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Breaking News... Disc at 11

The migration to tapeless news production

by Claudia Kienzle

HAMILTON, N.J.

The pressing need to be first in the market with a breaking news story has prompted many broadcasters to migrate to tapeless news production for a more efficient workflow and better on-air product.

While there have been sweeping changes in newsrooms nationwide, including newsroom computer systems, desktop media browsing, nonlinear editors and servers, there's been one last holdout for videotape—acquisition.

But the broadcasters we spoke with told us their stations have started migrating to tapeless acquisition so their news teams can bypass the ingest bottleneck to get news stories edited and on-air faster.

TAPE... WHAT'S THAT?

At WRDW-TV, a Gray Television Group CBS affiliate in Augusta, Ga., Chief Engineer Edward Elser said the writing was on the wall at NAB when he looked for new ENG cameras.

"Tape is going away very fast. Whatever camera systems you buy, it's all going to be tapeless. I would be surprised if by next NAB there's even a tape option out there," Elser said.

"We're in the process of purchasing Panasonic [AG-HPX500

NEWS, PAGE 12

The Slingbox Solution

Broadcasters adapt innovative online device for remote cam coverage

by John Merli

FOSTER CITY, CALIF.

If Dan Slentz has his way, soon there will be several live weather-traffic cams situated throughout Zanesville, Ohio. Slentz, chief engineer for WHIZ/AM/FM/TV, hasn't suddenly come into a small fortune which he's kindly donating to his operation. Instead, he's in the process of testing a Slingbox from Sling Media Inc., which is essentially a consumer product designed to reroute all the content from a home TV cable or DBS source to a dedicated laptop or desktop computer anywhere in the world via a typical broadband connection.

Although marketed as a consumer product, Slingbox has gained some broadcast adherents.

Slentz is excited about the Slingbox, which has been on the consumer market for nearly two years, and about the device's potential as an extremely cost-effective conduit for transporting video (and audio) via an IP connection without a lot of high maintenance. Slentz has been in touch with Sling Media to encourage it to work up a professional-grade Slingbox for broadcasters, and the firm has been generally receptive to the idea.

Using the off-the-shelf box, the initial test for Slentz in late June was to begin at the site of a print

SLINGBOX, PAGE 8

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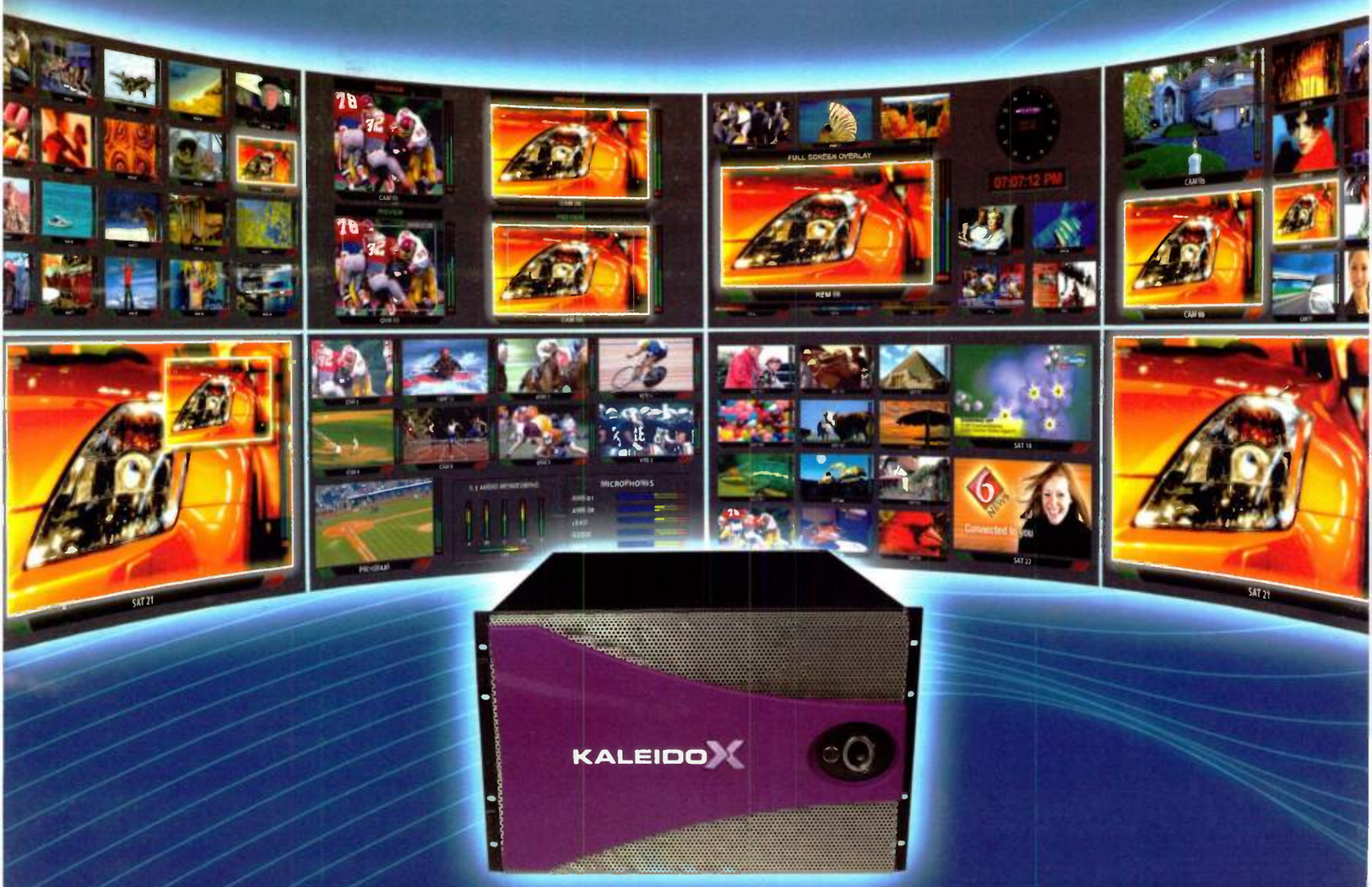

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Jerry Whitaker

ATSC Update

The ATSC has begun work to develop a standard for mobile and handheld services using compatible enhancements to the ATSC DTV system. Designated ATSC-M/H, the standard will be backward-compatible, allowing existing DTV services to operate in the same RF channel... p. 34

Frank Beacham

Net Soup

I get steamed over willful, blatant invasions of my personal privacy. That's why I'm so unhappy right now with Apple, my favorite computer company.
Privacy is one of those issues that tend to separate old codgers like myself from the children of the digital era... p. 36

Wes Simpson

Video Networking

With all of the hype surrounding the migration of video services to IP networks, an issue that often gets overlooked is whether or not there is enough capacity on the Internet backbones to handle the increased load. Not surprisingly, the limits may be closer... p. 39

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FROM THE EDITOR

Going Tapeless

To paraphrase Mark Twain, "the rumors of videotape's demise in the broadcast arena are greatly exaggerated."

Nevertheless, it seems inevitable that tapeless formats, whether they're optical disc-based, hard drive or flash memory will eclipse broadcasters' use of videotape within the next few years. We're seeing an increasing influx of lower-cost camcorders that yield high-quality video (at least high-quality enough for news), which are the result of combining new imaging technologies with IT-based storage. Add to that the fact that nonlinear editing is now ubiquitous in newsrooms nationwide and it's not a question of whether videotape is going away, but when.

Yet despite the enthusiasm for the technology, it's been a slow road to acceptance for tapeless since Sony and Panasonic launched their respective formats four years ago. Many broadcasters have been reluctant to move to tapeless for a variety of reasons, including the costs of media and the lack of an integration path within the newsroom, not to mention the fear of having to commit to one of several competing formats.

To help ease some of these concerns, manufacturers offer hybrid cameras that include both tape and tapeless storage. This "dual media workflow" is one of the things that attracted Scripps to the JVC ProHD line when it announced its decision several months ago to purchase JVC gear to transition its 10 stations to HD news.

Broadcasters have other tapeless options, including Grass Valley's Infinity, which will ship this summer, and the Ikegami-Toshiba tapeless product line, expected to be introduced at NAB2008. Hard drives are finding favor as well, including Focus Enhancements' DTE recorders, available for JVC, Canon and Panasonic professional camcorders.

Is having a variety of options good for our industry? If they're truly "open" standards-based, then yes. Standards such as MXF are helping break down the barriers, but there are still concerns in the industry about its effectiveness.

Tape will never fully go away—many still prefer it as an archiving medium; for example. But for daily use in the broadcast newsroom, its days are numbered.

* * *

We have a new managing editor at **TV Technology.** Melissa Sullivan, our former associate editor, has risen through the ranks to this new position. We know that the expertise and enthusiasm she brings to **TV Technology** will ensure that it remains the reliable and newsworthy read for our industry that it is. Congratulations, Melissa!

Tom Butts
Editor
tbutts@imaspub.com

ERRATUM

In the article "Stations Flex New Media Muscle," (June 13, 2007), the caption for the "News Over Wireless" image should have identified the TV station as KTVT in Dallas/Ft. Worth. **TV Technology** regrets the error.

LETTERS

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

Lip Sync

Dear Mario:

Regarding your lip sync article, moving lips that don't match the audio is nothing new.

Remember when we were kids and watched Dick Clark's American Bandstand? He would have all the top rock and roll singers holding a dead microphone up close, and lip synching to a 45 RPM mono record being played backstage.

Classic singers like Bobby Rydell, Paul Anka, and Leslie Gore would attempt to match their mouth movements to the music. Not all were totally successful, depending on how much alcohol they consumed in the previous hour.

So the next time you see the lips not matching the words, put a positive spin on it. Call it "Classic 50's TV Artifacts" and the audience will think it's done on purpose, to reflect the simpler, nostalgic, black and white tube-oriented days of yesteryear.

Bro Duke
Santa Rosa, Calif.

Where's WYSIWYG?

Dear Andy Ciddor:

Today I reread an article from the Feb. 2, 2005 issue of **TV Technology** about WYSIWYG from Cast Lighting ("Lighting Design: Spreading the Word").

We have such a system in our ETC Expression System that was installed in 2004 in a new 2,000 seat sanctuary. However we never had the model of the sanctuary drawn (the software was part of the purchased package but apparently the drawing was not). I am interested in a company that can take our architectural drawings and build the model, and then perhaps a day of training if needed. The system is functioning to control eight moving lights, but we are doing it more or less blind from the console since there is no model.

Any suggestions you can offer would be appreciated.

Dennis Clark

Andy responds:

It has been my experience that the WYSIWYG software bundled in with ETC consoles comes without any training package or any CAD model entry, as the level of expertise varies so widely between customers.

However, both services are commonly offered as options at the time of purchase. It's not unusual for these extras to be declined due to the budgetary constraints that inevitably arise by the time a construction project finally reaches the equipment fit-out phase.

As WYSIWYG is widely used in production, there are bound to be experienced and knowledgeable CAD and lighting operators in your area who are capable of entering your venue's data and fixtures into the WYSIWYG system. On the Cast Web site under the Cast Partners link (*www.castligting.com/cast/software/partners.jsp*), there is an extensive list of WYSIWYG service providers, trainers and educational institutions teaching the software.

The staff can be contacted at the phone extensions listed or via e-mail using first initial, last name @imaspub.com

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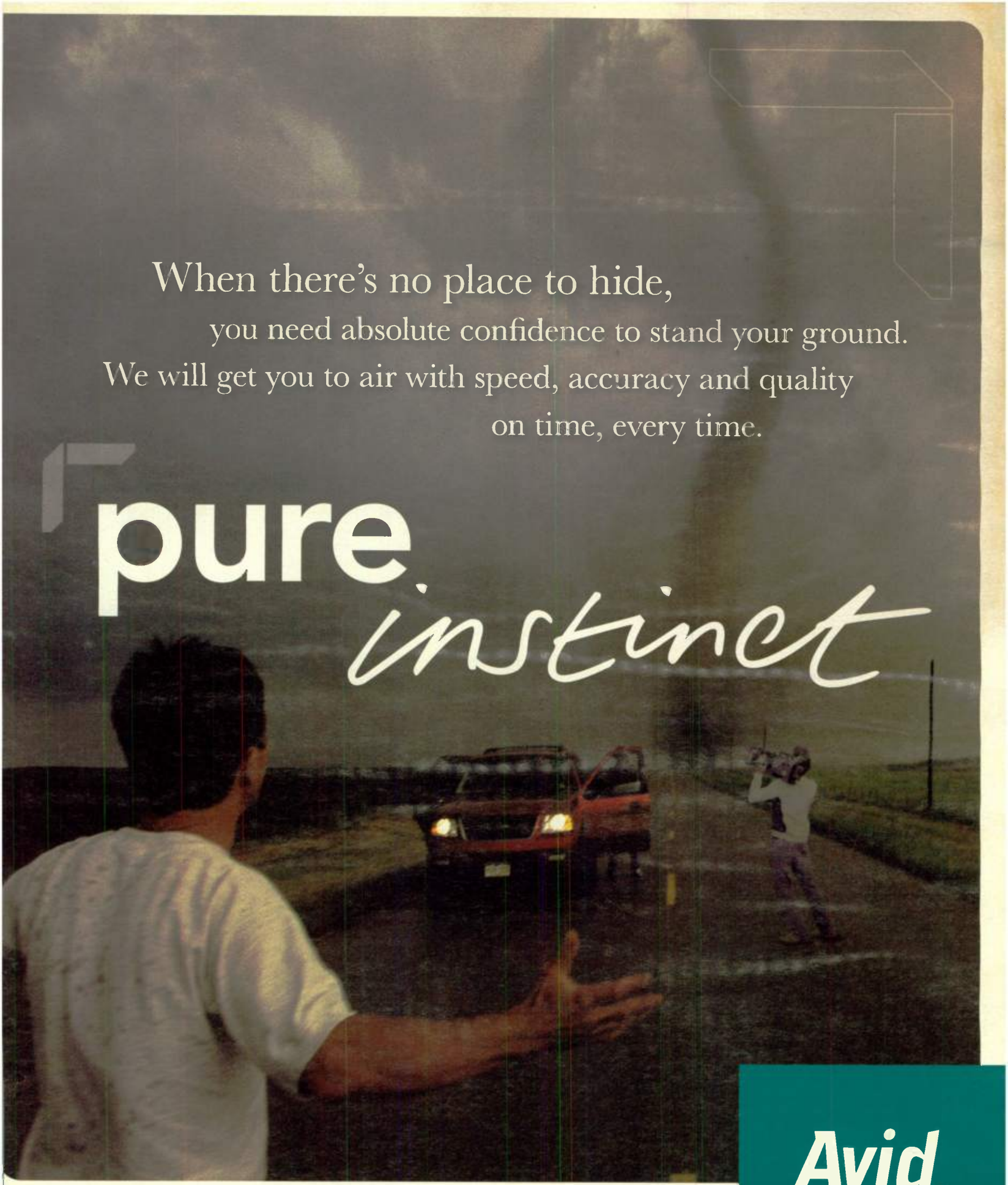

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ATSC Receives 10 Bids for Mobile TV

WASHINGTON

The Advanced Television Systems Committee has received 10 submissions in response to its request for proposals for its Mobile and Handheld Standard (ATSC-M/H).

The RFP, issued in May, came about as the result of promotion of the demonstration of two differing systems for broadcast transmission of content to handheld video devices at NAB2007. LG Electronics independently developed those systems in partnership with Harris Corp., and by Samsung, who partnered with Rohde & Schwarz.

Mark Richer

The ATSC request drew responses from proponents of both of the above systems, as well as from Coding Technologies, Coherent Logix Inc., DTS Inc., Mobile DTV Alliance, Micronas Semiconductor Inc., Nokia, Inc., Thomson and Qualcom.

"It is exhilarating to see this amount of interest from the industry," said ATSC President Mark Richer. "We look forward to reviewing all of the submitted proposals for the ATSC-M/H standard."

Richer said that the organization would like to see such a standard in place as soon as possible, in order to facilitate development of equipment for this new area of television program distribution. Richer has expressed a desire to have a number of companies in a position to offer mobile/handheld devices ready for the marketplace coincident with the rollout of digital-only TV broadcasting in February 2009. He said that recent interest in mobile and handheld television has begun to attract new members into the ATSC, including automobile manufacturer General Motors, and Delphi, a leading auto electronic equipment supplier.

In a related development, the Open Mobile Video Coalition, a group of television broadcasters interested in promoting over-the-air mobile TV services, is urging equipment manufacturers to participate in the ATSC's ongoing mobile television standardization process.

In an open letter to manufacturers, the coalition stated that it fully supported the ATSC push for development of a backwardly compatible standard for mobile and handheld television reception. The communication stressed that cooperation among all players was essential to avoid another "format war" situation, such as had existed in AM stereo, Betamax vs.VHS, and most recently, the battle for consumer acceptance of either Blu-Ray or HD-DVD media.

Open Mobile Video Coalition members include the Belo Corp., Fox Television Stations, Gannett Broadcasting, Gray Television, ION Media Networks, NBC and Telemundo Television Stations, Sinclair Broadcast Group and Tribune Broadcasting Co.

Standards

Standards

Blockbuster Taps Blu-ray Over HD DVD

DALLAS

The format wars over hi-def DVD heated up with last month's announcement that Blockbuster Inc. would begin renting and selling only Blu-ray Disc titles in a majority of about 1,700 of its 4,000 U.S. outlets.

Although Blockbuster's ubiquitous influence on the world of DVDs has lessened dramatically in recent years due to new competition such as Netflix, the movie rental chain's move represents a short-term blow to HD DVD proponents.

Blockbuster said about 70 percent of its rentals of next-gen discs fall into the Blu-ray camp, and it sees this as a sign from consumers that the marketplace has already made its choice in the format battle. It arrived at this conclusion despite the fact that only a small percentage of homes own Blu-ray or HD DVD players. HD DVD backers argue that the video chain's decision is premature and ignores the long-range picture, according to the Associated Press. Blockbuster does not distinguish between how many of its Blu-ray rentals to date are movie titles, compared to PlayStation 3 games. Those figures could be significant for either side. Each of the estimated 2.6 million PS3 game modules sold so far in the U.S comes with an internal Blu-ray drive.

Yet HD DVD, for its part, seems to be winning in the standalone category. Sony has acknowledged it has sold less than 100,000 standalone Blu-ray units in the United States, to date, while HD DVD standalone sales apparently have been around 150,000, according to Investor's Business Weekly. What this might portend, if anything, will not be known for awhile, especially since no one knows exactly how many PS3 owners are using their Blu-ray drives to rent or purchase Blu-ray movie titles.

Blockbuster, said it plans to continue renting HD DVD titles online and in the original 250 locations where they are currently offered.

DVD

DVD

ABI: Cable Ops Need to Balance Nodes

NEW YORK

ABI Research has released a new study which, in part, concludes that some cable television operators may have to "bite the bullet" regarding node splitting—the addition of more capacity to cable network nodes.

Over time, some cable operators have followed the practice of expanding their systems in a piecemeal fashion without much thought or planning for long-term capacity. This has resulted in systems with some nodes having more capacity than others, and some groups of cable subscribers having better service than others.

"Cable companies want to distribute nodes-each serving a number of households-as evenly as possible throughout the networks, so that there are similar numbers of homes being supported on each node," said Stan Schatt, ABI Research vice president and research director. "But for some operators the imbalances are approaching ridiculous levels."

Schatt noted that the concept of "node balancing" will be labor intensive and expensive for operators and that some had procrastinated, hoping that there might be an easy way out. However, the study indicates that time is running out for many and they will have no alternative but to move on and initiate the work necessary to bring their systems back into balance.

The study indicates that the problem exists not only with North American cable television systems, but also for those constructed in Western Europe.

Research

Research

TV Marti Gets Extension

WASHINGTON

The FCC has granted the Broadcasting Board of Governors an extension to continue TV Marti's Channel 13 Florida broadcasting efforts to reach Cuba.

The BBG's TV Marti facility is operating "with technical parameters at variance" from those that the commission had originally authorized when the frequency was granted to the now-defunct United States Information Agency more than 15 years ago. (The BBG has been responsible for U.S. international broadcasting since the USIA was eliminated in 1999.)

The FCC action became effective on June 21 and grants the BBG authority to continue Channel 13 operations until Jan. 24, 2008, subject to the condition that TV Marti does not cause harmful interference to other licensees.

Former BBG Chairman Kenneth Tomlinson, had originally sought a one-year extension in a letter to Commission Chairman Kevin Martin, dated Jan. 22, 2007.

This action is the latest in a series to allow the TV Marti Channel 13 operation to operate with technical parameters outside what had been originally authorized. TV Marti also has permission to transmit on Channels 18, 20, 50 and 64.

Federal Frequency

Federal Frequency

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The Drawn Together images are courtesy of Comedy Partners

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World Radio History

Slingbox

CONTINUED FROM PAGE 1

shop on the main drag of tiny Zanesville (Nielsen DMA #203) to install a weather/traffic cam connected to a Slingbox. "The box only cares about the source of the A/V," said Slentz. "It can take a feed from a VCR or a PVR, a cable converter output as A/V, or a straight RF input. The two crucial parts I've found to consider are the upload bandwidth—the stream speed output to the Internet—and the resources of the computer itself that is receiving that stream."

Slentz said a second tentative test phase in Zanesville would involve placing another camera and Slingbox atop a 30-foot tower at a park that sits high above a well-known bridge. "Our city is famous for having a Y-bridge that crosses over the juncture where the smaller Licking River hits the larger Muskingum River. It's a great vantage point for a camera that shows the weather and any threats of floods, plus traffic in the distance on [Interstate] 70." And the third phase of testing, Slentz said, would be locating a cam-and-Slingbox at the local courthouse for news reports on WHIZ, an NBC affiliate.

THE SHARP APPROACH

An ambitious Slingbox project also is underway at KPIX-TV, the CBS O&O in the nation's fifth-largest largest market, San Francisco. News Operations Manager Don Sharp currently has more than two dozen camera-Slingbox units focused on various traffic/weather sites throughout the Bay area—all available round-the-clock on the CBS5 Web site.

Sharp's tests with remote wired and mobile video garnered some industry attention this spring when he detailed his initiatives in an online interview with CNET-TV. "The response to that was truly amazing," Sharp said. "I heard from both broadcasters and other guys in a lot of states, in Europe, South America, from everywhere, asking me about this Slingbox idea."

Sharp said in his earliest tests more than a year ago he got "some pretty good quality" from a Slingbox attached to a DSL telco line. But looking for a wireless solution, he found the most reliable success using a cellular-based EV-DO (Evolution Data Only/Evolution Data Optimized) card from Sprint—a technology that provides wireless broadband (3G) Internet service directly to a laptop computer or smartphone. In effect, EV-DO creates its own WiFi-like "hot spot." The Sprint card works with Windows, Mac OS X, and Linux, according to Sprint, at DSL-comparable speeds.

In addition to his current 30 wireless remote locations with fixed cams (each connected to its own Slingbox) which are proving suitable for capturing traffic/weather content for on-air and online use, Sharp said he's also had success with Slingbox-generated video coverage in moving vehicles.

"I started playing around with it first on my bicycle, doing live shots, and then found that even driving beneath the Bay Bridge we had a live shot and never lost it. It even worked in rain at 65 miles-per-hour," said Sharp. "I can do a whole [cam site] package for maybe $600-$700 each. That's many times less than what we'd be paying for traditional equipment, which could easily run $20,000 a site, with all the microwave links, licenses and such." Sharp buys his cameras for about $200 each from China, and predicts he'll soon be using 50 Slingboxes and cams in CBS5's news operation.

Slingboxes are also being used for national coverage of local weather conditions. NBC Weather Plus, an NBC-Universal digital multicast weather service for local broadcasters, has begun tapping into live Slingbox-generated fixed video from a growing list of NBC affiliates around the country, including KPRC in Houston, WDIV in Detroit, KUSA in Denver and WKAQ, San Juan, P.R.

Jeff Thein, producer of NBC Weather Plus, said Slingboxes also will be put into service at NBC Universal's 10 O&Os in the near future, both for local coverage and to augment the digital-tier national weather channel. "By tapping into Slingboxes at our affiliates, NBC Weather Plus can seamlessly bring live weather coverage—previously only available in that particular market—to our viewers across the country," he said.

Slingbox, however, is not proving to be an easy, cost-effective solution for everyone. One major broadcast operation in the Midwest which did not want to be identified said it recently purchased a Slingbox for its own set of tests, which did not prove successful for its purposes. Problems involved latency issues (thus precluding acceptable lip-syncing for remote stand-ups), and securing enough bandwidth for the desired number of remote sites at various times. Nevertheless, this broadcaster said it does see future applications for Slingbox at some point, after some in-house tweaking.

Beyond broadcasting, major MSOs such as Comcast and Time Warner also are using Slingbox—mainly to monitor ad servers to prove that commercials are being inserted locally and going out on their systems, according to Sling Media spokesman Brian Jaquet.

When Sling Media, based in Foster city, Calif., introduced Slingbox a couple of years ago, it did not envision the consumer product capturing a growing amount of attention from electronic media professionals.

"Our primary focus was consumer-oriented, and still is, but from its earliest stages we noticed users tapping into it in a very vertical fashion," Jaquet said. "Yet when you combine a reliable video streaming device with an online wired or mobile connection, we knew it opened up a lot of possibilities. Like any technology, you build a product and then others notice different ways to implement it, including ways the creator may never have originally envisioned."

"Like any technology, you build a product and then others notice different ways to implement it, including ways the creator may never have originally envisioned."

—Brian Jaquet, Sling Media Inc.

With a Sprint EV-DO card and Slingbox, KPIX has fashioned a remote camera package for $600-$700.

As for Dan Slentz's encouragement from Zanesville to produce an industrial-strength version of Slingbox for professionals, Jaquet said, "We think it's definitely something worth more exploration and we will look at it for increased market opportunities. The question is, 'are we a big enough company with enough resources to put something like that out for the industry?' But we do find the idea intriguing."

