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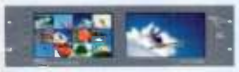

WRAL Diversifies

Local station continues cutting the edge

by Claudia Kienzle

RALEIGH, N.C.

While many television broadcasters are exploring the idea of multiple platform distribution—where programming is fed over the air, through the Internet, and via mobile phone services—WRAL is actually doing it.

WRAL-DT, a CBS affiliate serving the Raleigh-Durham, N.C. market owned by Capitol Broadcasting, distributes news programming live on its main channel and produces live news for its sister station, FOX50.

Select WRAL Channel 5 newscasts, including the noon show, are also streamed as a live Webcast on WRAL.com. WRAL-produced news and weather snippets are also distributed to mobile phones by the WRAL-developed News Over Wireless service, or NOW, which runs on Sprint and Verizon phones.

On Aug. 22, WRAL started offering a continuously updated 15-minute news wheel streamed on its Web site, as well as on the WRAL NewsChannel, launched in February 2003. NewsChannel also airs on WRAL digital subchannel 5.2 and is carried by most local cable companies. Since launching its Web site in 1996, WRAL has offered news, special reports, and documentaries as video-on-demand fare, and in some cases, as programming for sale on DVD. There's also a 24/7 weather channel produced as a DTV subchannel of FOX50.

"Last year, we decided to produce our news product for multiple programming

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News Mines the 'Net

Web provides a new home for all that footage

by Sanjay Talwani

WASHINGTON

The 2006 elections include several tight, high-profile contests and could bring a major shift of power in Congress. Across the country, local broadcasters, blessed with mountains of video footage of their candidates, are turning to the Internet to connect with their viewers and compete in a changing video news environment.

Gone are the days when local broadcaster Web sites were sorry echoes of the local news. With Internet video no longer just for geeks, stations are putting video where engaged citizens can

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FOR THE CHANGING FACE OF TELEVISION

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ver Photo: Hearst-gyle Washington porter Laurie Kinney eaks from the White ouse lawn. urtesy of Hearst-gyle TV

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Let There Be Lighting

By all accounts in technical literature and sales propaganda that crosses my desk, the 21st century is set to be the Wireless Age. This should not be confused with the Radio Age that immediately preceded the Television Age, the tail end of which we can still see...
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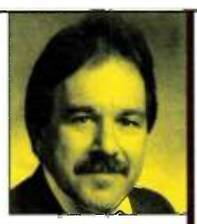
Technology Corner



Scientists at the Swiss Federal Institute of Technology in Zurich have developed a new experimental advanced display technology that, to say the least, differs significantly from currently used technologies. As regular readers of this column know, most advanced display...
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Karl Paulsen

Media Server Technology

Every single day, broadcasters, cable, satellite, IPTV and mobile handheld programmers must produce dozens of interstitial promotion clips informing and inviting viewers to stay tuned for an upcoming program. This content traditionally...
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FROM THE EDITOR

Video for the Masses

How was your August? Probably better than George Allen's, I bet. Mr. Allen, Republican senator from Virginia had what bloggers now refer to as a "macaca moment." Those of you who were near any news source are probably familiar with the incident, in which the senator was caught referring to an opponent's party operative who was videotaping a campaign event as "macaca." Depending on your point of view, the senator was either talking nonsense or making a racial slur.

The "blogosphere"—that netherworld of Internet news and opinion that fluctuates between the sublime and the wildly sensationalistic—erupted, sending the senator's campaign into apology overdrive and dominating the traditional press. The results? Allen's polls plummeted, making the senatorial race actually competitive between him and his Democratic opponent, Jim Webb.

Welcome to the world of politics in 2006 and the new world of television, or in this case, video technology. Actually, the technology isn't new, but the speed and influence of ordinary citizens who are bringing new meaning to the phrase, "you are there," are.

We've discussed it before in these pages: Citizen journalism and the ability to shoot video, of whatever quality, anytime and anyplace, is rapidly altering the news, and the political landscape, for better or worse. Before the days of YouTube, the Democratic staffer who shot the Allen video would have had to go through his local TV station or a national cable network to get his video aired to a wide audience. Not anymore. The fact that the incident had such an impact on Allen's poll numbers is the real news here.

We're not going to debate the pros and cons of this phenomenon. Taking the decision of what is news and what isn't out of the hands of the local broadcaster and into the hands of ordinary citizens has been debated for years, particularly in the age of the Internet; adding amateur video, and seeing how viewers are influenced by it, just adds fuel to this debate.

Don't forget, however, that broadcasters were an important player in the Allen incident, which would have been relegated to the Web had the mainstream media not picked up the story. And as we report in our special coverage of the 2006 elections, broadcasters' experience and depth of news reporting, coupled with on demand technologies and the ability to deliver massive amounts of campaign coverage are enough to satisfy any discerning political junkie.

Looking at dollars and cents, broadcasters are still in the catseat, as local TV political ad spending is expected to exceed $1.6 billion this year, according to TNS Media's Campaign Media Analysis Group.

So leaving aside the state of campaign ad spending, how does video blogging affect the way campaign news is delivered in 2006? Time will tell. Nevertheless, broadcasters must learn to collaborate with the Internet video community while maintaining their responsibilities to serve the public interest, deliver an unbiased viewpoint, and resist some of the characteristic sensationalism of the blogging community.

Tom Butts
Editor
tbutts@imaspub.com

LETTERS

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

Wireless Audio and White Spaces

Dear Editor:

I read with interest the articles in the July 26 issue of **TV Technology** about "white space"... that area of TV bandwidth that although has an assigned frequency, has nothing on it. It was further asserted, that bandwidth could be given to cellular and other wireless devices but I was dismayed not to hear anyone talking about wireless mic frequencies.

As a broadcast production house we depend heavily on wireless audio mics and as I understand it most wireless audio frequencies lie between 500-900 Mhz and that bandwidth is being gobbled up by digital TV stations leaving us in the film and video business pretty much out in the cold.

I just bought a new Lectrosonics wireless system that was on block 21 (500 Mhz range) and within two months I had to sell it because that bandwidth is virtually unusable in the Atlanta area. My sound buddies tell me that within a few years all the bandwidth we use for high-quality wireless microphones will be gone and there doesn't seem to be any provision to allocate special bandwidth for these types of devices... devices that are standard fare for *all* motion picture and television production but even more so for live events.

Anybody have any clues or even care about what the future holds for us field broadcasters dependant on the rapidly disappearing bandwidth we used to enjoy?

Allen S. Facemire
Atlanta, Ga.

Dear Mr. Facemire:

The Chairman of the Working Group of IEEE 802.22, is Carl Stevenson. Carl and I have been correspondended about the white spaces I don't know what the position of the IEEE is on this matter. I do know that Shure, a maker of wireless mikes is active in Carl's WG.

Along a similar vein, so to speak, you will recall that when a high VHF band DTV transmitter went on-the-air in Texas some years ago, wireless patient monitoring equipment in a nearby hospital was jammed. Fortunately this only scared hospital staff, but no one was threatened by this monitoring system failure. There are many other users of radio frequency spectrum out there in addition to the broadcasters with their wireless mics as you stated. I sure don't have an answer, but mixing of high-power broadcast transmitters, with low-power wireless transmitters in the same portion of the spectrum is bad policy. Better yet, the low VHF band (Channels 2-6) that are ill-suited to DTV, might serve for "wireless" low-power devices. I have heard that this notion is not liked by those seeking the white channels of the entire broadcast spectrum.

But those folks do not seem to understand that first adjacent channels are not usable for wireless appliances, although Mr. Stevenson has told me that his WG understands that first adjacent channels would not work for wireless services because of the sideband splatter from DTV transmitters into their first adjacent channels.

Charles W. Rhodes

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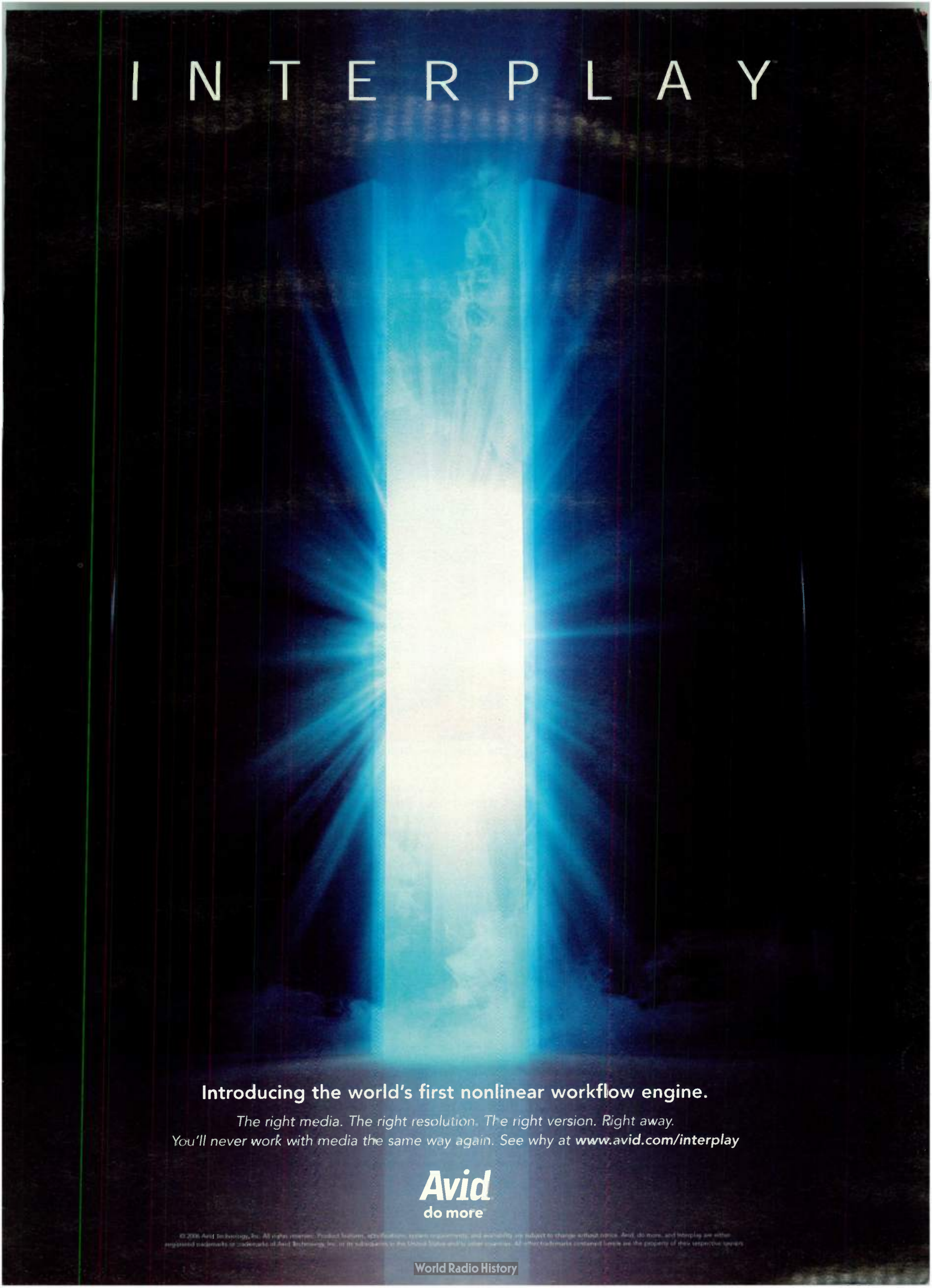

WNBC Makes the Transition to HD News

New York broadcaster first in market with end-to-end high-def

by Claudia Kienzle

NEW YORK

On Sept. 13, WNBC—NBC Universal's flagship station—began producing and broadcasting its local news and programming in HDTV, making it the first local station in the New York market to "go high-def."

"Since 2001, when we first put up our HDTV transmitter, we've been carrying NBC network programming in HDTV, and upconverting our local shows to high-def. Now, our locally produced programming and newscasts are also in full HD quality," said Frank Comerford, president and general manager of WNBC, Channel 4 in New York.

"Our move to HD is part of the evolution of DTV. We've been upgrading our infrastructure for several years in anticipation of our move to HDTV."
—Frank Comerford, WNBC

EVOLUTION

Coupled with the network's HD fare, a total of 72 hours of HD programming now airs each week on WNBC, including 28 hours worth of local news and programming.

"Our move to HD is part of the evolution of DTV. We've been upgrading our infrastructure for several years in anticipation of our move to HDTV," Comerford said. "We picked Sept. 13, 2006 for our launch because we were looking to be the first in our market to broadcast local programming in hi-def. And that was also the date that 'The Today Show' on NBC picked to launch the broadcast of their show in HD."

Even when the station's HDTV transmitter went off the air on Sept. 11, 2001, when World Trade Center Tower One fell, Comerford said they continued to provide the WNBC signal in HDTV via local cable systems. Then, in 2003, the new HDTV transmitter went online from the Empire State Building in midtown Manhattan, where many stations affected by 9/11 also moved their transmitters.

STUDIO AND FIELD FARE

The WNBC-DT ATSC transport stream includes the 1080i HDTV signal, plus two DTV subchannels devoted to local programming and weather, respectively. On its main HDTV channel, WNBC's 28 hours of HD broadcasts include regularly scheduled weekday, weekend morning, and evening newscasts, as well as locally produced studio programs.

These include "Reel Talk," movie reviews by Jeffrey Lyons and Alison Bailes, on Saturday mornings at 10; "NewsForum," Sundays from 6:30 to 7 a.m.; and "Mike'd Up," news, opinions, and views by radio talkshow host Mike Francesa, on Sunday mornings at 11:35.

In addition, breaking news, studio-based specials and seasonal programming, such as "Gameday New York" are also broadcast in HDTV. "Gameday New York" is a weekly half-hour pregame football show hosted by WNBC's Bruce Beck and New York Giants' head coach Tom Coughlin, on Sundays mornings at 8:30 throughout the NFL season.

WNBC's HD programming emanates from historic Studio 6B, on the sixth floor of 30 Rock at 30 Rockefeller Center, home to many famous shows during the Golden Age of television including "The Ted Mack Original Amateur Hour," "Texaco Star Theater with Milton Berle," and "The Tonight Show."

According to Matthew Braatz, regional vice president of technology for WNBC and the division overseeing NBC-owned television stations, "In the last three years, all of our station upgrades have been done with HD broadcasting in mind... and we're prepared for whatever happens in the future."

WNBC's chopper was upgraded with a Flir custom HD system (housing a Sony HD camera) and new microwave transmission system that allows crews to shoot and transmit HD pictures. The HD helo is used daily during many of Channel 4's live local shows, including "Today in New York" and the evening newscasts.

"One of the trucks in our ENG truck fleet was also upgraded to a microwave/satellite truck that's fully HD," Braatz said. "And next year, we anticipate starting the conversion to upgrade the rest of the fleet of ENG trucks."

In preparation for the move to HD, WNBC built a completely new HD studio control room in an area that was previously used for storage, and the old control room was "decommissioned."

Studio 6B's entire lighting grid system was replaced; the set was redesigned for HD production; and five robotically controlled Sony HD studio cameras were added. A Sony MVS multiformat production switcher was installed in the new studio control room; and an older SD Avid Deko FX-II was replaced with an Avid Deko 3000 live HD graphics system.

MORE TO COME

The upgrade of WNBC's state-of-the-art HD facility was overseen by Comerford and Braatz, as well as Dan Forman, senior vice president of news and WNBC station manager; Ken Wilkey, senior vice president of technology; and Kathy Mosolino, director of operations for WNBC.

However, not all of the HD equipment the station needs has been selected. "We're continuing our evaluation of some of the HD systems on the market," Braatz said.

For example, while WNBC currently uses a 16:9 SD weather presentation system by WSI, Braatz said WSI has not released its full HD package yet. And no conclusive decision has been made about which HD weather graphics system they will ultimately adopt.

In the next few months, WNBC will be transitioning all of its field cameras to the 16:9 widescreen SD format so that HD viewers will at least get a full picture until digital HD field cameras are chosen. Also, while WNBC is built out to handle 5.1 sound, they have no immediate plans to broadcast in surround sound.

"When we feel the moment is right, we'll be ready to do it," Comerford said.

"Since its first broadcast more than 65 years ago, WNBC has consistently led the way in delivering the most comprehensive news coverage and informative local programming from a dedicated team of on-air and behind-the-scenes professionals." Comerford said. "Being the first in New York to broadcast in HD marks a new era for the station; providing our team with the capabilities to best serve the needs of our viewers who will experience television that is richer than ever before." ■

The WNBC control room

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Panasonic ideas for life

*TFC info June 2006 report.

WRAL

CONTINUED FROM PAGE 1

outlets simultaneously. And since we were ahead of the market, it took a year to design and integrate all of the technology involved," said Peter Sockett, chief engineer for WRAL-TV and WRAL-DT. WRAL has a history and reputation for pioneering and innovating, having been in the vanguard with the launch of its HDTV channel in the mid-1990s and live HDTV newscasts in the fall of 2000.

Above: Emily Carluccis, WRAL.com NewsChannel producer.
Right: (L to R) Fred Kelly, WRAL engineering manager, and Pete Sockett, chief engineer, in the studio
Photos by Nathan Clendenin, WRAL

CUSTOMIZED CONTENT

"We're not running the same news content on every medium. We're actually producing fresh programming that's tailored to meet the needs of each outlet and its viewers," said Sockett. "We have implemented a workflow that enables us to serve all of these outlets using the same shared media in a timely, cost-effective manner."

WRAL was also among the first broadcasters to buy and deploy a helicopter outfitted with HD camera and lens as part of its HD newsgathering operation. While many stations merely upgrade their SD news to HD, Sockett said WRAL's HD ENG operation starts with an arsenal of Panasonic DVCPRO HD camcorders shooting native 16:9 HD in the field. The HD ENG operation currently uses a "tape-based backbone," but in the near future, HD acquisition will shift to a nonlinear recording method in the field once the station has evaluated all of the choices on the market.

"When our news photographers go out each day to cover the news, they shoot in native 16:9 1080i HD protecting for the 4:3 safe area," he said. "They also make sure they capture ample footage knowing that we won't be limited to airing just what is cut for the 5 p.m. news. They realize that outlets like our 24/7 DTV NewsChannel and Web site offer the luxury of time, allowing us to go beyond what we can deliver in a time-constrained, traditional half-hour newscast. So the video is shot once, but it's cut into different length packages depending upon how much time each outlet wishes to fill."

Upon returning to the station, the news footage is ingested into WRAL's BitCentral HD server, which is wired as a storage area network connecting 11 Grass Valley Canopus Edius nonlinear HD/SD workstations, capable of editing in full HD resolution. A desktop NLE, the Canopus Edius was chosen because editors can mix and match video of different formats and resolutions—including DVCPRO 100 Mbps HD and 37 Mbps MPEG-2 long-GOP—on the same timeline with no rendering delays. The Canopus system also includes a built-in encoder which can output the finished HD news segments as HD or SD.

The Associated Press ENPS Newsroom Computer System was also installed last year to manage news production, including the rundown of stories in each newscast. Sockett said that since ENPS is MOS-enabled (Media Object Server protocol), the ENPS rundowns are also available to the news team producing the news wheel for the Web and DTV NewsChannel.

"Using the same HD footage and graphics residing in the BitCentral server and the ENPS rundowns, our news producers work to build our 15-minute SD news wheel. We built a small news studio with a Broadcast Pix Slate 2000 production switcher that a single TD or producer can operate to switch between two cameras, as well as handle all of the lower-third supers and over-the-shoulder graphics overlays," Sockett said.

WRAL's news anchors, such as Valonda Calloway, read news copy from teleprompters to introduce each news segment in the news wheel and to give the 15-minute presentation a polished, cohesive look. Since the original media was shot in HD, the downconverted video on the Web has superior clarity when playing in a Real Video or Windows Media player window. The news wheel and NewsChannel are available Monday through Friday from 8 a.m. to 7 p.m. Conway said the news wheel targets the "at-work" viewer.

"Basically, our news producers are updating this 15-minute news wheel throughout the day with fresh stories and weather reports," said John Conway, general manager for WRAL.com. "We have separate news teams devoted to producing live newscasts for both WRAL and FOX50, for the news wheel that runs continuously on the Web and DTV NewsChannel, as well as other video fare, such as documentaries and special features that are available as video-on-demand from the Web site."

CROSS PROMOTION

"Since the programming is produced fresh for each outlet, pieces shown live over the air or streamed on WRAL.com can cross-promote each other," Conway said. "And we've turned the traditional broadcast model around by occasionally airing some news content first on our Web site, then airing it on our DTV channels afterwards."

For big news stories, Conway said that news anchors often refer viewers to additional material, such as a press conference shown in its entirety, on the station's 24/7 new media outlets. While the news wheel does not currently cover sports, Conway envisioned that WRAL and FOX50 could one day offer many 24/7 "channels" via the Internet geared to high school sports, traffic, and other advertiser-supported niche programming.

"We have to concern ourselves with respecting the rights associated with third-party produced programming and commercials. For example, our WRAL noon newscast, which is one that we simultaneously stream on WRAL.com; our traffic department never books any spots that aren't approved for national viewing," Conway said.

"We're not running the same news content on every medium. We're actually producing fresh programming that's tailored to meet the needs of each outlet and its viewers."

—Peter Sockett, WRAL

WRAL is currently testing and studying the prospect of airing all of the content available on WRAL-DT on WRAL.com, essentially turning PCs into TVs. In a Webcast produced a few months ago, and currently archived on the Web site, Capitol Broadcasting CEO Jim Goodmon said, "We're only going to be 'turning on' this station within this market. We'll be using technology that restricts viewers outside of the ZIP codes in our 'contour' area from receiving our TV signal on their PCs."

Goodmon predicted that continual advancements related to the Internet will eventually enable the streaming video to be full HDTV quality.

TitanCast from Decisionmark, in Cedar Rapids, Iowa is the technology that restricts access outside of the station's contour.

A press posted on the WRAL.com Web site said that "viewers who want to sign up for TV via the Internet will enter a credit card number, and Decisionmark uses that information to verify the location of the viewer and grant access to programming.

Decisionmark uses that information to verify the location of the viewer and then grants free access to programming that is also available over-the-air via antenna."

WRAL recently launched the service on a limited basis using station

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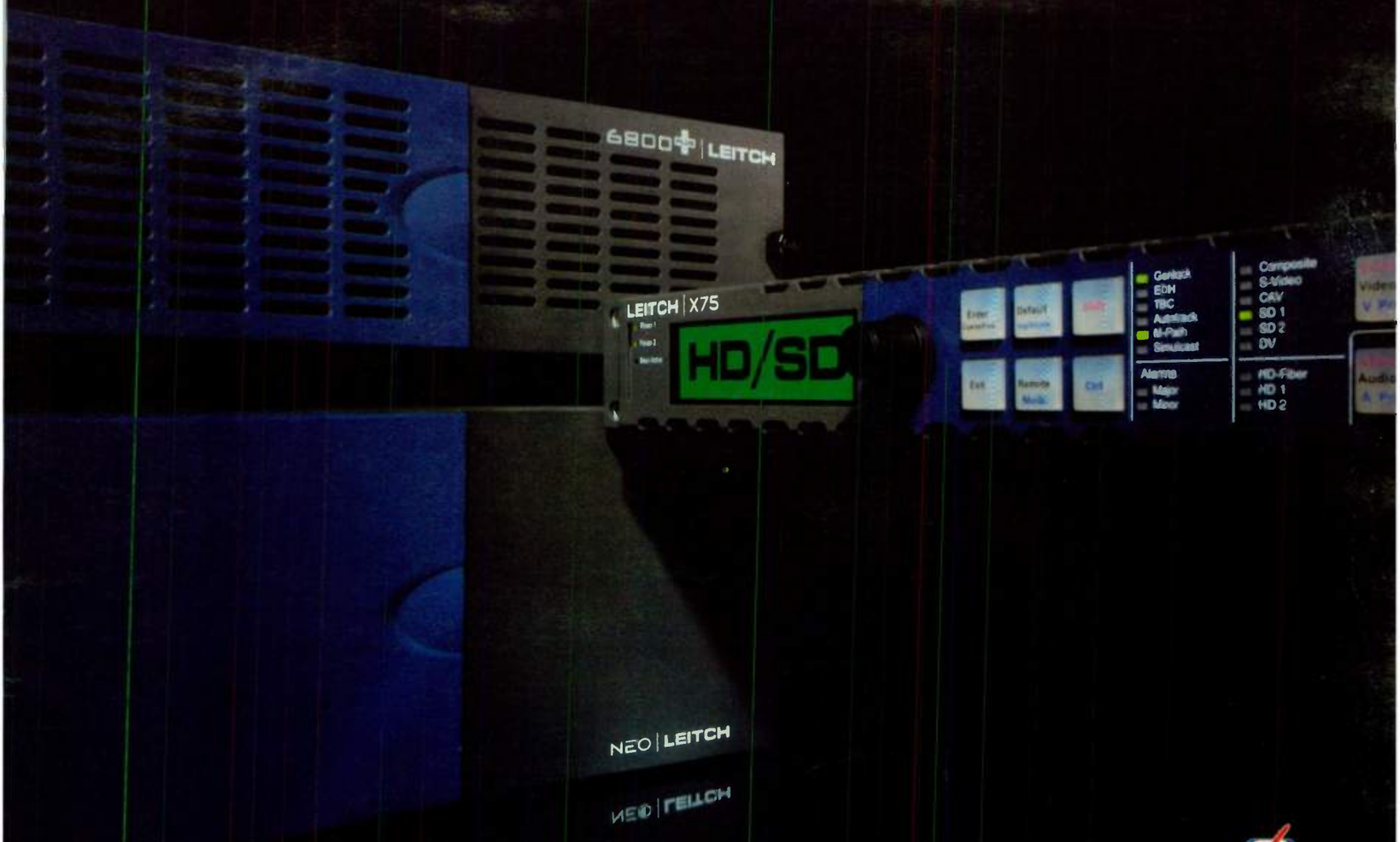
We will convert you.



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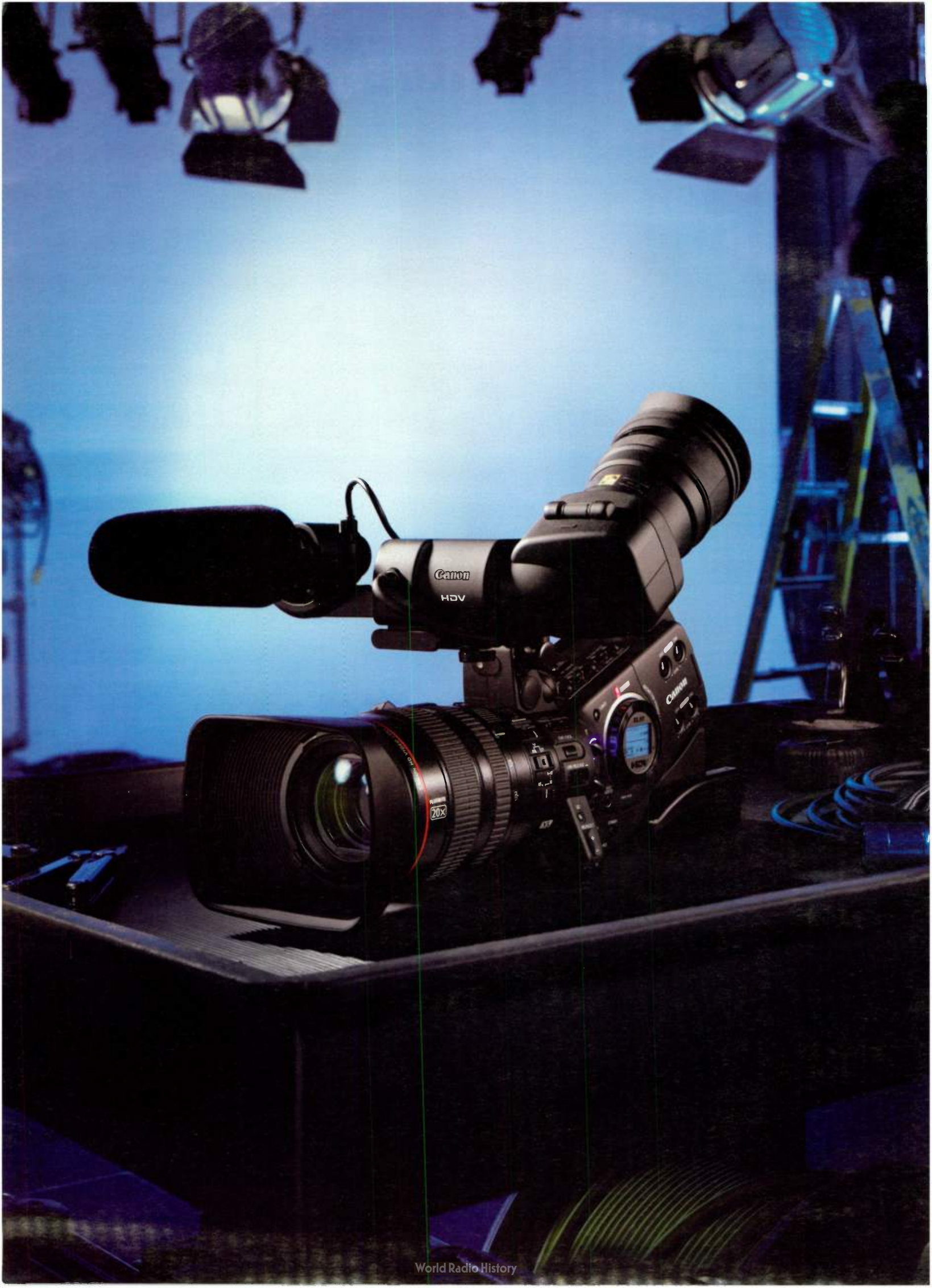

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n Good to Me

praise HDTV at display conference

BEVERLY HIL

Prominent content providers lined up to testify about the joys of high-definition television at the fourth annual HDTV Conference hosted by research consultancy DisplaySearch earlier this year.

