIS demonstrated audio/video IP streaming at the **Alliance** booth using a combination of MPEG-4 AVC/H.264 and MPEG-4 high efficiency AAC technologies.

Optibase featured the new AVC H.264 IPTV MPEG encoder and demonstrated its interoperability with set-top boxes from nine leading companies.

T-VIPS AS launched the TVG430, a new system, based on JPEG2000 technology and designed for economic transport of high definition video over Gigabit Ethernet.

Vbrick Systems displayed the WM Appliance, a Windows Media-based device for encoding and delivering high quality over low and medium bandwidth IP networks. ■

PRODUCTS & SERVICES SHOWCASE

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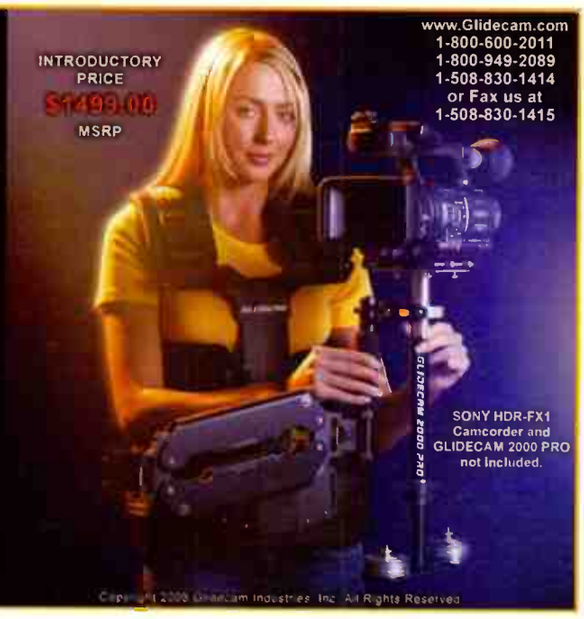

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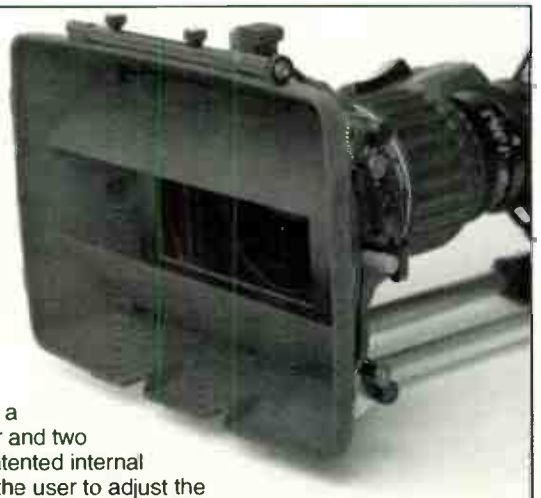

The new MB-350 wide angle mattebox from Vocas features two *independently* rotating filter trays and one non-rotatable horizontal tray. It can accept an additional 4x5.6" filter in the hood for a total of four stages! This fourth stage can also be used with a variety 4:3 or 16:9 mattes.

For lenses wider than 5.0mm the mattebox can use a 4.5x4.5" rotatable filter or one 4x4 non-rotatable filter and two horizontal filters. The patented internal eyebrow system allows the user to adjust the matte or mask to the zoom position of the lens. The MB-350 can be used as a clip-on mattebox or may require the MBS-100 support and bars adapter for use with standard 15mm rails.

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PRODUCT REVIEW

Test

CONTINUED FROM PAGE 101

720p HD, as well as 625i PAL and 525i NTSC SD. Levels can be monitored continuously and manually or automatically corrected. User adjustments include hard and soft clipping levels, luminance gain, chroma gain and black level.

Hamlet Video International introduced the MicroFlex and the Monitor Scope MS9000.

Also making its U.S. debut was HD and HDV VidScope VX, a powerful test and measurement system running entirely in software. It is supplied and run as a USB memory stick, giving any Windows computer with a suitable signal input port, a comprehensive automatic or objective monitoring device with waveform monitoring, vectorscope and color gamut error logging and checking.

Harris demonstrated the Videotek lightweight, battery-powered PTM-305 that features a video test signal generator, color monitor, waveform/vector scope and an audio analyzer/monitor. The menu-driven interface is navigated on the high-resolution, touch-screen display.

Leader Instruments introduced four options for the LV5800 multi monitor platform with built-in XGA display. Options include SDI input, eye pattern, DVI-I output, and AES/EBU input/output. The unit can display up to four sources at the same time, and connect to Ethernet for remote control.

Photo: Bob Kovacs

Charley Defago (L) of Visuals Switzerland gets a demo of the Leader LV5750 Portable Multi-SDI Monitor from Robert Sparks of Leader Instruments.

OmniTek showcased TQ for SD and HD broadcast monitoring applications features waveform generation technology.

OmniTek also released new Version 2.0 software for the PQA Picture Quality Analyzer, and new XR software Version 2.0.

RTI-Research Technology International highlighted its Pro Line 4100 DLS Betacam and the 5100 DVCPRO and DVCAM recycling and rejuvenation systems. Also demonstrated were the TapeChek videotape inspector/cleaner/ rewinders.

Snell & Wilcox unveiled Hyperion, a new content monitoring system that uses intuitive algorithms mimicking human intelligence to provide dedicated audio, video, and metadata monitoring.

Tektronix Inc. introduced the next generation of waveform monitors—WFM600, WFM7000, and WFM7100. WFM6100 is for composite analog and SD digital video formats. WFM7000 and WFM7100 multi-format waveform monitors offer HD, SD and composite video.

The WFM6100 and the WFM7000 Series waveform monitors offer the new MyMenu feature that allows users to place their most frequently used functions in a single on-screen menu. With CaptureVu, new to the WFM6100 and WFM7100, an entire frame of video data can be captured, either user-initiated or automatically, on the occurrence of a trigger event such as gamut alarms.

Other existing Tektronix products, WVR7100 and WVR6100 rasterizers, have added new eye and jitter measurements, and support for Association of Radio and Broadcast standards used in Japan.

Wohler Technologies showcased the new Touch-It LCD touch screen video monitor with built-in switcher from the company's Panorama division. The Touch-It has two high-resolution 7-inch LCD panels, offering video confidence monitoring for up to 12 channels of composite video. The left LCD monitor displays twelve 1.8-inch thumbnail images. The user touches one of them to select which image appears on right screen at full size.