Jaquet would not divulge any Slingbox sales figures, to date, but said Sling Media continues selling more boxes to consumers than to broadcasters and other professionals. ■

Some Wary of Slingbox Potential

Sling Media may have wowed a lot of tech critics and a growing number of broadcast engineers with its trio of Slingbox products, but it has also made one or two enemies along the way. Among those not willing to play ball with the Slingbox concept of place-shifting TV media is none other than Major League Baseball, which threatened legal action in June, (although the association has reportedly backed off from its threats for the moment).

A few heavy hitters have quickly sprung to Sling Media's defense, notably the Consumer Electronics Association, which called official baseball's legal threats nothing less than "a classic instance" of copyright owners trying to "suppress innovation" over a device that is clever enough to empower consumers.

"There is no infringement or piracy here," declared CEA President/CEO Gary Shapiro in a statement immediately after MLB voiced its displeasure. "Consumers are simply watching content they lawfully purchase or receive free, over-the-air, in a different physical location. You would think it would be in MLB's interest to please its fans, no matter where they are located. Unfortunately, MLB apparently doesn't want business travelers or American soldiers in Iraq to enjoy the nation's pastime via Slingbox."

The CEA chief reminded MLB that baseball operates under antitrust exemptions based on the concept that it provides entertainment benefits uniquely beneficial to the public. In early June, the Home Recording Rights Coalition also weighed in: "Allowing large copyright owners like MLB to threaten and harass our most innovative companies will harm consumers, our economy, and our global competitiveness." Bipartisan legislation currently pending in Congress (H.R. 1201) would limit the threat of so-called "secondary statutory damages" to device makers, according to the HRRC.

While Sling Media is talking with other parties about becoming willing content contributors (CBS has already signed on), the Foster City, Calif., firm is not looked upon warily by all pro sports groups. The National Hockey League has agreed to have live and recorded game clips, as well as some long-form content, featured on the Sling Media Web site.

John Merli

World Radio History

SONY

"Because the F350 has time lapse, slow shutter and over and undercranking, I got more creative options and my client got higher production value for the budget," Humeau says.

"With XDCAM HD, we shot a big show on a tight budget."

Thierry Humeau, director of photography and president of Télécam Films recently used his PDW-F350 XDCAM HD camcorders to create *Bombs, Bullets & Fraud*, a documentary on the US Postal Service Inspectors for Smithsonian Networks, a new HD TV channel from Smithsonian Institution and Showtime Networks.

"They needed a big movie that had to meet their high standards of quality on a fairly tight budget," Humeau says. "Some scenes we shot movie-style with a big crew, dollies and jibs. Some are ENG-style, following cops at night. Some are highly produced interviews. In every instance, the XDCAM HD camcorder came through."

The show's producer, Tim Baney of Baney Media is also a fan. He says, "The camcorder is very producer-friendly. You can instantly play back a scene on the LCD monitor and say okay, good, let's move on to the next take. It's a huge time saver and safety net that gave me confidence, knowing we got it in the can."

And the Smithsonian Networks' reaction? "They love it," says Baney. "In fact, they're already talking to us about another film."

To see a trailer of *Bombs, Bullets & Fraud* and find out how to receive up to $500 back on the purchase of an XDCAM HD camcorder, visit sony.com/xdcam.

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Smithsonian NETWORKS

World Radio History

Army Uses Web Portal to Manage Media

IT-based system could serve as model for other military facilities

by James E. O'Neal

FORT EUSTIS, VA

While the Army's Fort Eustis has roots extending back to 1918, it also has one of the most modern systems for managing multiformat media available at any military post or base.

As with much military nomenclature, the full name is a mouthful—Army Enterprise Multimedia/Visual Information Support Center Information Web Portal.

The system has been in the works for the past three years and is now operational, even though another coat of paint (in this case a final tasking for the system integrator to deliver a "work order management system" module) must be added for the total amount of functionality planned.

But according Michael Maxey, the visual information manager at Fort Eustis's Directorate of Information Management, this last deliverable is really icing on the cake.

"The system is already making a big impact on the way things are done here," he said. "Instead of moving 9,000 people back and forth to the auditorium here for mandatory training sessions, they can now get the training delivered to their desktops. It's a great time and money saver—just imagine the efficiency gained when before you had thousands of people coming and going, stopping along the way to visit or for coffee and donuts. Also you have to keep in mind that in an operation this size you will probably have 400 to 500 people out on travel or leave on a given day. Archiving the content with this system makes it a lot easier for everyone to receive the required training."

MANY NOW ONE

The new system combines functionalities of all media-related activities at the post. Before, there were separate operations for producing training videos, another for printing tasks, another for training services. Now there's a Web Portal.

"A lot of what we do here is training related," said Maxey.

As the home to the U.S. Army Transportation Center and the Army Transportation School. MOS [Military Occupational Specialty], the base offers training in helicopter mechanics, watercraft, motor transport operations—anything to do with Army transportation. The Portal works in conjunction with the school in helping trainees who want to brush up or review what went on in class. A Vbrick streaming media server is integrated with the Web Portal to offer classroom on-demand lectures to dayroom and other locations, according to Maxey.

"We've also gotten involved with the way 'town hall' meetings are handled," Maxey said. "We broadcast the meetings live via the post cable TV system and we also stream it. We have two Vbrick systems for this. One is for the local campus and the other feeds a 3 Gbps pipe to Cox Cable. Our first town hall broadcast on the new system went out on Feb. 27 and the second one on May 22."

Innovative Technologies Inc. (ITI), a Chantilly, Va.-based systems integration firm, is in large part responsible for the success of the Fort Eustis Web Portal project. ITI has been the sole contractor involved in the project, handling all details from planning to equipment deliveries and installation.

Humberto Irizarry, vice president of sales and marketing for ITI, described some of the features built into the Fort Eustis installation.

"The portal project was customized for the Army," said Irizarry. "It is all scalable—delivery rates range from 56 kbps well into the Mbps range, and the storage is scalable too. We're looking at upwards of 7 TB. It's all managed by local control, with users validated by the Army. Three different levels of authentication are used."

Irizarry said that his company has been involved with a number of DOD and federal government audio, video and IT projects, and possessed a unique understanding of some of the special issues involved in the Fort Eustis project.

"The system we designed allows all processes done by physical movement of paperwork to now be done via IP," Irizarry said. "The Army has been trying to get away from paper and move into the 21st century Web-based movement of paper and audio/visual materials. We were the exclusive contractor for the project and are proud that [we] were selected for this logical DOD technology jump."

> "The system is already making a big impact on the way things are done here... It's a great time and money saver"
>
> —Michael Maxey, Fort Eustis Directorate of Information Management

A Fort Eustis town hall meeting in progress

HAD TO WAIT ITS TURN

Maxey said that the basic concept for the system was developed "some time ago," but that the post, just like many other private sector, government and military entities, had to wait its turn before funding for the project could be made available. He reports that the system has performed very well, and there have been no real problems in implementation or operations.

"The only real issues have been more or less from a policy standpoint," said Maxey. "This is a network being used in a military environment. We had to be sure that we weren't breaking any Army policies."

According to ITI's Irizarry, the Fort Eustis Web Portal system is a first for the Army. The idea has been well accepted by the military, and Irizarry's company is currently building two more such systems for Fort Lewis in Washington state and for Fort Sam Houston in Texas. Irizarry says that two years of planning went into the Fort Eustis system to ensure that the Army got exactly what it wanted.

"As this is a first for the Army and we're the only contractor, we wanted to be sure that we got it right the first time," said Irizarry.

Television production workflow with the new system uses content captured with Sony DSR-130 DVCAM cameras.

"DVCAM is our acquisition media," said Maxey. "We have four DSR-130s and DVCAM decks. Right now we're using Avid Adrenalines with a Unity server for collaborative editing. We have about 20 terabytes of storage on line with the Unity. We use Telestream for moving the VOD product back and forth.

"Actually we get video shot from all over the country," he said. "We recently returned from a shoot at Fort Benning [Ga.]. Some of the footage was sent back with Telestream's ClipMail product. We'd used laptops out in the field for logging footage, so everything was ready to edit when the shooter returned."

Maxey estimates that his unit shoots 400 to 500 hours of raw footage per year. The Fort Eustis video group has been in operation for about 35 years and is staffed by 17 people. ■

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News

CONTINUED FROM PAGE 1

HD] P2 camcorders with Apple Final Cut Pro laptops that have a P2 interface for editing," Elser said. "Our field editors will be able to take their P2 card out of the camera, stick it into a slot on the laptop, and edit away. They can also bring it back to the station and ingest the data directly into an Avid, or relay it back via microwave directly into our Avid."

WRDW's new tapeless news equipment from Avid include an Avid Unity LANshare shared storage system; Avid AirSpeed servers, NewsCutter XP nonlinear news editing systems, and five Avid iNews Instinct journalist editing stations.

The station will no longer use its tape-based DVCPRO cameras. Elser added that their video journalists, who are "one-man bands," will be shooting with new, compact Panasonic AG-HVX200 P2 camcorders.

GOING SOLID-STATE

Panasonic is now shipping the AG-HPX500 shoulder-mount P2 HD camcorder, as well as the new 16 GB P2 solid-state memory card, (AJ-P2C016RG), which, for $900, doubles the storage capacity of its previous P2 card, (a 32 GB card will be available by the end of the year, according to the company). Among the 150 U.S. TV stations that have adopted P2 are Fox Television, Cox Television, and McGraw-Hill broadcasting groups.

P2's solid state architecture means no moving parts, freeing it from the limitations of optical disks, hard drives and tape systems, which require precise alignment and are subject to wear, vibration, shock, dust, and temperature limitations according to Robert Harris, vice president of marketing at Panasonic Broadcast, in Secaucus, N.J. "Since P2 is a high-capacity memory card that is compatible with current IT systems, it can also eliminate the time required for ingest, and the cost of a special deck that both tape and optical disk systems still require. P2 allows video pros to edit with their laptops in the field instead of waiting until they get back to the station," Harris said.

DISC-OVERING TAPELESS

At Belo Corp., in Dallas, Craig Harper, executive director of technology for broadcasting said there is a groupwide effort underway to adopt tapeless news technology. There is no set timetable for this migration, and different Belo stations are adopting tapeless news systems at different rates as existing equipment is retired.

Currently, 15 of the 21 Belo stations produce news, of which 11 operate in a tapeless newsroom environment. "Our stations have been shooting Betacam SX but we're now shifting everything to Sony XDCAM-HD; so we'll be disk-based in the field," Harper said. "To make this change for all 15 stations at once is extremely expensive and difficult to do. So we are going to put in complementary NLE systems in the field on a per station basis as we migrate over."

The Belo television stations in its largest markets include: WFAA-TV (ABC) in Dallas/Fort Worth; KING-TV, the NBC affiliate in Seattle; KHOU-TV, (CBS) in Houston; and KTVK (Independent) and KASW-TV (CW) in Phoenix.

Belo is not fully HD-capable from a production standpoint yet, Harper said.

"We are able to air commercials, programs, and network programming in HD. In Dallas, Seattle, Houston, and Phoenix, we produce the local newscasts in HD but the field recording is still SD widescreen," he said. "Our goal is to be tapeless from acquisition to play-out to air, the Web, and mobile, [because] that allows us to do that in a more efficient way."

Harper said that field crews will be able to send XDCAM HD files back to the stations via digital microwave, drive it back, or eventually send the data back via high-speed, broadband cellular services.

FEEDING MULTIPLE OUTLETS

Hearst-Argyle, Pappas Telecasting, and Albritton Communications have also adopted Sony XDCAM-HD. CNN also plans to use XDCAM for its HD news launch, expected later this year.

"CNN will begin using XDCAM HD camcorders and decks for HD ENG and news production, and will roll out XDCAM HD to its global newsgathering operation," said Bob Ott, vice president, optical and network systems, Sony Electronics. "XDCAM HD should help CNN supply high-quality HD native content for the upcoming launch of its HD network."

In Washington, D.C., Belo Corp.'s Capital News Bureau already shoots Sony XDCAM-HD in the field, and uses a Grass Valley Newsedit editing system. And in St. Louis, Belo's KMOV-TV is installing Bitcentral systems, including Précis for news production and Oasis for news sharing and archive.

"The benefits of a file-based newsroom, like those with Précis, are immediate. Within a Précis newsroom, the instant an asset 'enters the building,' the entire newsroom can begin editing and preparing published content," said Fred Fourcher, president and chief executive officer for Bitcentral, Inc., in Irvine, Calif.

"Even for stations moving to HD, once a clip is a file, every producer in the newsroom, every editor in an edit booth, and all the directors in the control room can access, browse, and even modify the raw content for distribution to any number of platforms."

Raycom Media, in Montgomery, Ala., started its transition to tapeless news production about five years ago—converting from DVCPRO and Betacam SP to Panasonic P2 cameras under the direction of Chief Technology Officer David Folsom. The Raycom Media TV group includes WMC, Memphis, Tenn.; WSFA, Montgomery, Ala.; WIS, Columbia, S.C.; and WAVE, Louisville, Ky.

Raycom Media has 27 television stations that produce local newscasts, and while none produce news in native HD, 21 are the top-rated news stations in their markets. Bitcentral Oasis and the AP ENPS NRCS are used across the group for news production and management; 21 of the 27 use Bitcentral Précis; and six use various Avid systems. By first quarter 2008, all of Raycom Media's stations will have transitioned to Panasonic P2, with nonlinear editing and server-based play-out.

"The benefit to a digital, nonlinear news environment is that we can do more with what we have, and seamlessly produce news for our multiple outlets, including our DTV channels, the Web, mobile services, and eventually HDTV," said Susana Schuler, vice president of news for Raycom Media. "We want our field crews to capture breaking news, edit the stories in the field, and feed them back to the station by the fastest means. Tapeless news technology helps us do our jobs in an increasingly challenging, hybrid formatted world." ■

Taking the Tapeless Archive Challenge

Since tapeless media is more expensive than videotape, news crews must dump their data frequently to free up the media for more recording. So, effective asset management and archiving are critical to making the tapeless news workflow perform well, and possibly defraying the costs of the capital investment.

"News footage is an incredibly expensive asset to acquire. To get an aerial helicopter shot, or footage of a one-time event or remote location could cost $750-$900 an hour to acquire," said Mark Siegel, president of Advanced Broadcast Solutions, a Seattle-based systems integrator. "If the average station has six or seven news crews out shooting each day, they now have a high volume of data to dump off of tapeless media. So the pressing question becomes where to put all that raw data—perhaps onto tape, hard drives, DVD—to store it?

"Many stations are making the decision early on to just discard that raw footage before they fully realize how valuable it may be," said Siegel. "But, by taking the time to preserve the metadata and archiving that footage, they can later find and monetize it by selling it to others, or using it in other venues, which can accelerate the return on investment to tapeless news."

Mark Siegel

According to Fred Schultz, senior marketing manager for news solutions for Harris Corp., "perhaps the greatest impact [of tapeless news production] comes with the new business opportunities that file-based production supports. Newsroom content can now be more easily repurposed for up-and-coming video-enabled technologies, including the Web, mobile phones, and handheld drives, [like the new Harris MPH in-band mobile DTV system].

"These new platforms serve as venues for your news content to be monetized in ways not previously possible," said Schultz. "They also call out for cost-effective, user-friendly asset management... [through products like Harris H-Class Invenio digital asset management system]... to efficiently collect, categorize, store, locate, and repurpose content—saving time while simultaneously monetizing media assets."

At Augusta, Ga.-based WRDW, Chief Engineer Ed Elser agreed that asset management is critical to tapeless news operations.

"If you don't have the means to handle all the metadata cost effectively, you cannot find the news footage you're looking for quickly; and the media is not in a usable form," Elser said. "But it's an incredible challenge to find an affordable, enterprise-class digital asset management and archive solution that's based on industry standards," Elser said. "I've really looked at everything that's available on the market today, but haven't found what we need for under $20,000. We're in market 115, and for a station our size, finding affordable asset management for our tapeless news operation has become a very serious issue."

Claudia Kienzle

World Radio History

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It's All About the Files

Whether it's flash memory, disc or hard drive, ease of use and media costs matter

by Claudia Kienzle

CAMPBELL, CALIF.

Although Sony and Panasonic have been first out of the starting gate for tapeless acquisition, there are other alternatives for capturing content in the IT world.

With DTE technology-based tapeless news acquisition, it's possible to capture the footage in the native file format that a particular nonlinear editing system supports—such as QuickTime, OMF, or MXF. So users can choose to record video in a file format their nonlinear editing system supports, and those clips can be dragged over to the NLE's timeline ready for editing.

Direct To Edit recording technology eliminates the time-consuming transfer of footage, often in realtime, from videotape into NLEs. (Direct To Edit is a registered trademark of Focus Enhancements.)

"News is always about time. Being first to air a news story could be a make or break for ratings in a particular market. That's why we have chosen to focus on it," said Matt McEwen, senior product manager for acquisition and video production for Focus Enhancements in Campbell, Calif.

FIFTH GENERATION

For the most part, Focus Enhancements has been flying under the radar, manufacturing DTE recorders marketed by JVC, Panasonic, and Canon. The company also markets its own branded DTE recorder called FireStore.

Scripps Television Station Group recently purchased more than 150 JVC GY-HD250 ProHD (HDV) camcorders, over 150 BR-HD50s ProHD recorders/players, and more than 300 DR-HD10060G HD hard disk recorders, and approximately 100 DTV monitors.

The 60 GB DR-HD100 is actually the fifth generation of the Focus Enhancements' FireStore DTE recorder. McEwen said that the recording technology is based on 2.5-inch hard disc drives, like the ones built into laptop computers, because they are rugged and offer high storage capacities.

The Ikegami-Toshiba tapeless system includes a camcorder, recording/management station and flash-memory-based media.

"Our industry in the midst of a major technical upgrade to high definition," said Michael Doback, vice president of engineering for Scripps. "JVC's ProHD products enable Scripps stations to provide local news coverage—including remotes—in HD."

McEwen said that the DTE technology would support Scripps' new HD newsgathering and production efforts.

"For WXYZ-TV, the Scripps-owned ABC affiliate in Detroit, this was actually the second time they adopted DTE technology," he said. "They had used a previous version of FireStore, called FS-3, which was SD, and now with this new deployment they are going HD. Users of the JVC system can capture a DTE file and drag it over to the timeline for editing, but they can also record simultaneously onto HDV videotape to have a back-up copy for archive. We worked closely with JVC to create a standalone device that connects to the back of the camera; and it has a 1394 FireWire interface from the digital output of the camera to our input. So the camera is 'aware' of our system, controls it directly, and gives the operator the status of the recorder in the viewfinder."

For Canon, Focus Enhancements makes a version of FireStore called FS-C, which doesn't have the same level of integration with the camera's circuitry as does the JVC system, but still features FS-C record status in the camera's

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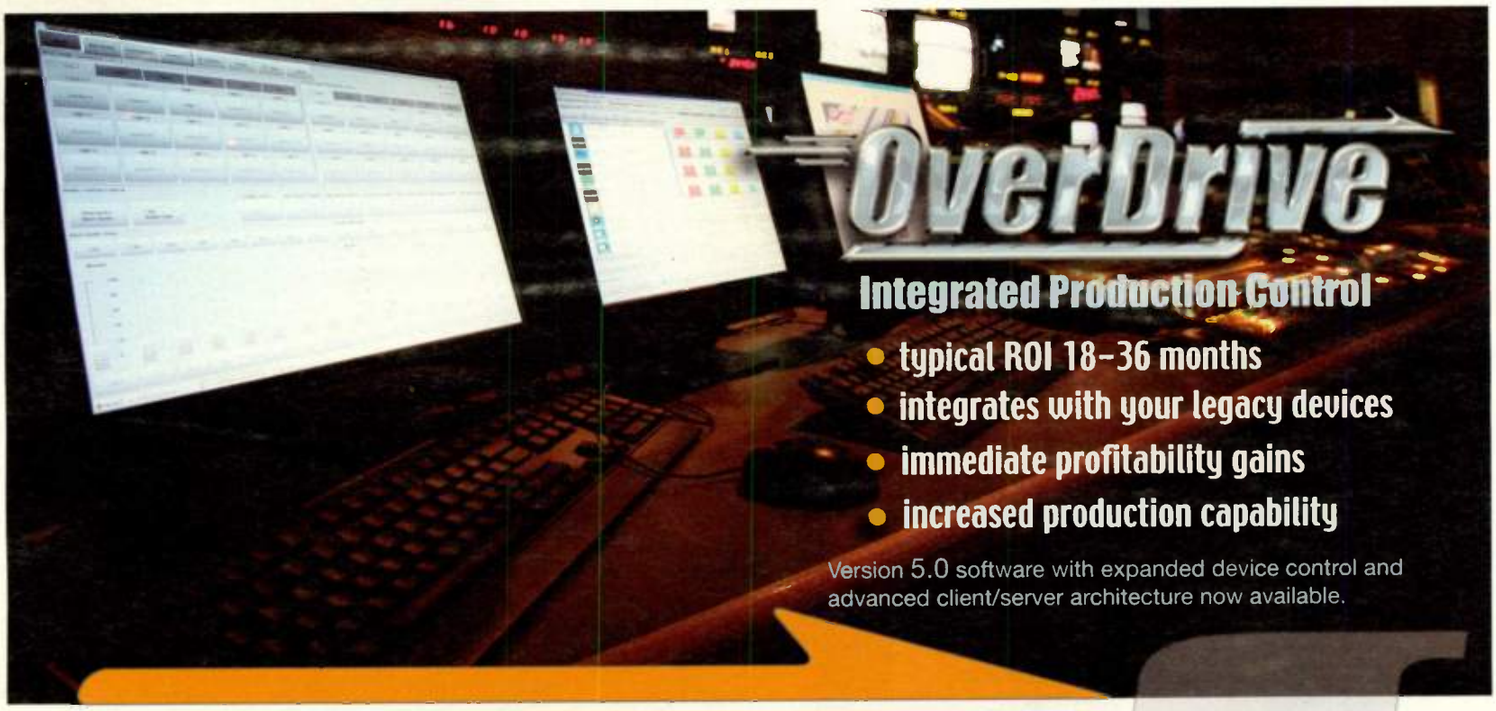

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"When surviving the elements and competition are the names of the game, we cast our vote for Anton/Bauer every time."

Director of Photography, Michael Murray used Anton/Bauer to power his equipment during the rigorous production of *Survivor: Amazon*. Murray and his entire crew at Adrenaline Films Orlando, which specializes in HD production in far-flung locations and extraordinarily harsh conditions, rely on Anton/Bauer batteries on their many assignments around the world.

"When you operate camera equipment in the kinds of difficult and demanding situations as we do, in underwater housings or mounted on the side of a helicopter, you minimize the risks by working with the best." says Murray. "A battery failure when you are literally up to your neck in dangerous surroundings is not a risk we can afford to take."

Michael Murray
Adrenaline Films
Orlando, Florida

Murray's most recent adventure was a three week documentary project in the middle of the Agaiambo swamp in Papua New Guinea about the recovery of a World War II B-17 Flying Fortress bomber dubbed "Swamp Ghost". Shot in High Definition using Panasonic Varicam with Anton/Bauer HyTRON 140 batteries, the filmmakers faced many challenges from the harsh environment, but battery problems were not something they worried about.

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Indy 500 Goes HD

Hi-def coverage of the 91st running enhanced by 1,800-foot Cablecam

by Robin Berger

INDIANAPOLIS

After years of anticipation, the Indy 500 finally went HD this year.

"Indianapolis Motor Speedway wanted to do hi def for many years," said Rich Feinberg, senior coordinating producer for ESPN and ABC. "Once there were enough funds to upgrade the technology, the production, operations and engineering personnel were able to dive in."

The plunge was huge.

"Everything was completely different from what we've done previously," said Dave Gass, senior director of field operations and engineering for IMS Productions, the production arm of the Indianapolis Motor Speedway. "We don't own hi-def facilities, so we had to rent. All Mobile Video provided the world feed facilities for us, and Yes Productions provided the ABC feed."

The result was breathtaking from the start.

"One of the most dramatic shots was at the beginning of the race, when you had all 33 cars coming down the straightaway," said Gass. "All the people in the pits and stands, all the cars, color and action [was there]; the grandeur of the event that wasn't there previously."

CAMERA COVERAGE

More than 40 cameras—SD and HD—were used.

All Mobile Video used five Sony HDC1000s and six HDC1500s for the pool feed, according to Lee Blanco, director of mobile operations for AMV.

Yes Productions used nine Ikegami HDK-79EX cameras: five handheld configurations and four studio cameras with SE-H700 extension adapters, according to Dave Kennedy, manager, technical operations for Yes Productions.

"These cameras used a combination of Fuji 101 and 87x lenses—the handhelds used Fuji 22x and 4.8x ENG lenses," he said. "Some of the cameras were operated on fiber, others on triax."

Kennedy noted that his crew also took in 25 RF camera feeds from in-car cameras, handhelds, and specialty cameras positioned around the track. The BSI in-car cameras used a standard-definition format, as time constraints ruled out an HD alternative.

"These feeds were handled by 18 FortelDTV UDC-550-CC up-down cross converters, which gave us color correction as well as conversion capability," he said. "The distribution was handled by 90 Evertz Microsystems' 500DCDA-HD down-converter cards, which allowed for down-converted distribution to SDI and analog signals all in one card with minimal delay."

Specialty cameras played a big role.

"It was the first time ever in the history of Indianapolis Motor Speedway that the sanctioning body of the IRL approved use of Cablecam

The Cablecam Accelerator System in HD made its first appearance at the Indy 500.

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Files

CONTINUED FROM PAGE 14

viewfinder. Focus Enhancements also makes a version of FireStore for Panasonic called the FS-100 which allows simultaneous recording to the disc as well as P2 cards.

INFINITE OPTIONS

Grass Valley offers the Infinity tapeless production system, based on REV PRO media. A company spokesperson confirmed that the REV PRO media is now shipping and that the Infinity camcorder will ship in August.

The Infinity SD/HD digital media camcorder allows recording onto integrated REV PRO media, as well as CompactFlash media and external devices. Also available as a standalone recorder, the Infinity Digital Media Drive can be used in the field, or with NLEs, such as the Grass Valley Edius editing system.