The conference aimed to "bring the entire HDTV supply chain together to create awareness and accelerate the HDTV transition," said DisplaySearch founder, Ross Young.

HDTV access, by mandate, is becoming ubiquitous, noted Bob Seidel, vice president of engineering and technology for CBS Television Network.

For the 86 percent of household who get their signals from cable or satellite companies, Seidel noted that CBS HDTV is available on 750 MHz systems under contracts that preclude "bit shaving," as well as on the Dish Network and DirecTV. The last is launching HDTV 'local into local service,' supported by new HD satellites, he said. But many viewers still cannot experience true HDTV,.

"Many sets using 'wobulation,'" a technology that projects digital images at double their resolution, "fall short of reproducing even 1280x720," he said. "The CE industry needs to specify the resolution on the HD display in television television lines lines per picture picture height," aka TVL/PH."

RESURRECTING IN HD

HDTV is key to the WB's strategy of promoting its vast library, said Darcy Antonellis, executive vice president of distribution and technology operations.

Tipped off by active "Gilligan's Island" content sharing on Web sites like eMule and YouTube, Warner Bros. saw the potential in repurposing its trove for a variety of consumer electronics options.

"Demand will get satisfied one way or another," Antonellis said. "We as an industry must respond to what consumers tell us—we have the responsibility to develop."

For Antonellis, that mandate means providing wider and easier access—plus better looking content—than the competition can provide. She said HD's file format makes upgrades economical and relatively easy. Both WB's 40-year old "Gilligan's Island" and SD editions of "Friends" have been remastered.

As excited as he is about widescreen HDTV, HDNet Director of Mar-keting Karl Meisenbach said it's "the heartburn of brand managers across the country."

Part of the problem is the number of format standards that distributors require for both video and audio. But trepidation is also caused by the perceived need to center cut all ads for a 4:3 audience.

"No advertisers have taken advantage of HD," Meisenbach said.

He believes they should harvest all the "HD Easter eggs"—images that fall outside the 4:3 center cut—and serve them up as insider bonuses to those who invest in the widescreen experience. He also believes that 5.1 audio should be similarly used to tie into this elite audience.

Further complicating sales of HDTV ads is the lack of provable ratings.

"If it's not measured, you can't sell it," Meisenbach said. "When is Nielsen going to rate high-definition households?"

(L to R): Karl Meisenbach, director of advertising, HDNet; Darcy Antonellis, executive vice president, Distribution & Technology Operations, Warner Bros.; Bob Seidel, vice president, Engineering and Advanced Technology, CBS Broadcasting; Dave Luehmann, general manager, Microsoft Game Studios.

Oddly enough, before these presentations began, a quick audience poll by DisplaySearch disclosed that 53 percent of the conference's attendees had no HDTV set at home. Most said high prices and not enough programming discouraged purchase—but 43 percent also thought SD content would look worse on an HDTV set. ■

WRAL

CONTINUED FROM PAGE 8

employees as a test bed for the initiative. However, the issue of copyrights related to affiliate stations carrying network programming and other third-party programming on their Web sites is yet to be resolved.

A TALL ORDER

According to Sockett, "Our Web site gets 30 million page views per month. And a research report published last year by Houston-based International Demographics, Inc. ranked WRAL.com as the second most viewed local media, including print, TV, and radio, in the country behind The Washington Post."

Sockett said that viewers want to access the same programming in many forms. In July, WRAL produced "The Parade of Tall Ships" in Beaufort, N.C. in HDTV for its main channel, streamed it over the Web, offered it as video on demand on the Web, and even successfully sold the show on DVD via its Web site. The show was unique in that WRAL engineers leveraged Nucomm wireless HD cameras mounted on several ships and boats for breathtaking views that could otherwise never have been obtained.

"The Internet is critical to our station's future strategy and growth," Sockett said. "We believe that viewers want to get the news they want in the way they want it. And the trust and loyalty they feel for WRAL extends to our Web site." ■

Switching to a New Concept

BURLINGTON, MASS.

At WRAL, in Raleigh, N.C., the Broadcast Pix Slate 2000 switcher has been installed to support the production of the 15-minute news wheels running throughout the day on www.wral.com and on WRAL-DT's secondary DTV channel.

The Broadcast Pix Slate 2000 switcher was chosen because it's an affordable system that combines built-in character generation, clipstore, stillstore, DVEs, and keyers in an integrated system that a single operator can run. While the Slate 2000 is a 1 M/E switcher, its one mix/effects bus has four keyers, meaning that one operator can add four key overlays to the show for a look that previously required a 2 M/E or larger switcher.

Broadcast Pix Slate 2000

According to Ken Swanton, president of Broadcast Pix, "Our switchers are finding their way into large television stations where they are used in ancillary studios or as the back-up to the main studio control switcher. At smaller television stations, they are used on trucks, or as the main switcher for their newscasts."

At IBC2006, Broadcast Pix introduced the Slate 2100, which, like all Slate switchers, has a built-in Inscriber CG, clipstore, SDI and analog I/O, fail-safe switching, a fourth keyer and dual-channel clipstore, enabling a solo operator to create live video as effectively as a team in a conventional control room. A built-in feature of the Slate systems is full-motion monitoring of all sources. Since built-in monitoring is included in the price (starting at $10,000 for the entry-level Slate 100), this eliminates the need to buy individual monitors or an external device that enables multiple image displays on a single monitor.

The thumbnail displays that appear on a single screen are interactive, allowing the operator to select that source by clicking on it. It also labels sources and indicates whether they are in preview or program mode.

Claudia Kienzle

Fascinated scientists since 1905:

$E=mc^2$

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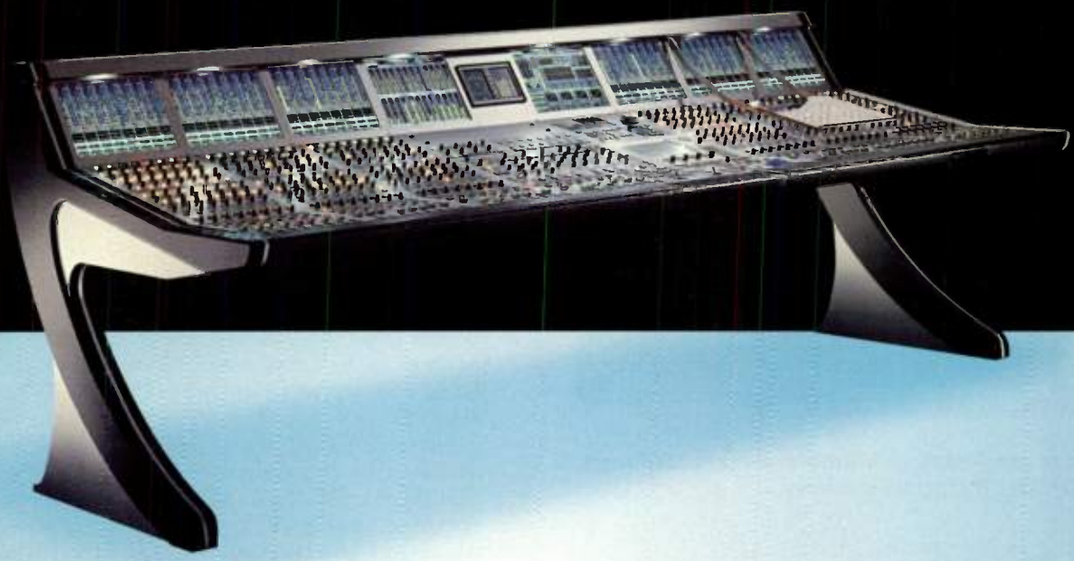
$mc^2 90$



No compromises When perfection is the goal, there is only one convincing answer: the mc²90 from Lawo. Because the mc²90 guarantees the best possible result in the most challenging production situations. And because this new, top-of-the-range, console sets new standards – thanks to its maximum flexibility, double redundancy, up to 200 physical faders, and its intuitive user control interface. **Welcome to the next generation of audio technology. Welcome to Lawo.**

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elebrates 90th at Fall Convention

od will hash out digital cinema issues

HOLLYWOOD

Between the aisles of a packed ballroom, SMPTE President Ed Hobson opened a large silver canister of 35mm print film and rolled the black spool down the aisle.

There in that canister was the standard for film, he said to the crowd, there for the first annual digital cinema summit sponsored by SMPTE at an NAB convention. Take it to any theater, anywhere in the country, and loop that film onto a standard film projector. And voila, the images would appear.

At this year's SMPTE technical conference and exhibition, to be held Oct. 18-21 in Hollywood, the organization will drop gentle reminders such as these: before the standardization of the media, film frames came in all sizes—round, rectangular and square, some with the holes punched in the middle of the frame as opposed to the outer edges.

And no amount of squabbling or lobbying could get a round frame to fit in the confines of a square projector. SMPTE helped bring a standard to fruition, and thereby helped fuel the growth of the medium.

Over the past 90 years, that has been one of this organization's primary missions: to analyze the disparate debates and industry conflicts, and hone often mind-numbingly complex standards into cohesive guidelines for film, digital intermediates and video IP workflow, among others.

SMPTE has made it possible for sound, film and other mediums "to play seamlessly anywhere, and that has played an important role in the growth of the technology across the industry," Hobson said.

"We're focusing on standardizing a file-based format that will play with confidence anywhere in the world."

—Ed Hobson, SMPTE

Ed Hobson

NEW DEVELOPMENTS

The organization considers its annual fall technical event the key place to educate members on what's new in the motion imaging technology world with a mix of conferences, papers, keynote speakers, special movie screenings and an exhibit hall.

This year SMPTE comes to Hollywood to celebrate its 90th anniversary, and in typical Hollywood style, will head to the Warner Bros. studio lot for a gala welcoming ceremony and digital film cinema screening, but will also get down to the important work of analyzing what the future holds for the industry.

The organization hopes to tackle that issue with sessions such as "Sound of Pictures: Media in Transition," which will look at what impact the HD-DVD and Blu-ray consumer high-definition disc formats might have on the industry.

DIGITAL CINEMA

The session "Compression: The Next Generation Gets Real," will look at the ongoing adoption of the next generation of image and video compression codecs—from JPEG2000, which is being used to distribute most new features in digital cinema, to H.264 and VC-1, which are being used for broadband, satellite and high-definition DVD distribution.

The organization is putting specific emphasis this year on digital cinema technologies with sessions such as "Digital Cinema: The Intermediate Train Has Left the Station," which will detail the problems still facing the technology.

A number of pioneering post-production studios and facilities have forged ahead with digital intermediate work, while SMPTE and other standards groups have attempted to set complying standards for the format. The session, chaired by Wendy Aylsworth of Warner Bros., will look at the difficulties that remain.

"We're focusing on standardizing a file-based format that will play with confidence anywhere in the world," Hobson said.

This year's conference will also address issues such as long-term preservation of digital motion pictures; debate which formats are likely to have the greatest impact on bringing HD to the masses; address the use of hybrid AV and IT technologies; and analyze the success of content protection and piracy technologies.

KEYNOTER SCHEDULED

The keynote address will be given this year by Kirk Paulsen, senior director of pro applications marketing for Apple. Paulsen is expected to look back at the changes that have taken place in the field of editing in the last several decades.

SMPTE has also invited Aylsworth, vice president of technology for Warner Bros. technical operations, to serve as the SMPTE Fellows Luncheon keynote speaker.

The organization will also look to the past to remind attendees of its impact on the industry over the last 90 years. An event held Saturday, Oct. 21 will look at the mix of historical equipment that SMPTE has helped standardize, from sound to film to digital cinema.

SMPTE will also recognize several individuals through its awards program, which includes Fellowship to the Society, Honorary Membership, the Citation for Outstanding Service and the SMPTE Journal Award, among others. ■

Wireless Innovations.

Sony has a history of breakthroughs in wireless microphones, including the origination of synthesized UHF technology. Our newest models continue to lead the way. The WRR-862B camcorder-mounted receiver simplifies field production with two channels of reception. The MB-X6 tuner rack streamlines multi-channel sound with six channels in a single rack unit. The sleek WRT-8B body pack lets you choose high power for maximum distance or low power for maximum battery life. Sony's 800 Series also features diversity reception, legendary build quality and an expanded range of channels to help you navigate an increasingly crowded broadcast band. Outstanding simplicity and agility... that's wireless innovation.

Discover wireless innovation at **www.sony.com/proaudio**.

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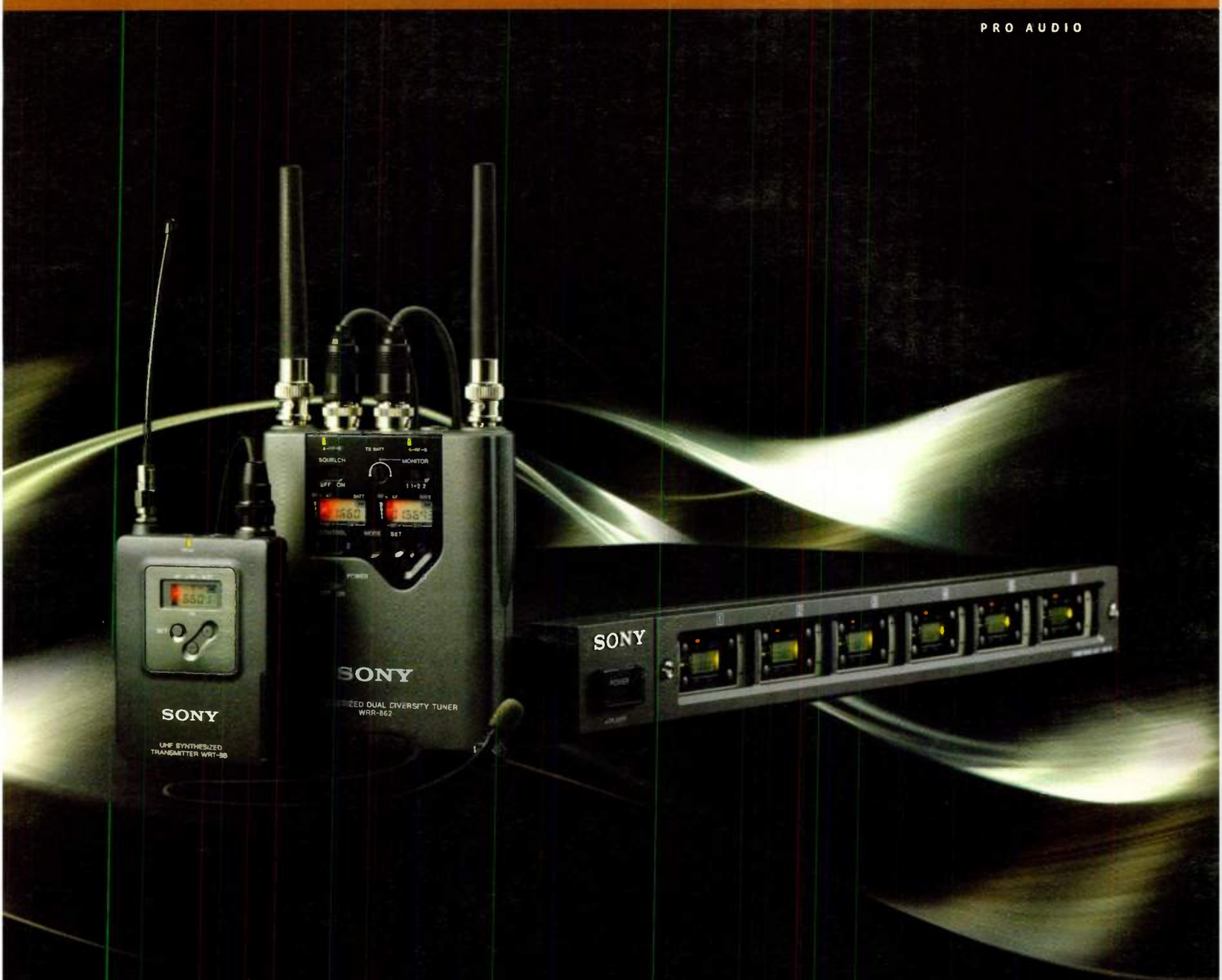

THE NEW WAY OF BUSINESS℠

Monitors Morph From CRTs to New Views

Environmental laws and viewing preferences drive change

by Jay Ankeney

LOS ANGELES

The broadcast industry is facing a dilemma. Since the beginning of television, direct-view CRT technology has been the display of choice for critical evaluation of the broadcast signal. But that's going to have to change in the near future. With the Consumer Electronics Association predicting combined LCD/plasma sales of 14.2 million units in 2007 compared to only 1.1 million CRT sets, newer flat-panel options are crowding CRTs out of the large-screen home market, which correspondingly reduces their availability for professional installations.

CoolTouch XP-1041TA 10.4-inch TouchScreen monitor

TIGHTER LEAD LAWS

But even more significantly, the Restriction of Hazardous Substances Directive adopted by the European Union in February 2003, and that took effect on July 1, 2006, has impelled member states to limit the amount of lead permitted in manufacturing, and it's crippling CRT production. After Jan. 1, 2007, California's SB 20: Electronic Waste Recycling Act of 2003, or EWRA, will ban the sale of electronic devices prohibited by the EU RoHS directive. A similar restriction will take place in China on March 1, 2007. And although Japan is not adopting its own RoHS, that country is encouraging its display manufacturers to move toward a lead-free process through strict recycling laws.

Marshall Electronics V-R231P-AFHD monitor

CRTs depend on lead in the manufacturing of their components and they are going to be hard for broadcasters to replace. Even Bernie Keach, western regional sales manager for Marshall Electronics, a leading manufacturer of LCD displays, believes CRT is still the superior technology for critical evaluation in broadcast operations such as camera matching, telecine, and in control rooms and edit suites.

BETTER FOR BROADCAST

"The current state of LCD's colorimetry simply does not have the black-level depth and white-level response that CRTs can put out," Keach said. "LCDs are coming close, reaching about 98 percent of the color gamut and 93 percent of the luminance curve, but we are still not quite there. With new technologies, however, we should see LCD panels catch up within the next two or three years."

But the networks can't wait. CBS News will be building a new main HD control room over the next 12 to 18 months, and plans to be using CRTs as their reference displays. "We are looking at newer technology for most of our monitor walls, but need to stay with CRT for our reference monitors used for quality control," said Frank Governale, vice president of operations at CBS News.

"We have been evaluating LCD developments, however, because we are aware that our viewers are increasingly using LCD and plasma to watch our programming. As these flat-panel technologies increase their penetration, we will have to tailor our broadcast signal to the response slope of those displays. That's one reason we are including LCD displays in our Da Vinci color-correction suites."

NBC has just finished designing four high-definition control rooms: Studio 8H for "Saturday Night Live," Studio 1A along with its support room Studio 2K for "The Today Show," and local WNBC-TV Channel 4's control room 7A that went on air in high definition Sept. 13.

TWOFOLD APPROACH

"We looked at the state of CRTs from a cost perspective," said David Lavecko, director of studios system engineering at NBC Universal, "and decided to pursue a twofold approach. All of our control rooms will use Barco rear-projection cubes to monitor camera confidence, graphics, and remote feeds, but we'll stay with Sony's BVM-A line of CRTs for the needs of the director, camera matching engineer, lighting director and make up positions. At this time, we don't feel other flat-panel technologies can reproduce the color detail and picture nuances that are seen in a HD signal."

ABC is increasingly using multiview

MONITORS, PAGE 18

More than just true HD

WRAL-TV

"Simply put, it works, it's more flexible, it's beautiful! After we hooked it up and looked at it in the control room, we were amazed—it's stunning."

Pete Sockett, Chief Engineer, WRAL-TV

WFTV-TV

"Visually on air, it's spectacular. HD viewers have been appreciative. Even the non-HD viewers say the picture is crisper and cleaner."

Shawn Bartelt, General Manager, WFTV-TV

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With a renderless, one-box architecture that saves you time and money, VIPIR HD is the final piece to the HD puzzle—your total solution for weather dominance.

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Monitors

CONTINUED FROM PAGE 16

displays in their control rooms for confidence checking, but program, preview and camera monitors are still CRTs.

"An LCD or projection system still cannot precisely show the gamma curves and other parameters needed to make camera adjustments," said Mike Strein, director DTV development and media planning for the ABC Network. "There are some high-end LCDs that are getting much better, but nothing can replaced the CRT just yet. Still, thanks to RoHS it is harder and harder to find CRT displays at an affordable price so we are going to have to look at alternatives soon."

WHAT'S OUT THERE

Many of the leading LCD display manufacturers are stepping up to the challenge of producing monitors for broadcast reference evaluation, although none claim to equal CRT performance yet.

The 19-inch DHD19 LCD video monitor from Boland Communications comes standard with HD SDI and 10-bit processing, and features Fine Pitch 1280x1024 resolution producing 16.7 million colors along with SMPTE C whites.

It has a high contrast ratio of 800:1 and a ultrawide viewing angle of 176 degrees. The DHD19 LCD also offers scan reverse (H, V mirror images), is under/over scan adjustable, and has picture-in-picture capabilities.

CoolTouch Monitors has introduced its first full-featured multimedia confidence monitor in the new XP-Series line. The XP-1041TA is a 10.4-inch standalone LCD monitor that has touchscreen controls. It offers an integrated speaker, dual-composite video, and a VGA input with a built-in scaler up to 1024x768 resolution. A version without a touchscreen is also available, the XP-1041A. CoolTouch's LCD display offers superior picture quality even under high ambient light. The touchscreen model operates via a USB connector on the rear of the unit and is powered by 12 V to give reliable performance in the field.

Panasonic TB-LH2600W

FrontNiche is introducing an HD Pro 23-inch range, including the PTP23HDSD-SDIHR and the PTP23DVI monitors producing 1920x1200 resolution with their new HD Pro driver card containing 4 FPGAs, an all new graphics engine. The HD Pro 23-inch also includes enhanced IP capabilities together with the technology Vutrix redeveloped and licensed from BBC R&D. All of the full native TFTs in the HD Pro 23-inch use the very latest video processor from Gennum, which the FrontNiche Vutrix engineers have beta sited for the last two years. It can also come with optional dual-link 1.45 GB inputs for 10/12-bit RGB, 4:4:4 display quality at 1080p.

The 23-inch high-definition V-R231P-AFHD 1920x1200 resolution active matrix LCD display from Marshall Electronics has pixel-to-pixel native display for all video formats. It offers a WUGA 6.9 Megapixel 1920xRGBx1200 display. The V-R231P-AFHD features custom LSI and ASIC technology with RISC processor with a 500:1 contrast ratio and response rates less than 15 milliseconds. Its user-adjustable color temperature has presets for D75, D65, D55. There is also a multiformat connector for HD or SD analog component signals in addition to DVI-I

While not calling it a true reference monitor, Panasonic recommends its BT-LH2600W 26-inch widescreen BT series multiformat color production monitor. It has a 16:9 aspect ratio at 1366x768 resolution with audio level meters displaying up to eight channels from HD-SDI. It also boasts an exclusive superimposed waveform monitor that graphically displays luminance levels from -5 IRE to 108 IRE in any of the monitor's four corners and a freeze frame grab for image comparison/analysis either on the entire frame or just the center.

Panorama*dtv*, the video division of Wohler Technologies, offers its Daylite Series of "high brightness" LCD displays that are modified to give exceptionally clear picture quality in all sunlight conditions. With highly efficient backlighting, the Daylight Series features a precision lens bonded to the front of the assembly to eliminate glare along with a new generation of control electronics.

All of Panorama*dtv*'s Daylite panels are RGB active matrix TFT types with fast response times. Their 10.4-inch LCD 800x600 pixels video monitor has SVGA or UXGA data input, a 500:1 contract ratio, and is designed for 12 V battery operation.

MONITORS, PAGE 19

Wireless Mics Go Wide for NFL

Sennheiser copes with ever increasing RF traffic

by Claudia Kienzle

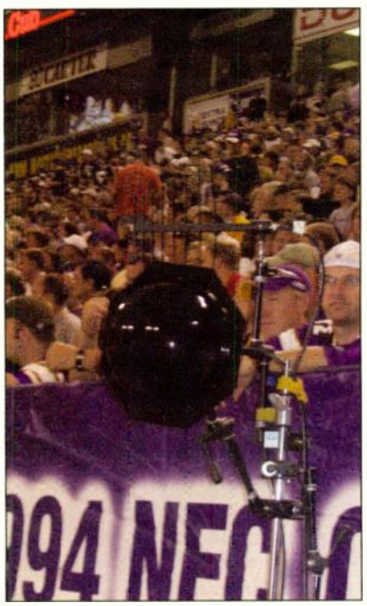
NEW YORK

When broadcasters cry "interference" at NFL games, they're not talking about a bad play. They're talking about the increasingly competitive RF environment at today's NFL games.

Since major sports networks, such as Fox Sports, ESPN, CBS, and NBC, want the most dynamic telecast possible, they use wireless microphones to enable announcers, interviewers, and sound men to move about freely. They also put wireless mics onto the players' shoulder pads, helmets, and sideline parabolic mics, to capture all the grunts, thuds, and crunches of game action for an enriching viewer experience.

"In the last few years, the use of wireless microphones has just taken off. We're in an interesting time where technology is surpassing what anybody ever thought possible," said Michael Mason, vice president of engineering and general manager for CP Communications, a leading systems integrator specializing in the rental of wireless microphone systems to top sports networks, including NFL Networks, Fox Sports and ESPN.

"What's unique to televising NFL football is that the production needs to move weekly from one stadium to the next, and adapt to whatever stressed RF conditions they may find in different metropolitan areas," said Mason, whose company actively works with the NFL and the Society of Broadcast Engineers Game Day Frequency Coordinators on behalf of its customers. "Besides finding open space between the DTV, HDTV, and other licensees to that spectrum, broadcasters covering the NFL also have to compete with other wireless devices, such as the coach comms, SkyCam, and wireless cameras for open frequencies."



Sennheiser AP 5000-CP helical antenna used during a recent Vikings game

For this reason, CP Communications asked Sennheiser to modify their wireless microphones to make them better able to cope with the RF challenges of NFL games.

One year ago, as a customer service to Fox Sports, CP Communications worked with the network to have Sennheiser modify its wireless mic gear. Then just before the start of the 2006 NFL season, CP Communications purchased more new Sennheiser wireless systems with the same modifications.

"We own over 250 channels of Sennheiser wireless gear, and it's a brand that our sports network customers demand," Mason said. "So the modifications were necessary, and Sennheiser helped us tremendously to serve the needs of NFL broadcasters more effectively."

While the Sennheiser wireless microphones work well right out of the box for most customers, the modifications were especially helpful for addressing the needs of the NFL group. The modifications were designed to boost the output power of the transmitters; and to wideband the receivers, increasing the odds of finding open channels in a crowded RF environment.

"When we took over Fox Sports rental business one year ago, we approached them with the idea of changing the technology in their six Sennheiser EM1046 racks to make them wideband and better able to find open frequencies," Mason said. "The individual receivers were previously capable of receiving frequencies in a very narrow 24 MHz bandwidth, they are now capable of receiving within 36 MHz, giving us a higher likelihood of finding an open channel."

Joe Ciaudelli, consultant for the professional products industry team for Sennheiser Electronic Corp. in Old Lyme, Conn., said, "Another modification was to make the antenna input to the rack itself wideband to allow the use of receiver modules from four distinctly different frequency bands. This allows them to use modules in different frequency ranges, giving them more flexibility to choose carrier frequencies as they move from city to city and to tune their modules to find free frequencies.

"NFL games are unique in the number of RF wireless devices competing for open frequencies in a very crowded RF venue. And unlike a sport like golf, which is usually played in open spaces outside of metropolitan areas, NFL games are held in cities where the fight for frequencies is an obstacle that's only going to get worse as the FCC strives to reallocate the spectrum."

CP Communications purchased 32 additional channels of Sennheiser EM1046 with accompanying Sennheiser SK250-UHF body pack transmitters to handle the new projects for the 2006-07 season. The Sennheiser SK250 boasts 250 mW, the highest output power allowed by the FCC. Sennheiser also installed an extra switch that accessed a second bank of frequency presets, beneficial when moving from one city and stadium to another.

Sennheiser also modified its SKM5200 handheld wireless mics which transmit to Sennheiser EM3532 receivers. CP Communications currently stocks the SKM5200 mics to be utilized on NFL football coverage as well as other sports. Sennheiser modified the SKM5200 and EM3532 with a unique feature introduced at NAB2006 called "Channel Command."

"Our engineers leveraged the nonaudible pilot tone in this transmitter to add essentially another channel of audio. Now the user can talk over the air or, with the press of a button on the battery pack, have a private conversation with the director or others in the broadcast truck or studio," Ciaudelli said.

So after finishing a live interview with a star linebacker or head coach, the reporter could run to another spot on the sidelines, press the Channel Command button to tell the director he has another interview lined up, and push the button back to have the audio go live again.

"This means that the SKM5200 can also act as a wireless intercom, and since this single device has a dual capability, that's one less RF channel that the user has to find without sacrificing any capabilities or conveniences," Ciaudelli said. The power output of the SKM5200 was also boosted from 50 to 80 mW to allow for a little extra range. Also, Sennheiser added an A 5000-CP circularly polarized receiver antenna that picks up the RF signals coming from in front of the mic, while ignoring or attenuating the sound coming from behind it.

The modifications, paid for by the customers respectively, did not require any new research and development efforts since the Sennheiser custom shop in Germany and Sennheiser's American engineering team, including Uwe Satler, Bruce Mosca, and Larry Huck, were able to use existing Sennheiser components and resources.