Also available is monitoring of 12 stereo analog audio inputs, plus internal speakers and audio-follow-video routing. The MON4-2W/HR offers 4 HD/SD-SDI inputs, four 4.3-inch wide LCD video monitors and 16:9 aspect ratio. A high-resolution triple screen 4.3-inch wide screen LCD video monitor panel will also be available.

The MON8-1 provides high-resolution viewing of 279 pixels x 234 lines.

RF

American Technical Services featured DSAM-RCS for 8-VSB digital signal analysis and monitoring at both transmitter and studio locations. It features a rackmounted 17-inch LCD screen, as well as a rackmounted computer, keyboard and trackball.

A.N.T. Antenna Nord telecomunicazioni showcased its ANT132 NTSC/PAL/SECAM quality control card.

Microwave Advances demonstrated the MicroSynth is a handheld, lightweight, battery-operated frequency generator. The company also showed the MWA-23SM phase-lock loop circuit.

Modulation Sciences Inc. showed the MSI-4400A 8-VSB analyzer with new features. The most significant improvement is to the signal to noise ratio capability. The ATSC recommends performance at 27dB and the MSI-4400A is designed to measure transmitters that meet this recommendation. Additional features include packet error rate, symbol rate deviation, active user controlled line for parameter alarming from the back panel and adjacent channel filtering.

Pixelmetrix launched a new DVB-T line interface for monitoring digital terrestrial transmissions, as well as the new SLF satellite line interface for digital satellite transmissions.

Promax Electronica S.A. featured the Prodig-5 TV Explorer with new functions for the installation, maintenance and surveillance of terrestrial, satellite and cable TV systems.

Rohde & Schwarz showcased the SFU TV test platform, now with two new options, the SFJ-K199 analog interferer and the SFU-K37 interferer management for simulating interfering analog TV signals on the digital signal.

The SFU can now deliver content using MediaFLO technology from Qualcomm.

Rhode & Schwarz partnered with Samsung at the show to jointly conduct the first public demonstrations of the emerging ATSC technology, A-VSB.

The FSH3-TV handheld TV analyzer for all digital cable standards now comes with an enhanced scope of important analog measurement functions.

Sencore demonstrated the Atlas MRD3187A modular receiver decoder built on a configurable hardware platform. It provides full audio decoding, digital video decoding, and remote operation.

The Sencore DTU-235 COFDM RF to USB adapter allows tuning QPSK, QAM-16, and QAM-64 COFDM frequencies on a PC.

Z Technology Inc. introduced two new features to the company's DM1010 DTV precision measurement demodulator—FCC shoulder measurements and transport stream data measurements.

The instrument ships with Z Technology WinDM-Pro application software for local or remote operation, directly connected to the user's PC or connected through the Internet. The WinDM-Pro application, in addition to full instrument control, provides dis-

TEST, PAGE 103

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World Radio History

Transmission

by Bob Kovacs

Digital broadcasting has entered a mature phase, one where improvements are incremental and the pace of new product introductions is slow. Despite this, manufacturers of transmission products showed new wares and innovative thinking at NAB2006.

Two trends continue with transmission products: greater efficiency and smaller size. Several manufacturers showed products that were more efficient, while others demonstrated products that packed more performance into less space.

TRANSMITTERS

Acrodyne devoted a healthy portion of its display to the company's Quantum IOT UHF transmitter. The big news continues to be how the Quantum can use the e2v ESCIOT depressed collector IOT to provide greater efficiency in both analog and digital operation.

With the cost of electricity rising sharply in many parts of the country, the cost savings provided by a depressed collector IOT transmitter has changed from "interesting, but academic" to "maybe we should think about this now" at many broadcast operations. Ai said that it has more depressed collector IOT transmitters on the air than any other manufacturer, an indication that its efficiency message is coming through.

Photo: Bob Kovacs

Dan Traynor of Acrodyne (R) points out the e2v MSDC IOT in an Ai Quantum transmitter to Alan Wheelhouse of e2v.

Armstrong featured its line of solid-state transmitters for VHF and UHF, with nominal power outputs as high as 16 kW. The UHF version uses LDMOS transistors for high linearity and smooth bandwidth.

New at the **Axcera** booth was the company's Axciter digital ATSC exciter/modulator. Featuring extensive digital processing, the Axciter can function as a DTx slave, work with future enhanced-VSB standards and provide digital watermarks, using a USB port and a simple flash drive to load the new firmware.

The Axciter contains Axcera's latest adaptive-correction technology, which monitors the transmitter's output and continuously adjusts the exciter to minimize out-of-channel emission, as well as providing linear and nonlinear precorrection. With the Axciter, the company said that a transmitter can be equalized in two minutes.

Axcera also featured a live demo of its DVB-H mobile TV technology.

A new "Dual-Mode" modulator was showcased at the **Bext** booth. The Dual-Mode modulator can be switched in software between analog, ATSC and DVB-T standards, and the system even supports 16-VSB and

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Test

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play of RF spectrum with the new FCC shoulder measurement.

The new hardware/software TSR option analyzes the ATSC transport stream outputs available on the DM1010 rear panel, and reports a full complement of transport stream information. The TSR option provides video thumbnails of each video stream, and flags transport stream errors in the ATSC recommended hierarchy.

Z Technology also introduced the DSS5600T, a new drive test system for automatic diversity DVB-T signal coverage measurement and mapping.

Z Technology displayed and measured off-air DTV signals at the show using the new DM1010 DTV Demodulator. One such unit was located on the show floor receiving a local signal and a second DM1010 was located in the company's Beaverton, Ore. headquarters. The WinDM-Pro software running on a PC was able to control either instrument and measure signal parameters from both units.

SIGNAL GENERATORS & CHARTS

Astro Systems displayed the SL-7036 sync generator which outputs and genlocks HD and SD, NTSC and PAL.

DSC Labs demonstrated Combi DX-1 test slides, CamAlign test charts version 6.1, and CamBook test chart sets.

ESE displayed the ES-102U GPS master clock/timecode generator and ESE ES-185U/NTP, an enhancement to the ES-185U that includes NTP output. Also on hand was the ES-110, which generates a stable source of 10 MHz and 1 PPS using GPS data.

Horita Co. showed the UTG-50 universal timecode generator that produces LTC at 23.976, 24, 25, 29.97 and 30 fps.

The ADQ-50 audio/video cue generator is a low-cost small unit that generates both video and audio cue prompts for use during ADR, Foley, or other post-production audio tasks.

Lynx Technik AG offered the Testor, a multiformat SD/HD video and AES test signal generator.