"At $67.50 for 35 GB, users can affordably own their own media, and have many options for recording, editing, exchanging and archiving stories on the same media throughout the workflow without the need for extra steps to move content to other media," said Scott Sheehan, Infinity market development manager for Grass Valley.

Fast Forward Video has developed a dockable digital recording solution for existing analog cameras that incorporates the Grass Valley REV PRO digital media drive. "Fast Forward Video is providing an affordable way for users of existing analog cameras to convert to a digital and file-based workflow from acquisition to archive," Sheehan said.

READY FOR NAB2008

At NAB2007, Ikegami and Toshiba Corp. announced a strategic partnership to jointly develop and market an advanced video production and editing system that includes the use of semiconductor flash memory as the main storage medium.

An Ikegami spokesperson said that the system is still in prototype form but it will be a finished working system by NAB2008.

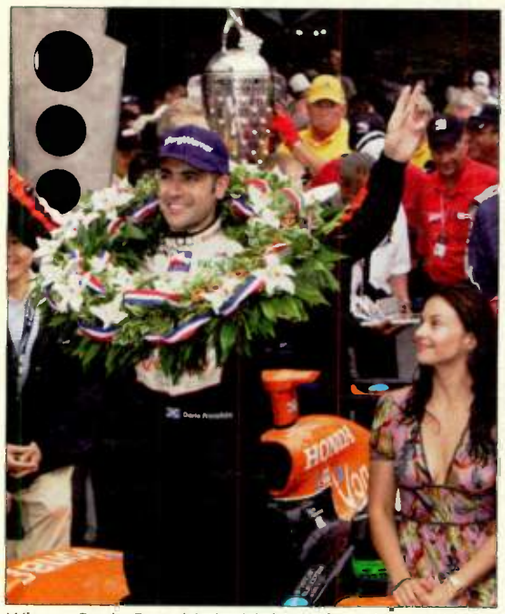
The system is comprised of a GFCAM hybrid tapeless camera for $25,000; GFSTATION for central video management and recording based on flash memory; a GFSTATION PORTABLE version; and GFPAK removable media, capable of storing up to 128 minutes of HD images. (32 GB will run about $950.)

Unlike optical discs, semiconductor flash memory has no moving parts; it's highly impact- and vibration-resistant, and offers easier, cheaper maintenance. GFCAM records high-resolution image data, and simultaneously records MPEG-4 proxy videos that are mirror copies, and the associated metadata. ■

World Radio History

literally flying over the track," said ABC's Feinberg. "It really offered spectacular shots."

The system's 1,800-foot trajectory started 200 feet behind the pagoda atop the Media Center, flew over the pits as it "threaded the needle between the pagoda and the scoring tower," then crossed the track diagonally to Turn One, where it was attached to the grandstand, according to Cablecam President Jim Rodnunsky, president of Cablecam International in Chatsworth, Calif.



Winner Dario Franchitti with his wife, Ashley Judd.

"It was our longest run to date using fiber as the 'pull line' [to achieve] speeds in excess of 80 mph," he said, noting the company's longest run to date *not* over fiber was 4,000 feet. ABC made the call to use fiber instead of a wireless connection.

"Using wireless gear opens the possibility of interference from other RF gear, including other TV equipment and telemetry from the race cars," said Paul DiPietro, coordinating operations director for ESPN Remote Productions.

The system was equipped with a Panasonic AK-HC1500 camera with a Fujinon 13x4.7 HD lens mounted on the company's new Pinpoint gyro-stabilized head, according to Rodnunsky. A Sennheiser MKH-816 shotgun mic captured distinct sounds.

Cablecam also debuted its new Cablecam Accelerator-projected A-to-B high-speed dolly along with a special system that takes up cable slack when the dolly is driven 1,800 feet away from its start point, said Rodnunsky. NASCAR plans to use it henceforth.

In addition, nine Iconix RH-1 HD minicameras were strategically placed along the outside wall to get come and go shots in the backstretch; one equipped with a shutter was placed at the finish line. Indy's Gass gave high marks to the technology's ability to capture the flagstand shot and illustrate how fast the cars were going.

Robo-Vision installed nine remote-controlled Ikegami HDL-50 cameras at the pit entrance, in no-man's land (between the pits and main part of the track), on the scoring pylon, and in turns and short shoots.

"Everything was completely different from what we've done previously."

—Dave Gass, IMS Productions

AUDIO AND WORKFLOW

Gass said this was the first Indy 500 to use 5.1 surround sound and EVS technology.

Yes Productions audio came through an SSL MT+ console, and used SRS Circle surround encoding transported through eight channels of Dolby E, according to Kennedy. The crew networked six EVS XT2 machines to handle replay effects and move backgrounds for its fully equipped Grass Valley Kalypso switcher and two Panasonic DVCPRO HD recorders to ingest from Avid editing and archiving systems.

ABC's Feinberg also noted that the graphics package built for Indy used a new system run on a different platform: Vizrt's Viz|Engine render with Viz|Artist 2.8 design software and Viz|Trio CG. The new setup offered real-time 3D animation, which enabled last minute rendering of title cards, a particularly helpful feature when covering car racing, a sport known for new entrants. ■

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World Radio History

BAS Update

Moving From Negotiation to Installation

A post-NAB review of progress in the BAS transition

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

RESTON, VA


Michael Degitz

This spring as we passed the two-year mark of the BAS transition, I had the opportunity to meet with broadcasters at NAB to discuss their station's transition as well as the status of the effort in general. I believe that together we are making real progress and are moving from negotiating and signing agreements to ordering and installing equipment.

Consider that as I write this update:

- All markets and all broadcasters are now engaged in the relocation effort.
- More than one-third of all stations have signed Frequency Retuning Agreements with Sprint (up from 26 percent in April).
- Sixteen markets have all FRAs signed and 20 additional markets have all but one FRA signed.
- Twenty-eight percent of stations have submitted purchase orders to the manufacturers and 10 percent have received all of their equipment.
- Stations in major markets like New York, Philadelphia, Los Angeles, Washington D.C., Baltimore, Tampa, Atlanta, Chicago, Houston, and Las Vegas have submitted purchase orders and many are in the installation phase.

As of May, $212 million in pre-paid RF equipment is in manufacturer inventory, including over 13,000 pieces of equipment, consisting of more than 6,000 transmitters and receivers and more than 4,000 controllers.

Most notably, this year we expect to transition the first multi-station markets to the new band plan.

WHAT'S NEXT?

Although we've made great progress, more work lies ahead and now is the time to execute. As I mentioned to many of you in Las Vegas at NAB2007, Sprint Nextel and the broadcast community will require additional time to accommodate the complexity inherent to the BAS transition process; however, we intend to ask for the minimal amount of time it will take to get the job done.

While Sprint Nextel wants access to its new spectrum as soon as possible, time is of the essence to the broadcast community, too.

First, the 2009 digital television transition has begun to place a premium on high-quality electronic broadcast equipment that broadcasters will receive from the BAS transition. The new equipment will allow broadcasters to distinguish their programming with high-quality, digital video feeds.

Second, starting in November 2008, the 2 GHz mobile-satellite service licensees will begin operating mobile-satellite services in the 2000-2020 MHz band that is currently assigned to BAS. As many of you know first hand, the MSS licensees have already begun exploring ways to ensure that they can service their public safety, homeland security and national security accounts even before the BAS transition is complete.

Completing the transition as quickly as possible will require everyone—Sprint Nextel, broadcasters, manufacturers and integrators—to continue diligently working on the task at hand. We need to finalize the relocation deal packages, sign contracts, order, install and test equipment, and relocate markets.

As we move forward there are several actions broadcasters can take to continue the momentum. These include:

- Reducing time between receiving and signing FRAs;
  Submitting purchase orders;
- Modifying FCC licenses (and file extensions if necessary);
- Saving receipts and packing slips for submission to Sprint Nextel;
- Informing Sprint Nextel of lessons-learned to pave the way for others.

Keep in mind, once a broadcaster's purchase order has been submitted it may take 8-12 weeks to fulfill the order. During this time, it is important for broadcasters to contact their manufacturer and service integrator to plan for installation.

Broadcasters should also contact their Sprint Nextel regional project manager. As a critical mass of stations in a cluster area reach the purchase order stage, the regional project manager will help establish a retune target date and begin coordinating with stations on a suitable cutover date.

SECONDARY FACILITIES

Recently, the FCC issued a ruling clarifying Sprint's rights and responsibilities for moving secondary BAS facilities. At issue is whether Sprint is required to move these facilities as part of the BAS relocation process, and if so whether Sprint must reimburse broadcasters for the cost of relocating the secondary BAS facilities. In the ruling, the FCC ruled that Sprint may, but is not obligated to, relocate and reimburse secondary BAS facilities in operation before Nov. 22, 2004.

In light of the ruling, Sprint is currently meeting with representatives of the broadcast industry to assess its effects on the relocation program and determine what is the best course of action moving forward.

For more information on the BAS relocation, visit *www.2GHzRelocation.com* ■

Canadian Coordination

Dealing with cross-border BAS interference issues

by Ken Freed

DENVER

As the 2 GHz transition rolls forward, what happens when a U.S. television station along the Canadian border discovers its relocated BAS transmissions might interfere with a licensee in Canada?

This is the question faced by Eric Bergman, chief engineer at CBS affiliate WTOL-TV11 in Toledo, Ohio. Bergman has a special interest because he's also SBE's frequency coordinator for eight counties in northwest Ohio and two counties in southeast Michigan.

Bergman was notified by the FCC about 12 possible instances of interference between WTOL's relocated BAS frequencies and three microwave licensees in Canada. He has submitted to the FCC the required data to show such interference will not occur, and he trusts the Canadian government will agree with his findings. Meanwhile, he awaits rulings from both national governments.

According to Ralph Beaver, a member of the SBE board of directors and head of the frequency coordination committee, "most of the local SBE frequency coordinators simply need to focus on mobile signals within their city, and they're done. They can handle on their own anything below 6 Ghz, but anything above that has to meet the FCC requirement for Part 1010 coordination."

EFFICIENT USE

Beaver says the 2 GHz transition may not affect cross-border coordination adversely, since stations will use their newsgathering microwave channels more efficiently.

"The digital protocols allow them to accomplish the same job with less power, which should reduce the risk of interference. I'm not sure if it will, of course, but it can," Beaver said.

"As stations prepare for the change to the new 2GHz band plan, they must modify their TV pickup authorizations to allow for digital emissions," Bergman said. Stations operating within 35 miles from the border with Canada must follow the requirements of FCC §1.928 (f) (1) (2)(3), which describes the criteria for frequency coordination with Canada.

"Item 20 in Schedule I of FCC Form 601 is where you make the declaration of the need to coordinate with Canada," Bergman said. Instructions on how to prepare the FCC application are contained in Public Notice DA 05-2223 (released July 29, 2005).

"The FCC and Industry Canada have a number of frequency coordination agreements in place," said Barry Isherwood, manager of terrestrial broadcast coordination for Industry Canada. In general, he said, when

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BAS Update

ModSci Has IFB Plan for Data Return Link

CTO Eric Small sees problems when BAS goes digital

by Sanjay Talwani

SOMERSET, NJ

Modulation Sciences Inc. thinks it has the solution for studio-to-truck voice communications after the BAS transition, when broadcasters will have to find alternatives to ensure reliable and private data links.

Eric Small, chief technology officer for MSI, which specializes in developing signal processing technology for broadcasters, has been testing a scheme using the Data Return Link (DRL)—two 500 KHz channels on either side of the new BAS channels—for interruptible fold back (IFB) communications. The test results were encouraging says Small, but it remains to be seen what technology will become the primary IFB backbone when 2 GHz BAS makes the transition to the new bandplan.

BEAT THE CLOCK

Small says his technology offers advantages over the alternatives, such as cell phones and the main DTV transport stream, in terms of reliability and efficient spectrum use. He says many broadcasters have expressed interest in MSI's DRL solution, but the DRL bands are not available until the market in question transitions to 2 GHz.

Currently, IFB systems like MSI's PRO Channel use a subcarrier on the TV aural channel. But with the shutoff of analog broadcasts set for February 2009, broadcasters will also lose that avenue, with no equivalent available in the new DTV channels. The real pickle will come if the transition to the new BAS band has not yet taken place at the time of a station's analog shutoff.

To drum up interest in its post-transition product, MSI is offering owners of its analog PRO Channel analog IFB system, already extensively in use, a discount on the new digital DRL system.

"We get a lot of phone calls wondering what to do," Small said. "We say, buy PRO Channel, and get a 40 percent discount on DRL."

In testing the new system under an experimental FCC license, MSI had to coordinate with users in the existing BAS plan. "Where a line-of-sight path existed, or there was sufficient fill from multipath [in 'urban canyons'], belt pack receivers were viable," Small wrote recently of the IFB-over-DRL test run. "Of course, with a lift-mast mounted directional antenna, coverage was limited only by terrain and the radio horizon, about the same as the forward 2 GHz video link."

MSI hopes to complete testing by this fall. The company is also exploring new technology to allow up to four voice grade channels in all 40 of the 25 kHz channels, creating up to 160 IFB channels for each market.

ATSC STANDARD

The ATSC is working on a standard (TSG/S3) to address DRL. That standard envisions automated tower control in the DRL band. It would not allow using the DRL for IFB, "however, I doubt if MSI's DRL equipment would be compatible

'Sorry, Your Call Cannot be Completed'

For broadcasters, loss of analog cell service will interrupt more than phone calls

by Ian MacSpadden

WASHINGTON

Broadcasters, beware. Come Feb. 18, 2008, Verizon Communications will discontinue providing analog cellular service to its customers. The scheduled change is due to a ruling by the FCC (ruling 22.901 of the 2000 Biennial Review of Regulations), which set the date as the sunset point for analog cell service in the United States.

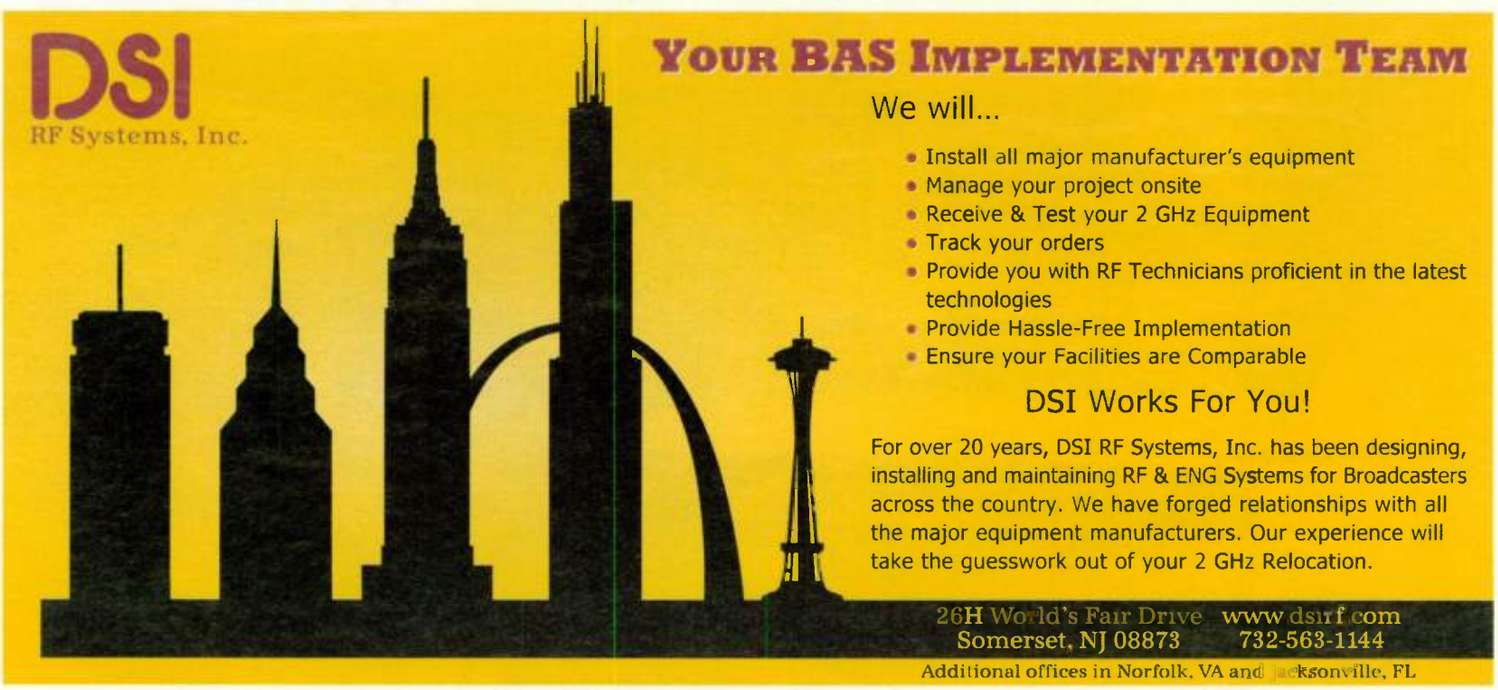
Why would a loss of analog service matter to broadcasters? Because it will have a profound impact on stations everywhere during remote broadcasts. Unfortunately, like many other products and services, broadcasters won't even feel the fallout of the loss of analog until it's gone.

CAN YOU HEAR ME NOW?

Since the 1980s broadcasters have used analog cell service for their field IFB to allow those in the production studio to communicate with talent in the field. These systems facilitate the near instantaneous ability for news anchors to talk directly with their field reporters during live broadcasts. They also provide control room producers with the ability to "interrupt" the signal in order to cue remote crews.

Prior to analog cell phones, many stations provided field crews with the off-air signal and a shared two-way radio interrupt for cues from the control room. This was a simple, but

CALL, PAGE 26



World Radio History

with the automatic transmitter power control portion of the DRL CS [candidate standard]," said Dane Ericksen, principal at Hammett & Edison and chairman of the ATSC Specialist Group on Digital Electronic News Gathering, which is developing TSG/S3.

Small disagrees with that assessment. "Certainly ATPC and IFB could not share the same channels, but there are 40 25 kHz [channels] available in every market and with directional antennas, the channels can be reused within the market at the same time," he said. "The issue is not one of compatibility; the FCC has not chosen to favor one technology over another, but rather coordination of the use of a scarce resource—spectrum. Nothing gives an ATSC *voluntary* standard any more claim on spectrum than any other use."

Small says broadcasters in general are taking a "wait and see" attitude toward IFB in the post-analog world.

And he sees problems with the other possible solutions for IFB. Placing IFB on the transport stream takes up valuable bits that could otherwise generate revenue for broadcasters. Small predicts about 1 percent of broadcasters will take that path.

The standard now being developed by ATSC would automatically adjust ENG output power for reliable transmission, resulting in more efficient use of spectrum and less interference with other users without operator intervention. Ericksen notes that all industry players, including MSI, were invited to work on TSG/S3, and the work so far reflects a consensus of the participants. MSI said it could not participate in any ATSC standards activities due to ATSC policies that would compromise its intellectual property.

Other challenges ahead for IFB over DRL include potential interference from Advanced Wireless Services (AWS), also known as Universal Mobile Telecommunications System (UMTS), a wideband cellular service slated for use on frequencies adjacent to the DRL bands. Small says experimental AWS has already caused interference with BAS functions, and the ultimate relationship of AWS and DRL remains unknown; however, AWS is required to operate with BAS without interfering. But he also said MSI is working on an interference-resistant DRL system.

Most broadcasters will probably use cell phones, despite warnings of unreliability in crisis situations. Much more serious is the FCC promoting of Priority Access Service, which gives "next available circuit" priority to emergency workers ranging from first responders to top officials. Once acquired, these circuits are rarely relinquished until the worker leaves the scene.

Small warns broadcasters: Do you want cell phone-based IFB to fail on the biggest story of your career, when an earthquake or explosion or even a traffic jam snarls the cell phone networks?

MSI's PRO Channel IFB is in two-thirds of the stations doing ENG in the country, and those are people who had tried the cell phone route, said Small.

At least some who use cell phone technology for IFB figure they'll get by. Pete Capra, chief engineer at KBAK in Bakersfield, Calif., is going with a cell phone solution. If a news story is so big it clogs the networks and knocks out the IFB, he said, reporters know to just start talking when they see themselves on the broadcast monitor. ■

World Radio History

Is Analog Interfering With D-ENG?

Early adopters of digital ENG gear may be at a disadvantage

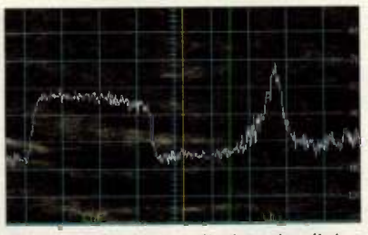
by Craig Johnston

SEATTLE

The promise of the 2 GHz relocation for BAS licensees, with its digitization of 2 gig ENG operation, is that digital microwave radios will be able to operate on adjacent, narrowed (from 18 MHz down to 12 MHz) channels, without interfering with each other.

That two digital microwave signals on adjacent channels will not harmfully interfere with each other is a proven and accepted fact. But as the equipment transition period of the relocation process moves ahead, some stations in a television market will begin to operate their newly received digital microwave equipment, while others will continue to operate their analog ENG gear. Will there be adjacent channel interference between the two?

Reports from some early digital microwave adopters, who moved to D-ENG gear ahead of the 2 gig relocation initiative, say that they did experience some interference from adjacent channel analog operations. However, users of the most modern D-ENG equipment, received through the BAS relocation program, report analog interference to be less of an issue.



A spectrum monitor displays the digital signal (L) and analog signal.

"As far as analog interference is concerned, the only way that you'll see it is if you have a much stronger adjacent frequency signal," said Rob Hershey, director of engineering at WHP-TV in Harrisburg, Pa. The station has been using digital microwave equipment in the BAS band for several months.

"As far as analog interference is concerned, the only way that you'll see it is if you have a much stronger adjacent frequency signal."
—Rob Hershey, WHP-TV

"Overall, it seems to be more of a monitoring issue versus actual interference," he said. "That's where the spectrum monitor is much more helpful, because it really gives you a true representation of what's going on, versus just a bar graph or an RSL level. It will be able to tell you that 'I've got an adjacent person that's going back to the same receive tower, and I'm probably seeing a much higher signal from him, so let me try to maximize what I have on my particular frequency.' That's where the spectrum viewer comes in very handy."

MIND THE GAP

David Otey, general manager of training systems for AZCAR, which runs the 2 GHz Relocation digital microwave training program under contract with Sprint Nextel, noted that there is a multi-year gap in equipment development between the pre 2-gig relocation digital microwave equipment and equipment stations are now receiving under the relocation equipment swap.

"Manufacturers have learned a lot," he said. He pointed in particular to developments in low noise amplifiers. "The newer LNAs have the ability to handle signals at varying levels without compressing the peak values of the modulated signal."

Otey said that in developing the relocation training program he and his instructors have done a lot of experimentation with adjacent channel operations. "If you select the right IF filtering in the receiver, you can get more immunity to an adjacent channel," he said. "We've found you can have 20 db more signal on adjacent channel and still be fine."

In fact, in one experiment the AZCAR training staff set up a co-channel situation with both a digital and an analog microwave signal on the same channel. "We were able to create, by balancing out the power levels, a situation where both receivers were receiving the intended signal," he said.

Otey reported that the analog signal was very noisy, and the signal quality metric on the digital receiver was lower than would have been expected had the digital signal been alone on the channel. But the picture itself from the digital mi-crowave path was clean.

IMPROVED CAPABILITIES

WHP's Hershey said his microwave operators have been pleasantly surprised at the capabilities of their new digital ENG gear.

"We were getting shots from locations that we had had no success from before," he said. "Some of them were problematic because of terrain limitations. We noticed things that would have been very noisy analog shots before, and were actually very usable digital shots now."

Hershey called the present situation a best-case scenario, because the station hasn't narrowed its BAS band ENG signal yet.

"It still takes up the footprint of the present channel allocation," he said. "We haven't gone to the new band plan yet, and that may make some difference simply because of the narrowing of the window.

"We're more than likely in a best-case scenario right now, but it gives us capabilities that we wouldn't have thought of before, like high-definition, things of that nature as well."

Until the station upgrades its signal paths from receive sites back to the station itself to digital microwave, they will likely begin their high-definition ENG migration by shooting in 16:9 standard definition. "In the future we're going to be migrating those paths to ASI streams coming in."

Hershey remains a satisfied customer for digital microwave. "We

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Canada

CONTINUED FROM PAGE 18

Industry Canada get a U.S. coordination proposal, "we look at frequency and power to determine if the U.S. station is likely to cause interference or not."

Isherwood said his office reports to the FCC the contact information of any Canadian licensee that may be affected by U.S. signals.

"The U.S. licensee then needs to contact the Canadian licensee," he said, "and whatever solutions they work out among themselves are then communicated to Industry Canada and the FCC."

Bergman counsels patience. "Communication between the FCC and Industry Canada does not happen overnight. You need to allow sufficient time, so you have your authorization from the FCC before you start using the new BAS frequencies or before your market switches to the new channels."

Bergman said WTOL filed its initial FCC application in mid-2006 and received a Notice of Return from the FCC dated on Valentine's Day that listed 12 cases of Harmful Interference Anticipated with three Canadian licensees. The last portion of the Return stated that his solution options included "reductions in antenna heights, Effective Radiated Power (ERP), operating area, and/or use of directional antennas to protect the Canadian station."

The Return further declared, "we are unable to successfully coordinate with Canada to allow for your use of a 25 KHz emission within the entire band from 2025.0-2025.5 MHz."

In the 60 days that followed, Bergman said that he performed "significant engineering analysis" of each HIA, and in each case he found there would not be any interference. In one instance, he hired an outside engineer to do an independent analysis, so there would be no doubts about his findings.

Bergman then contacted the Canadian licensees, including a station with a powerful signal 250 miles from Toledo. "I spoke with the chief engineers at all three licensees," he said, "and in each case they confirmed there was not going to be any problem. So, I did not have to change our FCC application. I just had to submit letters from the Canadian licensees confirming that the 12 cases of anticipated interference would not happen."