Mason and Ciaudelli agreed that the use of wireless microphone systems for NFL telecasts was increasing, especially now that the games are being broadcast in HDTV accompanied by surround sound. ■

Monitors

CONTINUED FROM PAGE 18

Sony continues to be the leader in providing CRT monitors, despite market and RoHS pressures.

According to John Kaloukian, director of marketing for the professional display group at Sony Electronics, "Sony still offers its BVM Series of evaluation-grade reference CRT monitors and for certain applications, such as critical monitoring in studios or control rooms. CRT is still a trusted option for many of our customers. However, continual advancements in LCD technology have made them extremely effective for more types of reference monitoring applications."

ChromaTru color processing available in the Sony Luma line of professional LCD monitors compensates for variations in LCD color levels commonly caused by differences in chromaticity coordinates, color temperature and gamma curves.

ChromaTru combines color space conversion and white balance adjustment, allowing Luma models to closely color-match not only other Luma monitors but also the SMPTE-C, EBU or ITU-709 color standards that have traditionally been used in CRT models. This type of development, as well as light weight and low power consumption, are continually making LCDs an ideal choice for nonevaluation applications including field monitoring or in OB trucks.

As the scramble to find a replacement for CRTs intensifies under the RoHS pressure, broadcasters should keep in mind that the six substances RoHS restricts do not include mercury, and mercury is a key ingredient in LCD manufacturing. So the search for broadcast-critical evaluation monitors may have one more level of evolution to deal with as concerns about mercury toxicity from manufacturing processes increase. ■

Dancing With the Pols

New technology choreographs '06 elections

by Robin Berger

LOS ANGELES

Industry providers believe the upcoming mid-term elections will be a trial run for the big show in 2008. Concerted in-house efforts were made to automate their products to better follow the twists and turns inherent to elections by immediately and simultaneously providing more data from more sources. These efforts were often fast-tracked by key acquisitions.

ADDED ON

Last year, Avid bought Pinnacle Systems, thus gaining its Deko on-air graphics software and MediaStream play-out server. This year, Avid linked a more HD-friendly Deko/DekoCast solution to its signature LeaderPlus Election Management system.

"This is the first time we've been able to pair up graphics products with LeaderPlus and really deliver soup to nuts—since we now have Deko as part of the mix, we're able to automate the process of collecting data and publishing it on air," said David Schleifer, vice president of broadcast and work groups. "We've got the ability to manage hybrid environments—we can drive the election results in HD and in SD on air: you can do these very sophisticated on-air looks, and have them formatted properly as 4:3 or 16:9."

Reporter Dan Bewley and Avid technology covered Michigan's Aug. 9 Primary Election for NBC's Grand Rapids affiliate, WOODTV Channel 8.

Schleifer said the real savings comes before the main event.

"The ROI would be in the lead up—the training, the setup, the decision-making process... what your look and feel will be on air," he said.

John Joy, operations technology director for NBC affiliate WOOD-TV, Channel 8, in Grand Rapids, Mich. agreed that the setup was "quite easy" and had no sticker shock.

"We have a maintenance package with Avid, so this was part of that—it covers the cost of hardware replacement," Joy said.

Vizrt acquired Curious World Maps, adding georeferencing capability to its arsenal of real-time features, and Ardendo, gaining asset management capability. Nir Goshen, Vizrt creative director of research, said georeferencing will distinguish this year's election coverage.

GEOGRAPHIC DISPLAY

Described by Goshen as "information that is displayed geographically in the context that it happens," the technology will supplant text with maps during broadcasts by at least two major U.S. networks, which he declined to disclose.

Their new look could, for example, pop a video box of a reporter or rival candidates in Topeka out of a map of Kansas to fill out the screen, while maintaining a pointer to Kansas, Goshen said. Georeferencing tools would also enable an anchor to stand next to a touchscreen map, select an area of choice, and prompt highlights of a race in progress to pop up on screen. Goshen said these nonlinear capabilities "don't have to be prescripted."

The touchscreen precludes the disadvantages of blue screen for both the anchor and camera op.

Georeferencing also includes the use of geospatial formats called "shapefiles."

This "technology allows you to pull the georeferenced information in a very elegant, very easy, very straightforward and very quick way," Goshen said. "If you use shapefiles in real time, and you have this data base of free, online information... you can display in a much more compelling way why there is such a tight race."

AlertLogic is this year's upgrade to BTi's Voting Attendant Package, which has been available since the 2000 election. The 2006 feature enables users to design screens for monitoring election parameters.

Multiple layouts can be configured and displayed simultaneously, items can be changed on a whim and reconfigured, or new ones created—even while election results come in—by pressing a button, according to BTi product literature. What's more, alerts can enable prevailing conditions to automatically trigger changes on the main display—for example, highlighting in red that an incumbent is not winning.

"Nine television stations went live with AlertLogic during the primaries," said BTi President Jay Wasack.

EASIER TRANSITIONS

Before Lyric Pro was introduced in April, Chyron Duet users were not able to "transition to an upper left 'live' or a lower third 'reporter super' by anything other than a dissolve or wipe," said Phil Carmichael, Chyron product manager for Lyric Pro Software. Nor could they simultaneously update "a ticker crawling across the screen with election results, or transition between lower-third name supers to full-page results run on the same output," he said.

"Previously, multiple machines with multiple channels would have been required to display that many different kinds of displays," Carmichael said.

Now, he said users can do these simultaneous tasks as well as create 3D election logos thanks to Lyric Pro features like Interactive Messages, persistent objects, multiple timelines per message and live particle effects.

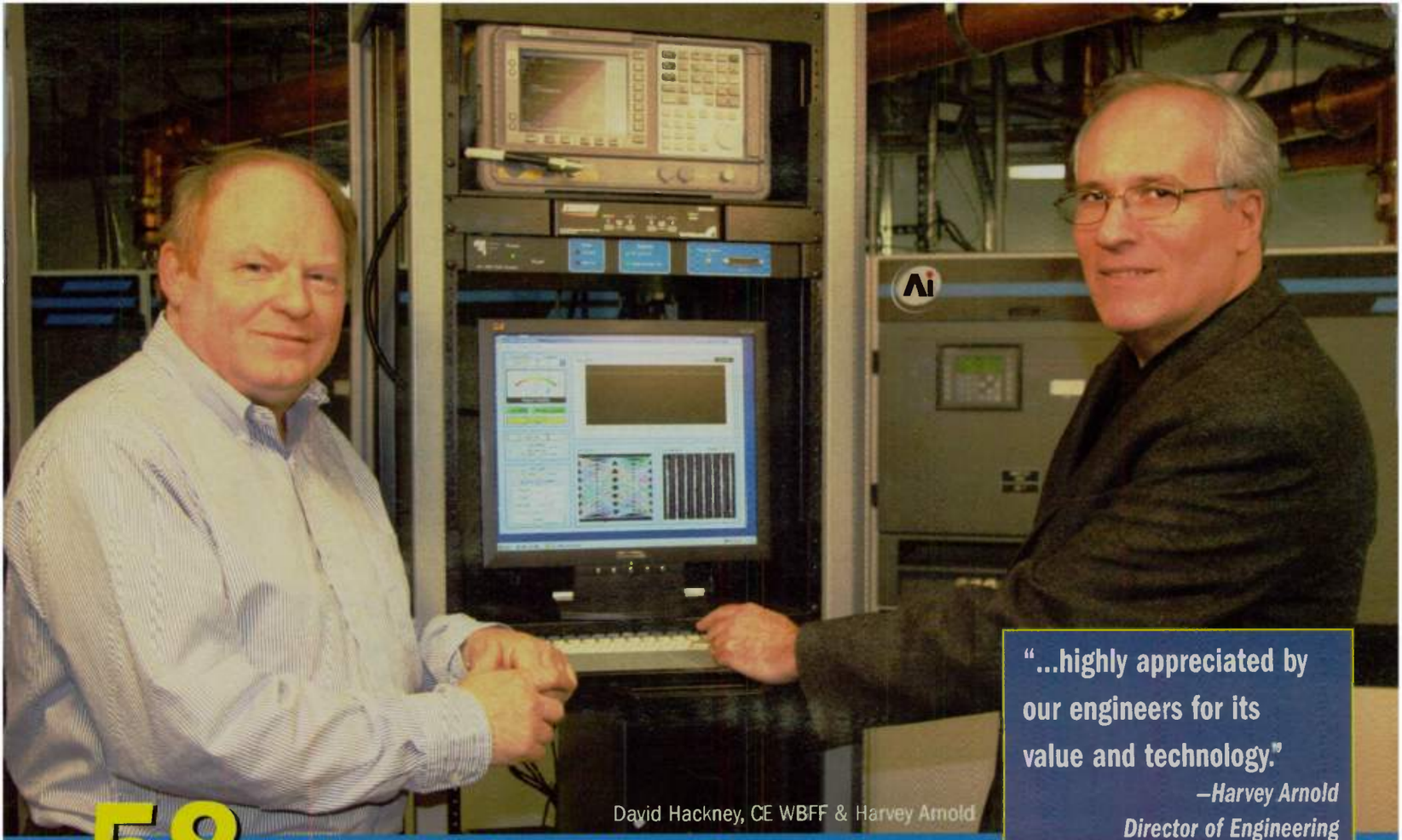
Lyric Pro is available as an option for Chyron's HD-SD HyperX graphics platform and its LEX option for standard definition.

"The key to elections is how you control the workflow," said Richard Hajdu, vice president of graphics and post for Harris Americas.

To help broadcasters do that, Harris introduced its Inscriber G-Series character generator and graphics system at NAB2006, aided by last year's Leitch acquisition. The G-Series features the RTX Application Programming Interface, which enables custom applications to access Inscriber hardware, and run their own applications in tandem with the Inscriber software, Hajdu said.

It also provides interfaces to MOS and automation systems, and has an integrated Media Store, which stores, catalogs, and recalls thousands of stills and clips without external storage.

"Our product can be dynamically driven from a newsroom system, an automation system or some external data source or third-party application," he said. ■



David Hackney, CE WBFF & Harvey Arnold

> **"...highly appreciated by our engineers for its value and technology."**
>
> ***–Harvey Arnold***
> ***Director of Engineering***
> ***Sinclair Broadcast Group***

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Coverage Goes Viral

Nontraditional distribution casts a new light

by Robin Berger

LOS ANGELES

Television has opened its door to nontraditional sources to cover this year's midterm elections, namely, video from citizen journalists or Webcasts.

One of the most eyeballed Webcast-driven incidents to be telecast to date was the infamous "macaca" faux pas committed by Sen. George Allen (R-Va.).

During an Aug. 11 campaign stop, the senator referred to 20-year-old Indian-American S.R. Sidarth, as "macaca." At the time, Sidarth was taping the event as part of his volunteer job for Allen's political rival, James Webb.

A JVC 32x Optical Zoom MiniDV camcorder was used by Sidarth to capture the epithet directed at him, according to the James Webb for Senator campaign.

After scoring notable hits on the YouTube video Web site, the one-minute gotcha! appeared on "all of the network affiliates in the state" of Virginia, said Webb campaign spokesperson Kristian Denny Todd, as well as on Comedy Central's "Daily Show" news spoof. She said that she had given a copy of the footage to the Washington bureaus of ABC and CNN, as well as to NBC's affiliate in Northern Virginia.

YouTube declined to provide a list of telecasts that used the video directly from its site. "We have no way to track this," said Marketing Manager Jennifer Nielsen.

Webb campaign consultant Joe Stanley said he believed the version aired on MSNBC's "Countdown with Keith Olbermann" was from YouTube.

"I'm almost positive they used the YouTube on there because the quality of the one they used on Keith Olbermann was downgraded," Stanley said. "It almost made it look more subversive than it was."

TECHNICAL DETAILS

To make the copy he sent to YouTube, Stanley ran Sidarth's tape into a Sony DCR-HC20-NTSC MiniDV camcorder, then into his HP Pavilion a1130n desktop PC via FireWire. He used Adobe Premiere Pro 1.5 to cut the feed.

"I cut out the other 57 minutes and 57 seconds and typed up some titles in Adobe Premiere, took a still shot of Allen's campaign bus and buffered it on each end, created a clip in an AVI file and uploaded it to *www.youtube.com*," Stanley said. "I wanted to upload the highest quality that I could because their compression degrades imagery."

Stanley didn't use AVI (Microsoft's Audio Video Interleave) for the clips sent to ABC and CNN. He sent a Windows Media Video file because he said it is smaller, thus quicker to send, despite its "lower quality."

Although AVI has its advocates, it also claims detractors, who believe the container is outdated and increases file size more than necessary.

ABC used the WMV file it was sent for a Webcast, Stanley said.

MATCHING UP PARTS

According to NBC Universal's vice president of advanced technology, Peter Smith, the rule at the peacock network is to "keep the video in the same quality as we received it."

"This is the first campaign where we have large numbers, potentially massive numbers of citizen journalists out there who could participate."

—Sam Feist, CNN/U.S.

"We do get Web video that will go on air, no matter whether it's MSNBC, CNBC or NBC," Smith said. "We virtually do no processing on the Web video or any other video."

The Web video comes in by e-mail or as a file, he said, and goes into a drop box, where it is scanned for viruses. If it's virus-free, it is converted to whatever video format is being used by a particular edit system.

Avid edit systems do the format conversion internally. Other systems require a pre-edit conversion primarily done by Telestream FlipFactory.

Smith, who did not see MSNBC's macaca video, said that "preserving the quality from the get go" is the best approach.

"You can't make the quality any better because there is no more detail to give," he said. However, he agreed that "there's the possibility that there might be some video enhancement device out there that would be successful for one particular kind of video."

A tech source outside NBC pointed out that although there is zero difference in picture quality attributable to the recording section of a MiniDV, DVCAM or DVCPRO, there can be many differences attributed to their respective camera sections, due to imager size, processing and other factors. As for making "lousy video" look better for a telecast, he, like Smith, believes the answer is "maybe."

For instance, IBC showcased upconverters and video processors from a Brick House/Let It Wave partnership, Snell & Wilcox, For-A, and others that he thought might help.

NBC's Smith also noted that, "We obviously have the option of windowing the Web video within the video picture. We can make the Web video any size we like. But whether that is the best choice is really up to the producer, the creator of the program, rather than any technical position."

CNN'S PROPOSITION

On Aug. 1, CNN announced the launch of its "I-Report" project, which invited viewers to submit video through a link at CNN.com or by e-mailing *ireport@cnn.com*, and CNN Exchange, "a comprehensive user-generated content destination that features user-submitted video, audio, articles and graphics" at *www.CNN.com/Exchange*.

For producers like Sam Feist, political director and senior executive producer of political programming for CNN/U.S., these options augment his source pool rather than vie to supplant other content aggregators.

"My job is to get the very best material from whatever source in the world on television as fast as I can," Feist said, noting he's just as comfortable sourcing material from YouTube, Flicker or elsewhere as I-Report and CNN.

He believes diverse blanket coverage will be particularly valuable in the upcoming elections.

"This is the first campaign where we have large numbers, potentially massive numbers of citizen journalists out there who could participate," Feist said. "We've all dabbled in it a little bit, but 2006 is the first campaign where these sorts of things can make the difference."

The "CNN Election Express Yourself" customized Airstream camper

The footage has already made an impact on "The Situation Room," where two Internet reporters present segments from news scoops discovered online. One such scoop was the macaca video.

The story "began to bubble on the blogs, and we picked up on it and reported it on 'The Situation Room,' where we cover a lot of politics, Feist said. "It expanded beyond our Internet reporters. Our congressional correspondent Andrea Koppel did a piece, and the story went on from there."

According to the press release, I-Reports "go through the same extensive vetting process CNN employs for all content that goes on air or online."

Like NBC, CNN does not touch up the quality of these videos or any other nontraditionally sourced video.

"We make very clear where this video comes from, which, in and of itself, is interesting," Feist said. "The video sometimes looks grainy, but you can make out what you want to see. At this point, the viewers know the difference between a piece of video that comes from a television camera and piece of video from the Web." ■

News

CONTINUED FROM PAGE 1

find it.

"We're really trying to think about viewer, how they use the site," said Candy Altman, vice president of news for Hearst-Argyle.

With regard to the elections, she said, "Now what I think is different is that certain elements are specifically designed for the Web."

Altman said improvements in Flash technology as well as the spread of broadband access are helping bring more video and viewers to Web sites.

"It's a matter of really trying to take the advances in the technology, and our ability to produce content, and marrying the two," she said.

Hearst has a brand for its election efforts, "Commitment 2006," which builds on previous efforts. Across the 25-station Hearst group, Altman said station Web sites are not just generating hits; they're making money with ads, even if the ads and the news are still ongoing experiments.

The company doesn't want to necessarily place candidate ads right next to related stories, lest it seem like a newspaper endorsement, and Altman described "a fine line" between providing ad space and covering up the page with clutter.

For ambitious stations, Web coverage through Nov. 7 means on-demand footage of debates, candidates' answers to questions and other resources; new interactive features beyond the old unscientific Internet polling; and a wealth of reporting on the many elections in a viewing area—even the small, local elections that might not get time on the evening news.

TOP LOCAL SITES

The stations are typically teaming up with their media neighbors, such as the local newspapers, and developing local Internet news juggernauts that even make money for their owners.

"It seems like every election, we come up with a new way to reach people," said Aysu Basaran, who has overseen coverage for several elections as executive producer of special projects with WBNS in Columbus, Ohio.

WBNS joins its sister newspaper, the Columbus Dispatch, as well as the cable Ohio News Network and a local weekly paper on its election site, *www.ohioelects.com*.

Back in 2002, the station launched a program called "CandidateMatch" on its Web site, whereby one could answer questions on issues and get matched with the gubernatorial candidate whose responses matched most closely. In 2004, the project attracted more than 237,000 unique visitors. Now, the station has convinced the candidates for U.S. House and Senate to take the Match test as well.

The Web site is also offering content from a weekly political talk show, "Issues and Answers," plus a Web-exclusive production—a "VODcast"—of commentary by local political pundits, which Basaran promises will have some edgy content that you can't put on television.

At WEWS in Cleveland, a Scripps station, News Director Steve Hyvonen said the coverage on his Web page is as aggressive as on the air. But in addition, the station has an "elite strike force" of reporters who are assigned solely to major candidates and will track them nearly continuously.

"You need to follow the candidates' lives inside and out," Hyvonen said. In 2004, when Hyvonen was a producer at MSNBC, reporters following presidential candidates using small cameras and laptops to get news up as quickly as possible.

"They literally went everywhere the candidates went," he said. "That's kind of where this business is going."

NEW TYPE OF COVERAGE

Scripps, like many station groups, has given a brand—"Democracy 2006"—to its election coverage, in which most of the company's 10 stations are participating.

"News coverage will be developed through an interactive process with local citizens and citizen groups," Scripps pledged without claiming to make any special investment in resources or technology.

Similarly, Journal Broadcast Group calls its initiative "2006 Red, White and Blue," an update of earlier electoral runs, and spokesman Jim Thomas describes the 11-station group's sites as aggregators of existing news coverage.

"Our stations are gradually increasing the presence of voter information on the Web sites," he said, warning against the urge of stations to just dump all their content online. "It comes around to, what are the *right* things to put on the Web."

Some local cable news operators are using the special features of that medium—such as channels reserved for on-demand programming—to bring debates and other features to voters right on their TV sets, not just online. In New York, News12, which operates bureaus around the metro area, for the first time is making available every area debate—more than 50 in Long Island alone—on VOD, with complete VCR functionality.

"They'll really have it in their control," said Debbie Koller-Feeney, News12's director of marketing and promotions.

Down in Florida, Tampa Bay cable newser BayNews9 has polls and other features, including its own on-demand channel on the local cable system, showing candidate highlights such as clips from a weekly local political show produced with The St. Petersburg Times. Breaking news such as election night concession speeches, should they be made this time in Florida, will be quickly made available on VOD.

Also on election night, BayNews9 will aggressively drive viewers to their Web site for coverage of the many local races.

"Where the Web really helps us is, we cover every race," said BayNews9 vice president and general manager Elliott Wiser. "The Web site allows us to put all the results on."

In high-stakes states like Florida and Ohio (where even "The Daily Show" is setting up shop just before the elections), stations understand that unprecedented circumstances and national headlines could pop up at any time, and the Web, they figure, can help them adjust.

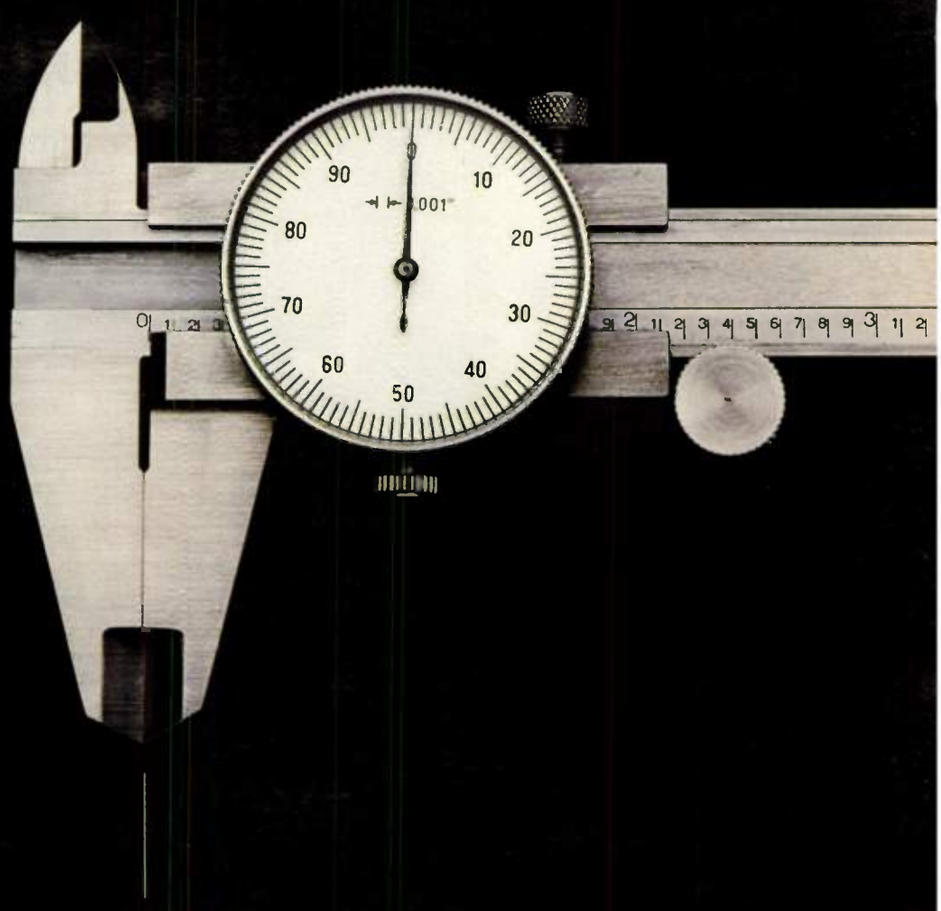
"If we can handle a hurricane," Wiser said. "We can handle an election." ■

"If we can handle a hurricane, we can handle an election."

—Elliott Wiser, BayNews9

Photo: Courtesy of Hearst-Argyle TV

The Washington Bureau of WISN-Milwaukee gets to work in front of the Lincoln Memorial.



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BAS Update

Training Licensees for the BAS Transition

Sprint Nextel collaborates with SignaSys to teach new workflows

by Michael Degitz
Vice President, Sprint Nextel Global Development and Spectrum Management

RESTON, VA


Michael Degitz

As we move into autumn, Sprint Nextel and broadcasters continue collaborating across the country on 2 GHz relocation activities. As of mid-September, 97 percent of BAS licensees have engaged in relocation activities. Additionally, 77 percent of the total affected broadcasters have submitted inventories and 48 percent of inventories have been verified. However, only 7 percent of BAS licensees have signed frequency relocation agreements (FRA) with Sprint Nextel. I'm hopeful that over the next few months additional agreements will be announced, moving all parties closer toward implementing the FCC's new band plan at 2 GHz.

In the past, I've written about submitting quote packages in good order to Sprint Nextel. This month, I'd like to move one step beyond this, and discuss something that follows closely behind the completion of the relocation agreement: training. Between the time that broadcasters in a market sign an FRA and the time that equipment is installed, the big question on most minds is: How do we use this new digital ENG equipment? It's important for the success of the 2 GHz relocation program for everyone using new digital microwave equipment to understand how and why it works differently than FM analog microwave equipment. With that in mind, let me share some thoughts on what training entails.


Drew Kraus (L) and Bill Hamilton, senior engineers in the SignalHelp group in SignaSys, configure the Hands-On Training System (HOTS), a central feature of the training session.

It's important for the success of the 2 GHz relocation program for everyone using new digital microwave equipment to understand how and why it works differently than FM analog microwave equipment.

RELOCATION TRAINING

Sprint Nextel has been working with SignaSys for more than year to develop a comprehensive training course for broadcasters, focusing on hands-on demonstration. SignaSys, in coordination with Sprint Nextel, has developed the curriculum and the training materials, with David Otey (formerly of the Society of Broadcast Engineers), who is leading a team of engineer-trainers. As more broadcast markets move into the training stage, SignaSys will be adding additional training staff.

Training in a market comes in two parts. First is a *Market Training Seminar*, which is intended for chief engineers, maintenance technicians and other subject matter experts. This seminar is an all-day event in each market. It delves into more technical aspects of digital transmission, digital modulation, error correction and modulation scheme and also covers advanced troubleshooting techniques.

After the *Market Training Seminar* is concluded, SignaSys offers *Semi-Custom Operator Training* geared toward each station in the market. This part allows station operations personnel to try out new equipment in an operating environment.

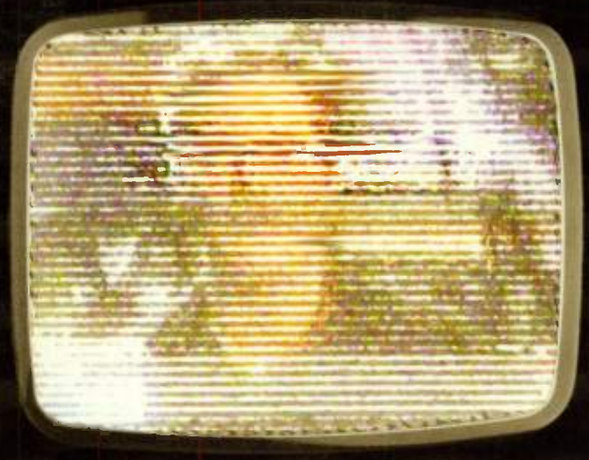
ISSUES COVERED

Working with digital ENG equipment is different than handling FM analog microwave and the training program will provide broadcasters with an understanding of what to expect. Anyone who has operated analog equipment knows that "finding the picture in the snow" is the way that operators

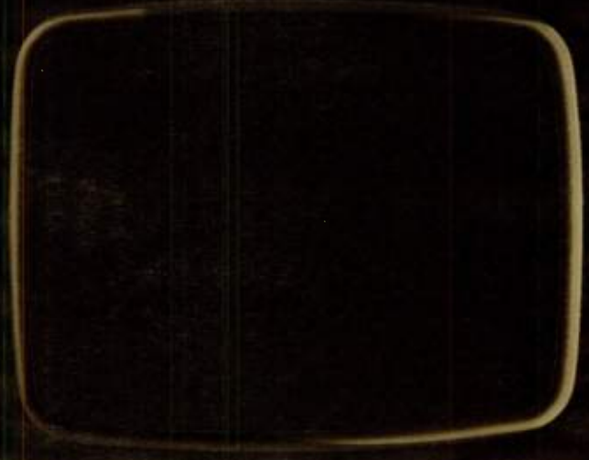
TRAINING, PAGE 29

TROLL SYSTEMS INTRODUCES

The New Black



weak analog signal



weak digital signal

SpecTroll, the smartest looking pedestals

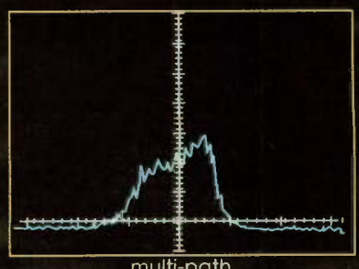
In the new digital world, snow and ghosts are gone, replaced by the stark reality of ON (a picture) or OFF (black). Against this backdrop, Troll Systems leads the broadcast industry in onboard signal diagnostics. Fully integrated into the TouchStar™ Master Controller, the SpecTroll Viewer provides raw spectrum data at 800 MHz (pre IF filtering and AGC).

Displayed in real-time, the SpecTroll Viewer can reveal the complete channel plan, up to 80 MHz of bandwidth or the span can be adjusted to isolate 25 MHz signal segments.

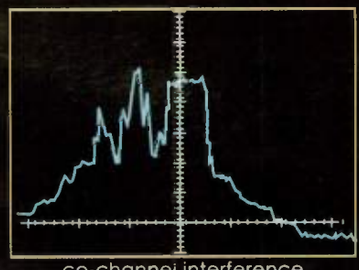
The must-have, much-needed accessory, the SpecTroll Viewer has been turning antennas everywhere. Easy to use, the SpecTroll viewer provides ENG operators an intutive way to quickly tune ENG shots or identify common signal distortions. An integral piece in Troll's digital collection, The SpecTroll Viewer makes it possible to find the optimal antenna position for the best possible shot.

An off-the-shelf option, the SpecTroll Viewer uses existing communications links, and does not require any communications upgrades or additional phone lines to deploy.