RTcomUSA Inc. featured the NSG-525S multivideo signal generator that inspects analog, digital, TV, DTV, audio, SPIF and HDMI.

Sencore displayed the VP400 family of portable multimedia generators, now with full motion 720p/1080i video clips. Depending on the model, outputs can include DVI, ATSC RF, NTSC RF, RGBHV and other formats.

Tektronix debuted the RTX130A, a portable signal test generator for product development and manufacturing tests. The unit provides compressed MPEG and RF in a single box.

REMOTE

Audemat-Aztec featured the Transmitter Remote Control IP2Choice Version 2, a modular system for remote management and monitoring. It comes with these new features: application program interface, API XML PHP, DTMF, SCRIPTEASY viewer and touch screen display. The system can be configured to connect to all the equipment at a remote site on three serial ports, 128 digital inputs, 40 analog inputs or 64 relay outputs.

Burk Technology showed the ARC Plus IP-based broadcast facility control system. Automatic functions are built in, and backward compatibility with the ARC-16 provides flexible rollout options.

AutoPilot 3 software broadens the capabilities of the ARC-16 by managing time-based or event-driven automatic monitoring and control routines. The new version 3 includes alarm notification by e-mail or SMS, and the ability to customize the user interface and create drill-down displays with virtual channels.

Davicom demonstrated the next generation Davicom MAC remote monitoring and control system, and introduced MacComm Version 5 communications software for Davicom MAC units. Davicom also showed the Scientel DVPD-03 dual video presence detector, now supporting VITS.

Newpoint Technologies offered TrueNorth, a monitor and control solution built on Newpoint Compass Server technology.

The company also showed Newpoint Mercury, a self-contained universal element manager.

Pixelmetrix, as part of its worldwide OEM agreement with **Statmon Technologies,** introduced ConsolidatorPlus, built upon the Axess application from Statmon. The system is able to collect and concentrate network performance and fault information across multiple wide systems and geographies.

Statmon Technologies demonstrated Version 6.1 of its Axess remote control and facility management system, and the EIF-32+, a 1 RU, embedded interface unit. ■

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COFDM data rates up to 31.67 Mbps. Also shown was the company's new line of DTT solid-state digital transmitters that feature power outputs up to 10 kW.

DB Elettronica featured the KD series of low to mid power (2 W to 20 kW) solid-state transmitters for DTV service

A new company at NAB2006 was **Delta RF Technology**, which showed its broad line of pallet RF amplifiers. These are circuit board modules that fit into a transmitter chassis. The company offers these solid-state pallet modules with UHF power outputs of up to 500 Watts.

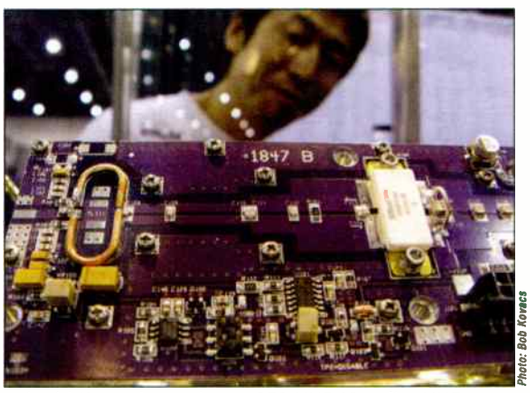

Photo: Bob Kovacs

Takashi Kamori examines a P50-UHF-12 pallet UHF amplifier module in the Delta RF Technology booth.

DMT showed a variety of transmitters, but highlighted its low-power digital systems, including both transmitters and repeaters. One such product is the 01M58, a 150-W UHF ATSC transmitter/repeater that fits into 8 RU of space.

For higher-power applications, the company spotlighted its 08M56, a full-rack solid-state transmitter that can provide up to 2,500 W in UHF ATSC operation.

Electrosys revived the name **Itelco** at its NAB2006 display and also made a splash with its new IOT transmitter rated at up to 100 kW for DTV operation and 300 kW for analog operation.

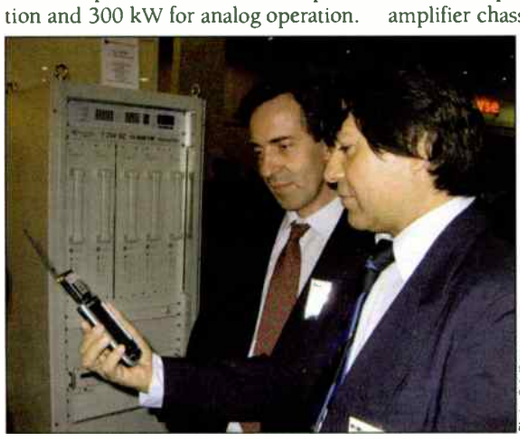

Photo: Bob Kovacs

Manuel Perez of Television Federal (holding unit) and Oscar Gonzalez examine the mobile video transmitted by the DVB-H test at the Electrosys-Itelco booth.

The company also demonstrated its ESS Supervisory System, which is Windows-based software that monitors and controls critical transmitter functions.

Harris Broadcast had its wide range of transmitters and control systems in its booth, including products from low- to high-power. Prominently featured was the company's demonstration of FLO mobile TV technology, which can use the company's Atlas Mobile and Ranger Mobile transmitters for a range of power outputs. Qualcomm developed MediaFLO for the delivery of full-motion video and other entertainment programming to mobile handsets.

Also in the Harris booth was the company's new NetBoss EM element management system used to configure and monitor a TV station's transmission chain from the studio-transmitter link to the transmitter itself. Using NetBoss EM, a station can designate transmission protocols and perform fault management to the component level.

KTech Telecommunications introduced its HPA-30KU Xtreme HPA transmitter, which uses an L-3 MSDC IOT tube to provide an output up to 30 kW in ATSC operation. The HPA-30KU uses a touch-screen control system with event-alarm logging, user configurable menus, a GUI user interface and an integrated remote control system. The transmitter includes KTech's own VSB-ENC-200 8-VSB modulator, with automatic linear and non-linear pre-correction capability.

Larcan featured a range of big and small transmitters. The spotlight was on the new MXi series of solid-state UHF transmitters that can be used for translators, low-power TV, gap filling and DVB-H mobile applications. The MXi is compact, with a 250-W power amplifier chassis occupying just 3 RU. System control is provided by a user-friendly touch-sensitive LCD display.

The Larcan MXi is available in a variety of power ratings, starting at 10 W. The broadband LDMOS design means that the power amp will not have to be retuned for different channels.