Bergman estimated that he invested about 40 hours in doing a dozen engineering analyses, communicating with the Canadian licensees, and preparing his response to the FCC's Return, which he filed on April 24.

As of mid-June, Bergman was awaiting final approval from Industry Canada and the FCC. "You cannot do the switch until you have authorization," he said, "and the process is taking us about a year. This is why I say you have to get started early to leave enough time for application approval."

ELSEWHERE

Not all cities near the Canadian border face the same frequency coordination issues as Toledo. "One station in Cleveland has already applied to the FCC and received approval for the 2 GHz switch without any Notice of Return," said SBE Frequency Coordinator Mike Szabo, chief engineer at WKYC-TV4 in Cleveland. That station is ABC affiliate WEWS-TV5.

Szabo said no other Cleveland stations have submitted their applications yet, as far as he knows, "and I keep close track of the weekly posts from the FCC licensing sections."

He added that he does not expect any returned applications because of the distance to Ontario across Lake Erie and because the BAS transmissions will point away from Canada.

"I don't believe any of the stations in Detroit have filed their FCC applications yet," said Russ Harbaugh, the Detroit area SBE frequency coordinator and a consultant at Media Control Inc. "Of the eight stations in the city," he added, "only four heavily use the 2 GHz band for news." These are WJBK, WDIV-TV4, WXYX-TV7 and WKBD-TV50.

According to Greg Thies, news operations manager at NBC affiliate KING-TV5 and the SBE western Washington frequency coordinator for signals above 1 GHz, CBS affiliate KIRO-TV7 recently was granted its 2 GHz license.

"Seattle has been fortunate on interference issues," he said, "because the majority of the news operations are south of the border. Even if a helicopter flies up to the border, its signals are always pointing south."

Like a lot of cities, Thies said, "We still have the majority of the project to go here, so we trust the FCC will decide to extend the deadline beyond this September." ■

World Radio History

BAS Update

Are Secondary BAS Licensees Included?

Sprint Nextel gets go ahead from FCC

by Craig Johnston

COLORADO SPRINGS, COLO.

John Burrell, chief engineer at KKTV-TV in Colorado Springs, Colo., knows first hand the value of far-flung television translators. Burrell grew up on a farm in rural Colorado, where a translator provided television to his family and neighbors.

While many television translators capture a station's off-air signal and relay it to a remote community, in Colorado and other mountainous states, it is sometimes necessary to feed the broadcaster's signal via microwave to the translator. Such translator and low-powered television station microwave relays qualify for secondary Broadcast Auxiliary Service licenses.

CBS affiliate KKTV uses just such a secondary BAS license to relay a 2 GHz signal to a 13,000-foot peak, and from there 117 miles to San Antonio Mountain in northern New Mexico, where a 100 W transmitter serves 100 miles of San Luis Valley and the 10,000 people of Alamosa, Colo.

"Outside of satellite, [people in San Luis Valley] get TV from almost nowhere else," said Burrell. "Albuquerque tries to service it, but not very successfully."

JOINING THE RANKS

KKTV and other secondary BAS licensees are breathing a little easier these days since the FCC issued its Second Memorandum of Opinion and Order (MO&O) in late May. That action opened the door for secondary BAS licensees to have their analog 2 GHz microwave equipment replaced by digital equipment, courtesy of Sprint Nextel.

Sprint Nextel's BAS relocation initiative is aimed at freeing up 2 gig spectrum by relocating BAS channels in the band and narrowing them from 18 MHz to 12 MHz. Operating within the narrower and relocated channels requires digital microwave equipment be used instead of the analog gear that has been long used there.

As part of its payment for a portion of the spectrum, Sprint Nextel has been "making whole" primary BAS licensees, purchasing digital transmitters, receivers, antennas, dedicated test equipment and other necessary items, and paying for their installation. The federal government is carefully monitoring those expenditures since those costs are credited toward Sprint Nextel's payment to the treasury.

As their name suggests, *secondary* BAS licensees do not enjoy all of the advantages that *primary* BAS license holders do. Secondary licensees must take all necessary steps to avoid harmful interference with primary licensees, and cannot claim protection from interference caused by primary licensees.

Sprint Nextel, unsure its expenditures would be reimbursed by the government, has balked at replacing secondary BAS licensees' microwave analog microwave equipment.

Gray Television, KKTV's parent company, along with Fox Television Stations, the Mohave County Board of Supervisors (which operates a number of television translators in Arizona), several Phoenix area broadcasters, and The Association for Maximum Service Television (MSTV) petitioned the NAB to direct Sprint Nextel to treat secondary BAS licensees involved in translators and low-powered TV stations the same way they treat primary licensees from the standpoint of microwave equipment replacement.

HALF A LOAF

The commission's response in the MO&O technically gave the petitioners half a loaf.

"Specifically, we will permit, but not require, Sprint to pay and claim credit for the cost of relocation of BAS facilities associated with translator television stations and short-term BAS facilities operating under Section 74.24," the FCC said in its order.

The MO&O repeatedly reiterated "the 'well-established principle' that secondary operations are not entitled to relocation reimbursement."

Representatives of Sprint Nextel and MSTV report they are working together to establish procedures for replacing secondary BAS licensees' analog microwave equipment.

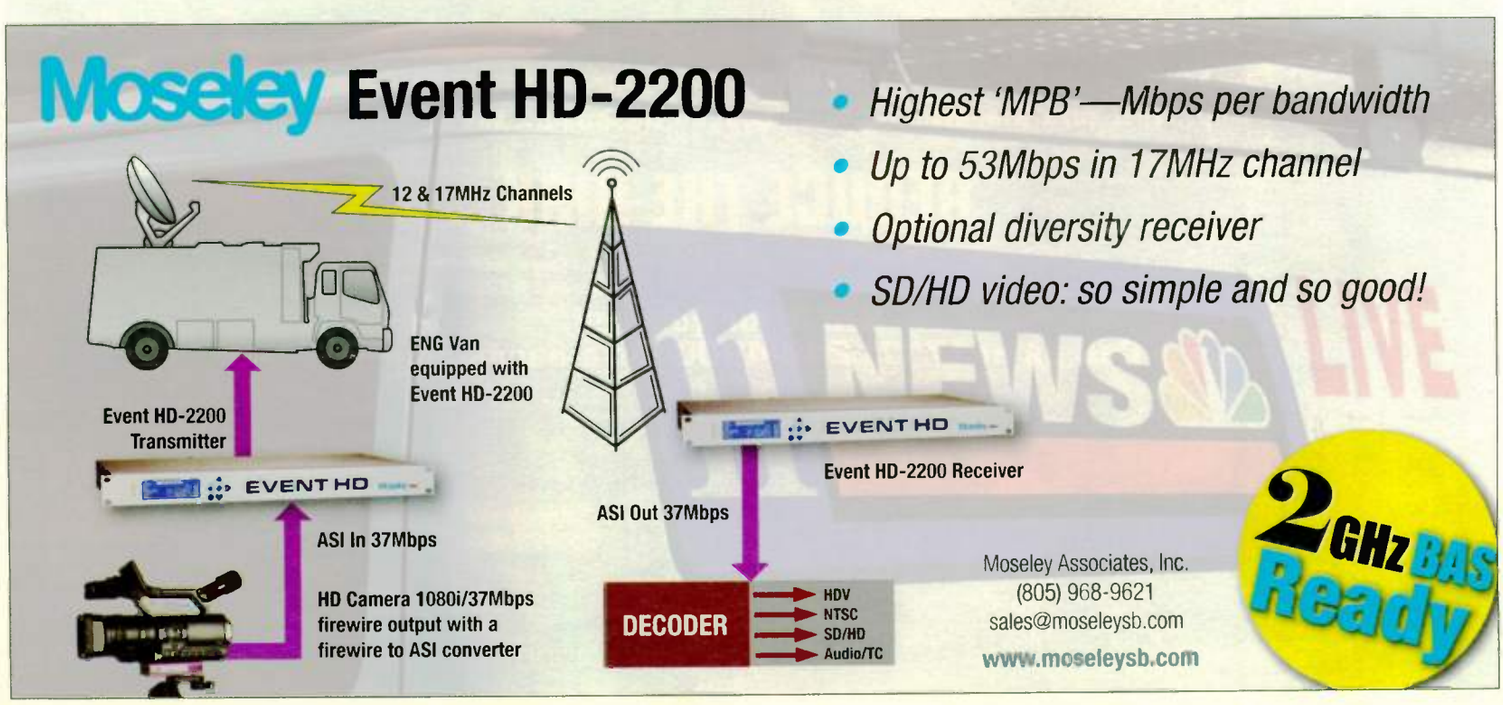
The equipment replacement effort for primary BAS licensees, many of whom use their 2 GHz spectrum for ENG operation, has proven to be complicated and time-consuming. But Bruce Franca, vice president for policy and technology at MSTV, predicted equipment replacement for secondary licensees will be much more straightforward.

"[Secondary licensee microwave applications] tend to be point-to-point links, and it tends to be a little less complicated with a little less choice for equipment," he said. "It's basically moving a signal from point A to point B, [and] as long as the equipment is capable of doing it, there's less concern about how it's actually done and what equipment's actually in use."

There's a very direct message to Sprint Nextel in the final sentence in the secondary BAS section of the MO&O:

"Finally, we are confident that permitting Sprint to pay for the relocation of BAS facilities associated with translator and LPTV stations and short-term BAS facilities will give Sprint the flexibility necessary to tailor its BAS relocation plans to ensure that it meets its important obligation to ensure that BAS relocation is complete by September 7, 2007," the commission said.

Earlier this spring Sprint Nextel warned the FCC they would be requesting an extension to that BAS deadline. ■



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World Radio History

BAS Update

Call

CONTINUED FROM PAGE 20

rather limited system. However, it worked quite well in fully analog plants where little delay occurred in between talk from the studio talent and the field.

As stations began installing digital switchers and other signal-processing infrastructure, they slowed the signal's travel through the transmission chain, thus delaying the off-air signal. The end result is that instead of instantaneous delivery, talent in the field will now hear a delay following their own words.

Analog cell phones offered a tremendous opportunity for stations to provide multiple paths for IFB communications. Not only could crews provide communications outside their broadcast area, but they also had much more control over them with the new ability to isolate and individually address specific sites using separate dial-in lines. Mix-minus was also made available in the field, allowing a reporter's own voice to be removed on the return IFB path to further reduce issues with delay. While this probably didn't give way to the back-to-back live shot, it did allow for better control, improved cuing, and more complex remotes.

All cell phones have their limitations. They are subject to dropped signals, no coverage, and even exclusion of coverage during emergencies. Further, the FCC does not permit cell phones to be used in helicopters, an ever-increasing choice for live broadcasts. During the 1990s, most stations opted to add a backup system to analog cell service. One early technology was PRO Channel, or Professional Channel, a private real-time one-way communications channel that is embedded in a station's analog broadcast signal.

Eric Small, chief technology officer for Modulation Sciences in Somerset, N.J. says "the FCC created PRO Channel for stations to use for their internal needs. It's free and belongs exclusively to each station's broadcast channel."

However, as cell phones became more ubiquitous, the use of PRO Channel declined. Orban, a manufacturer of PRO Channel equipment, has discontinued its line of PRO products.

"PRO Channels were getting little use around the country as cell phones and air times became cheaper, and in some circumstances more reliable too," said Kevin Clayborn, North American sales manager for Orban.

Some stations like WRC in Washington, D.C. have already migrated exclusively to digital cellular. "With analog going away and PRO Channel presenting too many issues, we decided that digital cells would work best," said Bill Nardi, director of technology for the NBC O&O.

DAYS ARE NUMBERED

As analog cell phones are being replaced by digital services, stations' transition to digital will soon signal the death knell for PRO Channel as well. PRO Channel only operates over a station's analog signal. On Feb. 17, 2009 as the last analog transmitter shuts off, PRO Channel will cease to exist.

John Johnson, director of corporate communications at Verizon Wireless says, "the termination of cellular service on Verizon's networks will not be a phased shutoff, but rather a flash cut-off of the service, which will occur on Feb. 18." Johnson added, "the shutoff only affects Verizon's own analog network and not those of its roaming partners." These remaining providers are independent service operators whose coverage reaches vast amounts of the country's interior and rural areas.

"A few far reaching providers will keep analog service for customers in order to support legacy systems," said Clay Dover, executive director of the San Antonio-based Rural Cellular Association. "Most though are migrating to digital because of the vast feature set available with the newer systems."

With the three original real-time IFB transmission options gone or going away, there are very few options remaining for stations.

Jack Vines, president of Television Engineering Corp. a St. Louis-based provider of ENG/DSNG vehicles, says that most stations are requesting digital cellular-based systems in the ENG and SNG trucks that his company builds.

"We never get requests for PRO anymore," said Vines. "Occasionally we tie a two-way and a cell to the IFB system, but most people just use Tellular Systems. These fixed wireless terminals connect to standard cellular and PCS networks but function a lot

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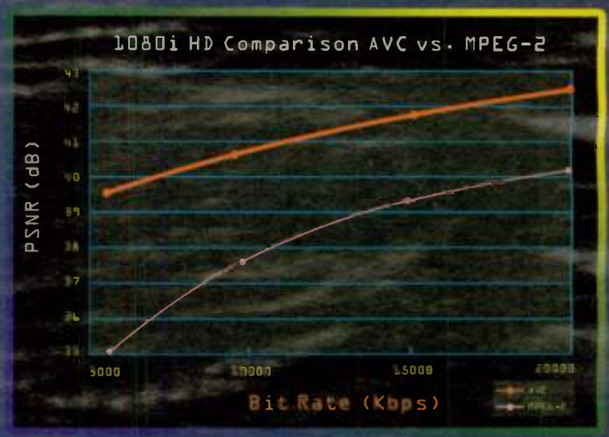

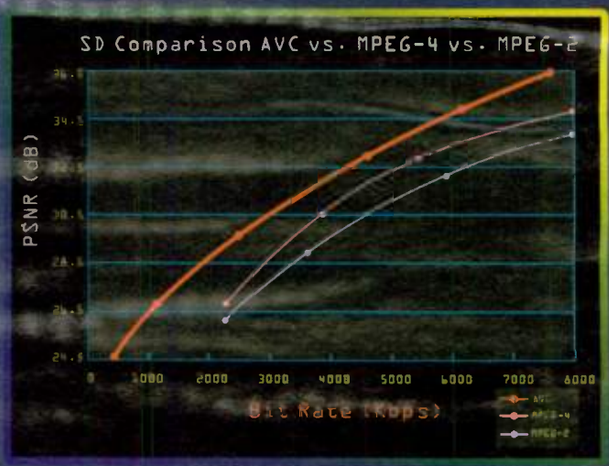

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Studios Ramp Up Media Management

Digital Hollywood spreads the message

by Robin Berger

SANTA MONICA, CALIF.

Last month's Digital Hollywood conclave was a stark reminder about how quickly technological changes have changed the corporate structures and lexicon of an extended industry.

In weeks leading up to the conference, Ericsson acquired Tandberg TV and Big Band Networks. The BBC and Lionsgate signed agreements with iTunes. And speculation was rampant about the new NBC-Fox joint venture hooking up with Google and Joost.

The buzz on workflow initiatives hung on service oriented architecture and proprietary hub systems, while yesterday's "Anytime, Anywhere" mantra for digital entertainment was replaced by WIWWIWI (somehow pronounced "wee wee"), or "What I Want, Where I Want It."

Panelists at the session "The Revolutionized Digital Workflow Experience," agreed that their biggest challenge was optimizing the interaction of a hodgepodge of parts accumulated over the years to yield results users wanted.

"We're being asked to make up for 50 years of patches—there's this baggage that has to be sped up," said Michael Pusateri, senior vice president technology for Disney ABC Television Group. He noted increasing exhortations to "build software to make [the problem] go away."

SOA & PROPRIETARY HUBS

This has resulted in a project called the "Jellyroll" hub system initiative for transmissions in and out of Disney/ABC, which came online last summer. It now clocks 850 Mbps from Burbank to Milan in 11 minutes, according to Pusateri. There are plans to launch an HD version soon.

The actual Jellyroll part of Disney/ABC's SOA-based system is a Web-based, metadata hub and time-based digital asset management solution that hooks into different services, according to Cyril Rickelton-Abdi, director of technology development for the Disney/ABC Television Group, who reports to Pusateri.

Sitting atop Jellyroll is a company-wide middleware layer called Media Monorail. Currently, it's mainly used by the Disney/ABC Television Group to deliver video assets between Burbank and Disney-owned and operated broadcast facilities in Paris, Milan, Madrid and Singapore.

"It enables one asset management system in one part of the world to speak to another asset management system in another part of the world," said Rickelton-Abdi. And, he noted, the Media Monorail also hooks into a variety of services—like streaming and encoding—via APIs. Above the Media Monorail, he said, is a network (traffic) management system called Agile Media Network, which, he noted is not associated with the BT agilemedia venture, an interactive media initiative from the U.K.-based telecom giant.

SOA is also a focus at Warner Bros. Advanced Media Services, according to Spencer Stephens, vice president and general manager for motion pictures imaging.

"The biggest challenge is making the technology we've got to work more efficiently. We want to have a more holistic approach to managing," said Stephens. "With traditional workflow management, a production supervisor has to look at multiple systems to determine the state of a Digital Intermediate," Stephens told TV Technology. "With our SOA system they should be able to set up a dashboard view into the project that pulls the relevant information from the individual systems and displays them in a project view."

Stephens said the SOA approach that the company is looking into with IBM would render a "top down view of resources in production" and better enable automation of the workflow.

> "The biggest challenge is making the technology we've got to work more efficiently. We want to have a more holistic approach to managing."
>
> Spencer Stephens
>
> Warner Bros. Advanced Media Services

Sony Pictures Entertainment's Digital Media Group is also "pushing toward SOA—building these [systems] out as loosely connected service blocs, kind of like Legos," said Donald Wong, vice president of digital media technologies.

The rationale behind this policy was a clear indication that SPE could not continue to spend as much as it had been on building out new applications with new utilities.

Wong says there are actually two SOA initiatives at Sony Pictures: a Java-based initiative by the company-wide IT group for shared services; and a Microsoft .net platform initiative led by Doug Chung, director of the Digital Media Group, who reports to Wong.

The Digital Media Group initiative began about a year ago and Tata Consultancy Services was contracted to help build its architecture. A 1.0 launch is expected to be rolled out this summer for the company's global marketing group.

"For the initial 1.0 launch, most of the assets that we're concerned about are more on the marketing side," said Chung, specifically TV and radio spots as well as print and billboard material. "We had already built out a complete digital asset management application [as a connected services framework] based on the .net platform—we had just wanted to extend what we had built, really make it fully services-oriented."

Wong said that the group's SOA initiative is already starting to pay off, with Chung rolling out two applications that feed off a digital media repository: one for domestic television

World Radio History

and one for motion pictures.

"The budget for both of those efforts would have easily been eaten up by one of our prior applications," said Wong. "I'm expecting our SOA-based framework to [also] bring our support costs down."

MOBILE & IPTV

Most panelists at the conference agreed that mobile TV had at least two niches: immediate "grab and go" access to sports, news and other updates, and content specifically created for the platform.

"It's an opportunity for time and place shifting that's in everyone's pocket right now," said Rishi Malhotra, director of HBO On Demand.

"You have to embrace YouTube and Joost because you can't ignore them. No one really knows how things will evolve."

—Rishi Malhotra

Dan Monahan, Global Infotainment Segment Manager for Intel Corp.'s Mobile Platforms Group, showed the Ultra Mobile Platform at Digital Hollywood's "Ubiquitous Video" panel. The new platform claims to support Internet devices that are "energy efficient, smaller, and truly mobile." It was first introduced in April at the Intel Developers Forum in Beijing.

The HTC Shift, a new mobile computing device, is based on Intel's new Ultra Mobile Platform.

Panelists at the conference also warned against underestimating online video services such as YouTube or Joost. This attitude was best illustrated by Mark Cuban's comment last fall that "only a moron would buy YouTube."

"You have to embrace YouTube and Joost because you can't ignore them," said HBO's Malhotra. "No one really knows how things will evolve."

TV Guide Channel President Ryan O'Hara admitted to hedging his company's bets by checking out prospects for partnerships with Joost.

"Joost takes over the whole PC. It's a great visual [and has] all kinds of interesting features," said O'Hara, putting chat high on the list of community-enhancing propositions.

As co-panelist Simon Danker, BBC director of Digital Media, noted, "Advertisers love communities."

Despite this, O'Hara acknowledged that Joost was hamstrung by a lack of access to mainstream content, relying more on user-generated product. Although he didn't think Joost would take the market by storm, he believed it could well cause a buzz among the much-prized younger demographics.

"This is the next-generation Comcast with better opportunities for monetized long-form content on line," said Martijn Lopes Cardozo, senior vice president of corporate development for Tandberg Television. ■

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The Importance of Being 'Data Detectives'

Tracking down the hidden flaws in DTV broadcasts

by Craig Norris

FALLS CHURCH, VA

Digital television is all about data streams—lots of them—and very complex, ever-changing data streams. And to make matters worse for a DTV troubleshooter, the data is usually encoded far beyond human visual recognition and in some cases deliberately encrypted too. The existence of such voluminous, ever-changing and complex data streams has spawned a new generation of digital test and measurement equipment.

Some real trouble can begin when the synchronous television data streams hit the asynchronous telco distribution networks, for example. All sorts of issues relating to things like propagation delays and network quality of service can wreak havoc on a television transport stream.

QUALITY OF SERVICE

Monitoring the performance of a distribution network and the integrity of a DTV data stream across that network is one the top priorities for Pixelmetrix which has developed its DVStation monitoring platform for this very purpose.

Making the status of the data streams and associated devices visible to an operator or manager is an important function performed by the Pixelmetrix ConsolidatorPlus Network Management System, a part of DVStation. The customizable Windows user interface enables complete visibility of the network status including a geographical map showing the location and status of each device. An operator can drill down to see the detailed status and alarms for any device on the map.

"Telcos around the world are encouraging the use of their networks as television distribution platforms, so the rise of IPTV continues to gain momentum," said Danny Wilson, president and CEO of Pixelmetrix in Singapore. "DVStation will surely find a home in that arena. Part of the EndGame architecture for IPTV, all these components together enable true 'end-to-end telemetry and visibility'—the goals of the Pixelmetrix monitoring platform."

Introduced at NAB2007, EndGame is a suite of tools from Pixelmetrix that provides a QoS solution for IPTV.

LIP SYNC

While the Pixelmetrix solution gives visibility to the wider network performance and status, the Harris Videotek TVM and VTM Series multiformat analyzers are finding a home within the television production and play-out environment. The analyzers can display the differential timing relationship of two video signals, allowing precise measurement of video delays through the production plant.

User discussion forums on the Internet include numerous complaints from consumers about erratic lip sync behavior in DTV broadcasts. Inconsistencies between channels are common; some channels have lip sync problems, others don't. And some consumers begin to experience lip sync problems when they purchase a different set-top box (espe-

DATA, PAGE 32

Danny Wilson, president of Pixelmetrix

Call

CONTINUED FROM PAGE 26

like older analog cell phones where you can connect multiple handsets to a single cell phone and have line level audio output for IFB connections."

Tellular-brand products are available for GSM, TDMA and CDMA formats and are supported by most carriers worldwidel.

Steve Williamson, director of sales for Oshkosh, Wis.-based Frontline Communications, another large ENG/SNG truck builder, sees a similar trend. "Most of our customers [70 percent] are continuing to use cell technology even with the delays that digital cell phones produce. Tellular, dock and talk, or cell cradles are common additions to almost all of our trucks. Recycled analog PRO-channel receivers and PRO3 receivers are being installed in about 25 percent. We do see two-way used in some instances, [5 percent] mostly in major markets."

Some helpful technologies could make use of the new DTV digital transport stream as well as the new Broadcast Auxiliary Service.

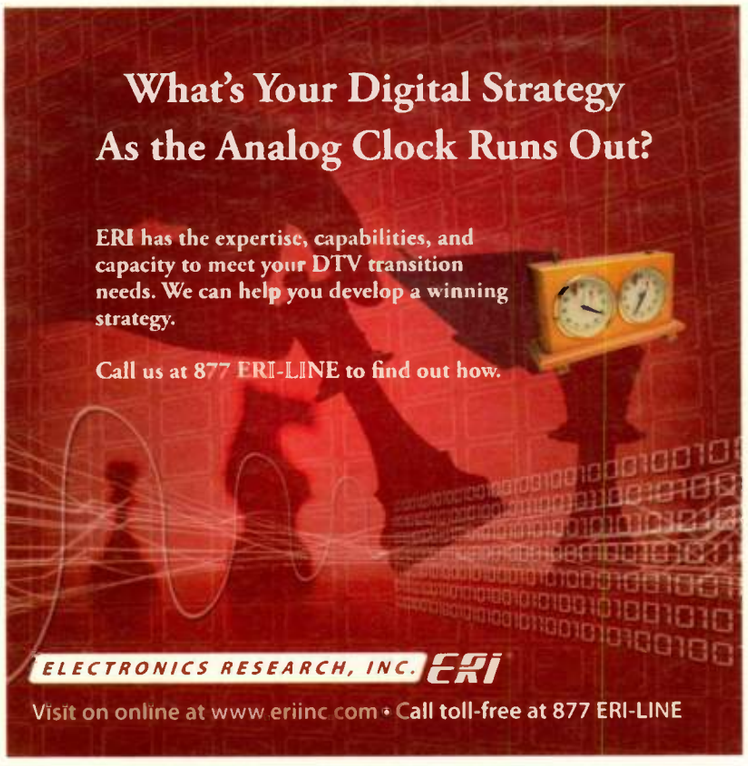
"With PRO Channel going away, the two remaining options are satellite phones and two-way radios," says Steve Wysong, president of Blountville, Tenn.-based Wysong Enterprises, whose company outfits news helicopters for ENG. "Both work, but both have limitations. There is the processing time on sat phones that adds too much audio delay and two-way channels are not always available in every market."