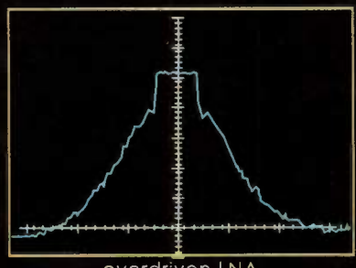
Conditions that can result in BLACK



multi-path



co-channel interference



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2 GHz ENG Design Considerations

'RF Technology' examines technical issues for new systems

by Doug Lung

LOS ANGELES

The 2 GHz transition from analog to digital ENG links is preceding and before long the first market-wide conversions should start. Some broadcasters have already made the switch to digital—it's the only way to transmit live HDTV from a helicopter. This month I'll look at some of the technical issues to consider when designing and operating a 2 GHz digital ENG system. I'll also describe ATSC's Candidate Standard (CS/TSG-696r1), which was released in late July.

DESIGNING THE SYSTEM

The "all or nothing" characteristic of digital transmission makes it impossible to judge signal quality looking at the picture or listening to the audio. While transitioning Telemundo Network from analog to digital satellite distribution over 12 years ago, I often received calls from cable technicians complaining that the signal was going on and off.

It couldn't be their dish, they argued, as they had a perfect picture when they set it up. The operator responsible for receiving the digital ENG feed will have to look at the signal-to-noise ratio or bit-error rate to make sure there is sufficient margin to ensure the video won't break up or disappear unexpectedly.

The traditional received signal level monitoring may work OK on line-of-sight paths, but if there is multipath or interference it won't provide any indication of how close the signal is to dropping out.

Sprint Nextel is covering the cost of adding a spectrum analyzer to each receive site. I strongly recommend taking advantage of this. A spectrum analyzer will show if someone is already using the frequency and will also indicate if adjacent channel signals might cause problems. Operators will need training to understand these displays.

Fortunately, as part of the transition, Sprint Nextel is making this training available. SignaSys will be taking an assortment of microwave and ENG control equipment into each market and giving operators a chance to get hands on experience receiving digital signals (see "Training Licensees for the BAS Transition," p. 26).

ENG truck operators will have more options after the transition. In addition to aligning the antenna and setting power levels, operators can select different data rates, types of modulation, and the amount of error correction added. While stations can set up presets for different shots, some experimentation will be needed to find the best combinations.

With today's analog microwave, if a story from a difficult RF location is important enough, the news director may accept some noise or interference in the picture. In the digital domain, this won't work, but if the news director is willing to accept more compression artifacts, the data rate from the encoder can be reduced, allowing more forward-error correction and possibly lower order modulation (QPSK on the COFDM carriers instead of QAM). This will reduce the signal-to-noise ratio required for reliable reception and may allow shots that wouldn't have worked with higher data rates and more pristine video.

Transmitting HDTV will be a challenge in the new 12 MHz channels. Increasing data rate in the same bandwidth requires using higher-order modulation or reducing error correction. Although this won't change the received signal level, a higher signal-to-noise ratio will be required for reliable reception.

Using a wider bandwidth will allow higher data rates, but increases susceptibility to interference from adjacent channels. More efficient video compression, using the new MPEG-4 AVC codecs, allows HDTV at data rates close to MPEG-2 standard definition TV, at the cost of increased latency (delay).

DESIGN, PAGE 31

Training

CONTINUED FROM PAGE 26

have been tuning in live shots for nearly 30 years. As you pan the transmit or receive dish to peak the signal, the video gets less snowy. Between the picture quality and the received carrier level (RCL) meter on the receiver, the microwave receive operator and the truck operator "talk in" a microwave shot, first panning the transmit dish, and then the receive dish until the shot is optimized. However, this method of operation is difficult, if not impossible to use with new digital ENG equipment. When you work with digits, you don't have the luxury of picking the video out of the snow—digital is either there, or it's not. So with digital video and modulation, until the signal is strong enough to lock the receiver, there's a black screen, presenting the challenge of how to know if you're correctly tuning in the signal.

This previous example demonstrates one of the challenges Sprint Nextel gave SignaSys in putting together a dynamic training approach. The object of the training isn't to teach broadcasters how to use the new equipment, but rather to explore and teach a new workflow. Without understanding the new workflow, it's possible that users could be frustrated by the new equipment. Manufacturers are delivering great new technology, but the technology can't reach its potential if the users don't understand the operating parameters. Familiarizing broadcasters with the workflow process and playing around with new equipment before the "narrow in place" phase is the goal of the Sprint Nextel-sponsored training.

Early adopters of digital ENG broadcast equipment have detailed other differences between analog ENG and digital ENG. "Picture in the snow" demonstrates one aspect of broadcasting in the new environment: signal acquisition.

Another issue is power. In analog ENG, the more power, the better, and the more power you have, the stronger the signal you get. However, more power is not necessarily helpful when using digital ENG. Digital equipment is more sensitive and more selective, and less power is required to get the same shot. As a matter of fact, if you transmit too much power, it's possible to overdrive the receiver and/or LNA and the visual result is the same as no signal at all—a black screen. SignaSys will demonstrate this and teach broadcasters how to tell the difference between no signal and too much signal.

Additionally, Sprint Nextel agreed to provide spectrum monitoring to broadcasters who want it as a tool for tuning in digital ENG shots. SignaSys has a module that covers the use of the spectrum monitor.

These examples are meant to demonstrate what will be covered during the relocation training. Of course, there is no substitute for the hands-on learning process and we're confident that all of the training modules will provide greater understanding of new digital ENG equipment. Remember that before relocation to the new band plan, stations will operate in a narrow-in-place mode in the current band plan. During the narrow-in-place phase, operators will have the opportunity to switch between analog and digital mode, building on and completing the experience from training.

For additional information on 2 GHz Relocation, please visit *www.2GHzRelocation.com*. ■

BAS Update

L.A. Readies for 2 GHz Relocation

Geography, busy microwave environment challenges broadcasters

by Craig Johnston

LOS ANGELES

America's second most populated city has 14 TV stations doing some sort of news on-air, with all of its attendant ENG microwave activity.

How much microwave activity is there in Los Angeles? Howard Fine of PAC-TV, a Los Angeles-based provider of distribution and live broadcast production equipment and services, and who also functions as the market's frequency coordinator, said that most stations in the region have around six separate receive sites, with several operations having more than a dozen sites spread throughout the Los Angeles basin. Networks have their news bureaus located in Los Angeles too, adding to the microwave activity.

The reason for all of this infrastructure is the need for stations to compete in a market where "local" news happens over a wide area.

"When you look at the topography of southern California, you see why you need all these receive sites," said Dave Seeger, KNBC-TV news operations supervisor.

With this in mind, will Los Angeles become a nightmare setting on the weekend that the market retunes to the new 2 GHz channels and tower climbers start changing filtering?

Cindy Hutter Cavell, Sprint Nextel director of broadcast engineering for the 2 GHz relocation project, thinks not. "Los Angeles is probably one of the only markets that won't have to do that," she said, noting that BAS licensees in Los Angeles have no fixed link 2 GHz operations in the market. (Fixed link gear uses hard-wired filters; the new ENG Sprint Nextel replacement receivers have remotely changeable filters.)

Hutter Cavell said that Sprint Nextel challenged microwave radio makers to create the remote replacement system. "For the relocation weekend, it's not possible, especially in the bigger markets, for there to be 25 tower climbers climbing 25 towers, changing out 32 filters overnight on a Saturday night."

A second issue for the market is shrinking bandwidth.

SPLITTING CHANNELS

Los Angeles stations operate on home channels within the 2 GHz band. In going from 17 or 18 MHz channels to the new 12 MHz channels, are microwave operators going to be able to successfully split channels and use other techniques to achieve multiple paths on the same channel?

"That's how we've been surviving with the limited spectrum that we have right now," said Tim Stumpp, director of West Coast news and technical operations for NBC News. "Most of the L.A. stations all operate on a split channel and reverse polarities, and all the different kind of ways you can bring a signal into a site."

Steve Niemczyk, RF supervisor at Los Angeles KCBS-TV echoed that sentiment. "We're strained as it is right now... we split channels."

So will the 2 GHz relocation replacement equipment allow such channel splitting? Hutter Cavell thinks so; users in metropolitan markets are accustomed to splitting channels. "One of the things that was absolutely instrumental for the microwave equipment vendors was making sure they could do 6 MHz pedestals."

Stumpp said that while he's been generally impressed with tests they've done with the new technology, he does have a question about COFDM. Stumpp said that due to the large number of microwave sites, it was possible for receivers to see signals from a variety of transmitters with the real possibility for interference.

Hutter Cavell agreed this could be an issue, suggesting stations should do experiments during the narrow-in-place phase of the relocation when new microwave equipment is operated in the old channels prior to retuning.

A crowded tower on Mt. Wilson, the site where Los Angeles stations transmit their signals.

"You can use power management and other tricks to keep it [interference] to a minimum," she said.

There's also the question of interference in the existing Channels 8, 9 and 10, which will not be relocated. KNBC's Seeger said that this has been a recurring problem.

"You get a lot of industrial interference, audio subcarrier popping—somebody turns on a microwave oven, you've got stuff in the video."

Seeger said that his operation's solution was to purchase very high-gain antennas for the ENG trucks.

KCBS's Niemczyk blamed the proliferation of WiFi for creating interference.

"[Channels] 8, 9 and 10 are basically useless, unless you run enough power to overcome WiFi," he said. "Fortunately our receive sites are out in the middle of nowhere. [on] 8,000-foot high mountains."

But even with isolated receive sites, the possibility for problems remains.

"The only time I have problems with those wireless guys is if they try to run a link from the mountain with an illegal transmitter, amplifier, antenna, to get the signal back to civilization. And then they'll wipe us out," he said.

The only solution in such cases is to track down the illegal operation and get them to shut down.

Hutter Cavell singled out Fine for his accomplishments in frequency coordination. "Relocation efforts so often can be made or broken by the local frequency coordinator, she said. "Howard is a huge proponent of this program. He's always run the L.A. market with a steel hand... and part of the success we've had to date in the L.A. market is due to Howard." ■

Design

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POWER CONTROL

If it sounds like digital microwave may be too complex for some ENG truck operators, especially if they have other responsibilities, one solution may be Candidate Standard CS/TSG-696r1, "ATSC Automatic Transmitter Power Control (APTC) Data Return Link Standard (DRL)." TSG-696r1 is considered to be stable and is expected to become a Proposed Standard by Dec. 15, 2006.

The FCC adopted SBE's suggestion to create two 500 KHz wide DRL bands at the lower and upper edges of the 2,025 to 2,110 MHz band. The main purpose of TSG-696 is to set a standard for using DRL transmission from the ENG receive site to the truck to set the transmit power level at the truck. Using the minimum power needed for a reliable link will reduce interference to adjacent channels and optimized spectrum efficiency by allowing more frequency sharing.

One example of this is described in TSG-696r1. Two 6 MHz wide transmissions from different trucks in different locations going to two receive antennas on the same or close-by receive sites are sharing the same 12 MHz channel.

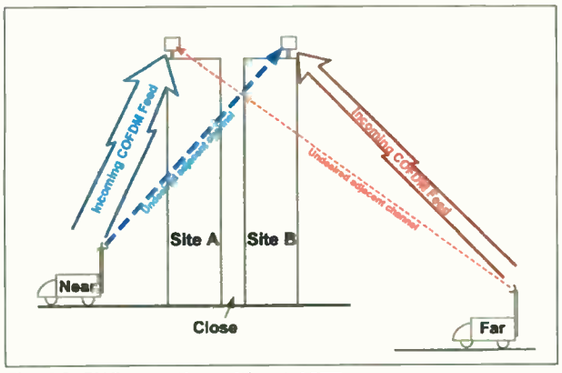

Fig. 4.2: ENG reception without APTT

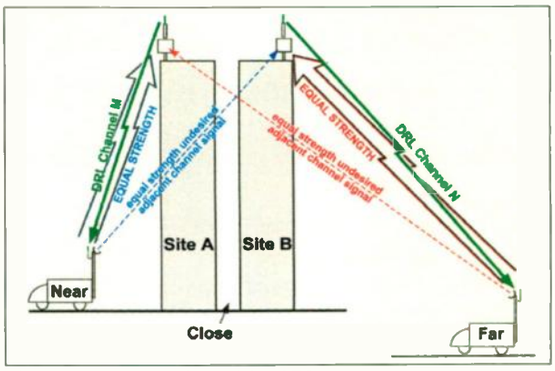

Fig. 4.3: ENG reception with APTC

The DRL signal can be used to control transmitter power level to match the received signal levels from the two trucks at the site. This would prevent the truck closest to the site from interfering with the distant truck. DRL also allows transmission of private data, which could be used to change modulation type, error correction or other settings in the truck if needed or for purchases such as camera control.

Figures 4.2 and 4.3 from the TSG-696r1 illustrate ENG reception without (Fig. 4.2) and with (Fig. 4.3) APTC.

The 500 KHz-wide DRL bands are each divided into 20 channels 25 KHz wide. The maximum effective isotropic radiated power (EIRP) is limited to 10 watts, but there is no limit on transmitter power, allowing the use of an omnidirectional, low-gain DRL transmit antenna. While the DRL signal will typically operate with an EIRP 16 dB less than that of a COFDM signal, with the narrower bandwidth of the DRL signal (25 versus 12 MHz), low-order modulation and aggressive error correction more than compensate for the EIRP difference.

The modulation and error correction specified in TSG-696r1 allows the DRL path between the ENG receive site and the ENG truck to be more robust than the COFDM path between the ENG truck and ENG receive site in most cases. Quadrature phase shift keying (QPSK) modulation is used in the DRL transmitter.

A one-half convolution code with no Reed-Solomon outer code is used for forward error correction. A watermark signal is injected into the transmitter at

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BAS Update

BAS Transition Effects Reach Far and Wide

Microwave service providers face different issues from broadcasters

by Craig Johnston

SEATTLE

The way network golf, car races and other large venue sports events are telecast is due to change in the next few years, and producers are hoping few people notice.

While much attention has been paid to broadcasters (BAS or broadcast auxiliary spectrum users) who are being relocated in the 2 GHz band, a group with another set of initials (LTTS or "local television transmission service"), are part of the same relocation.

A subset of those LTTS licensees is a group of boutique companies that have become one of the backbones of television sport: microwave service providers.

Whether the job is linking roving handheld cameras on a golf course, in-car cameras traveling 200 mph around a speedway, a blimp shot overhead of a football or baseball game, or mast-top camera on an ocean-racing sailboat, televised sports coverage relies on these companies to make it happen.

Total RF uses BAS spectrum at events such as the 2006 U.S. Open golf tourney at Winged Foot in Mamaroneck, NY.

Whereas years ago, the networks and even some TV stations owned their own mobile trucks and microwave wherewithal, the trend for most has been to outsource.

"They didn't want to hang onto the hardware and the personnel to do this," said Jim Malone, chief technology officer at Carlisle, Pa.-based RF Central, referring to broadcasters. "So what I think happened back in the late '80s, early '90s, there was a great trend to go outsource for everything."

As Malone pointed out, these service providers not only rent out the microwave equipment to the production companies, they also supply the technical crew to site and operate the equipment. Their employees are specialists microwave links.

"Most of these companies are a bit more advanced in their engineering skills," said John Payne Jr., chief engineer at Nucomm in Hackettstown, N.J. "They do a lot of custom work, on the cutting edge, of the type of equipment they're implementing."

BIG DIFFERENCES

As with their broadcast brethren, microwave service providers are relocating to new, smaller channels within the 2 GHz band. Both BAS and LTTS licensees will require new digital microwave equipment in order to operate on the new, narrower channels. And as part of its compensation for receiving

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least 18 dB below the QPSK modulated data signal. This allows identification of the DRL transmitter. With these parameters, at a bit-error rate of 1E-6 (one error per 1 million bits), the required carrier to noise ratio is only 7.5 dB. With the watermark 20 dB below the QPSK signal, it will degrade the DRL signal by only 0.04 dB.

TSG-696r1 notes that the watermark signal can be applied to the COFDM signal from the transmitter in the digital ENG truck as well. This would allow identification of the truck the signal is coming without decoding the main signal. This data could be used to set a receiver to the correct forward error correction or other settings without decoding the program content.

TSG-696r1 requires DRL transmitters have a tuning range from 2,025.0 to 2,025.5 MHz and from 2,109.5 to 2,110.0 MHz in 25 KHz steps. The 3 dB bandwidth may not exceed 19.2 KHz and the 20 dB bandwidth may not exceed 23 KHz.

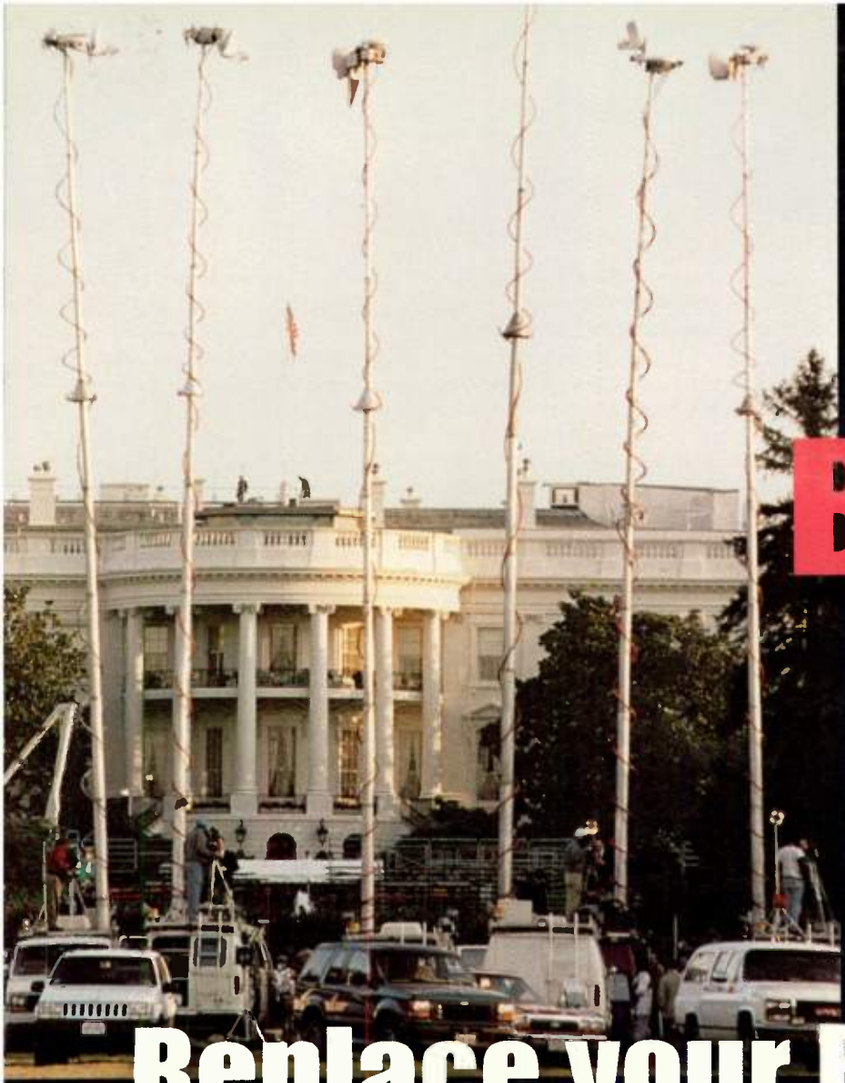
The ATSC Candidate Standard provides technical details on the DRL and the watermarking signal. It is available on the ATSC Web site (*www.atsc.org*),

Microwave manufacturers have told me they do not plan to offer any DRL equipment before TSG-696r1 or its successor becomes an official ATSC standard. That doesn't mean you should ignore power control. Digital ENG truck operators should know how to adjust power. FM transmitters and receivers were very forgiving of overload—a limiter, which removes amplitude variations, is a key part of FM receivers.

Complex digital modulation systems, on the other hand, are not as forgiving. Information encoded in amplitude levels becomes distorted as amplifiers (transmit or receive) are pushed beyond the linear part of their operating curve and start to compress the signal, reducing the signal-to-noise ratio and making the signal, even if it is strong, difficult to receive. Worse, transmitter power amplifiers generate intermodulation products that can interfere with adjacent channels.

Not all digital microwave transmitters and amplifiers are equal, even if they output the same power. Unfortunately, intermodulation performance isn't always easy to find in manufacturer's specifications, nor is the level of spurious out-of-channel products. Overloading sensitive receive site low noise amplifiers (LNA) can cause similar problems. A strong adjacent channel signal, even if it is clean, can generate intermodulation products and interference if the receive site LNA is overloaded. That's one reason Sprint Nextel has been willing to replace receive site LNAs in some cases.

As always, comments and questions are welcome. You can e-mail me at dlung@transmitter.com



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Transition

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part of the spectrum recovered though the relocation, Sprint Nextel has been tasked with replacing that equipment.

Though microwave service providers and broadcasters will be relocated to the same channels within the 2 GHz band, there are some big differences between the two. You can start with the area covered by their licenses.

Microwave service providers have nationwide licenses, said Cindy Hutter Cavell, director of broadcast engineering for the 2 GHz Relocation Project for Sprint Nextel, "where TV stations can have regional licenses."

This has a major effect on the equipment swap that these LTTS licensees will make. Each broadcast market will wait until all BAS licensees in the market have installed their new equipment and are comfortable with it, then all operators in the market will retune to the new channels in the dead of night over a weekend.

"[Microwave service providers] are not sure, when they go to different geographical areas, what the local guys will be working with, whether they can hand it off digitally or if they're going to be analog," said Tom Smith, product applications manager for Broadcast Microwave Services, Inc. in Poway, Calif.

That means service providers have to be prepared to operate in all markets, which requires them to have narrow channel-capable digital gear for markets that have retuned, and retain analog-capable equipment to interface with local operators in markets that have not yet retuned. They won't surrender the old equipment until the last market retunes.

ALREADY IN PLACE

Another difference is that these LTTS users are more likely to be using digital gear already.

"We've been doing shows digitally since the 2000 America's Cup," said Fred Fellmeth, chief operating officer of service provider Total RF in Bensalem, Pa.

Because they're currently operating digital microwave equipment, many staffers and regular freelancers won't need to acquaint themselves with the different techniques necessary to bring in digital live shots, spectrum monitors and other new diagnostic equipment. But little of that existing digital gear will survive the relocation.

"To work in the new band plan, the spectral regrowth and spectral masks are tighter than they were before," said Nucomm's Payne. "A lot of RF performance needs to be improved," he said, and technology has changed a lot since early digital microwave radios made their debut.

High-definition microwave capability is a more immediate priority for these service providers than it is for broadcasters in general.

"The biggest issue we face is choosing an HD upgradeable path," said Peter Larsson, general manager for service provider Broadcast Sports Technology in Odenton, Md.

This demand for high definition hasn't been lost on microwave equipment vendors.

"I think that the service providers we are talking to see the need to enter high def, and for their futures that's a smart thing to do," said Dan McIntyre, vice president of Microwave Radio Communications in Billerica, Mass.

Sunil Naik, director of engineering at Moseley Broadcast Santa Barbara, Calif., thinks the high-def business will be driven by sports.

Service providers' "revenue stream is driven on the quality of the picture," Naik said. Indeed, as more network sports are delivered in high definition, service providers must gear-up with HD microwave equipment.

Since Sprint Nextel's marching orders on the equipment replacement is to match the general capability of the new equipment to that being replaced, the company is only required to replace analog SD gear with digital SD gear. But licensees can opt to add some of their own money to the equipment allowance from Sprint Nextel in order to upgrade to HD capable equipment. All three service providers **TV Technology** spoke to for this article are doing exactly that.

(Microwave vendors we spoke to report this HD upgrade path, though not universal, is becoming more popular with broadcasters as well.)

NOT STANDING STILL

Another point that separates these LTTS operators from broadcasters is their lack of fixed installations.

"We're getting the same types of equipment," said Randy Hermes, president and CEO of service provider Aerial Video Systems in Burbank, Calif. "But we don't have to climb a tower to change an antenna or preamp, something like that."

Fixed installations have the advantage of standing still while they're being inventoried, which isn't the case for microwave service providers, with their gear strung all across the country or even the globe.

Their own sophisticated inventory systems might tell them everything they own and where it is, but the federal requirements for the 2 GHz relocation mandate physical audits, which were generally performed in rolling fashion, as equipment returned from jobs.

Service providers have much to gain from the equipment swap. "Stations don't see [microwave equipment] as much as a cash-cow as rental companies do," said Ken Andrew, major account manager for Carlsbad, Calif.-based Global Microwave Systems. "They see it as a way to turn their inventory...get more modern equipment."

And then there's the nature of their equipment itself.

"They use a lot of specialty-built equipment," said Sprint Nextel's Hutter Cavell. "They put this equipment on racecars, ocean going sailboats, in blimps, on skier helmets. It's necessarily a whole lot smaller and specially packaged than the stuff TV stations use."

This sometimes means that they will buy standard equipment, then separate modules to fulfill specific needs. "We'll end up selling them a camera-back portable," said GMS's Andrew, "and they'll take the amplifier and use it as a separate rental item."

Sprint Nextel has been flexible in such cases. "The existing equipment is actually still identifiable as microwave equipment; it may just be packaged differently," Hutter Cavell said. "It may not have a manufacturer model number, so we'll go with what the LTTS vendor calls it: Broadcast Sports has things called 'Frog' and 'Cricket'

"We'll write a description of the item: '.1W FM transmitter with built-in 3 dB antenna,' and follow up with a serial number or asset number if the LTTS operator has given it one."

She said that item description and functionality determine how Sprint Nextel reimburses the service provider, who can choose what they want to replace existing equipment with.

The time to change over is now for these microwave service providers.

"We are now, as golf season is winding down, starting to rip things out of our golf trucks and install the transition equipment so we're ready for the start of golf season in January," Fellmeth said.

As nationwide operators, they have to be ready to operate in the new channels before the first market retunes, and hang onto legacy equipment until the last market is done. ■

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NET SOUP | Frank Beacham

Can the Internet Save News Reporting?

When I began working in the news department at an NBC affiliate in the late 1960s, ratings were never discussed and no one cared about the hair style of reporters. The most important thing was accuracy—getting the facts straight.

Later, when I was hired as an investigative reporter at a Post-Newsweek station near the end of the Watergate era, I received a personal pep talk from publisher Katherine Graham—a gutsy woman who had recently been threatened with a ride through the Nixon Administration's ringer.

Mrs. Graham warned me that the pressure would be great, but I was to tackle stories without fear from inside or outside the company. If anyone tried to interfere with my work, I should call her.

That call was never necessary. We were in the second golden age of television news (after Edward R. Murrow and friends set the early standard). Even when I was sued after exposing some unsavory dealings by a local congressman, Graham's company enthusiastically supported me in court. We won.

Unfortunately, those days came to an end. Television news got profit-conscious, lawsuit-averse, and as a result, much of the programming morphed into fluffy lifestyle pablum. Over time, viewers would come to believe the sugar-coated diversions were actually real news.

We've reached the point where the FCC is investigating almost 80 TV stations for substituting corporate video handouts in place of genuine news stories without telling viewers. How low can television news go?

Just as the new TV season began, David Letterman half-joked, "Here at CBS was Bob Schieffer's last night as the anchor of 'The CBS Evening News.' ...Tremendous man, Bob—brought credibility and ratings to the news. So naturally, they got rid of him."

About the same time Schieffer left the stage, former vice president, Al Gore, a man who has experimented with television interactivity through his Current TV network—added some more harsh words about the quality of television news.

Addressing the International Television Festival in Edinburgh, Scotland, Gore observed that increasing media consolidation is a threat against all democratic societies. "Democracy is a conversation, and the most important role of the media is to facilitate that conversation. Now the conversation is more controlled, it is more centralized," he said.

©Shutterphoto.com/ Christos Georghiou

We've reached the point where the FCC is investigating almost 80 TV stations for substituting corporate video handouts in place of genuine news stories without telling viewers.

Gore said that questions of fact that threaten those in power are not heard on today's news programs. "...They try to censor the information," he said.

A few business people or politicians are now consolidating global media holdings, Gore went on. In Italy, much of the media is owned by former Prime Minister Silvio Berlusconi. In Russia, President Vladimir Putin has stifled dissent on television, and in South Africa, Gore said, dissent "is disappearing, and free expression is under attack."

In the United States, he said, "the only thing that matters in American politics now is having enough money to put 30-second commercials on the air often enough to convince the voters to elect you or re-elect you. The person who has the most money to run the most ads usually wins."

Though I'll surely be labeled a curmudgeon by some, it's pretty much a no-brainer among thinking people that the television news business is in sorry straits. Veteran reporters continue to leave the business, disgusted with dwindling pay levels, the dumbing down of content, and the outrageous redefinition of what is and is not a legitimate news story.

NEWSLITE

The talented pros who have worked in professional news operations in the past find it hard to play the illusionary corporate game of newslite. Rather than leave the business entirely, hopefully some will embrace the only remaining alternative—the Internet. Of course, the Internet is no more than a distribution system. It begins as an empty vessel. Someone has to create the information.

Just as word processors didn't produce better writers or video cameras better visual storytellers, a cheap distribution platform won't alone create a meaningful alternative for journalistic storytelling.

The whole phenomenon of "citizen journalism" and blogging—while helping break down the corporate walls that have long shielded the news business—does not necessarily result in better reporting or more accurate information. Yes, there is some genuine talent online—people who have broken important stories—but so far it takes a bit of work to find them.

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LET THERE BE LIGHTING

Andy Ciddor

When Wires Aren't the Worst Way to Go

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Every gullible wireless enthusiast who buys a cordless phone, a wireless mouse or a WiFi-equipped notebook computer is just adding more radio frequency pollution to the spectrum...