Pineapple Technology featured the company's LXT series of low power transmitters, which are intended for use in repeater or gap filler applications. They are available in power levels up to 200 W.

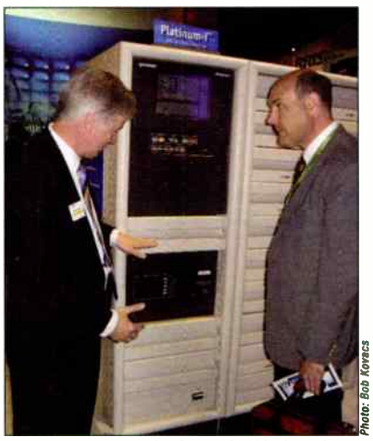

Photo: Bob Kovacs

Martyn Horspool of Harris (L) describes a feature on the company's Platinum-i VHF ATSC transmitter to Richard Klein of WNYT.

New at the **Rohde & Schwarz** booth was its SV8000 family of low-power transmitters, which range from 10 to 500 W. The new transmitter family is based on the popular SX800 exciter and the SV8000 series can be fitted with the company's NetCCU800 control system.

Rohde & Schwarz also is involved in the mobile TV market and introduced the XV703 transposer for DVB-H applications. The XV703 can be used for either different-channel or same-channel networks, with the latter possible due to an echo-cancellation feature built into the product.

The company provided a demonstration of MediaFLO mobile TV technology at its booth.

Superior Broadcast showed its new SBP12KDU 12-kW IOT UHF transmitter. Using an air-cooled IOT as the final amplifier, the SBP12KDU features a touch-screen monitoring system as well as differential gain and phase correction.

Photo: Bob Kovacs

David Hale of Larcan (L) discusses the company's MXi series of low-power transmitters with Larry Smith of Idaho Public Television.

The big news at **Thales Broadcast** is that it was recently acquired by **Grass Valley**. Will the company once known as Comark, Thomcast and now Thales Broadcast go through another name change? Time will tell, but the transmitter manufacturer had an extensive display of products in its booth, including solutions from low- to high-power.

Spotlighted was the company's Adapt exciter, which uses Thales' Digital Adaptive Precorrection to maximize power and minimize digital errors. The Adapt can be used with the company's Affinity solid-state and DCX Millennium IOT UHF transmitters.

ANTENNAS

Although not exactly an antenna manufacturer, **Altronic Research** was there with its line of wide-bandwidth, high-power RF loads. The company uses its own proprietary film resistors in its 6700 Series air loads and now offers a high-power dummy load that works from DC to frequencies higher than 1 GHz.

Like many other transmission specialists, **Dielectric** highlighted its products for mobile TV, including its MobileMedia line of antennas, RF filters, rigid transmission line and FLEXLine cables, used for MediaFLO transmissions. These products are tuned to work in the 700 to 1,700 MHz range planned for mobile TV transmissions.

Photo: Bob Kovacs

Jim York of Dielectric (L) explains the company's Low Power Branch Combiner to Lloyd Collins of Cumulus Broadcasting.

Dielectric also debuted its Low Power Branch Combiner, a rectangular waveguide combiner that can join together any two medium-power UHF channels separated by no more than 22 channels. The Low Power Branch Combiner can be used with any combination of analog or digital UHF transmissions.

Saving space is often as important as precise RF characteristics, particularly in cramped environments such as New York's Empire State building. Addressing the need for combining channels in a compact system, **Electronics Research Inc.** showed off its new Stretch Line Channel Combiner, a simpler alternative to traditional systems used for combining multiple television signals for a single

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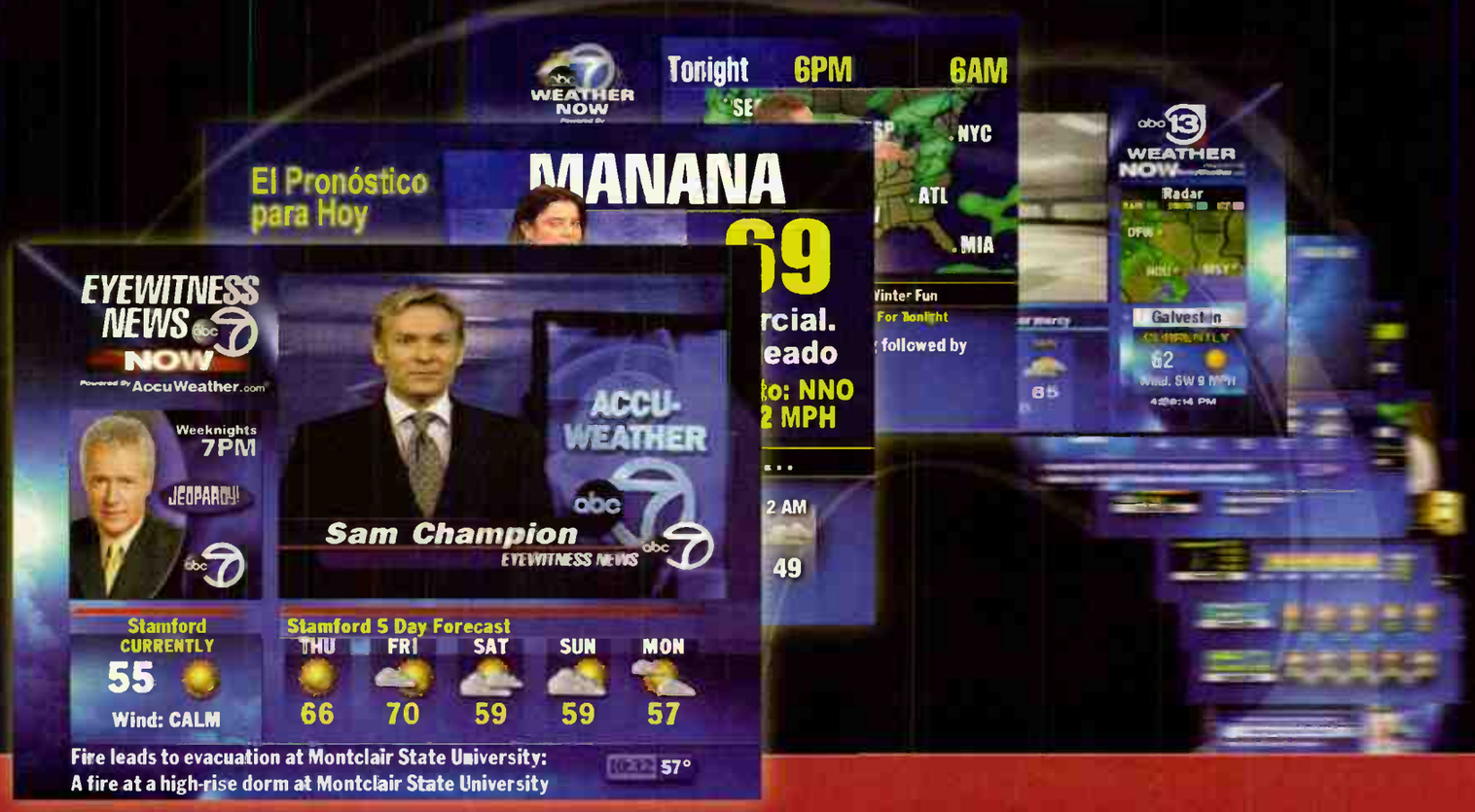