Wysong believes the solution may be to use the data return link of the 2 Ghz BAS band, the new digital service allotted by the FCC to local station use, (see related story). Companies like Modulation Sciences are working on IFB systems that will operate over the DRL. Small says they have successfully tested "proof of concept" equipment that "will replace their line of PRO Channel equipment with similar functionality after the shutdown of analog TV makes PRO Channel obsolete."

"Looking forward, I believe DRL will be viable for microwave once the BAS changeover is completed" Frontline's Williamson said. "But with DSNG/ENG combos becoming increasingly popular and redundancy always critical I expect most broadcasters to specify multiple paths and technologies for end-to-end IFB delivery."

Unfortunately, even though each broadcaster will have access to their own coordinated DRL segment of the BAS service, it won't be made available by the FCC until Sprint/Nextel finishes its 2 Ghz relocation project. Sprint Nextel is planning to ask the FCC to extend the September 2007 deadline for completion of the relocation.

If the extension is granted, once analog cell service disappears in 2008, there will be at least a year before IFB replacement systems like DRL will be able to come online. ■



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Autonomous monitoring, time-code continuity and full frame capture are just a few of the improvements added to the LV5800. Other features include extensive error detection with settable error limits, downloadable error logs, on-screen error identification and a low noise cooling system...just to name a few.

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Data

CONTINUED FROM PAGE 30

cially a lower-cost box).

The Harris X75 multifunction converter includes a feature that generates an A/V test signal designed to measure lip sync errors in a television plant. With this new tool, it becomes much easier to correct the timing errors by knowing where to insert a delay, and what amount of delay it should be.

It's also becoming commonplace to distribute digital video in its compressed form around a television station, as well as on the external networks to and from the station. How does one monitor those compressed signals without a set-top box between the cable and the display device? The Tektronix MTM400 Transport Stream Monitor has its own MPEG-2 decoders to allow direct monitoring of encoded content over RF, IP and ASI interfaces.

The remote user interface for the Tektronix MTM400 includes video thumbnails along with the video metadata, allowing complete confidence monitoring of the compressed signals without using set-top boxes as decoders.

Harris TVM950

Another product from Harris, the Videotek Quic file analyzer analyzes and even repairs various forms of MPEG and DV files in a server before they are distributed or played on air.

MPEG-2

Okay, so what if we monitor the decoded video on the network and see something wrong with it? Then what? How can a broadcast engineer find out what is causing the trouble? Since MPEG-2 transport streams are extremely complex, MPEG-2 analyzers are a must in a modern broadcast facility.

Pixelmetrix's CaptureVu technology—available in its MTS-400 series of MPEG test systems—captures and analyzes system events in real time and deferred time to debug the intermittent and complex problems that traditional analyzers miss.

Besides thousands of parameters, there are also "events." DTV isn't just about a synchronous signal being pumped into the airwaves or down the cable. It's also about events such as changes of configuration that occur from time to time, and trouble with a viewer's experience is quite likely to be related to an event within the transport stream, rather than just the continuous transport stream data.

And what if a particular event or piece of video data sent from the broadcaster's end causes a "hiccup" in a digital reception experience? How does an engineer replicate that event? This is a common requirement when testing and troubleshooting digital set-top boxes.

Tektronix MTM400

Rohde & Schwarz DVM400

The Rohde & Schwarz DVRG and DVM400 not only record MPEG-2 transport stream data, they generate and analyze such streams as well. The DVM400 platform can be configured with optional cards to record and analyze captured MPEG-2 streams after an event trigger has been detected.

DTV imposes a new requirement to generate SD and HD transport streams in the same multiplex. The DVRG and DVM400 are packaged with a library of "canned" transport streams to help an engineer replicate a particular broadcast scenario in the multiplex. This is particularly important when testing the RF chain for an ATSC or DVB service. One needs to feed a test multiplex of combined SD and HD transport streams into the modulator and then decode the ATSC RF envelope for analysis.

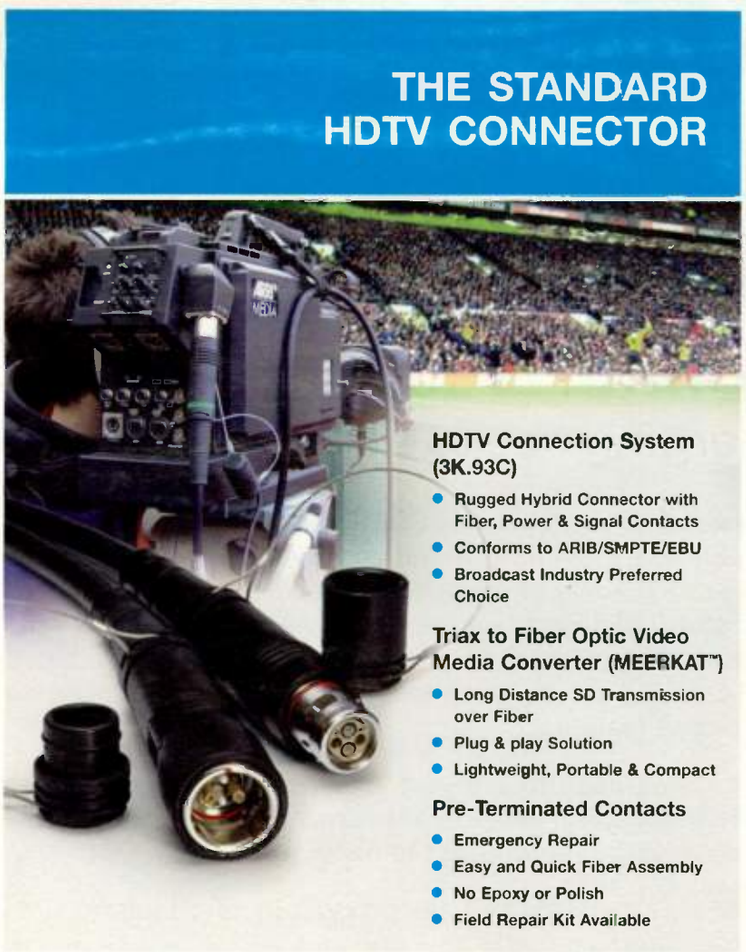
"The canned transport streams are played as an endless loop, but with continuous time stamps so that a receiver will see the stream in the same way as a live broadcast," said Eddy Vanderkerken, director of sales and marketing for the broadcast division at Rohde & Schwarz. "This gives the benefit of repeatable source material for worst case soak testing and intermittent fault observation."

But with all this advanced data generating equipment, the basic necessities for things like a simple HD color bars generator shouldn't be neglected. The Leader LT440 multiformat video generator HD-SDI provides HD-SDI outputs for color bars and other patterns with up to 16 channels of embedded audio.

For detailed analysis of HD-SDI signals, the recently introduced Leader LV5800 is one of the few analyzers that supports dual-link HD-SDI inputs.

"Among many other features, the system timing display rounds out the engineering and system setup functions of the LV5800," said George Gonos, vice president of sales and marketing for Leader Instruments Corp. in Cypress, Calif. "It provides an easy-to-use graphical representation of system timing [H and V delay/advance] and a number of user definable offsets for timing."

Broadcast engineers are now becoming "data detectives." And replacing Sherlock Holmes' magnifying glass with the new generation of test and measurement equipment makes visible again those things that became invisible when TV stations went digital. ■



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ATSC OUTLOOK | Jerry Whitaker

Work Begins on Mobile-Handheld DTV Standard

The ATSC has begun work to develop a standard for mobile and handheld services using compatible enhancements to the ATSC DTV system. Designated ATSC-M/H, the standard will be backward-compatible, allowing existing DTV services to operate in the same RF channel, without adverse impact on existing receiving equipment. A key element of the work is ensuring that broadcasters will be able to allocate a portion of their 19.39 Mbps 8-VSB signal to mobile and handheld while continuing to transmit services such as HDTV. This work is being conducted in the ATSC Specialist Group on ATSC-M/H (TSG/S4), led by Mark Aitken of Sinclair Broadcast Group.

ATSC M/H SERVICES

Discussion of ATSC-M/H has been underway for some time. It was designated a major priority in the ATSC strategic plan and approved by the board of directors last December. The strategic plan recognizes a growing consensus that mobile and handheld capability is essential to the future of local broadcasting. The mobile and handheld TV market is seeing rapid growth and it is expected to continue to expand. Mobile and handheld services using ATSC-compatible transmissions from broadcasters could be one of the technologies in this future landscape. Broadcasters have the advantage of a nationwide infrastructure of local terrestrial DTV transmission facilities and wide coverage bandwidth available through local terrestrial TV. Such capabilities within the ATSC suite of standards will leverage the existing capital infrastructure and provide value-added services to consumers that are not available through other means of delivery of the broadcasters' signals.

It is expected that ATSC-M/H technology will be utilized for a variety of services to mobile and handheld devices, which may include but are not limited to:

- Free (advertiser-supported) television content and other services delivered in real-time;
- Mobile and handheld subscription-based TV, video-on-demand, pay-per-view, and electronic sell-through services;
- Non real-time content download, to playback later;
- Datacasting;
- Interactive television;
- Real-time navigation data for in-vehicle use.

These new services may transmit various types and quantities of content that may be versions of regular TV programming optimized for handheld and/or mobile reception (simulcasting) or specific audio-visual content and/or data produced for mobile reception.

Broadcasters have indicated they would like the opportunity to announce new ATSC-based mobile and handheld broadcast services before the close of analog services in February 2009. The planned work schedule for a mobile/handheld solution, therefore, is based on this premise. The target dates for completion of the standards documentation are intended to take into account the time needed for professional and consumer manufacturers to develop equipment for implementation before such services can be introduced. This emphasizes the need for the standards work to be completed as soon as possible.

In May, the ATSC issued a request for proposal for mobile and handheld services. The general categories included in the RFP were:

- Scope of the planned work;
- Overall architecture, emphasizing that ATSC is looking to standardize on a complete systems solution;
- Target project schedule;
- Details regarding the materials required for submission;
- The consideration process by which the Technology and Standards Group will review the submissions;
- Administrative and process issues.

Broadcasters have indicated they would like the opportunity to announce new ATSC-based mobile and handheld broadcast services before the close of analog services in February 2009.

Last month, the ATSC announced that it had received a total of 10 proposals, (see related story, p. 6). Detailed descriptions for all submitted proposals were due at ATSC, July 6.

As with all ATSC work, protecting legacy receivers and the existing valuable services is a top priority. In addition, ATSC references the standards of other organizations where appropriate, as reinventing the wheel is seldom a useful exercise. And, wherever possible, harmonization with other industries and services is an important goal.

The Specialist Group on ATSC-Mobile/Handheld, TSG/S4, has been charged with developing standards and, where applicable, associated informational documents for mobile and handheld services using DTV broadcast signals. This activity will include communicating with other specialists and planning groups inside the ATSC, as well as other standards development organizations and technology committees working on standards that include mobile and handheld technologies.

TSG/S4 will focus first on evaluating the proposals submitted in response to the RFP. Selection criteria were being developed at presstime. The following general categories are likely to emerge as key elements:

- Backward compatibility—are there any legacy DTV receiver impairments?
- Video and audio quality;
- Service area and reliability;
- Scope of services and system flexibility;
- Interoperability with other mobile systems and/or platforms;
- Extensibility—can the system grow or expand as needs demand or as technology progresses?
- ATSC plans to create a comprehensive and complete solution to enable compelling mobile and handheld services and products. The ATSC-M/H stan-

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dard must specify, at minimum, the following:

- Physical layer—including modulation and forward error correction coding;
- Transport, signaling, and announcement—including an electronic program guide optimized for mobile and handheld services;
- Other parameters, as necessary, for the carriage of video, audio, and data essence and metadata.

Wherever practical, ATSC will try to maximize interoperability by incorporating existing solutions, which may be accomplished by reference to existing standards.

ATSC-M/H REQUIREMENTS

In the design of any new broadcast service, it is important to clearly identify the minimum target system requirements and capabilities. In the case of ATSC-M/H, these services will be carried in DTV broadcast channels. The presence of these services will not preclude or prevent operation of current ATSC services in the same RF channel, or have any adverse impact on legacy receiving equipment.

Current ATSC receivers are not expected to be able to decode or display ATSC-M/H services. Any ATSC-M/H solution should have sufficient flexibility to offer a viable service with bit-rates that do not devalue existing DTV services, including HDTV. No specific bit-rate allocation restriction exists, except that U.S. broadcasters are to provide a service that continues to conform to FCC requirements.

The service areas for mobile and handheld services will, at a minimum, correspond as closely as possible to the service area for DTV using 8-VSB. Larger service areas are desirable.

The reliability of service for devices operating within the ATSC-M/H service area should be comparable to or exceed that of cell phone and other handheld devices enabling similar services.

Service area, reliability of service, and other technical considerations will take account of practical antennas for mobile and handheld devices, which differ significantly from traditional 30-foot antenna assumptions.

The ATSC-M/H system will enable modes of operation that allow mobile reception by devices permanently mounted in cars, buses, and trains, at speeds up to at least 75 mph. Furthermore, the system will support modes of operation that allow reception by handheld devices that are stationary or moving at walking speeds of about 3 mph (5 km/h).

Specific technical targets for ATSC-M/H have been developed, including:

- Real-time broadcasting and a non-real-time mode (by reference to other work currently underway within ATSC);
- Video resolutions up to 480p at variable frame rates for screens installed in vehicles;
- Video resolutions up to 352x288 (CIF) at variable frame rates for screens in handheld devices (and perhaps up to 480p in a nonreal-time mode);
- Stereo audio for systems installed in vehicles, ideally with support for up to 5.1 channels;
- Mono or stereo audio for handheld devices, possibly with support for up to 5.1 channels.
- Use of bandwidth efficient advanced codecs for video and audio to provide for scalable quality and quantity of mobile and handheld services;
- Messaging capabilities;
- Use of digital on-channel repeaters and translators, and distributed transmission for fill-in service coverage as necessary.

Work within ATSC is open to all organizations with a direct and material interest. If you are interested in contributing to ongoing efforts to develop ATSC-M/H, please contact the author. Additional information on the ATSC can be found at www.atsc.org.

Jerry Whitaker is vice president of standards development for the ATSC. You can reach him via ***TV Technology.***

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Photo: Steve Jordan

NET SOUP

Frank Beacham

Apple's iTunes 'Privacy' Transcends Music Piracy

I get steamed over willful, blatant invasions of my personal privacy. That's why I'm so unhappy right now with Apple, my favorite computer company.

Privacy is one of those issues that tend to separate old codgers like myself from the children of the digital era. Most young people tell me to forget about it—the concept of personal privacy is long dead and who cares anyway?

As a member of the Vietnam-Nixon-Watergate-Plumbers-Pentagon Papers generation, I've witnessed what can happen when one's personal privacy clashes with an abuse of power. It's a sordid story—one that destroyed lives.

Since history always repeats itself, I'm keenly aware when corporations and the government want to know more about me than they have a right to know. In the name of music piracy (or whatever), Apple has—in my opinion—crossed that line by secretly embedding my name and e-mail address into every music file I purchase at their iTunes Music store.

In the name of music piracy (or whatever), Apple has—in my opinion—crossed that line by secretly embedding my name and e-mail address into every music file I purchase at their iTunes Music store.

It didn't much matter when those downloaded audio tracks were copyright-protected with DRM technology. Each file was sold with the clear understanding that it was linked to the purchaser and was crippled from working beyond a few designated hardware components.

For this reason, I bought few of those tracks from the iTunes store, preferring to purchase better-sounding DRM-free commercial compact discs to "rip" files for use on my iPod.

Then, with much fanfare, Apple CEO Steve Jobs broke the bonds of DRM, offering music downloads from EMI with no copy protection. At the same time, he upped the bit-rate for better audio fidelity and raised the price from 99 cents to $1.29 per track.

Fair enough deal, I thought. That is until I learned that Apple had made a secret pact with the devil. Embedded in that "iTunes Plus" music file is my name and e-mail address. It's not encrypted, so anyone with a simple text reader can see it.

I was furious and very disappointed in Steve Jobs. So were others. But a sizable group thought it was just fine. The issue opened a cultural fissure and resulted in a firestorm of debate on Internet forums.

THE DEBATE

One side says "so what"—it doesn't matter unless you're a music pirate illegally distributing music to others over the Internet. Another side says the embedded data is OK, but should be encrypted because it creates a security risk.

I say it shouldn't be there at all, especially without full disclosure of why and how Apple intends to use it. This is especially important when we have unscrupulous recording industry organizations like the RIAA out there suing everyone with whom they have a disagreement. (Some forget that the RIAA does not make law and much of what they call illegal is only their opinion or desire.)

Before we go any further, let me emphasize that I'm not a music pirate nor do I support helping those that are. I'm a writer and producer and need copyright protection to enable my own profession.

However, I resent the artificial barriers some content creators and owners selfishly erect that would kill the long-held axioms of fair use, and—essential to the arts—the concept described by Pete Seeger as the "folk process."

The free flow of cultural information, handed down from generation to generation, is basic to the creation of art. Without the "folk process" we wouldn't have the great body of songs written by Bob Dylan or the iconic images of photographers like Henri Cartier-Bresson or Gordon Parks. Great art is not created in a vacuum.

Media corporations want to own and control every word, image and artistic concept in our culture. That quest for cultural ownership is a major subtext of this escalating war over what they consider their intellectual property.

Since digital technology allows the easy replication of art, our personal electronic devices have become the new battleground in this war. The manipulation of this technology, and with it an invasion of personal privacy, is the backdrop to the iTunes story.

Just as with a book, CD or video that I may legally purchase, I expect to have the freedom to use it as I see fit. That includes loaning it to a friend or exposing it to others in a social situation. Short of mass re-producing it and selling it to others on the open market, my usage rights should be limited in no way. If the day comes when I can no longer do that, I will not buy the media.

THE SOLUTION: FISSION

At the time this column was written, Apple had refused all public comment on the iTunes privacy issue.

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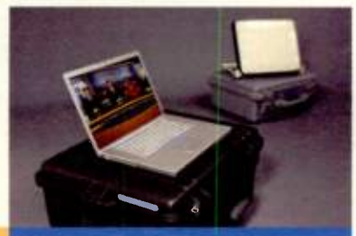

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That's really a lousy mistake for such a normally classy company.

But, as one could have easily predicted, it didn't take long for a solution to appear that effectively "cleans" the name and address of the purchaser from the metadata in DRM-free iTunes Plus songs.

It's a Macintosh application from Rogue Amoeba called "Fission." (Sorry, no version for Windows.) Ironically, the software was on the market long before the iTunes controversy erupted.

Quite simply, it allows users to copy, paste, trim, and split compressed audio files. It works with mono and stereo files in MP3, AAC, Apple Lossless and AIFF formats.

We wrote Rogue Amoeba to make sure Fission actually cleans iTunes files without degrading audio quality. A quick response came from Paul Kafasis, the company's CEO.

Clear, intelligent national policies as to what constitutes fair use of legally purchased media are sorely needed. Unfortunately, such clarity is not on the horizon.

Paul explained that the application never re-encodes, unless the user tells it to. Therefore, any compressed file run through it takes no quality hit. iTunes files are cleaned because the software ignores metadata tags it doesn't understand. In this case, since Apple's information is not standard for AAC encoding, the information is stripped from the processed version.

To test Fission, we purchased an iTunes Plus version of Bonnie Raitt's "The Road's My Middle Name." Using a text reader, we found our embedded name and e-mail address. As claimed, a quick pass through Fission removed the data. Returned to iTunes, the track played perfectly.

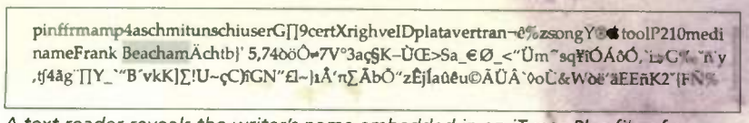
"We don't have any desire to aid piracy, but helping users anonymize their files isn't by definition a bad thing," Paul wrote in his e-mail. "As far as advertising the feature goes, however, I don't think we'll be doing that. Feel free to tell anyone you like, but this is a fine line, and we don't wish to assist in music piracy."

We're not trying to assist music pirates, either. We simply want media companies to be upfront and honest about their tactics. Clear, intelligent national policies as to what constitutes fair use of legally purchased media are sorely needed. Unfortunately, such clarity is not on the horizon.

Until that day comes, users of digital media should not let a group of corporations represented by the RIAA and their congressional supporters decide what is and is not proper policy. It's not their decision.

Make no mistake: We're in a significant culture war, the stakes are very high, and personal privacy now matters more than ever.

Frank Beacham is a writer and media producer living in New York City.



A text reader reveals the writer's name embedded in an iTunes Plus file of a Bonnie Raitt recording.

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LET THERE BE LIGHTING **Andy Ciddor**

All the World's a Stage

All the world may be a stage, but it also seems that everyone in the world has now become a director of photography. Watching the news I have noticed the increasingly frequent inclusion of supplementary material from the cell phone cameras of onlookers. I recently saw an item showing the aftermath of an incident as covered by a professional news team in the usual way. However, packaged together with that coverage was a four-way split of hideous quality cell phone stills of the actual event and, in the Zapruder tradition, a couple of utterly indecipherable "movies," that purported to show the event unfolding.

Fox News broadcast live footage of the Cory Lidle plane crash last October through the use of a Treo smartphone.

UBIQUITOUS PHOTOGS

Of course family photographers and amateur moviemakers have always been contributors to the news media. Abraham Zapruder's 8mm home movie of the assassination of President Kennedy (all 486 frames of it) ranks amongst the most famous movies ever made. Homemade video has been increasingly common for the last couple of decades, as those of us who have accidentally tuned in to any of the "funniest" home video shows are acutely aware.

What differentiates the 21st century is the sheer number of cameras in the hands of the populace every moment of the day. Until recently, we didn't carry a camera unless we had a specific reason to be taking photographs as mementos of an event. Most of us simply wouldn't bother to take our camera with us to go shopping, pick up a newspaper, buy our lunch or ride the subway to work. Today, as it becomes increasingly difficult to buy a cell phone without an embedded camera, there is a swarm of cameras at every event.

Although Zapruder took several hours to get his film rush processed and distributed, today's digital images and video streams can be sent out over most cellular networks within seconds of being captured, while third-generation networks can stream the images in real time. Welcome to a world with an ENG unit in every citizen's pocket or purse and news producers with PayPal accounts to bid for the images while the event is still unfolding.

Welcome to a world with an ENG unit in every citizen's pocket or purse and news producers with PayPal accounts to bid for the images while the event is still unfolding.

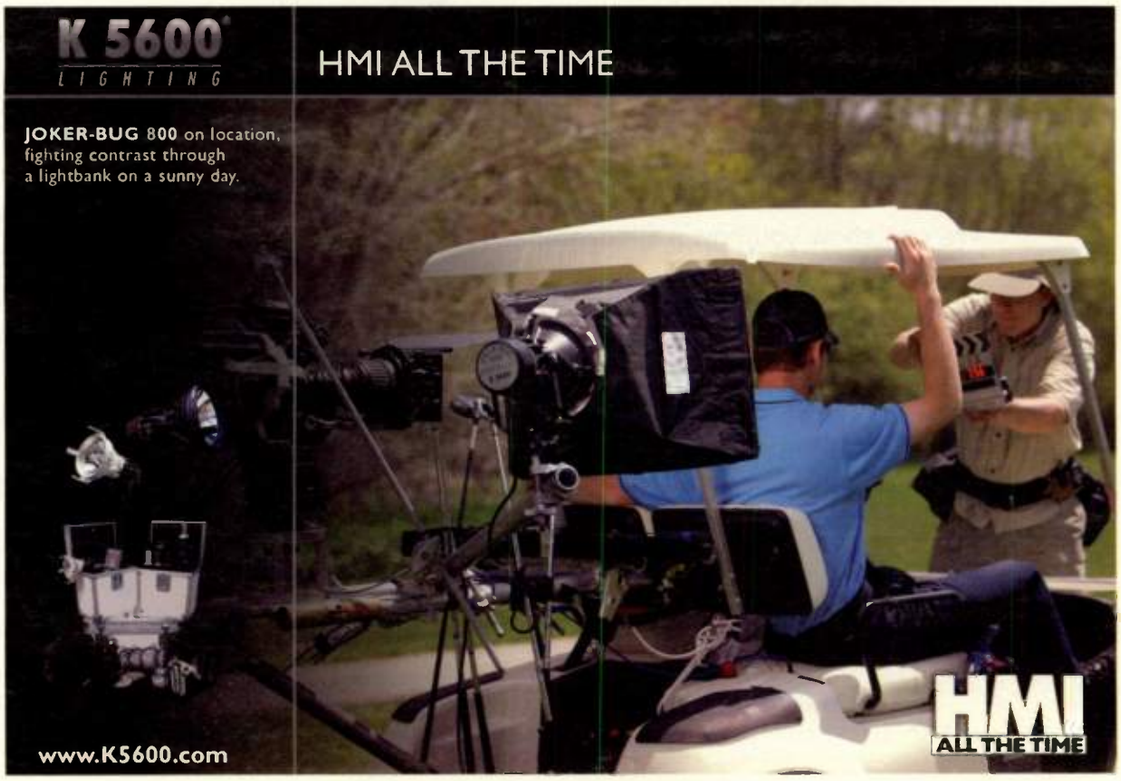
QUALITY IMAGES NEEDED

In the hands of even a moderately skilled photographer, who knows the capabilities of the camera, even a cell phone can produce reasonable pictures. Unfortunately, owning a camera and knowing which button operates the shutter doesn't make you a photographer, any more than owning an automobile makes you a Formula One race car driver. In the world of news and current affairs, actuality is everything and image quality is something that can be overlooked if the subject matter is sufficiently compelling. If the quality of home videotape cameras is usually well below what we would normally be prepared to put to air, it is still a long way ahead of the noisy, color mangled, soft focused, optically distorted, and fringed images that come from many cell phone cameras under anything less than full frontal daylight conditions.