By all accounts in the technical literature and sales propaganda that crosses my desk, the 21st century is set to be the Wireless Age. This should not be confused with the Radio Age that immediately preceded the Television Age, the tail end of which we can still see in our preview monitors. This Wireless Age is about not being shackled by the tyranny of wires or fibers to connect things together.

The current incarnation of a wireless age has arisen out of the ready availability of off-the-shelf, commodity-priced, radio frequency and infrared communication modules. These remove much of the pain and cost of developing an electronic device that incorporates a wireless link.

WIRELESS WIDGETS

Simply tack a wireless link module onto the circuit board of your existing widget and you have the new wireless widget, regardless of whether there's a need or a market for it.

Hence, we have Bluetooth earpieces for our cell phones, wireless keyboards and mice for our computers, wireless entry to our homes, offices and automobiles, wireless doorbells, cordless household phones that now travel in clusters, and outside our kitchen window is the wireless temperature sensor that once a minute, sends an update to the indoor/outdoor thermometer display.

Since the introduction of WiFi wireless data transmission standards, there has been a huge uptake of wireless local area computer networks, driving the development of devices to bridge Ethernet networks.

Since DMX512 is just another digital data stream, and a relatively undemanding one by modern computer data standards, several smart engineers came up with devices to pack one or more DMX data streams into an Ethernet stream.

In addition to allowing multiple DMX universes to be moved over a single Ethernet data cable, these devices also allowed DMX data to be carried wirelessly using ready-made radio link equipment.

A couple of DMX to Ethernet boxes and a couple of WiFi devices could be plugged together to produce a no-brainer wireless DMX link.

The last few years have seen a deluge of purpose-built wireless DMX (WDMX) devices come on to the market. Some are based on general purpose wireless communications modules, although many appear to be based on the 802.11b modules now available from many semiconductor manufacturers.

Unlike the systems built around standard bidirectional WiFi access points, most of the purpose-built WDMX systems consist of dedicated transmitter and receiver devices. As a cost reduction measure, this may have seemed like a good idea, as DMX512A is a broadcast-only protocol. However, the introduction of the remote device management extension to DMX512 has brought with it a need for data to be able to flow in both directions, a requirement that may entail major design modifications.

The main idea promoted by many WDMX marketers is that we can avoid the effort of running out DMX data cables to all those difficult-to-reach light-

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News

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Hopefully, the talent will rise and ways will be found to financially support them without corporate intervention or the toxicity of advertising. Sadly, we still must navigate a sea of politically motivated bloviators who claim to be bringing fairness to the news.

Interestingly, ad slogans have tried to convince audiences that one news show is more fair and competitors have bias. Of course, this is all bunk. Complete objectivity is a myth. All of us are biased, whether through our education, life experiences, age, or otherwise.

FOLLOW THE MONEY

It certainly helps to have some level of objectivity and not approach the news with a hidden agenda. But the holy grail of journalism is accuracy: Getting the story right, regardless of who is offended.

In old school journalism, we learned a simple rule: "Follow the money." In our culture, that has always been the most effective way to get to the truth.

Real reporting requires the guts to stand up and oppose popular conventions. The post-9/11 fear to tackle hard and controversial subjects still permeates too many newsrooms. The idea that "embedded" journalism can ever be legitimate should be abandoned.

Journalism, when practiced by the best, demands an adversarial relationship with those in power. It is the opposite mentality of a White House press corps that waits to be spoon fed the government's prepared theme of the day.

So who still practices this kind of journalism? One example is Seymour Hersh, one of America's finest investigative journalists. His work has long challenged abuses of power. He works independently, the old-fashioned way.

Hersh's chosen medium is still the written word. There is not yet a *www.seymourhersh.com*. But when the day comes that reporters of Hersh's standards independently report on the Web, we'll know the next golden age of journalism has arrived.

Frank Beacham is a New York-based writer and media producer.

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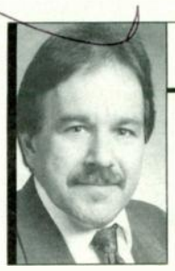


TECHNOLOGY CORNER | Randy Hoffner

Robotically Controlled Super Prism Displays

Scientists at the Swiss Federal Institute of Technology in Zurich have developed a new experimental advanced display technology that, to say the least, differs significantly from currently used technologies.

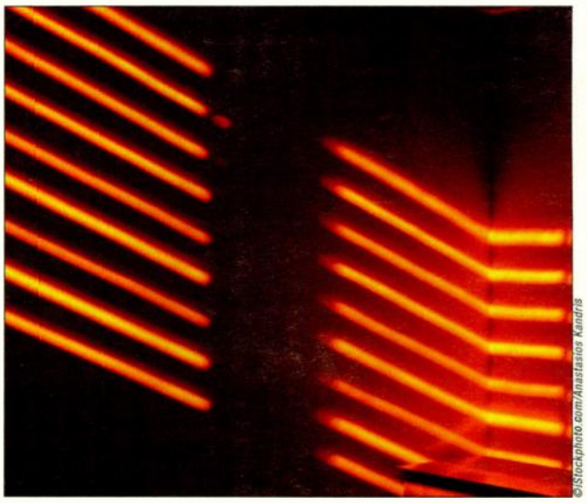
As regular readers of this column know, most advanced display technologies use the same fundamental approach that their predecessor, the cathode ray tube, uses to create a color image—red, green, and blue light are combined in various proportions and levels to reproduce the colors in the image being displayed.

There are a few exceptions to this rule. Some advanced displays employ auxiliary subpixels in addition to red, green, and blue subpixels. Some LCD displays add gray subpixels to enhance the display's ability to render the darker components of an image. A handful of experimental units also have subpixels of other colors, i.e., cyan, magenta, and yellow, to enhance the display's ability to render colors that fall outside the red, green, and blue subpixel gamut.

We may prove that it is theoretically possible to generate all the colors we can perceive using a mixture of just three primary colors. Red, green, and blue lights are typically mixed in a light-generating or transmissive device such as a video display; cyan, magenta, and yellow inks are usually mixed in a reflective device such as printing on a sheet of paper.

We know that nothing is perfect in this world, however, and there are limits to the purities and exact hues of the colors we use in either transmissive or reflective color mixing. Deviations from the ideal in the filters used in an RGB display generate red, green, and blue lights that are not entirely perfect in hue and purity. The result is that a given device has a practical gamut of colors that does not include all possible colors discernible by the human visual system.

The experimental display engine ...uses a diffraction grating, which may be visualized as a tiny set of Venetian blinds: a surface that contains a row of narrow slits or striations.



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STANDARD PHOSPHORS

In the case of a CRT, the red, green, and blue phosphors determine the color gamut. This is why it is important in professional video operations to use monitors that have CRTs with standardized phosphors, so when material is exchanged, all parties see the same colors when they look at the same images. In the United States, these professional CRT phosphors are standardized by SMPTE.

Similarly, in the case of advanced displays such as LCDs and plasma panels, the red, green, and blue filters, or phosphors, determine the display's color gamut.

Likewise, the colors and purities of the cyan, magenta, yellow, and black inks used in four-color printing, along with the "whiteness" of the paper, determine the color gamut in a particular situation.

Typically, the color gamut of a video display is considerably larger than that of ink on paper. This is in large part because the primary colors produced by the inks used in printing are not as pure in hue as the red, green, and blue lights of a video display, and because paper is typically not nearly as white as RGB light.

Those who use a computer to print pictures on paper are well aware of the differences in color gamut between displays and prints, and that it is nigh impossible to perfectly match a printed photograph with its on-screen counterpart. Interestingly, because cyan is the least pure hue of printing ink, the rendition of blues on the printed page is significantly inferior to the blues that may be achieved on an RGB display.

However, because yellow is the printing ink with the purest hue, and because yellow must be created in an RGB display by mixing red and green lights, the rendition of yellow on a video display is significantly inferior to its rendition on the printed page, particularly on very high-quality white paper.

LIKE BENDY BLINDS

The experimental display engine generated at the Swiss Federal Institute of Technology does not use red, green, and blue filters. It uses a diffraction grating, which may be visualized as a tiny set of Venetian blinds: a surface that contains a row of narrow slits or striations.

When light from a white LED is shined on a striation in the grating, it acts as a prism, spreading the light into its component colors, in just the same way that Isaac Newton's prism spread light into a spectrum.

Depending on the angle to which the striation is twisted, any color in the diffracted spectrum can be viewed or projected through a tiny hole in a light barrier placed in front of the grating.

The diffraction grating used in the Swiss experiments is not rigid, but is made of a flexible polymer that is typically used to make artificial muscles for robots.

When a voltage is applied to the polymer, it contracts proportionally to the

PRISMS, PAGE 42

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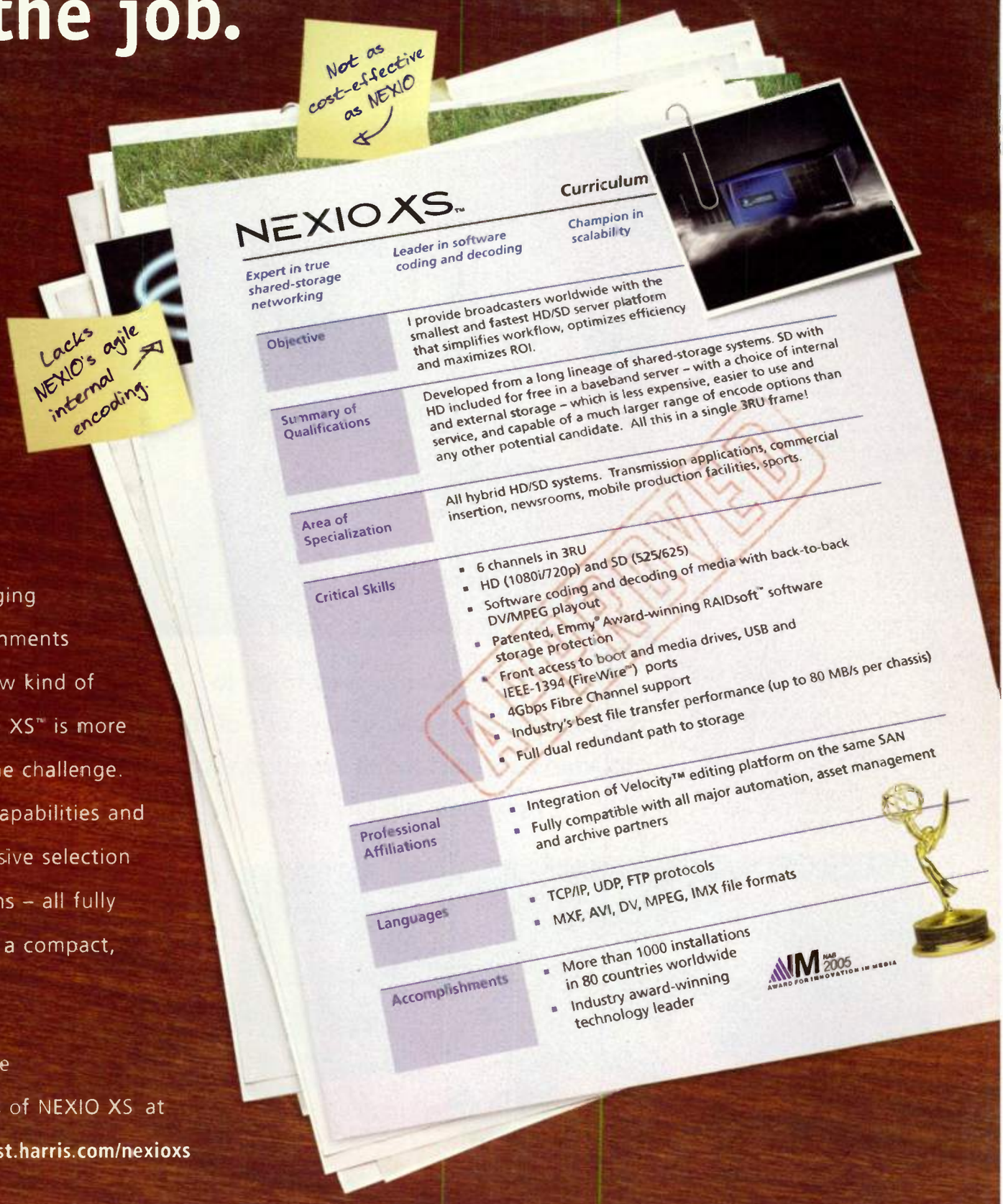

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INSIDE AUDIO — Dave Moulton

As The Potato Turns: Couch Spud Confessions

As I've intimated in earlier columns, I am not professionally engaged in broadcasting, either television or radio. Instead, I work in record production, do a little sound reinforcement, plus work in acoustics, loudspeaker technology and education. You might say I'm a music audio guy.

When I quit work every day, my habit has been to turn my brain off, pour myself a little dog hair, go flop on my sofa, gather my family of remotes around me and begin my daily channel surfing as a kind of mindless brain degauss. Sometimes I snooze, sometimes I read.

I like to videotape relevant chunks of the news (the lead stories, weather, sports) and the occasional F1 auto race (as a blue-state liberal, watching NASCAR is unceptable). I am, in short, very much your basic middle-class couch potato.

The author's think tank

THE ROCKY UPGRADE

As you may recall, I have a very nice, quite stylish Bang & Olufsen 32-inch Avant television. It came to me in 2000 as part of a business deal with B&O—I never would have plunged for it on my own. It had better than average picture, better than average sound, and better than average connectibility. I described all of this a couple of years back.

Last winter I found myself faced with the kind of health problem that leads one (that'd be me) to the insight that if you want to do something, you'd better do it now, because you (that'd be me) may not have another chance! And one of the things I'd been meaning to do was get around to having a home theater.

So, I used the contents of my savings account to rearrange and redecorate my living room to become a small but Very Nice Home Theater, complete with a beautiful antique colonial fireplace, home theater recliners and a nice stock 5.1 surround system with BeoLab 3 loudspeakers, which in turn use the Acoustic Lenses which have been such a big part of my life. Sweet!

Part of the idea here was to try to replicate the consumer experience of "the dreaded upgrade" to full surround sound from plain old stereo TV.

HI-DUDGEON OR HI-DEF?

Part of the idea here was to try to replicate the consumer experience of "the dreaded upgrade" to full surround sound from plain old stereo TV. This turned out to include an upgrade to HD for the television. I worked out a deal with my local Bang & Olufsen dealer here in Boston and hired them to do a full installation and upgrade, just as if I were a typical customer.

I wanted to experience what you get when you turn yourself over to the vendors and say, "Give me the best you've got."

It was an interesting experience. Naturally, I planned to write about it for you. I may also try to place something in a consumer video publication, because my experience is relevant there as well.

In any case, my experience leads to some cautionary insights we all need

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Prisms

CONTINUED FROM PAGE 40

applied voltage. In this way, a given color from the diffracted spectrum may be viewed or projected as required, and an almost infinite number of colors may be so displayed, as opposed to the limited gamut possible using red, green, and blue light only.

The experimental array consists of 400 such gratings side by side. This is too small to be used for a practical display, but it proves the concept. Initially, it required several thousand volts to flex the polymer adequately, but the research team has reduced the voltage requirement to about 300.

This "super prism" array controlled by artificial muscles is very much a laboratory experiment at the moment, but it would seem to harbor some interesting potential for future advanced video display technologies.

Randy Hoffner is a veteran TV engineer. He can be reached through ***TV Technology.***

MEDIA SERVER TECHNOLOGY

Karl Paulsen

Streamlining the Promo Process

Every single day, broadcasters, cable, satellite, IPTV and mobile handheld programmers must produce dozens of interstitial promotion clips informing and inviting viewers to stay tuned for an upcoming program.

This content traditionally was produced offline. Previously, the sophisticated graphics, video clips and sound bites required an editing system comprised of multiple video and audio components. Nonlinear editing systems have eased the requirements, reducing some of the effort, but seldom minimizing the impact on systems and people.

From a workflow perspective, as each clip is completed, it is individually printed to videotape, carried to the ingest bay and dubbed into a video server under automation control.

Humans enter metadata about the completed transfer into the automation and the server databases. Pre-assigned house numbers identify instances of the material to a traffic database.

The log conveys when the clip goes into the program schedule, and that information is subsequently passed into the automation system. Automation queries the server database, ascertaining the material is ready for air, and at the appropriate point in the programming day, the automation cues the server and the segment plays.

The latest live-to-air processes come from the foundations of digital signage, and appear to be the next promise for the live bag-and-tag activities for broadcast television.

Of course there are many variations for the server-to-air sequence, and another set of variations to creating the content. Yet in nearly all of these steps, human intervention is required—from the creative process to the moment of play-out—even with today's automation and server systems.

There is opportunity for error at each step, so checking and rechecking is often standard operating practice. Each facility, based upon its personnel, hardware, traffic and automation system—even the wiring—makes these tasks unique and more cumbersome than station management would like.

Networked nonlinear editors, file transfers, database translators and transcoding software have eased the workflow somewhat. Still, the production and handling requirements for this content doesn't change significantly.

Promos for daily shows are program specific and time sensitive, often requiring their own audio or video tags or graphic overlays. In many cases, they are repetitive with only minor changes, i.e., the words "coming up next" versus "today at three." Each clip uses the same video and the same graphics foundation. This sets the stage for template-based production—often referred to as "bag-and-tag" or "badge-and-brand."

Broadcasters have long sought a means to mitigate this work effort. Some simply reduced the amount of production while others developed their own automated solutions for some or several of the processes. Ultimately, the ideal

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Spud

CONTINUED FROM PAGE 42

to keep in mind about the professional production world we work in. But first, let me tell you what happened.

Alert readers may recall that I had a cable service provider called Charter Communications, and that, while I was less than totally thrilled with them, their service wasn't too bad when it worked (intermittently, I'm sorry to report).

CHARTERED WATERS

Well, I wrote to them to inquire about an upgrade to HD. No response. So, when another mutually enabled snafu occurred (that was not entirely their fault), I decided it would be good to try satellite for a change, so I fired Charter and hired DirecTV. Does this sort of thing sound at all familiar?

I worked out a deal with my local Bang & Olufsen dealer here in Boston and hired them to do a full installation and upgrade, just as if I were a typical customer.

Interestingly, Charter has yet to acknowledge it's been terminated, and keeps sending me bills and offers for exciting new services. Brain dead? (I've notified the attorney general's office and moved on.)

The local DirecTV dealer was quite easy to work with and installation went smoothly. Unfortunately, the install was less than perfect (when I subsequently read the instruction manual I found that "perfect" wasn't included in the installation service).

Less than perfect meant (A) no functioning provision for a VCR, even though they promised it—so much for the Betamax decision, and (B) no digital surround audio, only analog stereo, even though this was an HD system and "crisp digital picture and sound" were promised.

Meanwhile, the B&O dealer brought out and installed four BeoLab 3 loudspeakers and a BeoLab 2 subwoofer, upgraded my beloved Avant to HD capability, got everything to run off of B&O's uber-remote and did a nice job of cleaning up the wiring harness. It took 'em three trips and it wasn't cheap, but the end result is pretty luxy.

The HD picture is really pretty spectacular, I gotta say. HD sports really gain from this. My television switches all stereo to Dolby Pro Logic (2, I assume) and it isn't all that bad. Moderately nice envelopment, some bottom octave hype for the subwoofer, and comparatively few nasty artifacts. I can get to true stereo by reconfiguring the speaker selection, but then Dolby Digital is downmixed! Aieee!

Oh yes, Dolby Digital. Turns out DirecTV won't plunge for the optical cable for the digital output from its set-top boxes. Further, the installer doesn't tell you this (my installer told me that Dolby Digital was hooked up and running).

So, down to the electronics store, buy the optical cable, pull apart the system yet again to install the cable, and voila! A customer time 'n parts cost of about $200 (including diagnostics) to save the vendor $2. Nasty and probably bad business.

Anyway, once I got it working, the system was quite satisfying, except for the VCR bit. I'm still tweaking and I haven't brought the TEF analyzer in to really set up the system. But I'm enjoying a great deal of the experience.

WHAT DOES IT ALL MEAN?

I've actually got a fair amount more to say about this in future columns. But the teaser goes something like: "High Definition Television In Your Home: Is It Really There? What Aren't They Telling You? Find Out What's Happening To Your Entertainment Dollars In Our Next Edition offffff . . . 'Inside Audio!!!!'"

Thanks for listening.

Dave Moulton's health turns out to be OK, for the time being anyway. You can complain to him about anything at his Web site, www.moultonlabs.com.

Wires

CONTINUED FROM PAGE 38

ing positions.

Given that we have to get luminaires dimmers, scrollers, a power supply and a crew into these positions anyway, the elimination of one data feed doesn't seem all that compelling. The other selling point being pushed is that a wireless link eliminates any problems with earth loops, and offers galvanic isolation on the DMX network. This problem is usually solved by our optically isolated DMX buffers and splitters, or in the case of outdoor data runs subject to lighting, by using a run of nonconducting optical fiber.

While the notion of a cordless world may sound very appealing, the reality invariably falls well short of being glorious. For decades, I have privately chortled and publicly commiserated as the poor folk in the audio department struggle to get a reliable 15 kHz bandwidth radio signal from a wireless microphone to a receiver 20 feet away.

BANDWIDTH BEASTIE

As with all audio problems, I was glad that someone else was the reason for the hold-up, allowing me to continue with fine-tuning the lighting without being blamed for lost production time. After all, you can't always rely on the talent to blow their lines on the first three takes while you're waiting for that cutter to be put in place. To put this in perspective, a WDMX link requires 15 times the bandwidth of a radio mic.

Despite all protestations to the contrary, the black art of radio communication remains as unpredictable and unreliable as ever. To make matters worse, the very belief that the Wireless Age is upon us is beginning to look like a self-defeating prophesy. Every gullible wireless enthusiast who buys a cordless phone, a wireless mouse or a WiFi-equipped notebook computer is just adding more radio frequency pollution to the spectrum, especially in the 2.4 GHz industrial scientific and medical band shared by WiFi, Bluetooth, wireless DMX512 and cordless phones, to name a few.

Although many of the new generation of wireless devices use clever spread-spectrum, frequency-hopping modulation systems, there is a very real and finite limit to the amount of data that can be carried reliably in a given chunk of the radio spectrum, and we're well on the way to exceeding it.

As our audio, communications and video brethren discovered some years ago, production management for almost every event now has to include a radio spectrum management plan, to avoid RF anarchy. Bitter experience has already shown that a single unexpected freelance documentary crew at a big event has the potential to cause a domino effect with radio mic channel allocations that can shut down audio for everybody.

Given the limited reliability of wireless data links, the limited availability of usable wireless spectrum and the catastrophic impact of even the smallest glitch in the DMX feed to moving lights, scrollers or media servers, there has to be a very compelling reason to control any element of a lighting system with WDMX.

Maybe if part of your rig is on a barge in a fast moving river with so much water traffic that a length of fiber or data cable is impractical, you might be forced to consider WDMX. Similarly, if you have to control gear mounted on a moving vehicle, then WDMX may be the only answer.

Even in locations where there are few other sources of radio signals present, a sunspot, a dual-path reflection from the script assistant's notepad, or someone opening the trunk of their automobile 100 feet away can be enough to cause a glitch in the data reaching your equipment.

My personal rule is that wireless anything is great for other people, but you wouldn't want to use it yourself if there was any alternative.

Andy Ciddor has been involved in lighting for more than three decades as a practitioner, teacher and writer. You can reach him via e-mail c/o TV Technology.

INSIDE PRODUCTION Walter Schoenknecht

Linguistic Opportunities: More Than Meets the Eye

Here's a quick test you can perform on your latest video masterpiece, designed to help you judge the overall effectiveness of your communication.

First, load up your finished DVD, tape, or edited timeline.

Next, push the "play" button.

Finally, stick your fingers in your ears, and watch the whole show.

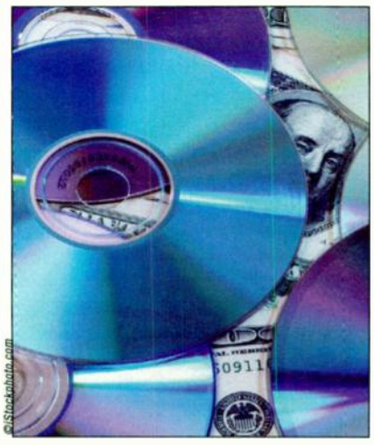
Congratulations—you've successfully simulated the viewing experience of your entire non-English-speaking audience: pretty pictures, no comprehension.

How much did you understand about what you were watching? With some program content, either by luck or by design, you might make out a bit of what's being communicated, despite the lack of a soundtrack. But given the emphasis we place on choosing the right interview clips, or on writing narration—punchy or poignant—we've got a lot riding on the verbal portion of our programs.

More and more of our corporate television clients are asking about multilingual delivery of their projects, and it's no surprise: the much-ballyhooed globalization of our clients' businesses invariably means that our shows are playing to audiences worldwide, whether we planned for it or not. And now that production companies and producers have succeeded in our long-term goal of making ourselves indispensable—positioning video as the premier vehicle for communication and training—we'd better be prepared to defend our privileged position, or risk losing our hard-fought status.

AUTOMATIC UP-SELL

From a business standpoint, alternate language delivery is a wonderful thing—a value-added service that generates more billable income on projects you've already won. There's a delicate balance to be struck, however, between spending too much uncompensated time on a seemingly simple task, and charging so much that clients run screaming into the night. Managing translation projects efficiently is an acquired skill, but don't panic—you've already mastered a dozen other acquired skills in your last five years of video production; you can handle this.



The first step is discernment. What does the project need, and what will the client pay for? It's helpful to think about the entire range of possible solutions and jointly determine priorities based on the project's perceived value; is this a big, top-down message from management, or a relatively routine informational piece?

Naturally, there's a question of scope—how many languages are we talking about here? Are certain audiences more crucial than others, or simply larger? It's possible to choose different solutions on a language-by-language basis and still meet customers' goals.

The proliferation of DVD delivery has made it easier than ever to produce multiple-language programming.

Next, in planning for a specific translation scheme, it's good to understand a few rules of thumb. For one, the cost of translation itself is relatively inexpensive. For a paper-to-paper translation, the translator is often paid a modest amount per word. Once you commit to voice the translated script, though, you've committed to a studio, talent fees, in-language session supervision, and, of course, your own editing time to replace or supplement your original soundtrack.

IN TRANSLATION

The most comprehensive approach to translation is three-pronged: narration, actualities, and on-screen graphics. To cut costs, you may choose to skip to graphical translations, have one performer to re-voice the entire track, or revert to subtitles only. Don't sell yourself short when it comes to subtitles. Even with the relatively friendly methods used to add subtitles to DVDs, for instance, you'll need to break paragraphs into screen-sized chunks and match them up with the original material, a sometimes laborious task, especially if you don't understand the language you're working with.

The proliferation of DVD delivery has made it easier than ever to produce multiple-language projects, since audio tracks and even subtitles can be menu-selected or even automatically switched by a player's home-language setting. Text-heavy graphical sequences can be programmed as "alternate angle" tracks in each of several languages.

Finally, there are the pitfalls. We all like to be heroes in our clients' eyes, but sometimes a little tough love is required. When the boss brings you down to the loading dock to meet Estefania from Ecuador, who "has a lovely voice," or offers to have Cousin Ruprecht stop by to belt out his own version of a German translation, just say "no." In any language, your audience expects—and deserves—to hear careful, well-thought-out text delivered by a pleasant, professional voice.

In the larger view, this is the entire purpose behind offering multilingual programming. Americans are often criticized for our lack of willingness to acknowledge other languages, and global businesses are becoming more sensitive to these concerns.

Offering additional languages shows respect for an international audience, demonstrating that someone—your client—cared enough to help them participate most fully in the program you've prepared for them. The good will engendered by this obvious act of respect can help guarantee the success of your client's project, and that's good news in any language.

Walter Schoenknecht is a partner at Midnight Media Group Inc., a New York-area digital production facility. You can reach him via e-mail at walter@mmgi.tv.

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Promo

CONTINUED FROM PAGE 43

objective would be to make the tasks entirely live-to-air.

Station automation systems could conceivably produce clips live-to-air. However, a sophisticated set of secondary events, entered into the traffic log and monitored by a live operator, is necessary. In addition, a set of outboard CGs, audio file servers, multilayer keyers and 2D positioners are required.

Automation sequences of commands and triggers—essentially a live edit decision list—could be subject to timing errors, and any form of previewing before air is nearly impossible. The risk and the degree of human effort is probably of little advantage compared to traditional methods of offline editing.

Broadcast interstitial delivery is headed towards a new domain—a template-based rendered live-to-air solution. The PC spurred this opportunity. When coupled with the same graphics engines used in today's CGs and clipstores, the power of these devices essentially turns what was once a set of separate video and audio engines into a single entity.

OFFLINE SYSTEMS

Using a non-video server to carry clips, audio and predeveloped templates over a media network is nothing new.

Master control switchers added audio and video clip servers years ago, with images created as files in offline systems, converted to native device formats and imported into onboard graphics engines. Outboard live branding engines helped supplement the on-air look, moving some production tasks away from NLEs.

The latest live-to-air processes come from the foundations of digital signage, and appear to be the next promise for the live bag-and-tag activities for broadcast television. Digital signage uses a concept of filling template-based graphics with current information pulled from a database. The databases are updated externally and therefore become more real time and market sensitive.

The broadcast equivalent might be the marketing department's promotion's grid, a spreadsheet that identifies what the tag for each promo should say depending on when it plays. Tag information is collected throughout the day and updated long after the log was called the day before.