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antenna. The SLCC is available in versions for UHF and VHF applications, and in configurations using 3-1/8-inch and 6-1/8-inch coaxial line sizes.

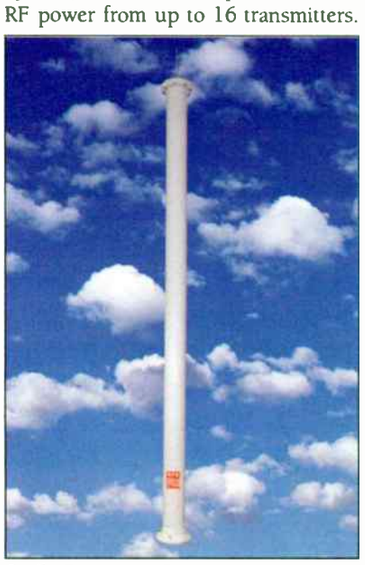
Jampro officials were bubbling about several big projects the company has landed, including the recent delivery of 24 high-band Prostar-series VHF slot antennas to Afghanistan. Jampro also provided a JA-SS 700 HD slot antenna for the NAB's own HDTV station.

Photo: Bob Kovacs

Alex Perchevich, CEO of Jampro, poses with the company's RWEC-506 DTV mask filter.

For new products, Jampro showed its RCCC DTV mask filter/combiner that saves space while providing filtering and combining for two UHF DTV transmitters. To further save floor space, the RCCC DTV mask filter/combiner can be ceiling mounted.

Radio Frequency Systems showed a variety of its antennas, filters, combiners and RF products, but the big news was the company's RF Monitor System, which can keep track of the RF power from up to 16 transmitters.



Radio Frequency Systems Superturnstile antenna

Using a Windows XP-based touchscreen, the RF Monitor System uses strategically placed sensors to watch forward and reflected power, providing user-definable alarms when maximums are exceeded. The RF Monitor System has an Ethernet port so that its data can be viewed anywhere an IP network is available.

Photo: Bob Kovacs

Bill Ammons of RF Technologies (R) explains the company's SFNstar UHF Low-Downward Radiation antenna to Paula Terrasi of Microwave Advances.

RF Technologies LLC featured the company's SFNStar low-downward radiation UHF slot antenna. This antenna solves the problem of engineering low-power translator and single-frequency network systems that place the antenna so close to the ground that RF radiation is a health concern.

With a pattern that reduces downward radiation by 25 dB, the low-downward radiation UHF slot antenna can be installed on roofs and support structures where use of traditional antennas would exceed radiation limits. The design also reduces coupled RF currents to the tower along the axis of the antenna.

Spain-based **Rymsa** had a significant booth at the show, which featured the company's antennas, transmission line, tower and filter products. One highlight was the Rymsa Digital Channel Combiner, a constant-impedance device that can combine two medium- to high-power UHF channels.

Front and center at the **SWR** booth was the Eclipse series UHF slot antenna. With systems available from four- to 32-bay, the Eclipse has a wide range of gain and pattern capabilities. The radome-covered slots require no pressurization against water ingress and the antenna can handle power up to 25 kW. The company also featured its line of combiners, filters and transmission line products.

TUBES

Burle Industries builds tubes and cavities for a variety of VHF and UHF transmitters. At NAB2006, the company was talking about its cavity swap and rebuilding program. This can save broadcasters a lot of time in the event of a transmitter cavity failure.

CPI's Eimac Division featured the K2D130W IOT, which can deliver 30 kW of average power in UHF DTV operation. The compact water-cooled tube does not require disconnection of the power supply or water connection during replacement.

The company also promoted its K3D130 multistage depressed collector (MSDC) IOT for greater efficiency in UHF DTV operation. Promising up to 57 percent efficiency, the water-cooled K3D130 can provide 31 kW of average power in DTV operation.

e2v featured its popular Energy-Saving Collector Inductive Output Tube (ESCIOT). A hit with DTV broadcasters, the ESCIOT is a water-cooled MSDC IOT offering greater efficiency in digital UHF broadcasting. The e2v ESCIOT also provides efficiency improvements for analog broadcasting, a consideration in this period of sharply rising energy prices.

With more than 225 **L-3** IOTs operating internationally, the company emphasized its service to broadcasters, including expedited shipping and trained crews. In addition, the company discussed the ease of replacement of its new Plug-In IOT 70, claiming that it could be done in 25 minutes by someone with modest transmitter skills.

L-3 also showed the company's Constant Efficiency Amplifier IOT, which can save up to $20,000 in energy costs per year per tube in either digital or analog service.

Thales Components showed its line of medium- to high-power IOTs, which are available in both standard and depressed-collector versions. One unusual feature of Thales IOTs is the elimination of the ion pump, which simplifies tube operations, while at the same time maintaining a high vacuum.

TOWERS

Towers are important, but accessories are often needed to make the tower work effectively. **Allied Tower** not only discussed its tower capabilities but also promoted its line of accessories, including microwave antenna mounts, ice shields, vertical waveguide ladders, tower-to-building waveguide bridges, platforms and warning spheres.

In addition to its antenna line, **Dielectric** is also a manufacturer and erector of broadcast towers. The company spotlighted its tower engineering, design and maintenance services, as well as its range of rigid and flexible transmission line.

Magnum Towers spotlighted the company's tower design and fabrication services. The company offers towers with face widths up to 15 feet and heights to 2,000 feet.

Radian Communications showed an interesting tower design that is currently being built in Indonesia. A combination of self-supporting and guyed concepts, the 1,400-foot tower is being constructed with a footprint smaller than a self-supporting tower, while using guys that cover far less area that a typical guyed tower.