Thus far, even the great wave of reality television has been produced with some care to keep image quality at the level that audiences have come to expect from their television entertainment. In their desire for "natural" and "realistic" settings, in such places as a historic house or on a desert island, producers continue to work from the premise that nothing looks less realistic than reality. We have had to go to extraordinary lengths to camouflage our equipment as palm trees; clumps of scrub or rusty old buckets to maintain acceptable exposures and reasonable contrast ratios, without making the pictures look "lit." Perhaps the greatest fun has been learning to light in the near infrared for the night-vision scenes that use the extended IR sensitivity of our camera pickups.

The grave concern for those of us whose passion and occupation is crafting video images, is that the tolerance of ever lower quality images in news, documentary and current affairs will lead to the acceptability of reduced image quality in other production formats. As television cameras get smaller and more light sensitive the day draws closer when budget-restricted producers will choose to accept inadequate lighting and vision quality, just to get their production to air. It would be ironic for this to come about at the very time when the new high-definition imaging chains quite literally place our work under even greater scrutiny.

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.



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VIDEO NETWORKING **Wes Simpson**

Can the Internet Handle Broadcast TV?

With all of the hype surrounding the migration of video services to IP networks, an issue that often gets overlooked is whether or not there is enough capacity on the Internet backbones to handle the increased load. Not surprisingly, the limits may be closer than what many users expect. In fact, unless significant capacity increases continue to be made, we could run out of bandwidth before the end of the current decade.

THE NUMBERS ARE IN

Consider the trends. According to comScore, U.S.-based companies delivered more than 7 billion video streams over the Internet to 126 million unique viewers in March 2007. The Reston, Va.-based Internet marketing research firm said the average viewer consumed 55 streams, or roughly two per day. YouTube alone was responsible for 1.1 billion streams to 55 million unique viewers. This represents a tenfold increase in the past year in the number of video streams delivered per month by YouTube, which was widely reported to routinely deliver 100 million streams per month before being acquired by Google last summer.

A lot of bandwidth is required for making this many video deliveries. Using 3 minutes as an average length of a video, and 4 MB per minute for the low-resolution video (just over 500 kbps), gives an average file size of 12 MB. Delivering 1.1 billion streams would require about 12.5 PB (that's Petabytes, or millions of gigabytes) of bandwidth for the month, or about 40 Gbps of traffic if the downloads were evenly spread out across the month, which, of course, they are not. Now this seems like a fairly heavy load on the Internet. Indeed, speaking at a cable TV conference in Amsterdam last February, Vincent Dureau, head of TV technology at Google, said, "the Web infrastructure, even Google's [infrastructure], does not scale. It is not going to offer the quality of service that consumers expect."

Things could get really ugly if even a small subset of today's television viewers abandon their current supplier (such as broadcast, CATV or satellite) and try to get their programming over the Internet. If 1 million viewers (which is a pretty small audience by U.S. television broadcast standards) are all watching a modest-quality 1 Mb broadcast (not good enough to be called SD), total bandwidth demand would be 1 Tbps (1 million Mbps). To put this in perspective, the total bandwidth from one major content delivery network is only 1 Tbps, and that has to be shared among all their clients.

Unless significant capacity increases continue to be made, we could run out of bandwidth before the end of the current decade.

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CAN MULTICASTING HELP?

Unfortunately no, because the Internet is not multicast enabled. What this means in practical terms is that a separate stream of video data must be created at the source for each viewer, and transported all the way to whatever device is being used to view the stream. Even if two people in the same building are watching the same stream at the same time, a separate stream needs to be delivered from the source to each one. Unfortunately, because of the varying age and state of the equipment that makes up the Internet, it is simply not feasible to enable multicasting, even though that would go a long way toward solving the bandwidth problem. For private networks, where the age and configuration of routing equipment can be controlled, multicasting is a powerful way to distribute real-time video streams to multiple destinations simultaneously.

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INSIDE PRODUCTION Walter Schoenknecht

The Truck Gets In Your Blood

Ahhh... life in this little video community of ours. And each of us with our own role to play.

Just as Main Street has its butcher, plumber, lawyer and doctor, so, too, do we all have our own little video jobs. The editor toils day and night in his little shop, seldom outdoors long enough to see the sun. The studio camera operator masters the rhythm of tilt up, pan right, zoom out, over and over. The assistant director sticks close to her watches; the technical director's finger darts here and there, and pictures are pushed down the line.

And then there are the truck guys.

In our little Main Street scenario, you're the former checkout bagger—male or female—who broke free, and went off to fly for the airlines... visiting a never-ending parade of exotic ports of call, never knowing what you'd find when you got there; living by your wits, bronzed and toughened by the weather, and still, somehow, one of us.

"Flipper," an aging utility trailer with an audio control room in its nose, has a well-worn storage bin for every possible accessory and ancillary item a remote could ever need.

As a truck guy, when you show up for work, you've got no guarantee of a good meal or a clean restroom or even electric power. You've got to figure things out for yourself. When you're holding a hot cup of coffee, it's only because of that $12 Wal-Mart coffee pot you bought with your own money and stashed in one of the belly bins. And your idea of relaxation is wiping yesterday's NASCAR mud off a thousand foot roll of Triax. It's the most boring job in video, loaded with things to whine and complain about; and in the same breath, it's a live-TV adrenalin rush played out on the high wire, without a net, a far edgier life than a studio brat will ever know. So unpleasant and disagreeable that it's got to be the coolest job ever.

FLIRTING WITH GREATNESS

I was never really a truck guy. Right out of school, a bunch of classmates landed jobs doing "local origination" for a forward-thinking cable system, one which had big, well-designed trucks for things like regional high school sports coverage. No 40-footers, mind you, but trucks with pedigrees like Gerstenslager and Lerro Electric. I worked a couple dozen jobs on those trucks, and the memories remain: the generator vapor-locking on a hot autumn day; the beautiful slow-motion sky shot after the 50-yard line handheld operator got tackled; and the bellowing, foul-mouthed director who ended each shoot with a pat on the back and his warm, sincere thanks.

I've booked a few trucks over the years for live, multicity medical symposia and the like, and each time, the response has been a visceral one—a thin line of sweat on the upper lip, a quickened pulse. No site survey has ever, in the history of television, accurately reported the pitfalls that await the truck and its crew, and the only thing you can properly plan for is to know when to abandon your plan, and to think up an entirely new one. It's a thrill, and a terror, and a multidimensional puzzle, all in the same instant.

TRUCK, PAGE 41

ECLIPSE V-SERIES PANELS. TAKE CONTROL AND LOOK GOOD.

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TECHNOLOGY CORNER Randy Hoffner

Technology Changes At Warp Speed

You know it, I know it, and we all know it. For a couple decades now, we have seen the nature of the television business continuously change, and most of the change that we have seen has resulted from technological advancements. These advances have significantly affected all aspects of the television business, from production to distribution to broadcast and all the way to the consumer. Today, it seems that the part of the business that is being swept along by the swiftest technological currents is the consumer side.

Long, long ago, there were three commercial television networks in the United States that were collectively responsible for more than 90 percent of the television that America saw. Then satellite technology gave rise to a slew of financially viable cable networks. Then came direct broadcast satellite, the Internet, digital video recorders, cell phone video, and who knows what else is next.

WHERE DOES PRIMETIME STAND?

The juggernaut of technological advancement has in recent years increased the pace of change in the television industry—and other industries as well to be sure—to breakneck speed. We are literally seeing the television industry change daily. And lest the reader think that this kind of change is centered on the United States, if we are to believe something we read recently, the United States is now 20th in the world in broadband Internet penetration, having recently been passed by Luxembourg.

According to a recent study, primetime television in the United States is losing its allure to many. Here are a few eye-opening results of this study by Chicago-based Relay Worldwide, a sponsorship and event marketing company and an affiliate of Publicis Groupe.

Thirty-eight percent of respondents reported that they enjoy primetime less this year than in previous years (26 percent, though, reported that they enjoy it more), while 48 percent said that watching primetime was less important this year than in previous years (19 percent said it was more important this year).

One probable reason for the above results is the fact that primetime shows increasingly

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Truck

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Two summers ago, the PGA championship came to town. Having seen nationally televised tournaments—and their attendant hoopla—blow through this championship golf course on other occasions, the locals all busied themselves cooking up ways to make money. Forty thousand spectators per day ought to translate to a mountain of meatball subs, beaucoups après-golf dinners, and a lot of front lawn parking lots.

For my part, I wangled an assignment from this publication to report on CBS' broadcast coverage of the event, and soon met Engineering Vice President Ken Aagaard behind the course for a backstage tour.

And there it was again... the visceral tremble and buzz of the truck job. Except, in this case, there wasn't a truck—there were around two dozen of them, all told, including two just for the wireless mic and camera links. CBS runs two HDTV packages, each made up of two 53-foot expando trailers, during football season... and both sets of them were there. Engineering and camera control for the 30-odd HD cameras had a truck of its own, in addition to mobile edit rooms; sub-mix audio trucks and pool feed facilities. My personal favorite was "Flipper," an aging utility trailer with an audio control room in its nose and a well-worn storage bin for every—and I mean every—possible accessory and ancillary item a remote could ever need. Truck guys like this quirky method of organization; having at least one constant in life—Flipper—leaves them free to adapt elsewhere, and to get the job done.

RUDE AWAKENING

And so it was we found ourselves, just a few weeks ago, maneuvering a small box-truck remote unit into a slot alongside the main drag downtown. Loaned by the local office of the mega-behemoth cable TV conglomerate, the shopworn, neglected three-camera truck was ours for the day, covering the town's sesquicentennial parade. Gotta love those freebies.

The cameras were out of phase by at least a mile. The character generator never actually did come on line. One of the brand-new camera cables was kinked in the shape of some sort of Greek alphabetic character. The switcher flip-flopped seemingly at will, and you couldn't coerce it into dissolving between sources. Sync just sort of let loose from time to time, unrelated to the faulty voltage regulator, which caused the generator to nosedive almost into oblivion every few minutes. And one audio channel was wired out-of-phase.

It was miserable, degrading, aggravating, infuriating... but it was *a truck job*. No amount of technical misery could take away the thrill and the spark. "Ready fade up in five, four, three..." and off we go. There's nothing in the world like it.

There's an old joke about the folks who sweep up behind the animals after the parade, and why they don't look for better work; the punch line belongs as much to us, crews and wannabees alike, as it does to them.

"What, and give up show business?"

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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MEDIA SERVER TECHNOLOGY

Karl Paulsen

Breaking the Media Storage Barriers

Emerging storage technologies continue to shape an industry driven by electronic data that is generated, manipulated, repurposed, backed up and assimilated by all walks of life. Whether that data is stored on conventional magnetic spinning media, optical media, holographic or silicon, the means and methodologies to capture and retain it continues to evolve.

Some of the more recent advances in storage will be highlighted in this brief overview of what's new. Storage available to both professional and consumer technologies continue to shape how we use all forms of media and data in profound ways.

Storage available to both professional and consumer technologies continue to shape how we use all forms of media and data in profound ways.

InPhase Technologies Tapestry holographic storage platform is used by several broadcasters including TBS.

VERSATILE DISKS

At CES2007 in January, Hitachi broke the 1,000 GB barrier with the announcement of the first widely available 1 TB hard disk drive. The Deskstar 7K1000 drive uses perpendicular recording, and is available in both SATA II and PATA 133. The drives feature three low-power idle modes designed to boost power efficiency. Their 7,200 RPM drive includes a 32 MB buffer, quieting acoustics, and utilizes Hitachi's Smart Card technology which can, among other features, provide information security, key data portability, and extended memory capabilities.

Hitachi-owned Maxell has been working with InPhase Technologies, a subsidiary of Lucent Technologies, to develop the InPhase Tapestry holographic media and drive. The result of more than 10 years of research in holographic storage, these WORM discs store data a "page" at a time by using a 3-dimensional scheme where bits are encoded in a light-sensitive material that keeps information in a layer-like format that results from interference patterns generated by lasers. Unlike CDs and DVDs, which store data serially on a bit-by-bit basis on their surfaces, the holographic media works by storing and reading out millions of bits at a time, enabling large increases in capacity and access speed. Commercial products from Maxell have been displayed for two years and are currently in use by major media providers, including Turner Broadcasting System, and are marketed as a PC-based archive solution through Ikegami.

For that all-optical network, work continues on holographic storage subsystems based on crystals. Such a storage system is reported to have a 1.2 TB capacity with 1 Gbps access times. The product, from Access Optical Networks, is comprised of two components: an optical holographic storage unit and a high-speed networking unit. While still in the development stage, the primary and most significant difference between the company's Compact Holographic Data Storage system is that it is aimed at directly interfacing to optical networks without the optical-to-electrical interfaces typical in current storage subsystems. The target market, initially, is for carrier-grade platforms where speeds in excess of 40 Gbps are looking at how to address the potential 100 Gb Ethernet threshold set out by the IEEE's high-speed study group, now set for the 2010 horizon.

FROM CONSUMER TO PROFESSIONAL

At the consumer level, and no doubt headed for the professional space, is the recent introduction in Japan, of a cartridge-based, removable hard drive and an internally mounted, yet removable version, dubbed the "iVDR" (Information Versatile Disk for Removable usage). These removable drives enable large-capacity recording and high-speed random access heretofore possible only with hard disk drives.

The iVDR interface is based on Serial ATA and provides a high-speed transfer rate of 1.5 Gbps. iVDR was developed by eight Japanese companies that formed the iVDR consortium in 2002. The goal of the consortium is to develop an industry standard as a next-gen large data platform that can be compatible and usable in a broad range of devices from A/V platforms to personal computers.

For the iVDR platform, a 2.5-inch serial hardware specification and a 1.8-inch version were released technically in 2004. With the growing need in the consumer space for storing high-definition content, Hitachi has announced a built-in version 250 GB iVDR; and in conjunction with Hitachi Global Storage, new slot-based hard drives for LCD and plasma displays in 3.5- and 2.5-inch form factors that will support media available in 80- and 160-GB cartridge disk drives.

Adding to the competition for the iVDR format, in April, Toshiba unveiled to the Japanese market a TV model with a slot for a removable hard disk drive. Toshiba's high-end model H3000 comes equipped with an internal 300 GB HDD installed, allowing up to 28 hours of program recording in Hi-Vision mode, Japan's version of HDTV. The new series further allows connection to an external HDD for transferring content from internal to external, thus expanding

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Warp

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may be seen at times of the individual's choosing, by using digital video recorders and accessing shows online or on the networks' Web sites.

Thirty-eight percent of those surveyed were aware that they could watch primetime shows on the Internet at no cost. One of the researchers noted that in the past, a penetration score of at least 33 percent indicated mainstream adoption of an innovation. Primetime shows have only been available online for a short time, but by at least one yardstick, it appears that primetime viewing online has already become mainstream.

The networks are, or will be, profiting from online distribution of their primetime programs, as they are selling advertising in and around them. And we have been hearing recently that "upfront" commercial sales for the new season will be made on the basis of audience number projections that include "live plus three" or "live plus seven" numbers, as the terms go for numbers of audience on the day of air plus viewership on DVRs for a period of either three or seven days after the airdate. In both of the above examples, online distribution and "live plus" selling, the networks appear to be well aware of the shifting sands through which they are navigating today.

On the negative side for the networks, the availability of these viewing options appears to be materially eroding the audience for broadcast reruns. This is a problem because reruns are a vital part of the broadcast network economic model. The more original programming that must be run in the traditionally rerun-stocked summer season, for example, the greater the costs incurred to program the network.

Primetime shows have only been available online for a short time, but by at least one yardstick, it appears that primetime viewing online has already become mainstream.

Broadcasters are obviously adapting to new technologies and finding ways to make it supplement their income streams. This has happened in spite of the dire predictions of the death of the traditional broadcast networks we heard in the past.

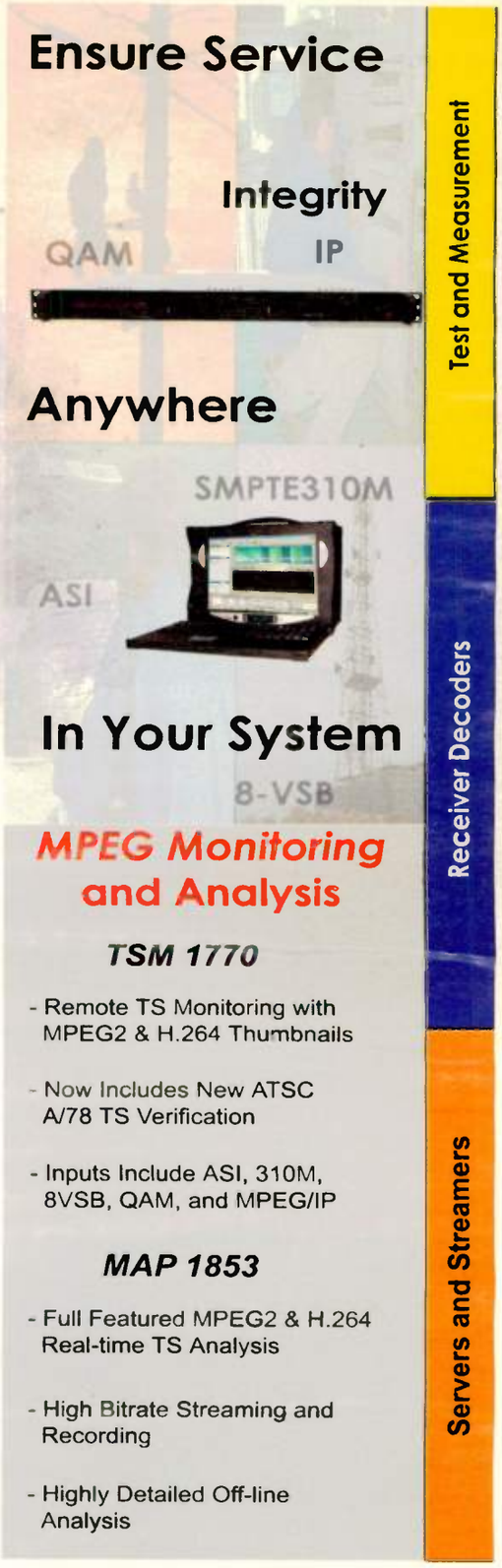
THE CURRENT PACE

We have seen tremendous technological changes on the production, distribution, and broadcast side as well. Leaving aside the increasing usage of computers and servers in this side of the business, we are aware that the future in broadcasting, as elsewhere in the industry, is digital. As we well know, a massive tectonic shift in the television broadcast business is imminent in 2009: the end of NTSC broadcasting. When this plan was first announced, there were many who predicted that for various reasons this shut off would never happen. It has been postponed a couple of times, but it does look like it is really going to happen this time.

This has even changed the focus of the FCC's enforcement functions. At some point in the past we stopped hearing about the dreaded FCC inspectors' visits to broadcast stations, and the citations for improper technical operation that these inspections sometimes produced. They're back, but this time they are inspecting the stores and Web sites of the major consumer electronics retailers, some of whom have been cited for noncompliance with a notice that must be placed prominently near NTSC-only TV sets, both in stores and on Web sites. These notices call attention to the fact that said television sets will not work after the NTSC shut-off date, and give some information about how to deal with this eventuality. These citations carry fines, and the FCC has been scrutinizing both physical stores and Web sites, imposing fines for violations. We have also seen the FCC propose $3 million in fines against manufacturers who have violated the restrictions against importing for sale TV sets that do not contain DTV tuners, after the effective dates of these restrictions.

With the current pace of technological change, it would not be astonishing to learn of yet other avenues for television program delivery by the time the NTSC shut-off date rolls around. The pace of technological change is speeding up, not slowing down, and there is no indication that this trend is going to be reversed.

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



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Internet

CONTINUED FROM PAGE 39

P2P TO THE RESCUE?

Video also puts an enormous load on the Internet though the phenomenon of file sharing using peer-to-peer networks. These networks operate by first storing content files within user devices (such as home PCs) and then using these devices to serve up content to other users by way of the upstream data connections from these devices back to the Internet. P2P utilities such as BitTorrent, eDonkey, and FastTrack are in widespread use throughout the world. Many of the files exchanged on P2P services are movies that have been ripped from DVDs, and can easily occupy 5 GB or more. You can create a lot of data traffic by moving even a relatively few of these files around.

According to data collected and analyzed by CacheLogic, a content delivery network provider in the United Kingdom, 50 to 65 percent of all downstream traffic (from the Internet to users) is occupied by P2P applications, and 75 to 90 percent of the upstream traffic is driven by P2P. Video makes up a significant portion of this traffic—more than 60 percent according to CacheLogic. A number of new video distribution services that have been announced by major studios are using P2P for file distribution (for example, In2Movies from Time Warner).

P2P solves one Internet video problem while creating another. It gets around the problem of scaling up a central server to deliver files to millions of viewers by distributing that function to every member of the network. At the same time, it creates a problem for ISPs, because it creates a great deal of traffic from subscribers back to the core, which is not how many of the delivery technologies have been designed to work. Because this upstream bandwidth is typically less than the downstream bandwidth, it becomes the limiting factor in a P2P network.

Andrew Parker, chief technical officer of CacheLogic and I spoke about some of the techniques his firm has developed to use P2P to handle these increasing loads.

The secret, he says, is to tap both the power of centralized servers for storing some forms of content and use classic P2P technology to deliver content between users that are in close proximity. The result, he says, is a system that is both robust and flexible enough to handle large amounts of data in a way that is well suited to today's Internet.

Top U.S. Online Streaming Video Properties-March 2007

Property	Video Streams Initiated (MM)	Share (%) of Video Streams Initiated
Total Internet	7,014	100.0%
Google Sites	1,177	16.7%
Yahoo! Sites	434	6.2%
Fox Interactive Media	421	6.0%
Viacom Digital	260	3.7%
Time Warner Network	222	3.2%
Microsoft Sites	151	2.2%
Roo Group Inc.	96	1.4%
Disney Online	90	1.3%
ABC.com	80	1.1%
ESPN	67	1.0%
Property	**Unique Video Streamers (000)**	**Reach (%) Among Total U.S. Internet Users**
Total Internet	126,635	71.4%
Google Sites	57,376	32.3%
Fox Interactive Media	47,446	26.7%
Yahoo! Sites	34,532	19.5%
Time Warner Network	28,945	16.3%
Viacom Digital	20,245	11.4%
Microsoft Sites	17,933	10.1%
Sony Online	11,956	6.7%
Disney Online	9,801	5.5%
ESPN	8,603	4.9%
ABC.com	7,033	4.0%

The comScore Video Metrix rankings for March 2007 show Google as the top U.S. streaming video property with 1.2 billion streams initiated.

DOES IPTV HAVE THIS PROBLEM?

Not in any practical sense. In this column, we have been talking about transmitting video over the public Internet, and not about purpose-built IPTV networks. The latter networks, particularly those that are constructed and managed by a single service provider from end-to-end are really not at risk, because the amount of bandwidth occupied by each viewer is carefully controlled. In addition, on a private IPTV network, different priorities can be assigned to different types of traffic, and multicasting can be used. The latter is particularly important, because multicasting allows a single IP video source to feed a number of destinations. This results in very efficient bandwidth utilization because copies of each stream are created only where they are needed as they reach branching points.

Things get really ugly if even a small subset of today's television viewers abandon their current supplier (such as broadcast, CATV or satellite) and try to get their programming over the Internet.

IS THERE A FUTURE?

Certainly, the loads placed on the Internet by video and other services will continue to increase. But, as in the past, capacity will be added whenever there is an economic justification to do so. Therefore, as it has for most of its history, the capacity of the Internet will continue to exceed the loads placed on it, if only just barely. Innovation will also continue, in the form of better ways to compress video, in the form of ever more powerful routers to switch the data, and in the form of higher capacity optical backbones.

The bottom line is that there is no crisis today, and likely not to be one in the future, unless millions of people suddenly decide to cancel their TV subscriptions and only watch programming delivered over the Internet. Let's hope that the shift is gradual.

Wes Simpson, who had to do a lot of video downloading to research this column (honest), is the author of the newly released book "IPTV and Internet Video" from Focal Press. He can be reached at wes.simpson@gmail.com.

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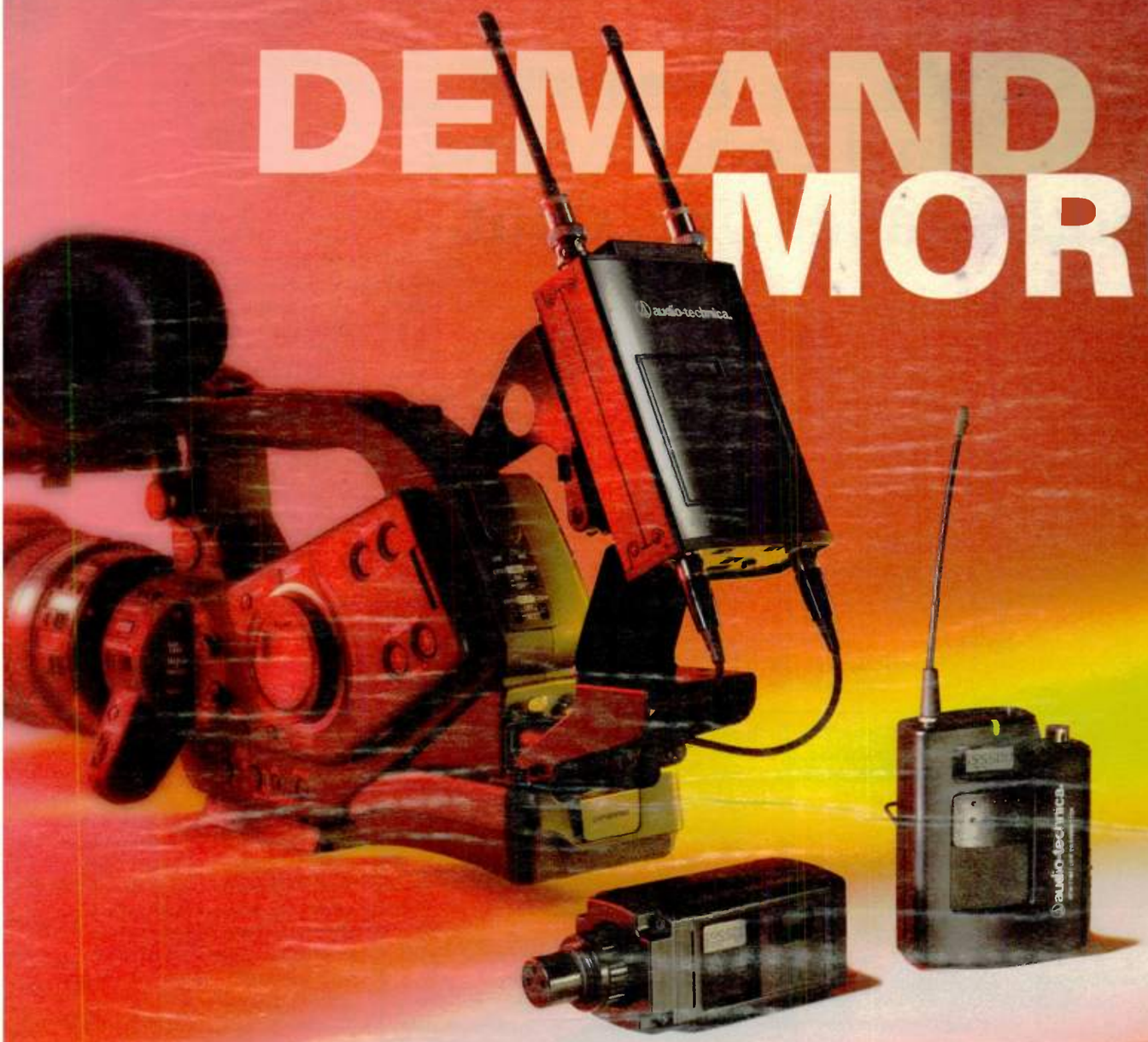

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INSIDE AUDIO — Dave Moulton

Directional Behavior and Loudspeaker Use, Cont.