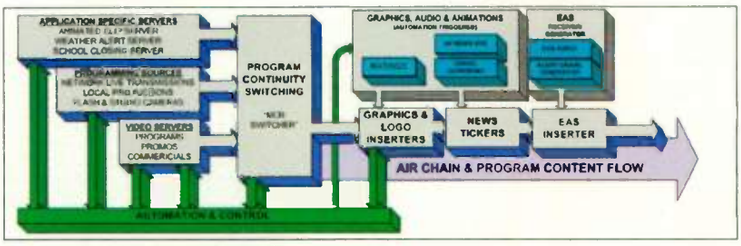
Traffic would only need to schedule the position of the appropriate video background clip and promotion, then send the fill information to the branding engine database.

Depending on the time of day and the program episode, variations in the text, audio tag, and even snipes or short animation clips could be automatically inserted directly on the air.

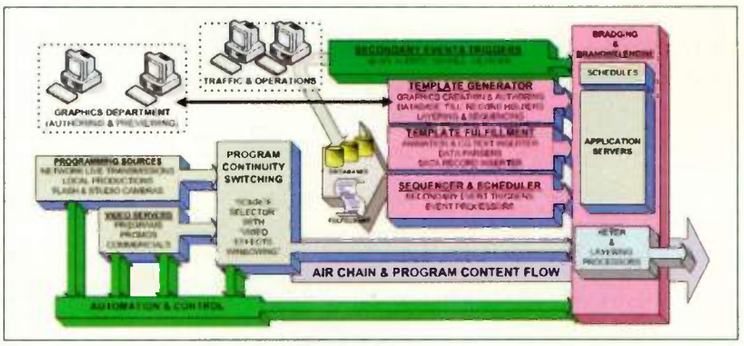
This operation is not unlike the wheel concept. Template-based systems link live-to-air graphics devices to third-party databases that semi-automatically collect and assemble the sequences of text and graphics elements, then populate a real-time rendered graphic with purpose-created messages, news updates, weather information, and even Web-scraped content from the stations own Web sites.

The messages are clear. Video servers, an important element in the content and commercial collection and the play-to-air role, remain. Smaller, purpose-built platforms are being deployed for branding the content that plays out from the larger video server systems.

In fact, NAB2006, demonstrated that this concept is much closer to reality, whether as a real-time filecentric-to-baseband video renderer, or with compressed video tagging at a file only level for real and non-real time replication.



Conventional "Master Control"



Branding-Promotions, News, Alerts, Graphics

Karl Paulsen is chief technology officer for AZCAR. He is a Fellow in the SMPTE and a SBE Life Certified Professional Broadcast Engineer. Contact him at karl.paulsen@azcar.com.

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HDV RECORDERS

Sony Multiformat HDV/DV Decks

by Carl Mrozek

HDV has been in use for a few years now, yet editing has been its Achilles heel. With each camera maker offering unique variants of HDV—many incompatible with each other in terms of playback, editing and other functionalities—finding a single player/recorder to handle all editing and dubbing needs has not been easy.

The pickings have been pretty slim so far, leaving many pros in limbo. However, a pair of new HDV decks from Sony, the HVR-M15U and the HVR-M25U, aim to fill the void. Both are designed to accommodate HDV and DV recordings made by their own cameras, and those of JVC and Canon, also. This has been the missing link in the toolset needed by pros serious about using HDV for editing as well as for HD acquisition.

The HVR-M25U is one of two new HDV format decks from Sony.

FEATURES

The HVR-M25U is a compact, half-rack-width sized HD videocassette recorder that supports HDV, DVCAM and DV formats.

The HDV format uses the same MPEG-2 compression used for HD broadcasting and the Blu-ray disc system. The HDV codec adopted by Sony uses 15-frame GOP and scans 1,080 lines horizontally by 1,440 lines vertically, at either 60i or 50i.

However, the HVR-M25 and its cousin, the HVR-M15U, can also play back HDV recorded at 720p/30. The machines can also play or record DV or DVCAM at either 60i or 50i.

HD and SD video can be input and output via either i.Link (IEEE 1394), or as composite, S-video and also HDMI signals. Analog component requirements can also be accommodated. Three sources—HDV, composite video and S-video—can be selected from the front panel. Various audio outputs can also be selected.

The HVR-M25U has a built-in 2.7-inch 16:9 color LCD screen on its front panel for quick and convenient monitoring and cueing. Despite its small size, the resolution and color rendition are more than adequate to assess basic video quality. It is also just large enough to simultaneously overlay pertinent data like format, timecode and audio—and also to navigate the menu, self-diagnostics and alarm functions.

Despite weighing only 9.5 pounds, the HVR-M25U packs a lot of options, including the ability to support operating dialog in several languages and to work with either with 50 or 60 Hz video. Most importantly, it plays and records HDV 1080/60i and 1080/50i, plus DVCAM and DV at 60i and 50i. It also plays back 720p/30 HDV, but can only output it in analog (not i.Link).

The machine does not play or record other progressive HDV (or DV) formats such as 1080/30F, 1080/24F or 720/24p. Moreover, Sony warns that intermingling multiple formats on a single tape can cause noise and distortion during playback, particularly where the formats change.

Both the HVR-M15U and HVR-M25U can downconvert from HDV to 480i or even 540i, allowing the use of SD monitors. Also, the downconverted images can be squeezed, letterboxed or edge cropped as needed. A display output switch routes text data—including the menu—to specific video jacks.

One unique feature of the HVR-M25U (not on the HVR-M15U) is Duplicate Plus. It allows easy and accurate dubbing. Duplicate Plus is essentially an alternative record mode specifically for cloning tapes via i.Link.

It is geared to simplify and ensure accurate transfer of timecode and essential video and audio data when dubbing from deck to deck.

In Duplicate Plus mode, the M25 simply duplicates whatever signal it is fed by a source deck. Typically, this is the format and frame rate of the source tape. However, if the source deck is programmed to downconvert HDV to DVCAM, or to DV, the M25U captures and duplicates that instead. Camera data from Sony cameras is also copied.

The HVR-M25U's feature-rich front panel provides functionality for selecting video inputs and audio outputs. Those selected are identified by yellow lights just above the LCD monitor,

SONY, PAGE 58

FAST FACTS

Application
ENG, EFP, educational and display

Key Features
Multiple format support, small size

Price
HVR-M25U, $3,960; HVR-M15U, $2,640.

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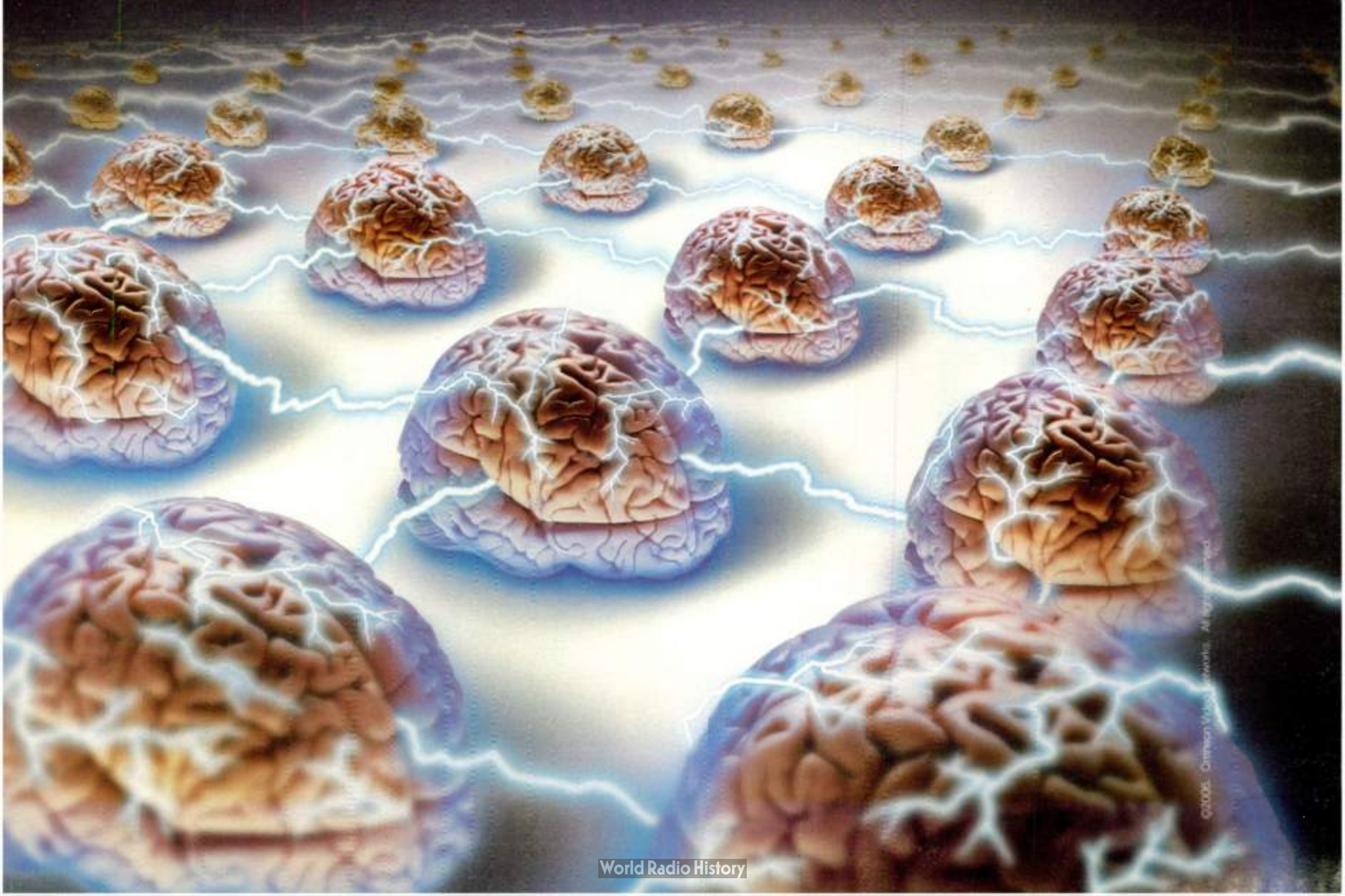


PRODUCTS & SERVICES SHOWCASE

PRODUCTS & SERVICES SHOWCASE

AUDIO TOOLKIT

Peak Pro XT 5 Bundle Audio Toolset

by Michael Hanish

Long one of the premier audio editors for the Mac, Peak has reached new heights in its latest incarnation, the Peak Pro XT 5 Bundle. The software includes all the tools an editor could need to shape, repair, edit, restore and master audio files for video or CD burning.

The XT (Extended Technology) Bundle includes the standalone Peak (two-channel audio editor and CD mastering), the Master Perfection Suite of six essential plug-ins (EQ, compressor/limiter, gate, real-time pitch correction, EQ matching and signal analysis) and SoundSoap 2 and SoundSoap Pro (noise reduction and audio restoration). For a bit more, you can add the multitrack and surround sound-capable Deck 3.5 DAW.

FEATURES

The heart of the suite is Peak, the Macintosh-only editor, plug-in host and CD mastering processor. Minimum requirements are a G3 running at 400 MHz or faster, OS 10.3.9 or better and more than 256 MB of RAM (the program runs better with more RAM).

Peak is now a Universal Binary, and long time users will be glad to know that the USB dongle copy protection scheme has finally been shelved. Peak integrates nicely as an external editor to be launched from Digital Performer, Live, Final Cut Pro or similar programs. Since it is Core Audio compliant, it has no trouble working with virtually any external audio hardware, provided Core Audio drivers are available.

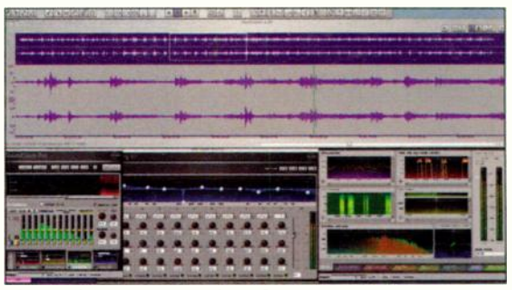
FAST FACTS

Application
Professional audio editing, mastering and restoration

Key Features
Personal preference customization, elimination of USB dongle

Price
Bundled software suite, $1,199; Deck 3.5 DAW add-on, $200

Contact
BIAS Inc.
800-775-2427
www.bias-inc.com



The Peak Pro XT 5 user interface

One of Peak's strong points is the degree to which it can be customized to suit personal preferences and/or project workflow and necessities. Not only can the app look and be laid out any which way you like, but the tool bar can be customized with the most used commands and shortcuts, so that the program will behave as you please.

Another strong area is Peak's implementation of selection and marker tools. These are useful not only for editing a single document, but can be used to selecting loops, preparing CD tracks for mastering, and spotting and synching to a QuickTime movie. A major new feature is Peak's Playlist, a 100 percent replication-ready CD burning utility with an optional graphic waveform view for visual crossfades.

Bundled with Peak (aside from the other elements of the Bundle) are some fabulous and highly useful plug-ins and DSP processes, such as Impulse Verb (a sampling reverb that comes with a 250 MB impulse library), Sqweez (a pro-quality compressor/limiter), Freq (a four-band paragraphic EQ), and excellent sounding sample rate conversion and pitch and duration change algorithms. By itself, Peak is a big and quite wide-ranging package.

The second part of the Bundle is the Master Perfection Suite, which adds to, and amplifies, some of the capabilities already in Peak, and which runs as plug-ins either on Mac or under Windows. For example, Sqweeze, a three-band compressor/ limiter/ upward expander is supplemented by a five-band version of the same. Freq, the four-band paragraphic EQ, becomes available in six-, eight- and 10-band versions that are all equally musical. Of additional interest is Reveal, a seven-tool audio analysis plug-in featuring an oscilloscope, power history (peak and RMS), spectrogram, spectral analysis, pan power, Lissajous phase scope and peak and RMS level meters. All tools can be viewed in one window or broken off into separate windows.

The bundle's remaining elements are noise removal specialists—SoundSoap 2 and SoundSoap Pro. While they are built on similar algorithms and processes, SoundSoap 2 is a very simple and very fast noise removal tool. One click initiates the noise-learning process, which provides the audio basis for noise removal. Sliders control the amount of click and crackle removal and post "cleaning" enhancer level.

Sound Soap Pro provides four stages of noise reduction and removal: hum and rumble, click and crackle, broadband sampling and removal, and a noise gate, all of which have very clear displays and controls, are easy to use and are very effective.

IN USE

I've been using Peak for quite a long time—since it first came out. To try out some of the new features, I picked an old audio interview that had been done on mediocre cassette equipment with a single poor microphone.

I recorded the interview from cassette directly into Peak through my old and trusty MOTU 896 FireWire interface and stitched both sides of the cassette into one file. Next, I trimmed the file and marked areas of the interviews for special attention and specific processing.

Then I did a noise removal pass on the whole file with SoundSoap Pro, with the aim of reducing the cassette machinery noise and tape hiss and several environmental issues that affected the recording. After most of the noise had been removed, or at least attenuated, I began re-emphasizing some parts of the low and upper-middle audio spectrum, with the goal of increasing the naturalness of the sound.

The spectral analysis tool of Reveal and the EQ matching abilities of the Repli-Q plug-in (both from the Master Perfection Suite) helped greatly in figuring out what parts of the spectrum needed what kind of work. Finally, a small bit of compression brought out the appearance of more dynamics and volume.

My experience in restoring such a piece of audio has shown that this is best done in small steps, an approach made much easier by several additional Peak features. First, Peak maintains a complete edit history for each audio document that is open in a session, with unlimited undo and redo and re-ordering of actions. Second, there are two ways to apply filters and plug-ins to an audio file—through the five inserts available in the menu, or through V-Box, a 4-by-4 matrix that allows you to instantiate and order (parallel and serial) the processing of plug-ins and/or virtual instruments.

SUMMARY

Whether you purchase Peak by itself or in either of the bundles—XT with Master Perfection Suite, SoundSoap 2, and SoundSoap Pro; or the XT Studio Edition, which adds the Deck 3.5 multitrack, surround capable DAW—you're getting flexible professional-level tools. The package is capable of handling almost any audio job you can throw at it, from basic sample editing and loop selection, to complex noise removal and restoration, to audio CD authoring.

Michael Hanish runs Free Lunch, a video/audio/multimedia production house near Guilford, Vt. He may be contacted at mhanish@sover.net.

COMPOSITING AND MOTION GRAPHICS

Boris Blue 1.0 3D Compositing System

by Geoff Poister

Boris Blue is a 3D compositing and motion graphics application that harnesses the processing power of today's advanced graphics cards to deliver unprecedented real-time performance. The software is designed to be compatible with selected NVIDIA cards to provide open GL hardware acceleration. This provides the user with instantaneous, full-motion preview of complex, multilayered 3D text, graphics and video.

FEATURES

Boris Blue is software that needs to be partnered with specific graphics cards to guarantee performance. This is because Boris Blue attains its real-time performance by using the extra RAM provided by open GL cards. While new cards are continually tested and added to the list, the cards currently supported are GeForce 6800, 7800, and 7900, and Quadro FX 1500, 3450, 3500, 4000 and 4500. Cards can be purchased bundled with the Blue software, sometimes at significant savings. The current version of Boris Blue runs on Windows XP, SP2.

What sets Boris Blue apart from other 3D compositing software is its flawless real-time performance and ease of use. Processing speed is so fast, that you can change a font, or the surface on a model, and you can experiment with different kinds of motion and lighting while watching the project travel through space in real time. This is not only a time saver, but dramatically improves creativity by allowing the freedom to experiment and view the results instantly.

Besides its speed, Boris Blue is loaded with capabilities that allow the user to easily create beautiful 3D text and graphics, import and modify 3D models and integrate video and photos. Any number of tracks containing models, text, or video can be manipulated in any way through 3D space. They can intersect, collide or even burst into flames if you wish.

The "burning auto in Red Square" scene created by the author.

Among its features, Boris Blue has a built-in particle emitter that can realistically emulate smoke, fire, sparks or water using pre-sets or any 3D or 2D image as a particle base.

Any text font, 2D image or hand-drawn design can be extruded into a 3D image. Custom bevels can be instantly created using spline drawing tools.

Blue incorporates a set of "shaders" that alter the surface characteristics of any object. These include methods for altering surface textures, reflectivity, and 3D spatial deformation such as ripples, twists and bends.

You can also map any image, including motion video, onto any surface. For example, a video can be pasted to a 3D model of a video monitor and it will remain spatially consistent with the surface as it rotates, changes position or is made to ripple or contort.

Boris Blue offers highly effective tools for creating and altering light sources and shadows. Light is crucial to give realism to a 3D world, and Boris Blue makes it easy to master its use. Light sources can be placed anywhere in the 3D space and models and text can be grouped in "containers" that collectively react to the source.

All of this happens while you watch in real time. You can test different fonts, change surface texture, add backgrounds and models and view dozens of tracks in real time. This is unlike other applications that only provide wire-frame previews and require rendering to view the final composited image.

Finally, Boris Blue ships with a very well-written manual and useful tools such as a KeyFrame library that provides hundreds of templates to get you up and running fast.

IN USE

Being a fairly standard video editor who tends to rely on others to do advanced graphics, I was a bit apprehensive about learning Boris Blue. My primary question was whether I could use it without a lot of training.

I am one of those who resist reading manuals. After installing Boris Blue, I read a minimum of directions and quickly embarked on my own. And, I have to say that I was highly impressed by how quickly I was able to do things I never dreamed I could do.

Boris Blue is elegantly designed to hide its inner complexity. There is a simple timeline and a control box next to it that allows you to add elements and change virtually any of their characteristics both in terms of appearance and motion in 3D space.

My first test was to type a word, which of course is easy. I then "extruded" it to make it three-dimensional. In another step, I added different colors and surfaces. Once I was happy with the look, I found it extraordinarily easy to make it travel through space, twisting, turning and tumbling in any direction. It's so easy that anyone can do it.

FAST FACTS

Application
3D compositing and motion graphics

Key Features
Extremely fast processing time; extrusion of 2D images; allows manipulation of multiple images through 3D space

Price
New user $995; upgrade $595; Boris Composite Suite (includes Boris Blue and Boris Red) $1,995

Contact
Boris FX
888-772-6747
www.borisfx.com

You just move the object by pulling an arrow with the mouse, and keyframes are automatically inserted on the timeline, effectively recording your movements. By clicking on a keyframe, you can go back and fine-tune the settings if you wish.

Another nifty feature is the ability to create different light sources that shine on your object from any direction you choose. You can change the softness, direction and distance of the light source with ease. You also have equally sophisticated control over the resulting shadows.

It's easy to add more objects, and Blue allows you to import 3D models, video, photos, or almost any graphic. To prevent confusion, each object along with all of its attributes is packaged in a "container," with all of the parameters and adjustments you make nested inside.

For example, I imported a 3D model of a car onto the same timeline as the word I created. I changed the surface material and color of the car, and gave it an entirely different motion path. All of those settings stay neatly organized within a single container on the timeline. I can expand the container to see some or all of the settings, or minimize it to avoid distraction while I work on some other element in the design. With both the 3D model and text in the same container, I can have them react to the same light source, thus simplifying my job. All of this took very little time to learn and execute.

In my video production classes, I'm often handed scripts that require a car explosion and I have to tell the writer to delete the scene because it's impractical. So, my next goal was to see if I could insert a 3D car model into a clip of Moscow's Red Square, and blow it up.

I imported a video clip of the Red Square into Boris Blue. I then imported a 3D model of a Jaguar that I found for free on a Web site. With ease, I made the model move along the Square in tandem with the camera motion, turn and recede into the distance. Then, I decided to use Blue's built-in particle emitter to create smoke from the tail pipe.

You can build your own particle effects, but I used one of the supplied smoke presets. There are numerous controls for adjusting the quality, shape, and texture of the smoke, and I quickly designed it to my personal whims. Boris Blue is capable of motion tracking, but I found that I could track the car quite easily just by inserting a number of keyframes. In a short time, I had a smoking Jaguar motoring through Moscow's Red Square.

Boris Blue makes it easy to make changes. With a single action, I was able to replace the Jaguar with a 3D model of a fish. All of the motion settings were retained, and I could even keep the smoke coming out of its tail.

And I was able to preview all of these changes instantly in real time.

The final step was to transfer the animation into my NLE, which is Avid Xpress Pro. I decided to export only the animation against an alpha channel so that I could lay it over the original video. This guarantees maximum video quality and also speeds up the export of the animation. I simply disabled the video track in Boris Blue and exported the project as an AVI file. The export is very fast due to the open GL acceleration. In Avid, I imported the file, which consisted of the model moving against an alpha channel. I laid the clip on a new video track above the Red Square video and had a perfect key over the original motion video.

I didn't blow up the Jaguar because that effect will not ship until the next version of Blue, which is due very soon. But I did set it on fire, and as soon as the explosion effect is available, I can finally approve my stu-

BORIS, PAGE 64

Sony

CONTINUED FROM PAGE 50

indicating format and whether they are 50 or 60 Hz.

There are actually two sets of format indicator lights—one for i.Link and the other for the analog I/Os, specifying whether HDV, DVCAM, or DV is being input or output.

There's also an auto-repeat playback or recording function, which can be triggered by various cues, including index markers, tape end or menu settings. This allows repeated looping of a tape, or it can be set to repeat a specified number of times from a specific cue point. This enables the HVR-M25U or M15U to be used for unattended playback.

The M25U also has three user-assignable keys on the front panel that can be used to trigger menu functions such as downconvert, color bars, data code, allscan, shuttlemax and others. (Shuttlemax changes fast-forward and reverse into a high-speed, bidirectional, hands-free shuttle.) DVCAM shuttles at 14 times, DV at 17 times and HDV at 24 times normal speed! By using the remote, various other shuttle speeds can be achieved as well, ranging from a 1/10 times slo-mo to eight times normal speed.

One mission critical feature is the front-panel key inhibit switch. When activated, it disables all other front-panel buttons, presumably to preclude accidental triggering. While in inhibit mode, many functions can still be operated via the Commander remote control. Also, according to Sony, the HVR-M25U can be operated by other Sony remotes set to the VTR4 command code.

IN USE

I tested the HVR-M25U fresh out of the box, and with only the RMT-DS5 remote and an operator's manual. After connecting the composite video and audio outputs to a Sony HR Trinitron SD monitor, I inserted an HDV 1080/60i tape, shot with a Canon XL H1 and then hit play.

To my surprise, a clean, crisp, squeezed image appeared on the NTSC monitor without any cues from me to downconvert. I later learned that when the i.Link convert function is activated in the I/O-record section of the menu, and that the M25 automatically downconverts to DV or DVCAM as indicated.

Unfortunately, things are not quite as simple when attempting to play progressive HDV, and DV. Some footage, such as 1080/24 and 1080/30 shot in CineFrame mode with the Sony HVR-Z1, played flawlessly, whereas 1080/24f and 1080/30f from a Canon XL H1 did not.

While viewable in the LCD monitor when shuttling, the latter cannot be output to other monitors or to an NLE via any of the video jacks.

(Using Final Cut 5.1, 24f and 30f footage can be imported from the XL H1 camcorder, or cross-converted to 1080i for playback on the M25). HDV footage shot at 720p/30 with JVC's single-chip HD10 also played without a glitch. The same should apply to 720p/30 footage shot with JVC's newer GY-HD100 and GY-HD250 camcorders.

I also used the HVR-M25 to load video into two NLEs—a PC running Adobe Premiere Pro and also a G5 with Final Cut Pro 5.0. I had to downconvert to DV (16:9) to capture to Adobe Premiere Pro, which cannot capture or edit HDV without a plug-in (e.g. Cineform).

However, the software easily captured and edited 1080i clips downconverted to 480i DV and DVCam. I later exported these to DV tape via FireWire. The same edited footage was also exported to Adobe Encore and burned to DVD. The DVDs retained much of the rich 4:2:2 cine coloring and high resolution of the HDV original, which was shot with the Canon XL H1.

The HVR-M25U also interfaced smoothly with Final Cut Pro 5.0 (loaded on a G5). The software quickly recognized the HVR-M25U as an HDV device when connected via i.Link.

This enabled full deck control for easy logging and batch capturing of 1080i HDV and 480i DV footage with a Canon XL H1. I later edited and exported these clips and projects back to the M25U without a hitch and with accurate timecode.

One surprise that I encountered was not being able to monitor either 32 or 48 kb audio captured on the desktop while logging and capturing. This is apparently an artifact of HDV compression rather than the HVR-M25U deck. The workaround was to monitor audio (and video) via an NTSC monitor, or a headset plugged into the headphone jack.

I preferred the NTSC monitor, as the audio was visibly in sync with video, whereas there was a perceptible lag in the video on the desktop versus that playing on the M25. However, once captured to Final Cut, the HDV video was in perfect lip-sync. I also monitored audio levels via the stereo level meter that can be displayed on the LCD monitor via the display switch.

One handy feature of the HVR M25U, not included with the more economical HVR-M15U is Duplicate Plus. This is essentially another record mode for the frame accurate transfer of timecode and other data, when dubbing from deck to deck. With it, the M25 faithfully duplicates whatever signal it is fed by a source deck. If the source deck is set to downconvert HDV to DVCAM, or to DV, that is what the M25U captures, along with timecode, via the i.Link.

I also used the index marker to help prescreen key clips, multiple times before logging them. This helped conserve hard drive space by logging and capturing to Final Cut Pro more selectively than batch capturing long and uncut shots.

I also had a "what the heck happened" experience when I accidentally discovered the M25U's key inhibit function. The playback, fast-forward and record functions became all mysteriously dysfunctional after I apparently activated the key inhibit by mistake.

I spent an hour going through the manual and playing with switches until I discovered key inhibit and turned it off. I learned the hard way that this functionality can definitely prevent unintended adjustments of the M25U in situations where "too many cooks may spoil the broth," and also that many of the inhibited functions can be overridden with the remote. Luckily my accidental discovery didn't happen at a mission critical time.

SUMMARY

Overall, the HVR-M25U interface is sensible, user-friendly and should be fairly familiar to owners and users of the DSR series of DVCAM/DV recorders. The menu is logical and accessible, once you learn to navigate it. However, many basic functions can be triggered on the front panel, without delving into the menu.

Even though it does not play all possible flavors of HDV and DV, the HVR does accommodate the prevailing ones. This allows the deck to serve as a compact and economical workhorse for pros around the globe, enabling them to save their camera heads for field recording. Its compact half-rack-width size enables it to integrate easily into a desktop environment.

Carl Mrozek operates Eagle Eye Media, based in Buffalo, N.Y., which specializes in wildlife and outdoor subjects. His work regularly appears on the Discovery Channel, The Weather Channel, CBS, PBS and other networks. Contact him at eagleye@localnet.net.

MAC-BASED RECORDER

Boom Recorder 7.5

by Ty Ford

There's a lot of audio recording software out there these days. And the list of PC-based programs is a lot longer than the list of Mac-based programs. None of the programs I've seen for $260 offer the features that Boom Recorder 7.5 does.

It's a surprisingly slim (1.3 MB) application for Mac OS X. Boom Recorder is compatible with Power PC as well as new Intel Macs. Boom Recorder's feature set is aimed at the professional location audio and audio for video markets, where multiple tracks and SMPTE are required.

FEATURES

Boom Recorder, created by Take Vos (a Unix programmer by day and software developer by night) is a very full-featured recorder. Vos's personal company is Vosgames (*www.vosgames.nl*). While not an editor, Boom Recorder does support the recording of up to 64 channels of audio with timecode, WAV (BWF, RIFF or RIFF64) and CAF files.

CAF, Apple's Core Audio File specification supports many sample formats including: 16- and 24-bit integer PCM as well as 32- and 64-bit float PCM. It allows for polyphonic files and file sizes larger than 4 GB. A CAF file is very robust—if, during a long recording, your computer crashes, the audio file up to that point survives.