Photo: Bob Kovacs

John McKay of Radian Communications poses with a model of a tower that the company is building in Jakarta, Indonesia.

Stainless was promoting its design, engineering, maintenance and tower erection services. The company discussed its many broadcast projects and current AISC fabrication certification to the new building standard.

Photo: Bob Kovacs

Mithieux Marcelo of Radioemisora Cultural in Argentina (L) discusses the Rymsa Digital Channel Combiner with Oscar Mata of Rymsa.

As the analog shutdown gathers in the distance, the future of broadcasting and transmission products is uncertain. There will be broadcasting, but new technologies and government mandates are rocking its foundation, making this an exciting and confusing time for the industry. Transmission vendors at NAB2006 showed a wide range of products to meet the new realities of broadcasting. ■

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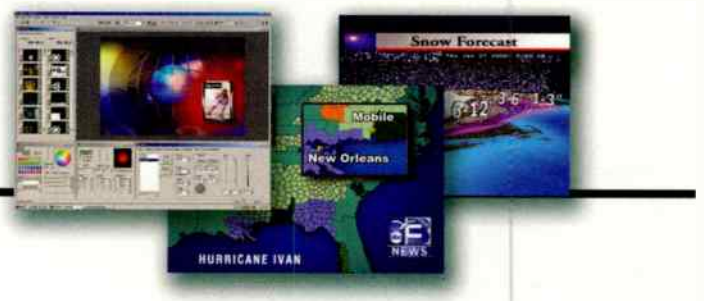

by Geoff Poister

Now that HD is a given, companies are concentrating on other aspects of visual technology. This has led to more refined tools, sporting higher resolution and greater versatility.

3D ANIMATION

Boris FX released Boris Blue standalone 3D compositing and animation software that provides real-time rendering and display of finished 3D models, as well as tools for reshaping and transforming graphics and live-action video. The company also unveiled Boris Red Version 4.0 and a new Boris Continuum Complete bundled with Final Cut Pro for the latest Intel-based Apple computers.

Nvidia introduced three new products: Quadro FX 4500 SDI, delivering 12-bit uncompressed SDI in 2K, HD, or SD formats; the Quadro FX 540 Professional Video Edition, delivering component HD, S-Video and composite video along with OpenGL graphics acceleration; and Gelato 2.0 with Sorbbetto, which combines a production-ready final-frame renderer with interactive relighting technology.

Maxon Computer debuted HAIR, the first fully integrated Cinema 4D module for the creation of hair, fur and feathers.

Maxon Computer HAIR

Noise Industries LLC unveiled Factory Tools for Avid AVX, a collection of 85 effects with a unique feature that enables users to create their own effects. They also introduced Organoptics FX, which provides subtle organic visual effects for the Avid line.

Triangle Software LLC introduced Beat The Traffic for the broadcast of traffic reports. It features 3D animation, lower-third ticker, information user pages and traffic forecasting, and BeatTheTraffic-3D, a live-to-air system inspired from flight simulation technology.

Vizrt unveiled the Viz|3G graphics motor for mobile telephone applications. It tailors transmissions for individual phone capabilities.

Digital Voodoo/Bluefish444 showed Symmetry Version 3.0, a multiformat, Avid-certified digital intermediate acquisition solution; and the Catalyst 2K/HD/SD Analog/SDI video card for Windows and Linux.

Orad introduced HDVG (Hi-Definition Digital Video Graphics), an HD/SD system that eliminates the need for setting a different graphics systems for SD or HD formats.

EFFECTS & SOFTWARE

Avid Technology Inc. presented version 5.5 of the Avid Studio Toolkit, offering significant enhancements and allowing users to create more compelling graphics, titles, composites and effects. The package also provides additional authoring options, including support for the Blue-ray Disc format.

Crystal Vision Ltd. unveiled five new products, including Safire HD, a modular chroma-keyer that works with all common HD formats; ViViD HD, a high-definition video delay line that compensates for delays caused by other equipment; Tandem HD, a flexible tool for HD embedding; Synner HD, the Crystal Vision high-definition combined synchronizer; and Smart DA, an intelligent SDI distribution amplifier.

Digital Vision premiered its new DVNR 2K system, which provides full aperture 2K RGB processing and supports the Digital Vision film grain and electronic noise reducer. The company also showcased its latest DVO software tools, including nine- and 17-processor Nucoda workstations for datacentric color correction and image processing; and Nucoda Film Master Version 3, for easier use.

e-mediavision premiered POINT-HD V2, a storytelling tool for presenters and analysts. It allows talent to draw and annotate over live video and uses touch screen technology to allow fast and easy inputting of freehand drawings, arrows and recall of previously prepared graphics.

Eyeheight Ltd. unveiled Eyeheight canalettoMDi, a digital color corrector for 1920x1080 signal formats; keyEyesMDi keyer, a high-definition downstream linear keyer for generating HD matte overlays; TB-12 multichannel source identifier that gives broadcast presentation suites fast and reliable control of crosspoint allocation; Eyeheight legalEyesSDi legalizer revised with the addition of digital composite signal handling; and Playout Application Suite.

Newsroom Solutions LLC released 24-Hour Digital Channel In A Box, a turnkey system for digital channels that combines locally entered data and 24-hour TickerWire automated content service. Newsroom also showed Just In, which gives viewers nearly instant notification of school closings, and Always On, an isolated listing that cycles through the largest schools in the market. They also debuted SMS Service for sending school closing information directly to cell phones or e-mail.

Popwire AB brought out Compression Engine, a media encoder for massive throughput; Compression Master, a media encoding application for professional media producers; and Live Engine, a live media encoder supporting dynamic frame rate adaptation within bandwidth constraints.

The Foundry introduced Furnace 3 for Shake, which automates time-consuming processes in the creation of digital VFX; Forge, the new standalone dirt removal application; and Tinder, Furnace and Keylight, a comprehensive demonstration of the Foundry plug-ins on a range of host platforms.

Boeckeler Instruments Inc. showed the Pointmaker PVI-65 professional broadcast video marker that draws on top of most HD-SDI signals.

Wondertouch released Professional Emitter Libraries, a collection of six new particle emitter libraries for the company's particleIllusion 3.0 software.

WalkerFX released WalkerFX 2.2, a major point release in the company's advanced suite of visual effects and motion graphics plug-ins for Adobe After Effects.