Last month, I wrote about the problems that are encountered with directional microphones—cardioid and hypercardioid designs, to be specific—in terms of their off-axis frequency response. I noted that if such a directional microphone has a flat frequency response on axis it would most definitely *not have flat frequency response* off-axis (i.e. it will probably sound bad). This is a given.

I bring this up now because, as with microphones, we tend not to think through very clearly how loudspeakers really behave, and to not consider the implications of their directional behavior, which often leads to problems in our work. I see this a lot with loudspeakers.

The physical problems are due to the relationships between frequency, wavelength and the acoustical behavior known as diffraction. Higher frequencies have shorter wavelengths. Sound waves can only bend around objects whose size is smaller than any given wavelength/frequency. Comparatively high frequencies cannot bend, while low frequencies can. View this from the point of view of a sound-emitting tube, (see Fig. 1).

MULTIPLE DRIVERS

Loudspeakers, in general, have multiple drivers mounted on the face of an enclosure box. The drivers vary in size, of course, in order to radiate frequencies of various wavelengths. However, because the drivers face in one direction and are mounted in a large plate (called a baffle), the combined frequency response of the drivers varies widely as a function of angle off-axis from the loudspeaker.

This behavior is generally severe, so that variations in frequency response are easily audible by 10 degrees off-axis and response is seriously degraded by 30 degrees off-axis. What this means is, simply, that loudspeakers only work properly in one direction. This in turn has serious implications for loudspeakers in rooms (where they almost always are), because the room is, strictly speaking, part of the loudspeaker system.

As I noted last month, human listeners integrate the complex array of sound artifacts that arrive at our ears directly and by early reflection paths from any sound source. We use this wondrous and complex integration process to localize and identify the timbre of any given sound, using the spectra from *all* of these reflections (from *all* directions) over about 50 ms. What this means is that, for sounds emitted by loudspeakers into a room, our perception of timbre is deficient vis-à-vis the source-recorded instrument because of the degraded early reflection information. Dang!

A LITTLE HISTORY

This apparently hasn't been much of a problem over the years. Sound that is technically lousy seems to pass muster generally, especially in televisionland. How can this be?

Part of it has to do with the behavior of microphones. For instance, we really admire elderly Neumann large-diaphragm tube microphones, especially for a variety of close-miking applications, such as lead vocals and acoustic guitars. What we don't bother to take into account is that such microphones were designed to have an average of flat response from all directions, which means that they have a high-frequency response peak (approximately 8-12 dB) up in the 6-12 kHz. range for sounds arriving on-axis. They were not designed for close-miking applications.

Such a response, when combined with a loudspeaker with poor high-frequency response (such as most loudspeakers up to about 1990 and virtually all built-in television speakers), sounded way better than a more accurate response. Some years ago, I did a blind-listening comparison of vocal mics and found there was a pretty clear preference for mics with such a high-frequency boost over flatter mics (See *www.moultonlabs.com/more/eight_vocal_microphones_tested_and_compared/*).

Barriers

CONTINUED FROM PAGE 42

storage capabilities infinitely. The later model uses the eSATA interface, an extension of serial ATA [see "Deciphering the Latest Storage Buzzwords," Media Server Technologies, June 13, 2007].

On the domestic front, and not to be undone by others, is the newest addition to the living room media space, Apple TV with its 2.5-inch internal 40 GB HDD. The current Fujitsu drive is a parallel ATA-7 (PATA) 4200 RPM model, with 2 MB buffer and 12 ms seek time; enough for iTunes and most iPod resolution video, yet unlikely to support premium-quality high definition. Expect alternatives for storage to be available in the future.

And finally, in this thumbnail overview, is the mainstream HD disc, including HD DVD and Blu-ray, with its next generation configurable high-definition players. Aimed at addressing previous compromises, the overriding hi-def agenda for home media networks and storage—whether for read-only products or otherwise—is clear. Storage and storage platforms must be supported on many fronts or the future will be limited. With the analog transition less than two years away, competition for storing content is fierce, whether on the professional front, the consumer platforms or at the network service level. Expect many advances in speed, access, capacity and portability in the next 18 months; and no doubt just in time for the next "next-gen" solution.

Karl Paulsen is chief technology officer for AZCAR Technologies, a provider of digital media solutions and systems integration for the moving media industry. Karl is a SMPTE Fellow and an SBE Life Certified Professional Broadcast Engineer. Contact him at karl.paulsen@azcar.com.

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Also, over the years, we have learned to indulge ourselves in overly bright mixes, simply to offset both the general and also the off-axis deficiencies of most loudspeakers.

This practice is probably going to wind down over the next few years, for several reasons. First, we are beginning to use surround sound, which allows us to distribute reasonable spectra where we want it much more carefully.

Second, we are beginning to incorporate room correction into our home theatre loudspeaker systems. As we begin to approach some sort of reasonably flat and neutral response in end user playback systems, we are going to have to back down on the overly bright mixes we have been historically prone to.

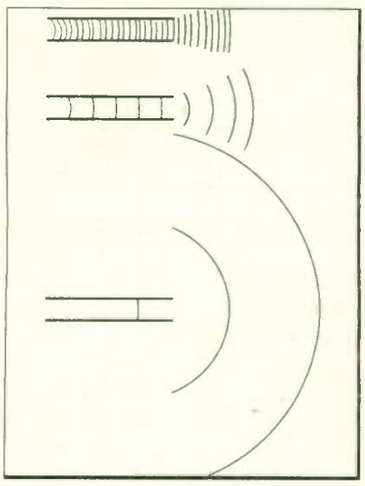

Fig. 1: Series of wavelengths, relatively long, short and equal to hole size, passing through tube. Upon exit into a free space, long waves disperse broadly, equal wavelengths disperse across approximately 45 degrees, short wavelengths are a beam with slight dispersion (15 degrees).

USING LOUDSPEAKERS IN PRODUCTION

The process of monitoring, and the questions surrounding best monitoring practices, require at least a book. For our purposes here, I can only suggest a few simple practices that may help you obtain more consistent and effective results.

First, always listen on-axis! There is no other way. The speakers need to point directly at you and must be equidistant from you and at exactly the same levels.

Second, try to listen within the so-called, near field of the loudspeakers. This really means within 3 feet of them, while hopefully the side and rear walls are more than 6 feet away, (9 feet or more would be better).

Third, it really helps to have high-frequency absorption materials overhead and on the wall just behind the loudspeakers.

Fourth, it is nice to have hard sidewalls and rear wall (there is much more to this part of it).

WHAT DOES IT ALL MEAN?

For many of you, this may be pretty basic. For others, it may not be. I regularly notice very compromised speaker placements in studios of all sorts and at all different levels of the food chain. This is especially true for casually installed and placed monitors located on the meter bridge of a console. It can also be true for editing suites, wall-mounted speakers in broadcast studios, and other hard-working mid-level production spaces, along with a lot of semi-pro home studios and the like.

We depend on the loudspeakers to provide us with the predictive information about how our work will sound to our beloved end-users (I call it listening ahead). The techniques needed to do this successfully are many and complex. The four items listed above represent a rudimentary first step. Just keep in mind that most loudspeakers (except mine, of course) don't work very well off-axis.

Thanks for listening.

Dave Moulton knows these things because he has spent years listening to bad loudspeakers while wondering why they didn't sound so good. You can complain to him about anything at his Web site, www.moultonlabs.com.

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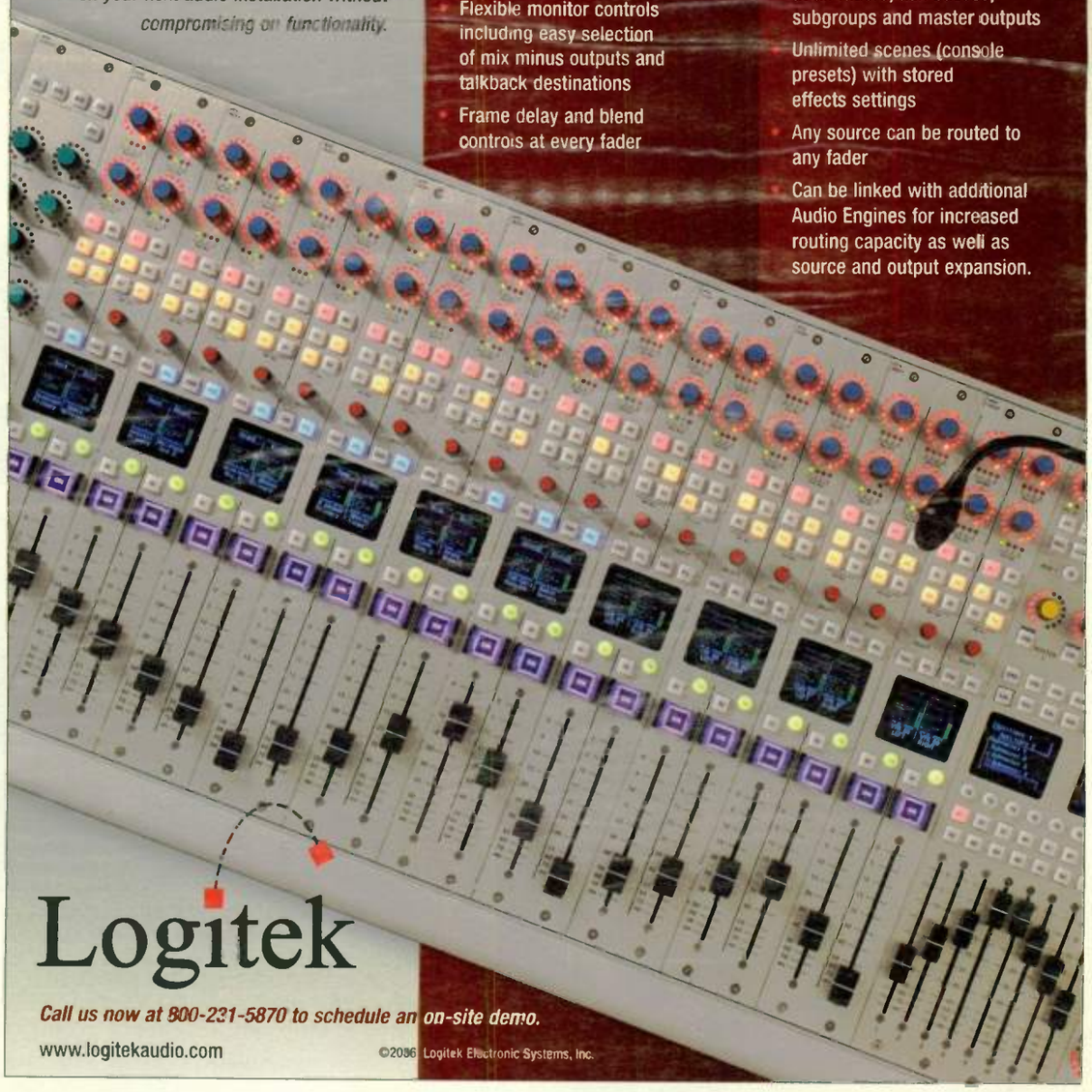

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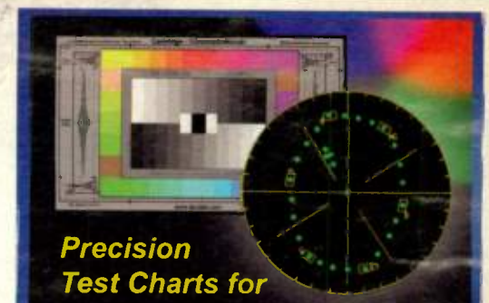

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P2 CAMCORDER

Panasonic AJ-HPX2000 HD P2 Camcorder

by Geoff Poister

This is Panasonic's first full-fledged, professional ENG/EFP high-definition video camera employing P2 memory card recording. The company introduced P2 technology with the smaller, inexpensive AG-HVX-200, which competes in the HDV arena. The introduction of the AJ-HPX2000 provides a P2-based camera designed for high-end broadcast and independent film production. It incorporates many of the standard features found in their tape-based DVCPRO HD camera, the AJ-HDX900, but records on P2 cards instead of tape. In addition, the AJ-HPX2000 offers an optional card providing a new codec, AVC-Intra, which delivers equivalent image quality at half the data rate of DVCPRO HD, effectively doubling the capacity of the P2 cards.

FEATURES

The AJ-HPX2000 is a serious camera designed from the ground up for high-end professional use. As such, it accepts high-quality HD lenses (2/3-inch bayonet mount) to match the resolution of the CCDs. The camera employs three native HD progressive 2/3-inch CCDs, 14-bit A/D processing to deliver high-resolution images with all of the 17 available DVCPRO formats in SD or HD. These formats include DVCPRO 25 and 50, and all of the DVCPRO HD (100 Mbps) resolutions, including 1080/59.94i, 1080/50i, 1080/29.97p, 1080/25p, 1080/23.98p, 720/59.94p, 720/50p, 720/29.97p, 720/25p and 720/23.98p.

Essentially the camera can deliver video in any format currently in use, NTSC or PAL. It also provides users with recordings in 720/24p native mode, with true discrete frames. Because this mode uses six fewer frames per second, it requires less data and increases the recording capacity of the media.

The camera itself has the standard professional architecture in terms of location of controls for gain, white balance, focus and the like. It is rugged, and ergonomically balanced for shoulder or tripod use. It also includes an on-camera stereo shotgun microphone, and two additional rear XLR inputs, for a total of four audio tracks when recording in HD. Audio recording is done at 48-kHz/16-bit.

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The Panasonic AJ-HP2000 2/3-inch HD P2 camcorder

The AJ-HPX2000 also has an HD-SDI output that can be used for recording on an external VTR. An IEEE 1394 port is available for transferring the signal to a portable hard drive, offering additional options for backup or alternatives to the P2 cards, when desired. There's also a USB 2.0 interface that allows for quick transfer of P2 card data to a PC or hard disk. And there's an optional HD SDI input board, which is likely to appeal to broadcasters who need to record pool feeds during ENG operations.

For those who like to fine-tune their image characteristics, the AJ-HPX2000 offers both pre-set templates and the ability to create your own color matrix. There are several presets for "film-like" gamma, and a 12-axis color correction matrix that allows fine adjustments in specific color regions. The 14-bit A/D conversion system is an upgrade from the conventional 12-bit system.

But clearly what makes this camera distinctive is the P2 memory card technology. The difference goes far beyond the novelty of recording on solid-state media. It changes the way video is accessed and handled.

The camera has five P2 card slots. Using 16 GB cards, the recording capacity is 80 GB, which provides about 80 minutes of recording time in full 1080 or 720 DVCPRO HD, as you get about one minute per GB. However, if you record in 720 24p native mode, you can increase that by more than two times.

Panasonic has always banked on a continued increase in memory card capacity and decrease in cost, and their forecast has held true. They're now coming out with 16 GB P2 cards, and the company is predicting that a 32 GB P2 card will be available by year's end.

Cards are hot swappable and can be inserted or removed in any order after or during recording. This allows you to remove the cards that are full, dump the contents to a hard drive and reinsert them without interrupting the shoot. The camera provides a thumb-

PANASONIC, PAGE 54

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HD LENS

Fujinon HA25x11.5 BERM Hi-Def Lens

by Carl Mrozek

Like a gambler who never has enough money, a wildlife photographer rarely has enough telephoto power. In the past, solving this problem usually entailed adding a long fixed focal length lens, adapting a long variable telephoto SLR lens for use with video, or using add-on extenders in addition to the internal 2x extender of many pro video zoom lenses. When adding extenders, there are often subtle, and not so subtle, tradeoffs. In the worst case scenario, when using internal doublers, there is a big loss of light transmission—usually two *f* stops—particularly at the highest focal length of the zoom range. Moreover, there is often a loss of resolution, resulting in a softer look, which can be quite noticeable in some cases.

Another option is to use a long variable (zoom) telephoto ENG/EFP style video lens, which is usually quite large, heavy and clunky. Typically they have long zoom ratios, but sacrifice wide-angle coverage to maximize telephoto power, with the minimum focal lengths nearly double those of standard, multipurpose lenses. This maximizes operation at the tele end of things, but compromises their general-purpose utility, including mobility and the ability to capture a simple establishing shot. Luckily, today, lensmakers are creating lenses with plenty of reach, but which can also be used for a variety of non-telephoto applications including grabbing establishing shots. One such lens is the Fujinon HA25x11.5 BERM.

FEATURES

Despite its 25x zoom ratio, the HA25 is an ENG/EFP style of lens with a focal length ranging from 11.5 mm at the wide end, to 288 mm at the tele end. When using the built-in 2x extender, this range jumps from 23 mm to 576 mm—very respectable on the telephoto end and still workable on the wide end. It gives a 45-degree angle of view when fully zoomed out (without the 2x extension), which is wide enough for an establishing shot.

Equally impressive is its modest weight, only about six pounds. The diameter of the outer lens barrel is 110 mm, versus 85 mm for a typical standard definition lens. This translates into a filter size of 107 mm., which is common for HD lenses.

At first glance, the HA25 looks like a general purpose ENG-style broadcast lens, in terms of its design and proportions, but it is beefier. There are some differences in the layout of switches and design of the motor drive module, typically provided as a pistol grip with key function switches set up for operation by touch alone while shooting. The absence of a wrist strap on the control module for safe handholding suggests that this lens was not designed for such applications. Servo connectors on the underside of the motor drive module, (focus, zoom, exposure, record/pause) suggest that the HA25 is mainly intended for use with servo controllers, and on a tripod.

The layout of switches on the boxy control unit is also different. The record button is placed on top of the control module, behind the zoom rocker arm and next to an identical return video switch. This is opposed to placing it on the rear panel, facing the user, a location that has become somewhat universal with most pro lenses. The design and location of most other function switches on the HA25 though, are fairly standard.

FAST FACTS

Application
ENG/EFP shooting

Key Features
Impressive zoom range, light weight, extremely good resolution and color rendering

Price
$49,800

Contact
Fujinon Inc.
973-633-5600
www.fujinon.com

The Fujinon HA25x11.5 BERM high-definition lens

IN USE

I tested the HA25x11.5BERD with a 2/3-inch SD camera, the Sony DSR 570W, as I didn't have an HD camera with 2/3-inch CCDs to work with during the evaluation period. Actually, this made for a familiar benchmark for evaluating the HA25's performance and quality relative to other pro SD and HD lenses I've used with the same camera.

The HA25 is about double the weight of a standard professional SD lens. The DSR 570 comfortably supported its mass without a cradle or other brace, making it easier and quicker to mount/dismount camera and lens from a tripod. This helps greatly when stalking wildlife, as frequent changes of vantage point are required, often on terrain too rough to safely traverse with a camera and an expensive lens perched on the tripod.

That was certainly true when I was pursuing waterfowl, seagulls, muskrats and the like on an icy, blustery breakwall, flanked by a frigid, deep, fast-flowing river on one side and an inlet choked with ice floes on the other. There were also patches of ice on the breakwall itself. When you add in occasional powerful gusts of wind, I preferred to proceed with the DSR 570 and HA25 lens slung across my chest and shoulder, rather than atop the tripod, which was a lightweight Sachtler DV 8 with carbon fiber legs. The latter supported the HA25 and DSR 570 nicely when properly counterbalanced; with drag levels near the high end for both pan and tilt.

Working with the HA25 required some adjustments in balancing the payload. Without a support brace, I had to mount the camera as far back as possible on the tripod plate adapter, and also had to slide the horizontal adjuster on the head as far back as I could to achieve a workable balance point. Also, as the weight of the HA25, DSR 570 and Frezzi 100 Li batteries was around the max payload for the DV8 head, I used the maximum counterbalance levels.

Once mounted and balanced, I tested the HA25's optics and was immediately impressed by the ultra-high resolution in close-ups when zoomed to full telephoto. Waterfowl, muskrats, waves, ice and waterfront scenes never looked closer or clearer than they did through the HA25. Even close-ups of wildlife (waterfowl, gulls and muskrats) shot around sunset were highly detailed, with great contrast and vivid color. A small red spot on the beaks of breeding male gulls seemed strikingly rich and crisp, even when captured in deep shade. In shot after shot, there was abundant detail and surprisingly rich color even when shot in shade or overcast, especially in extreme close-ups. In these low light conditions and high focal lengths I kept looking for indications of spherical aberration, but found little worthy of mention, even with the 2x extender.

Whether peering through the HA25 via the camera's black and white viewfinder, or watching the footage on an LCD HD color monitor, I lapsed into thinking that I was viewing HD, rather than SD imagery.

An accidental, but welcomed benefit from using the HA25 and 2x extender, with its two stop light loss, was an increase in the film look. This was seen as a very slight softening at the highest focal lengths when using the 2x extension, shallow depth of field and sharp separation between subject and an out-of-focus background. Overall, it created a remarkably cinematic look, even though I was shooting at 60i.

I was awed by the fine detail, color rendition and high contrast of a brown muskrat on the broken ice and also the normally dull gray gulls, even when filmed around sunset. At sunset the detail visible in the muskrat's wet fur was impressive, as was the intense brown coloring of its

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soggy fur, even after sunset. Also impressive was the lack of chromatic aberration at full telephoto (with the 2x) after sunset when shooting nearly wide open.

My greatest difficulty with the HA25X came when using it without servo controls, as I did initially. It took some time to become accustomed to not fumbling for the record/pause button on the back plate of the motor drive module. This is where one's thumb naturally rests when grasping the unit with a handgrip. Instead, the record/pause switch is topside, just behind the zoom rocker arm and next to that identical return video switch. Initially, I regularly confused the two and often watched the tail end of my last shot rather than the beginning of a recording of something new, and vice versa. While I soon learned to overcome this confusion most of the time, it was difficult to avoid it altogether, especially when wearing gloves and/or when I was in a hurry. Having rain slickers on the camera and lens didn't help matters either.

These problems were simply resolved by using Fujinon's ERD-10A-D01 servo controller for zoom functions, including speed, with a record/pause trigger. Although it added a pound or two to the package, this removed all the ambiguity from triggering record/pause and it eliminated accidental vibration when fumbling for the correct button. Fujinon's film-style focus wheel, the EPD-2CA, also made it feasible to also adjust focus and even follow focus, without rattling the frame. This was when even at maximum telephoto—576 mm. Operating the HA25 was so easy with the servo controls that it suggested the lens was designed expressly for use with them, but not without them. That's unfortunate, as the HA25 could, with a few modifications, be made much easier to use without servo controls.

As mentioned, I wasn't able to test the HA25 with an HD camera for this review, but did record enough DVCAM footage to appreciate what a difference a lens can make in image quality. Hands down, it was the best footage I'd ever shot with the DSR 570, as compared with various other pro zoom lenses, including HD models, or with adapted fixed focal length HD lenses. The amount of detail visible in close-ups was in many cases virtually HD quality. This enabled me to appreciate why others have elected to begin the upgrade path to HD with the purchase of an HD lens for their SD camera.

While the lens is designed for HD use, it can also be used to take SD imagery to the next level.

SUMMARY

Fujinon's HA 25X lens is an impressive piece of glass, with plenty of "reach" and impressive resolution. It also features negligible spherical aberration. Its color transmission characteristics were also impressive, with minimal aberration visible in the hours and hours of DVCAM footage I shot. Much of this was done in conditions offering less than saturated lighting. Despite being classified as an ENG-style lens, the HA25 is designed to be operated with servo controls for zooming, focusing and triggering. It works smoothly and flawlessly in that mode. Whether operated manually or with servo controls, the HA25 enables one to capture exceptional close-up action and high contrast HD images with brilliant color and detail. It is ideal for sports, wildlife, news, special events (concerts, live shows), surveillance and other applications, especially where superior telephoto power is needed. While the lens is designed for HD use, it can also be used to take SD imagery to the next level. Due to its high cost, it should be considered a specialty lens for serious professionals who specialize in the aforementioned applications.

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Panasonic

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nail display of all clips and automatically lists them in the order in which they were recorded. Some clips may be spread out over two cards if the recording started near the end of the first. The thumbnail image alerts you that the end of the clip is on another card.

Having instant access to every clip shot allows the operator to review material without worrying about accidentally recording over previously recorded material. You can look at a clip shot earlier and review it on-site, a task that would be time consuming and dangerous to do with tape. And you can begin recording again instantly in mid-preview. The recording will commence on the available P2 card space.