Boom Recorder's User Interface

RIFF64 files, from the online document *www.sr.se/utveckling/tu/bwf/prog/RF_64v1_4.pdf*, are "designed to meet the requirements for multichannel sound in broadcasting and audio archiving. RIFF64 is based on the Microsoft RIFF/WAVE format and Wave Format Extensible for multichannel parameters. Additions are made to the basic specification to allow files greater 4 GB in size when needed. A maximum of 18 surround channels, a stereo downmix channel and bitstream signals with non-PCM coded data can be stored in the file. All existing supplements and chunks of the BWF and WAVE formats can be passed along with the new format."

Boom Recorder records mono or "poly" multichannel files (or both simultaneously) with depths to 32-bit floating point and sample rates up to 192 kHz, and in theory, at even greater rates. It also records metadata for project, scene, take, roll and timecode and stores that in the iMXL chunk of each file.

Soundlog.xml files can be easily viewed in Mac's Safari Web browser or any browser. Control clicking on the soundlog.xml page in Safari brings up an xml page with even more detail. In the near future, Vos said users will be able to make their own custom templates with additional information.

BOOM, PAGE 63

FAST FACTS

Application
Mac-based audio recording

Key Features
16-bit, 24-bit integer and 32-bit float sample formats, samples at 48 kHz, 96 kHz, 192 kHz and other rates, Broadcast Wave Format, audio file format; compatible with most digital audio and video editing workstations, QuickTime component for reading Boom Recorder files with timecode into Final Cut Pro. Multipolyphonic file handling

Price
$260

Contact
Vosgames, The Netherlands
www.vosgames.nl

EQUIPMENT RACK

APWMayville Stantron E Equipment Rack

by James E. O'Neal

To the broadcast facility tourist or otherwise casual observer, an equipment rack is an equipment rack. To the uninformed, they may just as well be a row of bookcases—they all look alike and they all support equipment.

I know differently. In my former life as a broadcast engineer, I purchased and installed a lot of racks. They are not all created equal.

I've praised some, sworn at others and been indifferent to a lot more. When I learned that a new E model was available from APWMayville for review purposes, I gladly volunteered my services to find out just how I would categorize this rack. (Okay, I'll admit it—I like the "new car" smell that comes with a brand new rack.)

FEATURES

Not long after the delivery agent shows up at the loading dock with his 18-wheeler, one of things you notice is how well or how poorly something as big and heavy as an equipment rack survived the trip. Most of the racks I'm used to came in a heavy cardboard box that had to be cut or torn away to get at the unit inside.

APW Mayville's Stantron rack packaging is a bit different. First of all, the rack was strapped onto a wooden pallet wider and deeper than the rack. This got my attention, as not too many manufacturers seem to bother isolating their racks from whatever's in the tractor-trailer with them. Once in a while, something bad happens during the truck ride and you get a rack that is slightly less than perfect. This is both annoying and time consuming, as you have to contact the freight company, fill out forms, get someone to inspect the damage, wait for a settlement and wait for the manufacturer to send out another rack. (Sometimes when you're on a really tight timeline, there just isn't time for this and you have to take your lumps and use the less-than-perfect rack. anyway. No one's happy.)

The addition of the oversized pallet is a good idea. It's also very handy for moving newly received racks around, given that's what pallet jacks were invented for. (They don't work worth a hoot with racks that are only packed in cardboard cartons.) Hats off to APWMayville for including the pallet.

There's another difference in the APWMayville packaging concept. There is no packing box to have cut away. On first glance, it appears that the rack is fully contained within a cardboard carton, but this is a bit of an illusion.

Actually, there are four cardboard sheets wrapped around the rack and pulled tight with clear shrink-wrap. This give the impression and protection of a four-sided shipping carton, but doesn't have to be cut away to get to the rack. One-inch thick honeycombed corner reinforcements are supplied for corner protection. The whole shrink-wrapped assembly is fastened tight to the pallet with strapping. The rack buried inside this cocoon is further protected by a clear vinyl shipping bag.

Our rack arrived without any dents or scratches. I should also mention that APWMayville also included a red liquid-filled "tip alarm" on the package.

FAST FACTS

Application
Mounting of professional audio/video/RF equipment

Key Features
RU measuring scale strips on front rails; comfortable grips on side panels

Price
Basic 70-inch rack with side panels and casters, $1,200

Contact
APWMayville.
800-558-7297
www.stantronracks.com

After the packing material was removed and set aside (which only took a minute or so after the bands were cut), I went off in search of a socket wrench to remove the lag bolts holding the rack down on the pallet.

Surprise! There were no bolts. This is the only thing that gives me a little concern about the packaging.

The rack delivered for review was equipped with casters, so I worry about

The APWMayville Stantron E rack

what would happen inside a lightly loaded truck if the strapping had been compromised in any way. But our rack did arrive safely and I'm sure that the company did their homework. Anyway, it's nice not having to dig around in the toolbox for the right-sized socket to get the thing off the pallet.

Once the rack was unpacked, it was examined carefully for defects and overall quality of workmanship.

The product received here at **TV Technology** was supplied with a textured "basic black" coating. The finish was very evenly applied, with no sign of underspray or overspray or "shadowing" around the internal bracing.

Speaking of bracing, the rack is constructed with multiple horizontal braces—a total of seven in the 70-inch model reviewed. This rack is going to hold its shape!

One of the more interesting features of the APWMayville rack is the presence of a black and white height reference applied to both front and rear rails. These strips are divided into rack units and can't help but make installation of equipment go faster and easier. (Show of hands here—how many of us have at least once mounted that 80-pound power supply, half an RU off and then had to do it all over again?)

In the world of equipment racks, there are two styles of rack rails—those with oversize holes intended for installation of clip-in "Speed Nuts," and those with tapped bolt holes. Both have their weak and strong points. APWMayville uses the latter, so there's none of the aggravation from a clip being in the wrong hole, or having one spring just as the last bolt is driven in.

In what has to be a first from rack vendors, APWMaryville included a 15-page installation manual. It's chock full of detailed drawings, showing how everything is supposed to fit together and providing instructions for adding various accessory items to the rack, such as an "anti-tip" bracket. (A very good idea for racks on wheels or those that are even the least bit top heavy.)

IN USE

One of the quality checks I like to use in evaluating new racks is done with a carpenter's framing square. If the corners of the equipment opening are not square, then the rack wasn't put together too well, or it took a hit in handling and shipping.

I put my trusty Stanley square to work in checking all opening corners, and the rack passed with flying colors. While they weren't perfectly square, the error was so small that you'd never detect it without careful measurement.

As mentioned, the APWMaryville E rack has drilled and tapped rails. While these are handier than dealing with push-in clips, they can be problematic if threads were cut poorly or clogged with paint.

I decided to "test" the rack by installing some 19-inch gear. Based on prior experience, I was not really looking forward to this, as I no longer have ready access to a tap-and-die set.

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APW

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I was quite surprised to find out that a 10/32 bolt supplied with the rack went easily into the first hole I tried. Thinking this was a fluke, I tried several others. The bolt went in all of them as easy as pie. No stripped bolts. No excessive force. No slipped screwdrivers. No cursing!

I tried mounting my piece of "test equipment" in three different locations. There was plenty of side-to-side clearance in each position. (Have you ever had to work with a rack that came with rails so sprung you needed a house jack to push them apart to mount gear?)

The rack was equipped with rear rails, but the equipment didn't need any rear support. However, just to see what I was up against, I decided to find out was involved in relocating the rails.

Adjusting the rear rail position can be something of an ordeal. With other racks, this can amount to removing side panels, unbolting rails, relocating multiple sets of clip nuts, re-mounting the rails and then putting the sides back on. APWMayville has made rear rail relocation so easy, it can be accomplished in less than five minutes.

The rails are secured to the horizontal frame members by four 3/8-inch head bolts. They screw into large flat bolts that ride in frame member slots.

Changing position is as simple as loosening the four bolts, sliding the rail forward or backward and then retightening the bolts. There's no need to break out the ruler. The horizontal members are supplied with a series of reference marks (1/16-inch holes) spaced at one-inch intervals to ensure rails are vertical and line up together.

The rack reviewed was 36 inches deep, with correspondingly wide side panels. Someone at APWMayville must have had experience installing and removing side panels, perhaps without the benefit of steel-toed boots. Anyone who has had to jockey around side panels eventually learns the hard way what I'm describing. You'll be pleased to know that the panels are equipped with recessed grips. This is a godsend for lowering and raising them. No more smashed toes because you lost your grip. And if the rack is on casters, the handholds make it easy to move around without bear-hugging.

A back door is a nice feature in a rack that's going in a location where the rear is visible, that is if the door fits properly. This rack was equipped with a lockable rear door and it fit the frame very nicely with clearance on all sides—no binding. However, there is a slight negative here—and this is my only negative for the rack. The latching assembly is rather small for the door size—only about an inch across at the base. It's not that easy to turn, as there's only room for a couple of fingers. I had to fumble with it a bit to get it open. This may be a bit trivial, but I'd be happier with a larger handle. I grew up with racks having car door-sized latches.

SUMMARY

Other than the peanut-sized latch handle, I can find no fault with the rack. The shipping materials were very well engineered. The rack is built very solidly and finished to perfection. The fabrication was done in an exacting manner, with nothing left to guess work. I really like the RU side label strips on the front rails and I'm also very impressed with the nice job of tapping and cleaning threads in the rail bolt holes.

The design of the rear rail system is second to none. Being able to relocate rear rails without having to remove and reinstall hardware is a real timesaver.

I'm also impressed that someone took the time to do drawings and put together the first real rack instruction book I've encountered. All in all, I was well pleased and would recommend the product to anyone needing a quality rack.

James E. O'Neal is technology editor for ***TV Technology****. He has more than 36 years experience in broadcast engineering. He may be contacted at* joneal@imaspub.com.

Boom

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Boom Recorder will read all past recordings to repopulate the soundlog.xml; this will be the first version where the soundlog.xml be somewhat useful.

Boom Recorder is versatile almost to a fault. It can be configured to write mono and/or poly files to folders on one or more hard drives simultaneously; even on different computers, provided the network is fast enough to handle the traffic. If the files are bigger than a single drive can handle, Boom Recorder can spread the files out over different drives.

Boom Recorder accepts seven timecodes: 23.97 fps (HD format for pulldown to 29.97 NTSC), 24 fps, 25 fps, 29.97 fps NDF, 29.97 fps DF, 30 fps NDF and 30 fps DF. Getting timecode into Boom Recorder is as easy as jam-synching code into an unused audio input. Boom Recorder automatically senses timecode, and when it does, the grey timecode numbers turn black. Timecode can be counted by session (hours, minutes, seconds and frames you've been running the application), by time of day, LTC/SMPTE EBU (by jammed timecode to an unused audio channel, or at the beginning of a session on a channel that will subsequently be used for audio).

You can also supply continuous timecode to an unused audio channel and Boom Recorder will update once per second.

Core Audio SMPTE and Core Audio wordclock are available, but Vos said he hasn't heard of any systems using these features quite yet. There is currently a 2 GB file size limit for ordinary WAV files, but Boom Recorder's prerecord buffer—set to five seconds—usually has no trouble closing one file and opening another without discontinuities.

"Aggregated Devices" is a relatively new term. Mac OS X Tiger now allows you to use multiple audio or MIDI devices together to increase the number of channels of input or output. You can combine devices of like sampling rate and resolution—whether via FireWire, USB or PCI—into a single aggregated device. Setup is easy via Audio/MIDI Setup, and your new virtual device will automatically show up in all Core Audio-based applications. There's more on aggregated devices at *www.apple.com/au/macosx/features/coreaudio/*.

Boom Recorder will work with nonaggregated devices. It just won't let you aggregate for more inputs or outputs. The Boom Recorder Web site compatibility chart shows 25 different hardware modules, all of which support Boom Recorder and nine of which support aggregate operation. Boom Recorder 7.5 requires OS X 10.4.4, or later, and a core audio-compatible interface. It also requires a fairly recent version of Quicktime. My test machine, an 800 MHz G4 Titanium Ti-Book with 1 GB of RAM, runs OS X 10.4.7 and Quicktime 7.1.2.

My own interface, a Digidesign 002R, is supported, but not for aggregated operation. Digidesign hardware is known for not playing especially well with others. During my first tests, Digi Core Audio Manager got stuck with the wrong sample rate and caused glitches in input, record and playback.

A restart straightened things out, but I couldn't get inputs 9-16 of the DIGI 002R, which come in by way of an RME ADI-8 DS converter, into Boom Recorder. Every time I tried I got a symphony of ticks. The cure was to quit Boom Recorder, start Pro Tools, while attached to the DIGI 002R, change to the desired sample rate and bit depth and then quit Pro Tools.

I left the clock source unselected in Boom Recorder. (Here's a tip of the hat to the tenacity of Pro Tools.) After that, Boom Recorder operated properly. In fact, it also simultaneously handled my Aphex 1100 2-channel preamp that connects via the S/PDIF input on the DIGI 002R.

IN USE

When setting up a session, the hardware preferences settings let you choose which main device to use, the sample rate, data source, clock source and buffer size. Patch bay preferences settings let you select which inputs to record, which outputs to monitor, how many mono or poly files you want to generate, how many folders you want to create for the audio files and which tracks should go into the various folders.

Folders preferences settings allow you to create folders on different volumes with the typical Mac finder navigation. First select the number of mono and/or stereo channels and then the number of folders—for example, stereo files in first folder and mono in second folder. General preferences settings allow you to create your own meter ranges, adjust the prerecord buffer (useful for never missing a record cue) and engage the ability to create a new file during record simply by pressing the record button.

Recording an 18-track file, even one at a lowly 16-bit, 44.1 KHz rate eats up disk space fairly quickly. A 30-second file runs a bit over 45 MB. When I recorded a file that way and opened it in Quicktime Pro, the "show

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MONITOR/ROUTER

Panorama Touch-It Video Monitor/Router

by Michael Hanish

Good monitoring and efficient use of studio space don't usually fit into the same description. Monitor screens and speakers take up space; routing systems consume space and take time to wire up and implement. For some time now, many innovative and space saving video and audio monitoring solutions have come from the video division of Wohler Technologies, Panorama*dtv*.

Two of the latest devices offered from Panorama, and due to be shipping by the time you read this, are the Touch-It and Touch-It Plus. Both provide composite video monitoring for 12 sources on a 7-inch, high-resolution LCD screen, occupying three rack spaces. The Touch-It Plus adds audio monitoring. This review is based on the use of a preliminary Touch-It evaluation model.

FEATURES

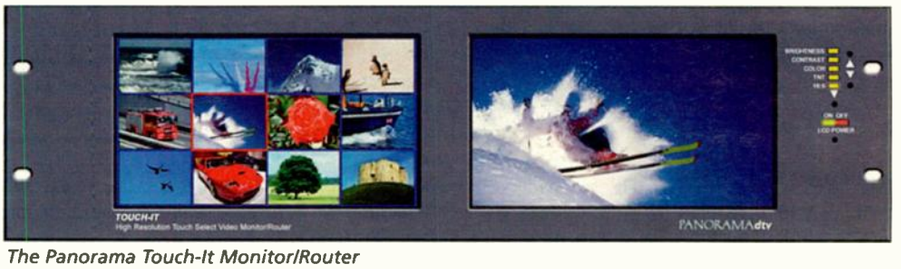
Touch-It's front panel is simplicity itself: side-by-side 7-inch LCD screens and a few LEDs and switches to control the main display image. On the left is a 12-point matrix touchscreen, which displays up to 12 inputs simultaneously, each as a 1.8-inch thumbnail. Inputs can be NTSC or PAL—Touch-It auto-senses and configures automatically, but only one standard can be in use at a time. The output monitor screen, or "target display," as Panorama calls it, on the right is similarly a 7-inch, 16:9 TFT LCD, which will show the source selected by touching the left side matrix.

Operation is basically as simple as that. Both screens pivot up and down in the rackmount enclosure by about 30 degrees to provide an optimum viewing angle. The Touch-It Plus adds two small mid-range speakers, headphone jack and audio level and balance controls (audio follows video automatically in the Plus model).

Rear panel connections are all BNC, with active loop-through connectors. Two additional BNC connectors provide external monitor outputs for the selected video source, which allows the unit to serve as a small router. On the Plus model, audio connections are provided via three DB-25 connectors for inputs. Each handles four stereo pairs. And there's a pair of XLR connectors for line-out monitoring. Power is provided by an external, wallwart power supply.

Image controls, on the upper right of the unit's front panel, apply to the selected source as viewed on the output LCD monitor (but not the external monitor outputs). Image adjustment is simple: one button cycles through parameters (brightness, contrast, color, tint, and aspect ratio), and two other buttons adjust the values for the selected parameter up or down. These settings are written to an internal EPROM, so each of the input image settings is retained when power is shut off or disconnected.

Audio controls on the Plus model include, in addition to output volume and balance, output level attenuation (up to -18 dB), a pre (unity with input level) and post (output volume and balance) switch, and a line/speaker switch that selects whether output audio is sent to the built-in speakers, line out, or both.



The Panorama Touch-It Monitor/Router

FAST FACTS

Application
High quality monitoring and signal selection in limited space

Key Features
Picture monitor and small router combination

Price
Touch-It $5,500; Touch-It Plus $6,000

Contact
Wohler Technologies Inc.
888-596-4537
www.wohler.com

IN USE

Setting up and using the Touch-It was very simple and quite a pleasure. The first decision involved placement of the unit. The easiest place to install it in my studio was not at an optimal viewing angle, even with the help of the tilting screen. As a result, I had to carve out a space in the rack that was at eye level. There is really very little side/side or up/down tolerance for viewing these screens.

Characteristic of TFT LCD screens, off-angle viewing makes the image hard to see, to the point of a fade to black. However, once properly situated, the target monitor was really ultrasharp, clear and not fatiguing to view. It may not be quite high resolution enough for very serious quality monitoring, but it's close. In the pre-release version I evaluated, the 4:3 image is skewed to the left side of the display rather than being centered, a condition that Panorama promises will be fixed in the shipping version.

Source selection is accomplished by just a touch. I quite got to like the straightforward simplicity of this method of selection and routing, and came to wish that all routers and switches worked this way.

The ability to identify sources by image is quite handy, but I did wish for the possibility of some sort of on-screen identifier for each source, a name, a number, or some means. There is often an image jump on the external monitor when a different source is selected, so remember that this is a router for monitoring, not a switcher for presentations.

Image adjustments were similarly straightforward and easy to use. I particularly liked the fact that settings and adjustments were remembered even when the power was off or the power source removed, but I often found myself wishing for some sort of system reset button. There is no display provided for settings of any of the image controls, even while adjusting them; therefore, getting the image back to a neutral group of settings can be difficult and confusing.

SUMMARY

Some natural applications for the Touch-It or Touch-It Plus would be in remote trucks or cable headends, where space is sometimes at a premium. In any studio situation where you have to deal with monitoring multiple sources, Touch-It would be a real benefit. Installation, setup, and operation are simple. The monitor screens are of sufficiently high quality to be used with confidence as a quality output check. I wish I could report first hand with an evaluation of the audio performance of the Touch-It Plus. I am sure it is excellent, based on the high quality components and design the have gone into the standard model.

Michael Hanish runs Free Lunch, a video/audio/multimedia production house near Guilford, Vt. He may be contacted at mhanish@sover.net.

Boris

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dents' action adventure scripts for production. Maybe if they can blow up cars on-screen, they'll have less desire to do it in real life.

SUMMARY

I have to say that Boris Blue is so delightful to work with, it makes you forget that it's one of the most powerful 3D compositing software packages in the industry. It is brilliantly designed to provide immense motion graphic capabilities with unprecedented ease of use and real-time performance.

Boris Blue can be used to do a wide range of computer animated graphics, but it is particularly ideal for any TV station that wants to easily and quickly create dynamic 3D logos with multilayered video and animated objects such as those seen on network news.

Although using Boris Blue requires the use of one of the new open GL graphics cards, this is no reason to balk. They are the way of the future. Anyone engaged in serious video editing will want one of these cards anyway, as they dramatically accelerate rendering time, file export and performance for other applications as well.

In a sentence, Boris Blue is a magnificent contribution to the world's tools for graphic art. Its elegant design makes sophisticated motion graphics possible for even those who are software challenged.

Geoff Poister, Ph.D., is a member of the Film and Television faculty at Boston University and a regular contributor to TV Technology.

TRANSPORT STREAM MONITOR

Sencore TSM 1770 DTV Monitor

by Joey Gill

With the transition to DTV, there have been many changes to the broadcast plant.

One of the most profound of those in the everyday life of a broadcast engineer is the methodology for monitoring, measuring and storage for review of signals.

The Sencore TSM 1770 DTV transport stream monitor

Until the DTV transition, video waveform monitors were the order of the day. A broadcast engineer could evaluate almost any part of an analog video signal with a waveform monitor. Typically, a normal test configuration included not only a waveform monitor, but picture and audio monitoring as well.

The waveform monitor provided information about the signal, whether good or bad, and a photograph could be taken of the display to document that observation. For evaluating audio quality, a completely different set of test equipment was required—noise meters, THD meters, VM meters, sweep generators, test clips, headphones and, of course, a good set of ears!

While video and audio measurements are still very important, the new DTV delivery platform for these signals requires a complete set of test instruments dedicated to just that purpose. Sencore Corp. has just such a toolset.

For decades, Sencore has provided a complete line of signal evaluation products for broadcasters. In addition, they have been developing new and innovative products that allow broadcast professionals to monitor and evaluate DTV signals. One of these is the Sencore TSM 1170 transport stream monitor.

FEATURES

The TSM 1770 occupies either one or two standard rack units, depending on the model. The unit I tested was the 2 RU model. It weighs 20 pounds, and is 20.5 inches deep. The device includes front rack "ears" and has hardware connectivity for a rear support.

For rackmounting, rear support is a must. On the front panel is the unit's power/reset switch, a cooling inlet and a DVD drive assembly.

The rear of the chassis contains a cooling fan, AC receptacle, two USB ports, keyboard and mouse ports, a DB25 connector, a DB-9 (com) connector, VGA out and two well-labeled RJ-45 connectors. One of these is for MPEG/IP and the other is for networking.

The IP addresses are neatly labeled over each of the RJ-45s. There are two PC slots populated on the backplane as well. The top slot is for 8-VSB/QAM input, with a single "F" connector available. The other slot allows the use of a single SSI (synchronous serial interface, such as SMPTE 310).

There are two ASI (asynchronous serial interface) inputs and an available loop-out for one of the ASI inputs (four BNC connectors total). All of the connectors have adequate room around them for connections, and all are properly marked. This machine cannot be mistaken for anything other than a server-based tool.

FAST FACTS

Application

DTV transport stream monitoring

Key Features

Supports many file formats, ease of operation, scalability and remote access.

Price

Ranges from $12,000, up to $25,000 (unit reviewed)

Contact

Sencore Inc.
800-736-2673
www.sencore.com

The TSM 1770 application operates with a minimum CPU rating of Pentium IV, 2 GHz or better, and with at least 256 MB of RAM. A great deal of the 180-page manual is dedicated to software setup and server management.

The TSM-1770 can monitor up to four streams simultaneously, either locally or from a remote location using IP connectivity. Each stream monitored is represented by a thumbnail view on the monitor screen, with important information displayed in that thumbnail. The thumbnail includes audio metering, a picture showing the actual video content of the stream, service description table information, event information table data and click-to shortcuts for logging and error information screens.

The unit provides real-time monitoring of MPEG, DVB and ATSC standard signals. It can monitor 8-VSB RF signals, indicating quality using the constellation pattern and well as the eye pattern.

It accepts SSI, ASI, 8-VSB, QAM and IP signals, depending on your requirements. The TSM 1770 also monitors the bit-rate of all packet identifiers, or PIDs, and can display them in real time to verify bandwidth allocation. It can monitor presence, syntax, and the timing of each DVB and ATSC table as required. (This is important for viewer acquisition time issues).

In addition to monitoring transport streams, the TSM 1770 can also record streams for future viewing and evaluation. However, the MPEG files must be analyzed using an MPEG analyzer (not part of the TSM 1770). The size of the recorded file is user-defined, and the analyzer can be programmed to start a recording upon detection of specific

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Sencore

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signal conditions or user-defined errors. Finally, there is an option that provides for contact closure when certain errors are present.

IN USE

The test unit arrived in a proper shipping container, packed as you would expect any PC server to be. The packing was solid and neat, and best of all, didn't fall apart when I removed the unit.

The TSM 1770 is purely a PC-driven evaluation tool. Setup was the same as with any PC.

First, I hooked up the monitor, keyboard, mouse and power. I then connected a SMPTE 310 signal to the appropriate BNC connector on the back panel. After pressing the power button, the computer came to life. The demo unit I received came without a printed operator's manual. I tried to locate the application software, looking on the desktop, in the lower tray, and even checked under the start menu without success.

I finally gave up and called the Sencore telephone number. After a very short menu selection process, I had technical assistance on the phone, and in no time at all, I was monitoring a transport stream. As it turned out, the whole monitoring process is started by double-clicking on the Internet Explorer icon on the desktop. It really couldn't be much easier.

After the double click, the browser screen opened with the Web address box reading: "TSM 1770 Website/Local Host." The browser was not accessing the World Wide Web, as I had no Internet connection hooked up at this time. The TSM 1770 application itself is Web-based, and the "Web sites" the application uses are all located on the PC hard drive.

In the browser display, there are six link buttons along the left hand side of the screen, and redundant buttons in the middle, with short descriptions of the applications posted beside them.

One interesting note—at the bottom of the screen is a disclaimer stating that "using Microsoft Internet Explorer may lead to client application malfunction including application freeze...please restart...."

Obviously, this is typical of the "state of the art." At least Sencore gives you fair warning!

However, the TSM 1770 I tested ran for several weeks with absolutely no restarting required.

The links provided on this screen are: home, TSM 1770 client, editor, scheduler, documentation and utilities. Home is the starting point. The TSM-1770 client is the actual transport stream monitor application. Editor is used to create user templates; scheduler is used to schedule and send events; and documentation contains a series of PDF files. (These cover product info, the user manual, a template checking manual and server management, setup and security.) The utilities folder contains four more applications: Java Runtime Environment, Windows Media 9, Fonts and Server Management.

I was anxious to see the monitor work and selected the TSM-1770 client option. The application started, and there were plenty of screens, but there was also a "no signal" indication. At this point, I returned to the local host screen, and opened up the PDF user manual via the documents shortcut.

The manual is large and includes information about PC setup and maintenance. However, it is easy to navigate, and I had no difficulty finding the needed information. Using the utility shortcut, the server management application provided a menu to select different input standards for the unit's four input ports.

As I was using SMPTE 310, I selected SSI on the I/O-1 port. Once I returned to the client application, the unit was decoding and displaying information about the three signals in our broadcast stream.

On the left-hand side of the TSM 1770 client browser window, there are status indicator boxes that are present on most of the screens while using the client application. Indicator boxes denote the type of signal arriving at any of the input ports. The boxes also display signal health by illuminating three dots resembling LEDs.

These dots represent error levels. Level 1 errors are problems that can cause the signal to not be decoded. Level 2 errors can cause problems with the signal, but decoding can usually take place. Level 3 errors are those associated with stream components not required for proper function, but which contain ancillary data. Green indicates a normal condition; yellow shows that an error has occurred, but is no longer present; red means that an error is present.

There are nine menu selections at the top of the client screen. The first of these is the summary screen.

This displays all thumbnail views for all feeds. Each channel can be investigated individually by using the mouse. In addition, the summary screen can display alert conditions: transport stream data and ID number, network ID and the number of programs present.

In addition, the application for recording a portion of a transport stream is also located on this screen. However, parameters for the recording are set up under the configuration menu, mentioned later.

The next selection is the error screen. This screen displays all errors that the monitor is detecting. These are shown in a matrix pattern, and can be accessed and evaluated from this screen. Some of the columns are identified with abbreviations, making initial understanding difficult. However, once you are familiar with the nomenclature, the abbreviations shouldn't be a problem.

The program screen is next in order, and is basically an enlarged

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Boom

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movie properties" window revealed all 18 files in the channel assignment window.

The properties window also showed a timecode track that measures things in samples. Apparently, Apple has yet to figure out how to convert samples at a specific sample rate to SMPTE. Unfortunately, Pro Tools LE 7.0 balked at importing the file. I was able to record and import an eight-channel poly file with no problems. When I tried 18 tracks again, but as separate mono files, I had no problems recording or importing.

The poly file problem may just be a temporary roadblock. The software may vary. Upon import, Final Cut Pro 5.1.1 recognized all 18 tracks and I was able to simply drop them all on the timeline in one move. Having been recorded at 44.1 KHz, they required a simple render to be audible at the 48 KHz session rate.

SUMMARY

The convenience of poly files cannot be overlooked. Recording multiple tracks that are all combined into one poly file, and all synchronized and stamped with timecode, metadata and notes is a great step forward, for production, post production and archiving. The future of production audio is here. Boom Recorder is an inexpensive, fairly simple and elegant way to begin your adventure.

Ty Ford regularly writes for ***TV Technology****'s sister publications* Radio World *and* Pro Audio Review. *He may be contacted at* www.tyford.com.