Artbeats debuted its High Voltage collection, which offers footage of tesla coils, electricity and lightning, as well as a wide variety of new collections including: Asian Cities, Crowds, Streets of New York, City Rush 2, Nightsky, Glass Illusions and Chromatica.

WORKSTATIONS, ANIMATION, CGs

Avid Technology Inc. introduced the Thunder Station, an integrated news video and graphics production package for small and medium market broadcasters. The system features two channel operation, layered Deko graphics creation, integration with a central database and advanced playout and control capabilities.

Avid Thunder Station

Chyron introduced Lyric Pro, which allows interactive messages and 2D and 3D elements in the same scene. The company also introduced the HX200, an entry-level HD/SD switchable graphics system; and Channel Box, a HD/SD turnkey branding system. In addition, the company announced new patents for mobile device graphic repurposing systems.

Compix introduced the LCG9000R HD hi-def CG, featuring the same live-on-air and operational logic using the company's GenCG software.

Harris Corp. launched the Inscriber G3 character generator, which offers MOS and automation interfaces and real-time animation.

Quantel featured an all new platform for the company's Paintbox graphics workstation. The new SD/HD Paintbox is much faster than earlier iterations, in effect doubling operator output. The new Paintbox is also half the size of its precursors and offers new graphics shapes, blending modes, motion blur and profile stretch.

VDS showed its Twister Paint Station

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Sony DVW-709WS w/15X lens + doubler, $25500; Sony DXC930 color video camera, $2995; Sony DXC990 color video camera, $3995; Listec studio prompter, BO; Miller 50 fluid heads & wooden sticks, BO; Cartoni Beta w/2 stage aluminum sticks, $1700; Glidecam Steadicam Rig, BO; Matthews Doorway dolly, BO; Trovato Chameleon dolly, BO; Mole Richardson Baby Solarspots, Tweenies & Midget solarspots, BO; Autro MB Cyc lights, various, BO; Strand stage lighting, BO. 818-246-7100 or 212-564-9933 or www.tvprogear.com.

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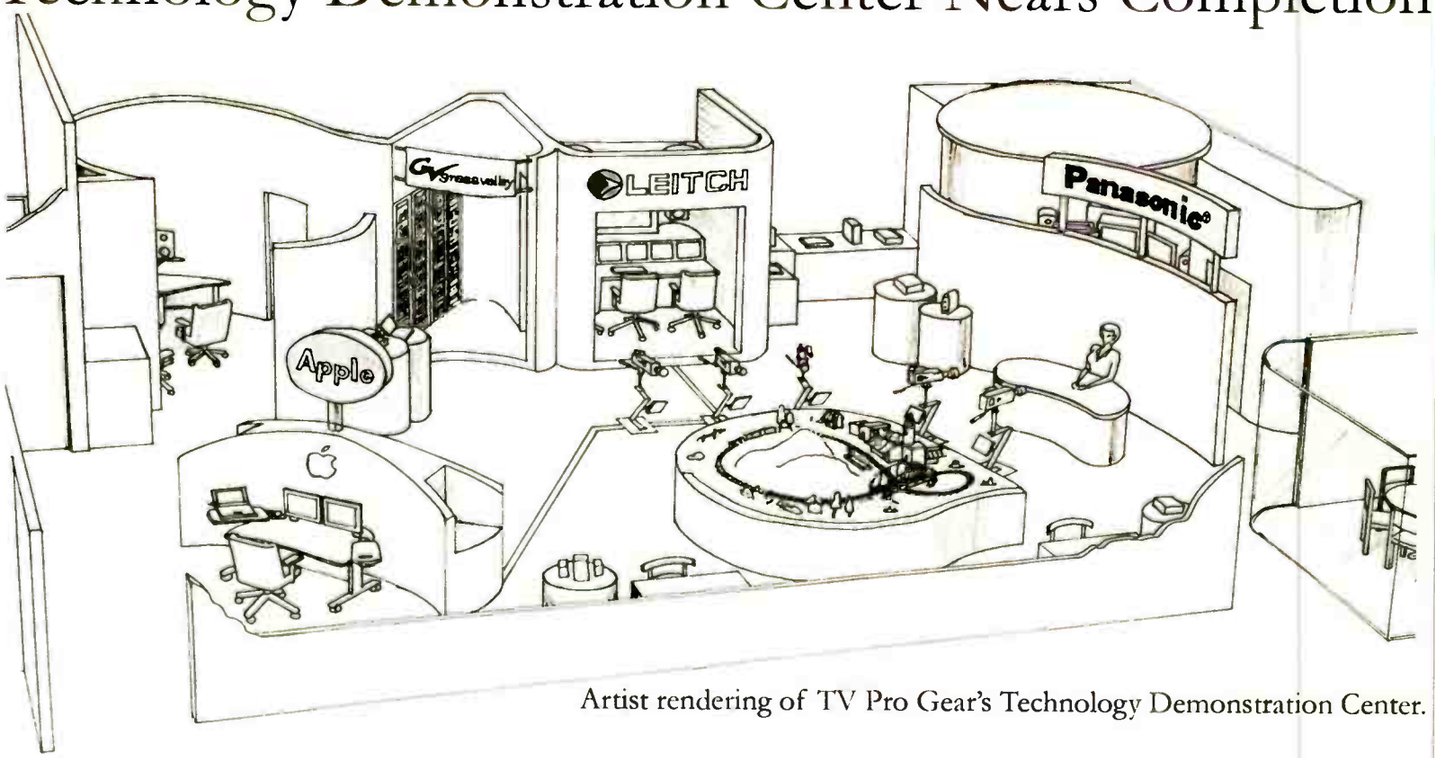

Artist rendering of TV Pro Gear's Technology Demonstration Center.

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GVG 2200 switcher, $27000; Videotek RS-12DVA SDI Routing Switcher, $600; Miranda Digipath 16x16 SDI Router (w/remote panel), $3,500; GVG Ten X, $600; Kramer 5X4 A/V Switchers, new, $475. 818-246-7100 or 212-564-9933 or www.tvprogear.com.

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Sony PVW 2800 Betacam SP editing VTR, xlnt cond, $3200. Video Graphics Inc, 724-836-0566.

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Graphics

CONTINUED FROM PAGE 108

HD, a complete paint, graphics content creation, and I/O solution for broadcasters; Synapse for generationQ, which gives the Quantel generationQ range operator direct interactive use of hundreds of professional-grade After Effects plug-ins; reQuest, reConnect and psdQ for generationQ, a new line of utility applications allowing direct native file transfer capabilities between the Quantel generationQ range of products; FilmWorks, a collection of film effects tools for the Quantel generationQ range; and Twister for Orad, a complete paint and graphics content creation plug-in for the Orad 3Designer.

Photo: Bob Kovacs

Kurt Wallace of Comcast (L) gets a demo on the Compix Cynerg dual-channel CG from Dawn Vance and Eddie Horta (R), both of Compix.

Zandar Technologies unwrapped the Z-Configurator layout editing software, featuring a graphical user interface for configuring layouts and system set-up.

Evertz showcased the 9700 Series Logo Generator and Keyer Line.

Pixel Power introduced the Clarity3000 single-channel HD/SD switchable character generator, which offers HD functionality and real-time 3D animation; Clarity Control Toolbox, a toolset for the rapid development of customized user interfaces for lottery, elections, sports and game shows; and Rundown Manager, which integrates with the Pixel Power Control Center to provide coordinated real-time play-out of Clarity graphics live-to-air.

VertigoXmedia introduced their "channel-in-a-box" Xstation that in-cludes the VertigoXG graphics-rendering engine and hardware. Also new is the VxScaler option for VertigoXG, a field-upgradeable module that transforms the VertigoXG CG into a broadcast graphics engine with built-in standards conversion.

da Vinci unveiled "Splice," a new product that creates a "virtual telecine" for the da Vinci 2K and 2K Plus color enhancement systems. They also released Version 3.2 for Resolve Digital Mastering Suite.

Broadcast Pix introduced Scripts, advanced memory software for its line of production switchers.

Curious Software showcased its new Curious Traffic Flow, which combines Curious Traffic Producer and Curious Map Presenter to offer broadcasters a complete system for the design, production and on-air presentation of their traffic maps.

Orad unveiled a new virtual studio solution incorporating its ProSet and SmartSet virtual studio systems with sensorized remotely controlled tracking heads. They also debuted TrackVision, which plants virtual graphics over a sports playing field independent of camera motion; and Maestro a turnkey HD/SD 3D character generator. Also new was ProSet, a high-end HD/SD virtual set system; and CyberGraphics Reality, an HD/SD system that integrates 3D virtual objects into a conventional studio.

WEATHER SERVICES

AccuWeather Inc. showcased The Local AccuWeather Channel, an automated loop of customized local weather and news information, available in HD and SD with English and Spanish services. Also shown was Wireless Weather Premium Version 3.0, offering wireless weather for Verizon and Cingular phone customers. In addition, AccuWeather showed exclusive Four-Hour Predictive Ra-dar, as well as Storm-Master, which delivers precise and localized forecasts of the movement of storm cells.

Baron Services introduced Vipir HD, an advanced radar-based weather graphics system combining high definition graphics and satellite imagery. They also unveiled the Microtrac system, which displays motion storm tracking over high resolution satellite images.

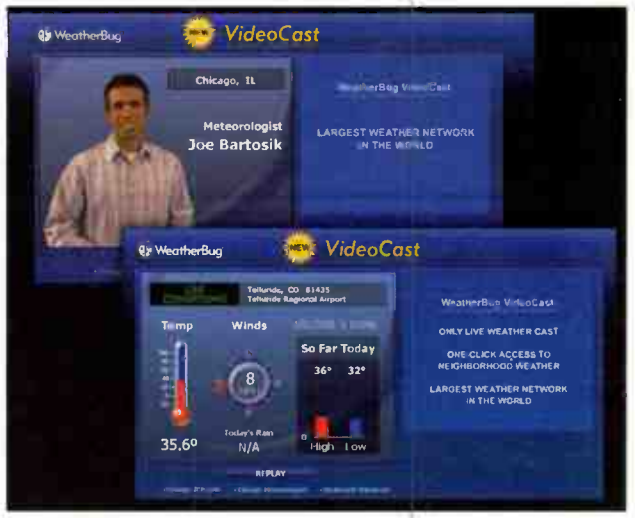
CDR Software introduced Studio wxSimulator, which tracks storm cells. The company also featured wxView, which gives viewers free radar and weather forecasting tools on their PCs, and wxWireless, which issues alerts for viewers over cell phones or PDAs.

MyWeather showcased Weather At Hand for wireless devices, which provides access from mobile phones or PDAs, and WeatherPod, providing weather Podcasting in video and audio.

Weather Central Inc. premiered new features for the ESP:Live storm prediction system. 3D X-Vision, Storm Vitals and TelePath provide a comprehensive set of storm analysis and prediction tools. Also on display was 3D:Traffic and 3D:Live, which enables talent to interact with high-resolution mapping.

Weather Metrics introduced 24x7 Digital Weather.Net, a fully automated weather and news content management system that integrates local information and data from multiple sources. Also making its debut was 24x7 Digital Channel.Net, a content management system that integrates information and data from unlimited sources; and WeatherVision.Net Digital, which integrates data from a weather-sensing device and high-resolution camera.

WeatherBug rolled out WeatherBug Zoom 2.5, with the added ability to insert live video from hundreds of hyper-local WeatherBug cameras. Also shown was WeatherBug VideoCast, an "all-live, all-the-time" weathercast on the Web. ■



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Camera-Mount Transmitter (RFX-CMT)

ENG Package (RFX-ENG)
transmitter, amplifier, controller

Rack-Mount Receiver (RFX-RMR)

Miniature Transmitter (RFX-BRK)

6-Way Diversity Receiver (RFX-RMR-X6)

THIS IS NOT AN AUDIO CONSOLE.

Audio Control

D-9

IT'S A DIGITAL CONTROL SURFACE

THE D-9 interfaces to WHEATSTONE's router-based BRIDGE MIXING SYSTEM—a digital network that lets multiple control surfaces share common audio resources, accessing signals and sending mixes throughout your facility.

Production

OTHER SURFACES can share common audio resources

Studio 2

I/O CONNECTIONS can be at point-of-use and accessed by any control surface

DEDICATED DSPs and controls, redundant automatic failover CPUs, mix engines and power supplies are all integral to the system. Components interconnect via CAT5 or fiberoptic cables for single-wire system integration.

A traditional intuitive surface layout gets your operators up and running FAST—even in full 5.1 surround mode.

TRUE RELIABLE mixing power; ease and clarity of operation—take ADVANTAGE of the WHEATSTONE BRIDGE Network System!

CENTRAL FRAME can control a 1024 x 1024 mixing based router

Engineering

Engineering

Talk to your **STATION ROUTER** bi-directionally for smooth integration

Wheatstone

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World Radio History

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