POST PRODUCTION

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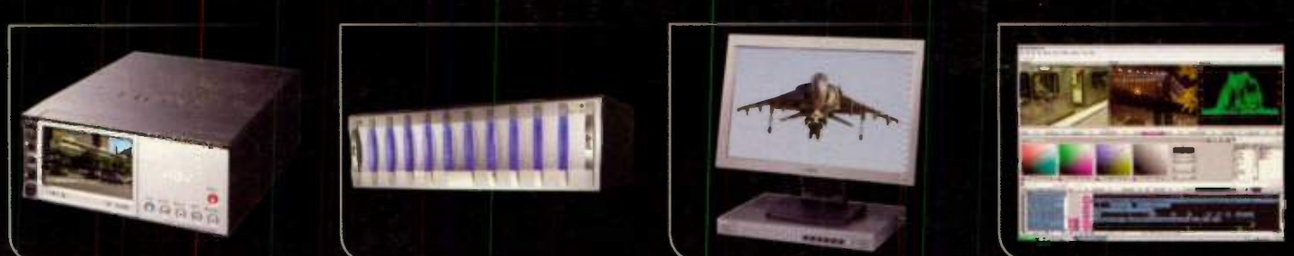

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MARKETPLACE

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Pelican 1080 HardBack Laptop Case

The 1080 HardBack from Pelican Products Inc. is a crushproof watertight cased designed to protect 13-inch laptop computers. The product is constructed with a high-impact, heat and chemical resistant composite shell and has a shock-absorbing foam-molded inner liner for additional protection.

The 1080 HardBack features an anodized aluminum latch with stainless steel pins and tongue-and-grove lid construction. It has a built-in GoreTEX pressure equalization valve to keep moisture out and also to make it easier to open the case at any altitude.

The HardBack case is designed to fit into most travel bags and protect major brand computers from Apple, Dell, Sony and others. It is backed by Pelican's lifetime guarantee.

For more information, contact Pelican Products Inc. at 800-473-5422 or visit *www.pelican.com*.

Shining Technology CitiDisk HD Video Storage

CitiDISK for HD is a high-capacity video storage unit from Shining Technology Inc. The unit supports Panasonic HD camcorders and is designed for both professional and prosumer digital video camcorder users. It weighs in at 10 ounces and is small enough to fit in the palm of a hand.

The CitiDISK is available in 100 and 120 GB storage capacities and is FireWire linked to the camcorder. The storage device features an integral rechargeable lithium polymer power source that automatically takes over when external battery power begins to run low. The lithium polymer battery is very stable and less sensitive to temperature than conventional lithium ion batteries.

For more information, contact Shining Technology Inc. at 714-761-9598 or visit *www.shining.com*.

DNF 2044CL Clip Access System

The 2044CL Clip Instant Access System from DNF Controls is designed for fast-paced production and broadcast applications. The new unit is constructed around DNF's ST400 controller and the ST420 Shotbox. It provides operators with instant access to 300 single clips or multiple-clip combinations.

The 2044CL can play out a sequence of up to 20 images on one channel or across eight channels and is available with a sequence play-out option that supports up to 30 sequence lists.

The device allows users to read the name of the video clip called up on the Shotbox key, and also to assign and re-assign clips to Shotbox keys.

For more information, contact DNF Controls at 818-898-3380 or visit *www.dnfcontrols.com*.

Litepanels Lithium-Ion Battery

Litepanels Inc. is now offering a new lithium-ion battery designed to power that company's 1x1 LED technology television light. The battery can power the 1x1 light fixture for up to three hours when fully charged.

It weighs less than two pounds, and while it is designed to mount on the rear of the 1x1 lighting fixture, it can be positioned virtually anywhere. It measures 1-by-3.5-by-11 inches.

The new battery can be recharged to more than 80 percent of capacity in just over an hour with the Litepanels charging unit. The battery also works with the Litepanels Ringlite Mini product.

For more information, contact Litepanels Inc. at 818-752-7009 or visit *www.litepanels.com*.

Miranda Kaleido-X Proc/Router

The Kaleido-X from Miranda Technologies Inc. is new product combining both a multi-image processor and a SD/HD signal router in one unit. The device is designed to serve multiroom environments and is expandable.

Each chassis can display 96 SD, HD or analog input signals across eight displays

of any resolution or orientation. Each output can be controlled independently for multiroom applications, or they can be grouped to create large highly integrated monitoring systems.

The routing portion of the Kaleido-X can switch up to 96 unprocessed inputs to any of 48 outputs for feeding baseband monitors, test equipment or master control and production switchers. Routing functions are controlled by on-screen menus, a remote control panel, the Miranda iRouter application or via aux bus controls on MC and production switchers.

For more information, contact Miranda Technologies Inc. at 973-683-0800 or visit *www.miranda.com*.

CRYSTALVISION

The Demon 2 from Crystal Vision is a new 12-bit broadcast de-embedding monitor designed to provide high quality performance in video/audio monitoring applications.

It can convert SDI with embedded audio

into combinations of component, composite, Y/C and SDI video signals, while de-embedding 20-bit digital audio. It fits Crystal Vision rack frames and can provide up to 24 de-embedding applications in 4 RU of space.

Audio outputs are provided as four mono or two stereo pair balanced analog signals and two balanced or unbalanced AES/EBU signals. For more information, contact Crystal Vision at 44-122-349-7049 or visit *www.crystalvision.tv*.

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

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ANTENNAS

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Dielectric TFU-24JST-R DTV transmission antenna, never installed, never used, full spec sheet upon reques,t $92,500. www.studioequipmentsales.com (818)745-1249.

Yamaha 03D 24 ch. Digital mixer, $950; (2) Neve G Series 62 ch. mixing console, recent recapping $65,000/ea; (2) Otari MTR-90 24 track rcdr, $2,500/ea. www.studioequipmentsales.com (818)745-1249.

BATTERIES

AUDIO PRODUCTION

Want to Sell

(4) Lectrosonics UCR-205D wireless mic rcvrs w/UM200C xmtrs, in block 21, each pair incl 3 antennas, Lectro M-150 lavalier, DC pwr cables, AC wall-wart pwr supplies & manuals, xlnt physical cond & work perfectly, $2000/ea or $7800/four. 818-597-8855 or soundmixer@prodigy.net.

Bittree & ADC Audio and Video Patch Panels from $250; 45RU racks from $400; Graham-Patten D/ESAM 230 audio mixer, $5900; Yamaha O1V 16-input digital mixer, call; Mackie 1604 VLZ used, $550; Mackie 24-4, make offer; Tascam M-2600 MK II 16-Channel Mixer, $1,500; Digidesign 888, $650; Sony PCM7040 DAT, $3,990; Panasonic SV-3800 DAT, $300; Wohler Amp 1-A, $325; Wohler AMP-1A-VTR, $550; Wohler AMP-1AP, $325; Wohler Amp-1APF, $325; Wohler MSH-8AL Audio Level Meter, $600; AKG C 414 B ULS Microphone, $950. 818-246-7100 or 212-564-9933 or www.tvprogear.com.

Gentner AP400, $1400; Tektronix 760A, $700; US Audio DA-2, $199; Clear-Com XP-22, $250; GVG AMX-170S mixer, $450; Graham-Patten D/ESAM 200 16-input, $2600; Sony DMX-E3000 w/options, $4500; Teac M-2A, $420; Tascam M-308, $300; Yamaha PROMIX01, $590; Wheatstone TV-CONSOLE 600, $2000; Switchcraft 26x2 audio, $153; ADC BJF203-4MKII, $150; GVG 8550-8551 VDA Tray, $1000; Leitch FR-882 w/8 ASD card, $950; Clear-Com ICS-2003, $1500; Clear-Com ICS-92, $700; RTS RM300, $125; HME RW800 base station, $2100. 818-551-5858 or 212-268-8800 or www.broadcaststore.com.

CAMERAS

Want to Sell

PVW 637 Beta SP camera w/PVV3 deck, complete w/case & manual, bought new. Glen, 208-735-1970 or 208-420-9779.

Sony BVW-400A w/12x9 lens, $6000; Sony DXC-637 w/PVV-3, $7000; Sony UVW-100 w/lens, $3500; Sony DSR-130/DSR-1/18x lens, $8010; JVC GY-HD100AU, $5495; Sony BVP-50 head, $2300; Sony BVP550/BVV-5, $11200; Sony BVP550 head, $8500; Sony DXC-325, $1800; Ike HC-340 w/J15x9.5B4 lens, $2250; Ike HI-55 /w14x lens, $4500. 818-551-5858 or 212-268-8800 or www.broadcaststore.com.

Sony DXC930 color video camera, $1995; Sony DXC990 color video camera, $2995; Listec studio prompter, call; Miller 50 fluid heads & wooden sticks, call; Cartoni Beta w/2 stage aluminum sticks, $1700; Glidecam Steadicam Rig, call; Matthews Doorway dolly, call; Trovato Chameleon dolly, call; Mole Richardson Baby Solarspots, Tweenies & Midget solarspots, call; Autro MB Cyc lights, various, call; Strand stage lighting, call. 818-246-7100 or 212-564-9933 or www.tvprogear.com.

CAMERA ACCESSORIES

Want to Sell

Sony CA553, $1700; Sony CCU-355 w/CA55, $4340; Sony CCU-370, $6500; Sony CCU-M3, $200; Sony DXF-51, $975; Ikeg VA-95SA, $530; GVG WAVE-LINK w/2 chnls, $1250; Schneider 14x9 Ike mount, $750; Fujinon A12x9BERM, $1995; Fujinon A14x8.5BERM, $2500; Fujinon A14x9BERM-28, $700; Canon HJ22EX7.6BIRSE, $22000; Canon J17x8.5B3IRS, $2500; Canon J20AX8B4IRS, $6500; Canon J20AX8BIRS w/cntrl, $8000. 818-551-5858 or 212-268-8800 or www.broadcaststore.com.

COMPUTERS

Want to Sell

SGI ONYX RM4 board, $300; SGI ONYX RM5 board, $300; Marshall V-R563-P LCD rackmount LCD monitor, $1650; Marshal V-R72P-2SD LCD monitor, $2699. 818-551-5858 or 212-268-8800 or www.broadcaststore.com.

EDITING EQUIPMENT

Want to Sell

Avid Adrenaline, $15500; Avid Symphony Version 3.5 on IBM Intellistation, $12500; Avid MC 9000 on Mac G4, $10500. 818-246-7100 or 212-564-9933 or www.tvprogear.com.

Sony BE-9000 edit cntrlr, $3460; Convergence ECS-195LM edit cntrlr, $740; GVG VPE-131 edit cntrlr, $2270; GVG VP-141L, $1730; GVG VPE-241, $3350; GVG VPE-251, $992; GVG VPE-251, $4220; GVG VPE-331, $1500; GVG VPE-41, $900. 818-551-5858 or 212-268-8800 or www.broadcaststore.com.

Discreet Logic/Autodesk Fire 7 Film/HD edit system on SGI 3200IR3 w/2.7TB Stones Array (HDD storage), $120,000 OBO; (2) Avid Symphony 4.84 fully loaded w/888 digital audio, Meridian VBOB, $10,500/ea; Avid Symphony 4.84 fully loaded w/888 digital audio, Meridian VBOB, 640MB LVD storage, $12,000; Avid Unity Media-network fileshareing server, fully redundant failover system w/2.7TB JBOD storage, 800MB internal, 10 seat (IBM/MAC), essentially 2 systems in one, $32,000; (3) Avid Newscutter 4/Xpress Pro 4.5 w/Meridian A/VBOB, keyboard, $2,500/ea. www.studioequipmentsales.com (818)745-1249.

LENS REPAIRS

Focus Optics. Service and repair of broadcast video lens. Fujinon, Canon, Nikon, Angenieux, etc. **We have the fastest turnaround in the country.** We also repair lens that have bad inpact damage. **Call Stuart at 800-234-lens or www.focusoptics.com.**

MISCELLANEOUS

Want to Sell

GVG 8500 w/5x8501 cards video DA, $575. 818-551-5858 or 212-268-8800 or www.broadcaststore.com.

MONITORS

Want to Sell

Sony PVM2030 color monitor, $250. 818-551-5858 or 212-268-8800 or www.broadcaststore.com.

Sony PVM-20M4U, $1750; Sony PVM-14M2U, $1050; Sony PVM8042Q, $500; Sony PVM8041Q, $400; JVC TM H1750CG 17" color monitor, B-stock, $640; JVC TM H1950CG 19" color monitor, B-stock, $925; JVC DT-V1710CGU 17" HDTV monitor, B-stock, $1890. 818-246-7100 or 212-564-9933 or www.tvprogear.com.

SIGNAL PROCESSING

Want to Sell

Chyron InFinit!, $5500; Chyron MAX w/option, $2800; Chyron MAXINE, $6500; Sony BVX-10 color corrector, $2000; For-A CCS-4360 frame color corrector, $1000; Accom 221 encoder/decoder, $1750; GVG CV-20T, $225; AJA D4E, $230; Comtech SDM-2020D, $3450; Minerva VNP-151, $2850; Miteq U-96-14.25S, $5460; Leitch FR-6804-1 w/ADC, $950; Leitch RC-4000, $420; Sony HKPF-1125, $1900. 818-551-5858 or 212-268-8800 or www.broadcaststore.com.

Leitch DPS 575 digital processing, $4495; Leitch FR-684 Dual PS 2RU Frame, $295; Leitch FR-884 Dual PS 2RU Frame, $295; Leitch Mix-7001 Multi-function digital frame, $400; Leitch 6804 Mounting Frame w/Pwr sply, $250; Leitch SPG-2602N Pulse Gen, $1,000; Sony BVX-D10/BVR-11, $3,990; Leitch DPS-295 Component TBC, $1,500. 818-246-7100 or 212-564-9933 or www.tvprogear.com.

Tektronix SPG-422 component digital sync gen, $4,200; Grass Valley 8900 series 2RU tray w/PS w/2 8960ENC component digital encoder cards & 2 8960DEC component digital decoder cards, $1,400; Grass Valley 8900 series 2RU tray w/PS w/4 8801 component digital DAs, $1,200; Phillips Triton 1616 component digital router w/BDS-1616 digi video, BES 1616/10 AES/EBU audio, BRS 1616 RS-422 & BCP-1616 cntrl panel, $3,200. www.studioequipmentsales.com (818)745-1249.

Inscriber Title Deko/Namedropper NBC, SDI based CG w/NBC network promotional animated bug creation & insertion, great as just a CG or make your own animated images to insert with titles, $9,000. www.studioequipmentsales.com (818)745-1249.

SWITCHERS

Want to Sell

GVG 2200 switcher w/Krystal effects, $27000; Sony AWS-G500 Anycast switcher w/options, $13500; Videotek RS-12DVA SDI Routing Switcher, $600; Miranda Digipath 16x16 SDI Router (w/remote panel), $3,500; GVG Ten X, $600. 818-246-7100 or 212-564-9933 or www.tvprogear.com.

TELEPROMPTERS

GVG Master 21 master control switcher $5500. 818-551-5858 or 212-268-8800 or www.broadcaststore.com.

TEST EQUIPMENT

Want to Sell

Tektronix WFM601i SDI Waveform, $4500; Tektronix WFM601 SDI Waveform, $3500; Tektronix 1745a wfm/vec NTSC/PAL, $2500; Tektronix 1755 wfm/vec, $2750; Tektronix 1765 NTSC/PAL wfm/vec, $3450; Tektronix 1730 WFM, $900; Tektronix 1720 vectorscope, $900; Tektronix 1710B, $1000; Tektronix 764 Digital Audio Monitor, $1000; Videotek TVM-821D, $3295; Videotek VTM-200, $3195. 818-246-7100 or 212-564-9933or www.tvprogear.com.

(4) **Leader LVO 5872A combo** waveform/vectorscope like new, $1,500/ea; Leader LV-5100D component digital waveform/ vectorscope combo, $2,200; Tektronix 1750A waveform/ vectorscope combo $1,800; Tektronix 764 digital audio monitor, like new $1,800. www.studioequipmentsales.com (818)745-1249.

TRANSMITTERS/ EXCITERS

Want to Sell

TRANSMITTERS-Used transmitters from Harris, Acrodyne, RCA, Emcee, TTC. Antennas, microwave, feedline, etc. See transmitterwarehouse.com or call 954-792-7207.

TRANSMITTERS WTS Cont.

TV FILM EQUIPMENT

Want to Sell

(4) Lectrosonics UCR-205D wireless mic rcvrs w/UM200C xmtrs, in block 21, each pair incl 3 antennas, Lectro M-150 lavalier, DC pwr cables, AC wall-wart pwr supplies & manuals, xlnt physical cond & work perfectly, $2000/ea or $7800/four; Nagra IV-STC, genuine Nagra Kudelski stereo timecode rcdr, xlnt cond, complete w/7" lide, ruby guides, 2 Universal pre-amps, handle, Nagra line-in cable, Lemo timecode out cable, etc, will toss in Kudelski ATN pwr sply & Kangaroo bag complete w/accessory pocket, also incl Nagra QSLS sync & WSLS timecode interface & Nagra IVS/IV-STC technical manual & 3 rolls of new Emtech SM468 tape, $3750. 818-597-8855 or soundmixer@prodigy.net.

VTRs/VCRs/ RECORDING MEDIA

Want to Sell

Sony A-6053-021A drum, $900; Sony BVH-3000 REEL motor, $750; Sony BVH-2000, refurb, $2500; Sony BVH-950 refurb, $3100; Sony DNX-A220, $12000; Sony BVW-70 refurb, $6500; Sony BVW-75 refurb, $7000; Sony PVW-2800 refurb, $6000; Sony BVW-65 refurb, $2995; Sony BVV-1A, $1050; Sony BVV-5, $2000; Sony BVW-50 refurb, $2100; Sony DNV-5 refurb, $11000; Sony BVR-1000, $4500; Sony A-6052-063-A upper, $3260; Sony DSR-1800 w/I-link, $4900; Sony DSR-20, $2100; Sony HDD1000 w/HDDP-10, $12000; Sony HDV-1000, $5000; JVC CU-VH1U-P, $1799; Sony FLEXICART BFC-1, $24000. 818-551-5858 or 212-268-8800 or www.broadcaststore.com.

Sony UVW-1800 BetacamSP, $3995; Sony PVW-2800 BetacamSP, $4490; Sony PVW-2650 Betacam SP, $1950; Sony PVW-2600 Betacam SP, $1950; Sony BVW-70, $4750; Panasonic AJ-SD93 DVCPRO 50, lw hrs, $5495; Sony DSR-2000, $7995; Sony VO 9850 w/timecode, $1200; Sony VO 9800, $1000. 818-246-7100 or 212-564-9933 or www.tvprogear.com.

SERVICES

EMPLOYMENT

HELP WANTED

Sencore

CONTINUED FROM PAGE 66

thumbnail view.

The thumbnail display frame rate is somewhat slower than a real-time television display, but this is not really objectionable. There's a window with a list of the programs within the stream, and the TV guide window is also displayed. In addition, a description of the video detected is displayed on the right-hand side of the screen. Examples would be: 16:9 ratio, MPEG-2 format, 1920x1080 size, 29.970 frame rate, 4:2:0 chroma. There's also a description of the audio detected: AC-3 mode, bit-rate 384, sample freq. 48,000 and number of channels—5.1.

The TS status screen is next on the list. Basically, it displays how the data pipe is divided. Each program can be displayed in a number of ways. The most common would probably be as a bar graph. Each of my three programs was displayed in bar graph form, indicating bandwidth required for video and audio. In addition to the bar graph display, there's a stacked graph display, as well as a pie display. The stream can also be displayed in the time-domain as well.

Last on this screen are the FTP and export selections; these are used to manage files that you save or create.

The structure screen is a type of tree menu allowing navigation through the program association table, the master guide table, the system time table, the event information table and the program map table. Each allows you to dig further into the stream for more precise evaluation.

The template screen allows management of user-defined templates. This would be a custom setup, depending upon your requirements.

The logs screen allows you to customize the analyzer in terms of trapping and notification of error conditions within your transport stream. You can filter the alarms by their type, priority, and by family. All errors logged are displayed in a matrix pattern. In addition, there is a message listing at the bottom of the screen.

The physical screen is just a simple status screen indicating signal presence.

The final screen is the config. There are a variety of areas represented here: a general refresh rate selection box, a brief summary view, time zone information and server options. These options include a tab for analysis, capture, log and other.

The analysis tab provides options for specific signal types such as MPEG-2, DVB, ASTC and ISDB. The capture tab allows selection of the maximum number of files captured per error, and the duration before automatic file cleanup. The file option allows pre-selection of the file sizes that you can capture. The log tab provides for management of how logging takes place for both bit-rate and error logs.

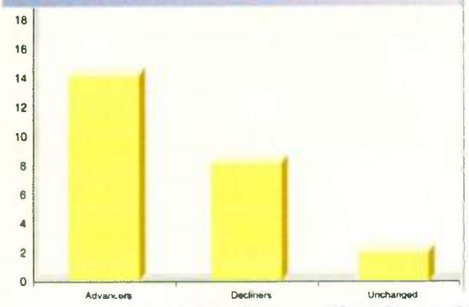
SUMMARY

The Sencore TSM 1770 is a pleasure to use. I can't think of an easier way to manage such a complex signal scheme than with the TSM 1770. Graphics are easy to read and understand. Most functions are intuitive, and the automated features almost make this unit seem like another member of your staff. It's obviously not a first generation TSM.

However, depending on options ordered, the unit does not come at a small price. I would suggest that potential buyers do their homework and choose their option packages wisely, as it is easy to double the price of the unit by adding options.

Joey Gill is chief engineer at television station WPSD in Paducah, Ky. He has been with the station for 25 years and has worked in broadcasting since 1977. He may be contacted at respond2jgill@yahoo.com.

WIN-LOSE RATIO



TOP ADVANCERS BROADCAST STOCKS
(SEPTEMBER 1 - SEPTEMBER 15)

Lin TV	+4.00%
Gray	+3.75%

TOP DECLINERS BROADCAST STOCKS
(SEPTEMBER 1 - SEPTEMBER 15)

Nexstar	-7.56%
Young	-4.73%

TOP ADVANCERS TV TECH STOCKS
(SEPTEMBER 1 - SEPTEMBER 15)

Harmonic	+13.73%
Scopus	+8.38%

TOP DECLINERS TV TECH STOCKS
(SEPTEMBER 1 - SEPTEMBER 15)

Ciprico	-6.39%
Tektronix	-1.94%

To have your company listed, contact Melissa Sullivan at msullivan@imaspub.com.

TV Tech STOCKS as of Sept. 15

Company Name	52-Week Range	Sept. 1	Sept. 15	% Change
Avid	32.05 - 59.10	39.96	42.33	5.93%
Belden	18.65 - 37.25	36.35	36.31	-0.11%
Ciprico	4.00 - 6.84	4.54	4.25	-6.39%
Harmonic	3.79 - 7.70	6.41	7.29	13.73%
Harris	36.72 - 49.78	43.40	44.31	2.10%
LSI Logic	7.41 - 11.81	8.01	8.49	5.99%
Scopus	3.05 - 8.35	3.34	3.62	8.38%
SeaChange	5.07 - 9.89	8.57	8.68	1.28%
Tektronix	22.64 - 36.89	28.30	27.75	-1.94%

Broadcast STOCKS as of Sept. 15

Company Name	52-Week Range	Sept. 1	Sept. 15	% Change
Acme	3.50 - 5.74	5.28	5.40	2.27%
Belo	14.93 - 23.82	16.33	16.18	-0.92%
Entravision	6.59 - 9.18	7.49	7.49	0.00%
Fisher	38.89 - 49.89	43.09	43.76	1.55%
Gray	5.15 - 11.79	6.40	6.64	3.75%
Hearst Argyle	19.97 - 26.27	23.20	23.81	2.63%
Nexstar	3.80 - 6.20	4.50	4.16	-7.56%
Lin TV	6.12 - 15.41	7.25	7.54	4.00%
Ion Media	0.37 - 1.15	0.90	0.90	0.00%
Sinclair	7.18 - 10.07	7.80	7.90	1.28%
Univision	23.52 - 36.67	34.82	34.88	0.17%
Young	1.70 - 3.96	2.75	2.62	-4.73%
Tribune	27.09 - 38.13	31.25	30.97	-0.90%
Meredith	45.04 - 56.83	47.96	49.62	3.46%
EW Scripps	40.86 - 50.98	47.01	46.36	-1.38%

Quantum Acquires ADIC

SAN JOSE, CALIF.

Global storage company Quantum Corp. has acquired Advanced Digital Information Corp. and its outstanding shares for about $770 million.

The deal, announced in May, was finalized in August following approval of the transaction by ADIC shareholders. Quantum is funding the transaction through a combination of cash and about $500 million in financing.

With the acquisition of ADIC, Quantum offers a portfolio of platform-independent systems, software, devices and media. The deal is expected to expand Quantum's market access.

"We are bringing together two long-standing leaders in backup, recovery and archive to create the largest independent company in this market, with more than 50 years of experience in meeting customer needs," said Rick Belluzzo, chairman and CEO of Quantum. "By combining our complementary strengths and intelligently integrating our broad range of assets, we are well positioned to provide even greater value to customers, expand our branded channel and OEM base and pursue new opportunities for growth."

Quantum said it would continue to sell and support all current Quantum and ADIC products through the companies' respective partners and distribution channels; and maintain existing service contracts and product warranties.

The companies said their combined revenues over the last four quarters are more than $1.2 billion.

Quantum expects the transaction to be up to 15 cents accretive on an earnings per share basis, with the accretion beginning to appear in its financial results in the March quarter of next year. Over the last few months, the company has identified annualized cost synergies of about $75 million to $80 million, compared to the $45 million it had initially estimated.

Verizon, ABC Ink Platform Deal

BASKING RIDGE, N.J.

Walt Disney Co.'s ABC Entertainment has agreed to a multi-year deal with Verizon Business, a division of Verizon Communications Inc., to use the Verizon Media Platform. Financial terms of the deal were not disclosed.

ABC will use the Verizon Media Platform Workgroup Edition to automate its content workflow, including content repurposing and distribution. It will also use the platform's multi-channel distribution capabilities for sending content to mobile devices and Web portals.

The Media Platform combines with ABC's existing production system to streamline various processes, including editing, transcoding and storage of media files, and content distribution.

"Deploying the Verizon Media Platform provides us with a flexible, scalable media asset management solution that improves our workflow efficiencies, enabling our potential for growth," said Alexis Rapo, vice president of digital media at ABC Entertainment. "By working with Verizon Business' professional services group, we were able to integrate key modules of the Media Platform into our existing editing environment and can now manage and distribute an increasing flow of digital content in a variety of formats in a cost-effective and efficient manner."

BIAfn Buys DIN

CHANTILLY, VA.

BIA Financial Network Inc. has acquired Digital Information Network, an Oklahoma City-based company that provides weather and alerting desktop applications. Financial terms of the deal were not released.

BIAfn, a financial advisory firm serving the media and communications industries, said DIN would operate under the newly created BIA Information Network LLC. The new company will focus on ActiveAccess, a software application for delivering news, weather, alerts, promotions and other content directly to computer desktops.

"As part of our strategic consulting practice, we have been investigating various technologies to stem audience and revenue erosion in the media industries," said Thomas J. Buono, CEO of BIAfn. "It is critical for media companies to reach new and younger target markets, strengthen existing relationships with their core audience and provide their advertisers with an expanded marketing platform with auditable results."

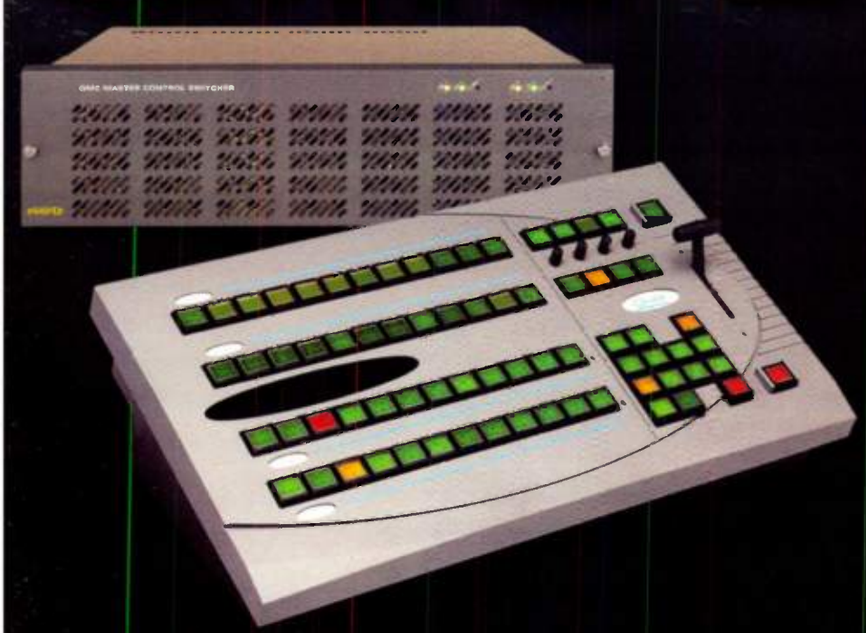
ActiveAccess can supply content including messaging that can appear as news crawls, pop-up alerts, audio or video alerts; real-time Webcast over the Internet; a Web portal that provides a customized Web-based interface for users to access a client's Web site directly or multiple other sources of information; and sponsorship information and messages with direct links to a Web site or targeted to specific groups.

Currently there are more than 85 television and radio stations, in addition to newspapers, businesses and government agencies using software from DIN, BIAfn said.

Quartz

Intelligent Master Control

QMC-2



QMC-2 FEATURES & CAPABILITIES

- HD & SD video formats
- Multiple keyers
- Internal DVEs
- Built-in Logo Stores
- Wide range of transitions
- Full audio capabilities
- 1.5Gb/s HD preset & program channel
- "Look-ahead" preview of next transition
- Supports Multiple Standards
  - including 720p & 1080i
- Standard 16 channel enhanced audio
- Supports Dolby® E signals

LOGO FEATURES

- Up to 16 static/animated logo layers
  - including clock, date, temperature displays, audio clips and text crawls

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