This camera has another feature that is worth noting. Panasonic is introducing a new codec option called AVC-Intra. It's an intra-frame form of compression based on MPEG-4 H.264. This differs from the AVCHD codec, a long-GOP method used in consumer cameras. Intra-frame compression avoids the artifacts that can arise with long-GOP compression. By inserting an optional AVC-Intra card into the AJ-HPX2000, you can achieve DVCPRO-HD quality at half the data rate. Panasonic will offer two levels of AVC-Intra compression, 100 Mbps and 50 Mbps. Using the 50 Mbps level, you can effectively double the capacity of your P2 cards while maintaining DVCPRO HD quality. But you can also shoot at 100 Mbps to achieve an extremely high-quality image, almost equivalent to D-5. This can be useful for very high-end projects, such as a feature destined for film transfer and theatrical release.

IN USE

The first thing I noticed when picking up the AJ-HPX2000 is that it is substantial. The camera resembles other ENG/EFP shoulder-mounted cameras in ergonomic design. Anyone familiar with the traditional Betacam style will find controls in familiar places. The AJ-HPX2000 is a hefty shoulder-mounted camera weighing 10 pounds, plus another five or six for an HD quality zoom lens and battery.

The AJ-HPX2000 accepts serious lenses, which provide exceptional quality, but this comes with a price. I tested the unit with a Canon HJ22ex7.6B lens, which weighs four pounds and sells for about $30,000.

The AJ-HPX2000 controls are easy to find and the menu control is designed so that you can navigate it while looking through the viewfinder.

The LCD screen is useable when the camera is on a tripod or held away from the shooter's body. While certainly adequate, I think this is one area that could use some improvement. For starters, it's square and HD formats are 16:9, which means that the image must be squeezed. This limits the value of the LCD screen for working on composition. The eyepiece viewfinder connection, on the other hand, is compatible with the highest quality electronic HD viewfinders available. The one I had was a full 16:9 1080i AJ-HVF21G.

The AJ-HPX2000 image quality is excellent. I shot in all formats and found it very easy to switch between them. I was particularly enamored by the 1080/24p and 720/24p formats. They both mimic film, which creates a look more suitable for drama.

I could not readily distinguish between 720/24p and 1080/24p resolutions, which points to a significant advantage. Shooting in the 720/24p native mode generates less data, which means you can more than double the amount of video on your P2 cards. With the image quality almost indistinguishable from that of 1080/24p, this is a convenient way to get great images and more memory card mileage.

Film gamma settings provide a nice emulation of the film color curve, yielding deeper, more saturated colors and higher contrast. Three user buttons provide customized settings.

There is noticeable intra-frame motion blur when panning or shooting moving objects in 1080/24p or 720/24p. Sometimes this looks nice and is desirable for a film look. But it can be bothersome when shooting rapid action. However the camera provides an easy fix. I found I could eliminate the blur by changing the frame rate from 1/60 of a second to 1/100.

The audio functions are as good as any HD camera on the market. The AJ-HPX2000 offers four channels of digital audio with an on-camera stereo mic and two additional XLR inputs. The record level controls are conveniently located on the side near the back, and there's an additional level control in the front.

The camera accommodates contrast extremes very well and I didn't have problems with overblown light areas despite shooting in the bright sun.

The main distinguishing feature of this camera is its use of P2 memory card media. In fact, this is the first high-end camera built around P2. The first thing you notice when using the camera is that recording begins as soon as you hit the button. There is no pre-roll time as with tape, and the camcorder is completely silent.

There are many advantages to P2 technology, but primary among them is that it provides nonlinear access to material while you are shooting. This is like having a camera and the capture portion of an NLE in one device. As with an NLE, you have a list of clips with thumbnail images. You can randomly access any one, fast-forward through it, pause or reverse. And you can delete unwanted clips on the spot. And it is also almost failsafe. It is nearly impossible to delete a clip accidentally, as the display asks you to confirm the deletion several times before allowing it.

Another nice feature of the P2 are the thumbnails and the extensive metadata they provide. There's date, time, length, format and even the camera model that was used for recording. The technology is solid and recording was flawless. It provided instant review of material with no worry about recording over what had been shot.

Recording to cards is made simple. A light on each card's slot indicates if it is capable of recording or full. You can remove full cards with the camera running, dump the data with an optional transfer device and then put them back without interrupting anything. You can also set the recording to loop continuously, a feature useful for newsgathering purposes, such as an event stakeout. This way you can end your footage with the resolution of the event.

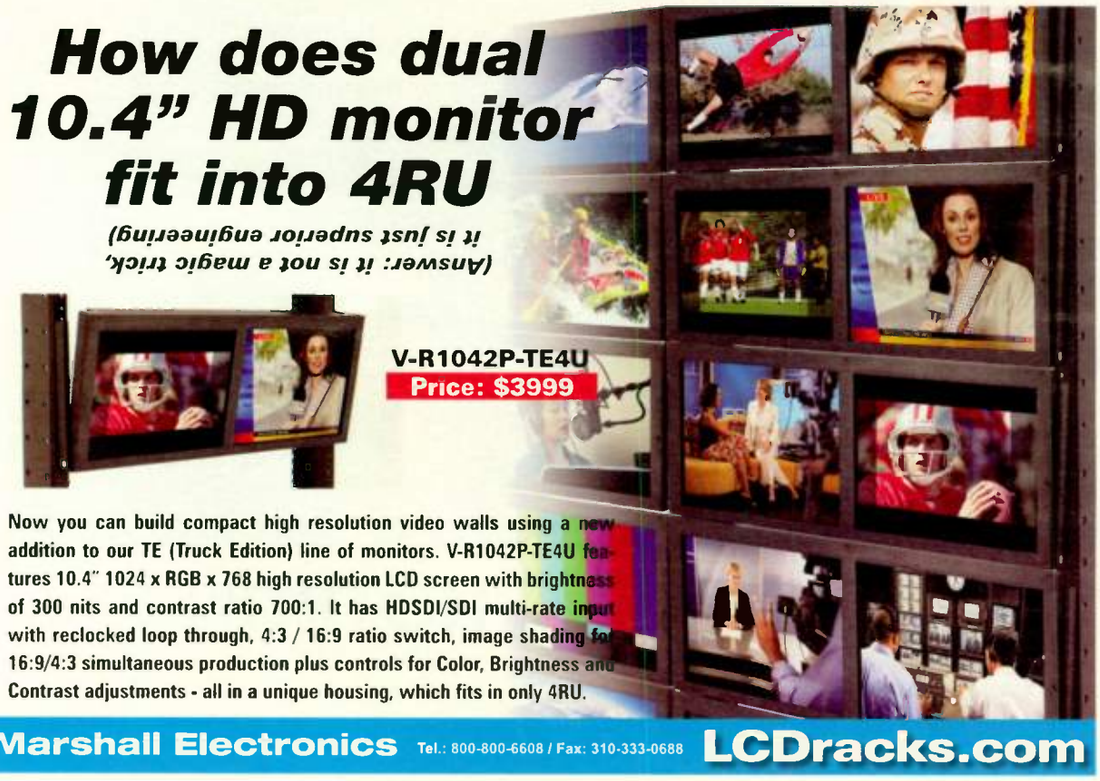
SUMMARY

The AJ-HPX2000 is a huge step forward in high-end video acquisition, as it merges an excellent high-resolution camera with solid-state recording media. The P2 technology used is solid, extremely well designed and surprisingly mature.

The camera is exceptionally durable, as it has no moving parts. This is a significant money saver, as the unit is not subject to the wear, maintenance costs and downtime associated with tape-based cameras. Also, you can say goodbye to tape dropouts and the cost of tape itself.

The ultimate benefits, though, are the ways in which media can be managed more efficiently. Panasonic has developed an entire workflow to achieve this. Recording onto P2 cards greatly streamlines the editing process, both in the field and in the editing suite. With P2, you bypass the NLE capture step. As card capacity increases and cost decreases, P2 recording will become more attractive, and the AJ-HPX2000 will become more valuable and useful with each passing year.

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



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WIRELESS AUDIO SYSTEM

Audio-Technica UHF Wireless System

by Ty Ford

Sticking one wireless receiver on the rear end of a camera is fairly common for run and gun. If you need two, Audio-Technica's new 1800 Series Dual Channel Camera mountable UHF wireless system deserves a look. Although single receivers are available in the series, the new ATW-R1820 dual channel receiver is a significant change in wireless receiver technology.

FEATURES

The ATW-R1820 dual channel unit contains two separate full diversity receivers. That's a total of four RF front ends in one case, all using the same two BNC-mounted stub antennae. It also has an auto-scanner and onboard audio mixing features.

The receiver kit includes a snug cloth holster with a metal clip that can be used to attach the receiver to a belt or to the back of a battery box. The bottom of the holster is open but fitted with straps to allow the short mini-XLR to XLR cables included with the kit to be attached to the receiver audio outputs. BEC group also makes a receiver box that locks onto various camera battery lugs into which the receiver fits.

The receiver weighs one pound and six ounces when loaded with six AA batteries. While the receiver case is metal, the battery door is plastic and detaches completely from the body. That makes it one more thing to keep track of. Fortunately, the six AA batteries provide nearly six hours in dual receiver mode and almost 10 hours in single receiver mode, so battery changes shouldn't be required as often. The receiver has a small, four-bar battery life display in its LCD window. The receiver also has an external power jack to accept 12 VDC, 500 mA from a camera or other external source.

The top of the ATW-R1820 receiver hosts the two BNC antenna connections, power/audio peak LEDs for each receiver, a power switch for internal/external power for one or both receivers, controls for changing frequency and operating the auto-scanner and antenna-switching status lights.

The bottom of the two-channel receiver is relatively busy. There are two mini-XLR outputs, A and B and a switching matrix. You can send the output of receiver one to both outputs, so it feeds both A and B mini-XLR outputs. You can route receiver one to output A and receiver 2 to output B, so each are on separate tracks for split track or stereo recordings. You can route receiver one and two to MIX, which makes a mono mix of both channels available to both outputs. Two small pots on the bottom of the receiver are used to adjust the levels of the individual outputs or to create a two channel mono mix of the two mics.

The receiver's mixer allows some interesting possibilities. If receiver one is set to output A and receiver two is set to MIX, receiver one is audible on both outputs and receiver two is audible only on output B. If receiver one is set to Output A mix and receiver two is set to Output B, receiver one is only on the left channel and receiver two is on both A and B channels. Depending on how the receiver is mounted, you might want to tape over the mixer controls after setting them to prevent accidental changes.

One of the features I like best about some of the AT receivers is the stereo mini-jack right on the receiver that lets you listen to the audio before it gets to the mixer or camera. In this case, it let me sort out which mic was going to which output. There is also a monitor level control that has plenty of gain to feed a set of headphones. There was a difference in the audio between what came through my Sony MDR7506 headphones from the stereo mini-jack directly from the receiver, and the audio passed from the receiver's balanced outputs to my Sound Devices 442 mixer. The main outs were clearer, making the receiver mini-jack output sound dull by comparison.

The Audio-Technica 1800 Series dual channel camera-mount UHF wireless system

The ATW-1801 body pack transmitter (and ATW-1802 plug on) each operate on two AA batteries, a departure from 9 VDC operation. The transmitters, as with the receiver, may be ordered to operate on either of two frequency bands: 541.500-566.375 MHz or 655.500-680.375 MHz. There are a total of 996 frequencies per band in 25 kHz increments. The phase lock loop system uses FM modulation with ±10 kHz deviation. Each transmitter can be set for 10 mW or 30 mW output. RF output obviously determines battery life.

Both transmitters have LEDs that display green when powered up and red when powered but muted. These LEDs blink to indicate low battery. There is also a small, four-bar display in the LCD window of each transmitter that indicates battery life. The mute and power can be locked either on or off. There is no noise when switching from mute to on. Powering down the transmitters, however, does generate a small click. I also found some situations in which there was enough RF in the air to allow some unpleasant noise to escape the receiver even after the transmitters were turned off.

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FAST FACTS

Application
ENG/EFP production

Key Features
Two receivers in one box, 10 mW and 30 mW transmit power, frequency agility

Price
$1,795 for any of three combinations of the ATW-R1820 dual-receiver and body-pacs and mics or plug-on units. Components are also sold separately.

Contact
Audio-Technica U.S. Inc.
330-686-2600
www.audio-technica.com

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EYE ON FURNITURE

Console Us All With Yet Another Rack

by James E. O'Neal

It's interesting to look at historical photographs, especially those that are broadcast related. Even if the functions of some of the equipment depicted isn't readily recognizable after 70 or 80 years, the racks that contain it leave no doubt as to their identity. Equipment racks have been with us from the very beginning.

Has anything really changed in the world of racks and their companion consoles since broadcasting took off in the 1920s?

The answer is very definitely yes, and most all of these changes are designed to make broadcast systems integration more ergonomically and visually pleasant for the end user, and to make life just a bit easier for the equipment installer.

Early manufacturers followed Henry Ford's Model T palette of colors, offering racks in any color, "so long as it's black." Fortunately that's changed, with catalogs now full of racks and consoles available in several colors and finishes. And when these just won't do, most manufacturers will accommodate special order colors or even decorator color combinations for a slight additional charge.

All sorts of other options not available when racks first entered the broadcast facility are yours for the asking (and a few extra dollars). How about louvered tops, sides and backs for starters? Do you have a situation where there's limited space behind the rack? If so, a set of split rear doors just might be the answer. Most any broadcast gear needs a good ground for proper operation. Rack venders are only too happy to sell solid copper bus-bars sized to fit their racks and predrilled and tapped for electrical jumpers from installed gear. Wiring management systems offered can range from a simple cable-lacing bar all the way up to mini-sized cable trays designed for internal mounting. For dealing with neat and clean entry and exit of connecting cables, some venders can provide pre-punched holes in varying sizes, and even factory-equipped with grommets and seals. Power should never be a problem either. Rack and console manufacturers offer a wide range of AC plug-strips designed to mount in their respective furniture. Some of these can even be ordered with built-in spike and surge protection.

In the beginning, broadcast gear came in rackmount packages that were fairly shallow. Everything was nicely designed to fit in a two-foot deep rack or console. If there were more tubes, transformers or other components that had to be accommodated in a particular unit, the designer simply lengthened the 19-inch front panel to fit it all in, or if this wasn't practical, put the circuitry on multiple panels and connected it together with cables and plugs.

Solid-state gear followed suit—for a while. After that, designers and packagers seemed to have a contest to see how deep a package they could put together. This initially led to overly deep equipment protruding from the rear of racks. But broadcast furniture manufacturers caught on very quickly and soon began to market deeper and deeper racks, with 30- to 36-inch deepths seeming to be the norm now. It's comforting to know that even the longest server chassis can be buttoned up inside a rack and rear doors will close.

KEEPING A COOL RACK

With the end of the tube era, we were led to believe for a while that heat wasn't something we needed to worry too much about. Solid-stated equipment consumed much less power than the gear it replaced and simple radiational and convection cooling was all that was needed. Then came the chip and the beginning of the Moore's Law competition and life has never been the same. With the packing of more and more components into less and less space, furniture manufacturers have had to add cooling systems to their catalog lines. In checking catalogs, prospective rack users will see that some very inventive solutions to heat removal problems have been engineered for 21st century applications. There are now top-mounted air movers, vent blocking kits for restricting air flow in some parts of the rack and enhancing it in others, spot cooling assemblies to mount in close proximity to prime heat generators, chimney-effect cooling systems, exhaust ducting systems and more. In addition, thermostatic controllers for these forced-air cooling systems are offered and at least one manufacturer has an integrated temperature monitoring system with a digital readout of internal rack conditions. The unit not only presents the good (or perhaps bad) news to someone in the proximity of the rack, but can also trigger a remote alarm if a pre-set temperature limit is reached.

The shift from conventional CRT displays to flatscreen monitoring in control rooms is supported by new products from Winsted and others.

ACCESSORIZE, ACCESSORIZE

Broadcast furniture accessories don't stop with power distribution and cooling systems either. Most venders have had a lot of experience in understanding and responding to needs unique to broadcasters and teleproduction facilities. In areas where it's necessary to keep a log of operations, manufacturers can supply front-mounted writing surfaces. A variety of both fixed and retractable shelves are also available from most rack producers. There's nothing like a convenient storage drawer or two for keeping a room tidy and both "plain" and lockable rackmountable drawers are available from multiple sources. For the more fastidious among us, furniture manufacturers seem to have thought of everything by

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even offering rackmounted "media holders" specially designed and sized to accommodate DVDs and tapes.

If a verbal "don't touch the goodies" warning is not adequate or you need extra security for expensive gear, most all manufacturers can provide an assortment of locking mechanisms for rack doors, or even accessory drawers.

If you're concerned about building a real showplace, many rack providers sell clear or smoke-tinted see-through doors, which conceal equipment, but still allow operators and visitors alike to see all those "blinking lights" inside.

If mobility is your requirement, rack makers universally address this. With some it's as simple as a set of casters. Other manufacturers provide special wheeled-bases to replace stock, non-moveable units.

COMPUTERS DICTATE

The integration of the computer into broadcast operations has kept furniture manufacturers on their toes too. It's no longer necessary to support that rack-bound computer on jury-rigged strips and its accompanying keyboard propped up on a cardboard box. Manufacturers have come up with several very eloquent solutions to the computer challenge, including integrated keyboard and trackball units, specially designed to fit within standard rack spacing and to retract out of the way when not in use. There are even some integrated units that come complete with an LCD display all ready to connect up to the computer.

The move to more and more CRT computer displays, and lately LCD monitors, has also spurred broadcast furniture providers to develop complete lines of consoles specifically designed to accommodate this part of the computer-human interface and to be ergonomically correct in the process. Great care has been taken to place displays at just the correct eye height and to provide the correct position and elevation for keyboards and mice or trackballs. Such products have become an art form with some suppliers. Entirely new lines of space-saving consoles are now available, predicated on the popularity of flat-screen display units. Look for these to dominate the field in a few years, as more and more equipment manufacturers say no to the venerable old CRT in new monitor designs.

It's no longer necessary to support that rack-bound computer on jury-rigged strips and its accompanying keyboard on a cardboard box.

DON'T FORGET THE AC PLUGS AND SOCKETS

Hopefully by reading this far, you've decided to move ahead into some real 21st century broadcast furniture and are already heading for the catalog or Web site of your favorite manufacturer.

Is there anything else that you should build into the furniture budget before you send it to your department head for approval?

As you don't want to lose any airtime because someone pulled an underfloor cable that just happened to have a strangle hold on a rack power circuit, don't forget to add enough Twist-lock plugs (and receptacles) to accommodate all the plug strips purchased. You'll probably have to get these from an electrical supplier though.

WOULD YOU LIKE SPACERS WITH THOSE?

How about blank panels or spacers? There never seems enough of these when you're building a new facility, or even adding on to or upgrading an existing one. Order a good supply of these in several sizes from your furniture manufacturer to ensure that you have a match for the color and texture of the racks and consoles themselves.

Also, if you don't have it already, you might consider some software for doing rack and facility layout. This could range from something as basic as Microsoft's Visio all the way up to full facility design and documentation programs such as VidCAD and WireCAD, which allow you to put together detailed furniture equipment layouts and facility floor plans.

Go ahead and get the ball rolling on your next large or small facility project. Manufacturers have made this part of the operation a lot easier and more pleasant than it was when your granddad was building the control room you saw in that picture.

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Audio-Technica

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A small but readable LCD screen is available for displaying the status of each transmitter. When the transmitters' SET buttons are pushed, the LCD becomes backlit—enough to see in the dark. When in MUTE, "mute" in very small letters appears on the transmitter's LCD display. Both transmitters have sliding panels that cover the adjustment controls to prevent accidental status changes. The panel on the plug-on transmitter has a hole that allows you to turn the transmitter on and off, even when the panel is closed.

The ATW-T1801 bodypack transmitter is slightly smaller than a box of Marlboros and chews up a pair of AA alkaline cells in eight hours in low-power operation, and six hours at high power. That specs out to 160 mA and 180 mA current consumption, respectively. The bodypack has a switchable input with low-Z input for mic or high-Z musical instrument pickups and also makes available a small bias voltage, but not enough for phantom power. Input sensitivity is adjustable in four steps from –6 dB, 0 dB, +6dB and +12 dB, with a default of +6 dB.

The antenna on the bodypack transmitter unscrews. The microphone connector is spring loaded, locking, four-pin Hirose-type connector. Pulling the sliding outer shell of the connector releases the lock. The spring clip for hooking the transmitter on a waistband or pocket is designed so that it can be reversed, allowing the mic to be mounted in either of two vertical orientations. The transmitter case is made out of high impact plastic. The hinged battery door is a little hard to get open if there are no batteries to pop the lid.

So while you may not break any long distance reception records with the Audio-Technica 1800 Series, partnering two diversity receivers and a mixer in one box does give you a lot of operational power.

The ATW-T1802 plug-on transmitter duplicates the features of the bodypack transmitter with a few exceptions. It provides 12 VDC phantom power, but doesn't have a high impedance instrument input option. The Audio-Technica AT 4073a worked very nicely with the plug-on. Its high sensitivity may not be what you want in extremely high SPL environments, but it feeds the plug-on an impressive signal. A Sennheiser 421 dynamic mic, while less sensitive, also worked well.

IN USE

The auto-scan feature on the receiver could use some work. Its first scan ended up in the middle of a locally occupied NTSC channel, whose transmitter is about six miles away. At that frequency, range was limited to about 30 feet. After checking a chart and choosing a more open frequency, I walk tested both transmitters running high power (30 mW) with the receiver in dual mode and got about 50 yards before taking soft hits on the plug-on and 70 yards with the body mic. I did have some unusual range reduction problems, as it was a rainy day.

On subsequent days, I got more than 50 yards from the body mic and 30 yards with the plug-on, with my body between the mics and the receiver and both transmitters and receivers working. With the antennae in the clear, about 10 more yards were added. On one occasion, the plug-on went a good 70 yards when held vertically and in the clear.

Using two antennae for two full diversity receivers in the same box can be expected to reduce range to some degree. It's a simple trade off—a bit of range for operational flexibility. So while you may not break any long distance reception records with the Audio-Technica 1800 Series, partnering two diversity receivers and a mixer in one box does give you a lot of operational power.

SUMMARY

Navigating the menus to make changes was easy after I had used the system a day or so. For the ENG/EFP market, where having two channels of wireless strapped to the camera is increasingly useful, the Audio-Technica 1800 Series brings a lot to the table, especially at its price point of $1,795. You may or may not want to use the mixer features on the receiver, but having them does provide options. Audio-Technica sells the 1800 Series in three different sets: a receiver and two body mics, two plug-ons or a body mic and a plug-on. The only things on my wish list would be a strapped pouch to hold everything and, of course, 48 V phantom power for the plug-on.

Ty Ford is on special assignment from ***Radio World*** *and* ***Pro Audio Review****. He may be reached at* www.tyford.com

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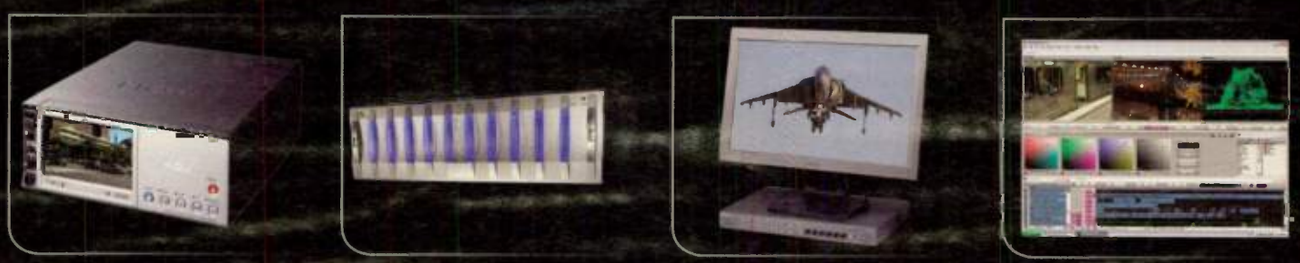

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EQUIPMENT RACK

Middle Atlantic Equipment Rack

by James E. O'Neal

Walk into any broadcast or production facility and what do they all have in common?

Racks!

The bigger the facility, the more racks. You really can't build a TV plant without racks, and I've certainly been in this business long enough to have seen my share.

Racks are sort of like dogs and cats—they can be there, but you really don't notice or remember them unless they're very good or very bad.

The Middle Atlantic half rack I received will be remembered for some time for its good points.

FEATURES

Even though the rack sent out for this review was not full-sized (4 feet tall and 3 feet deep) it certainly was no tabletop curiosity or toy.

The freight agent was huffing and puffing so much after getting it off his truck that I took pity and offered to help with loading it onto his appliance dolly. He did not decline my offer.

Once loaded, the pneumatic tires on the dolly seemed on the point of bursting. This baby is made out of solid steel and is heavy! I have a feeling that even unloaded, it's not going to go anywhere by itself, unless perhaps your facility is located somewhere along the San Andreas fault line.

To lighten our load a little, we decided to chuck the wooden shipping pallet that the rack was strapped to before we brought it into the building. With the way some racks are packaged this could have been an ordeal in itself—hunting up the right sized socket and end wrenches to unbolt it from the pallet, plus tipping the rack to get at the bolt heads or nuts. Middle Atlantic made this part of the operation easy. It amounted to just clipping a couple of bands of strapping material and then the rack was free of the pallet.

The rest of the packing material was removed once we were in the **TV Technology** offices. This consisted of a lot of shrink wrap, heavy corrugated corner pads and sufficient additional heavy cardboard to guard the rack from the slings and arrows of shipping. Underneath the cardboard and outer shrink wrap was yet another layer of shrink wrap.

The Middle Atlantic packaging did its job—not a scratch or dent anywhere. Once unpacked, the rack was examined for any hidden damage and for overall quality of workmanship.

The unit supplied for evaluation came with a black wrinkle finish. As a restorer of vintage electronic gear, I can attest to the difficulty in getting a decent wrinkle finish job on a metal surface. If there's an academy award for wrinkle finishes, Middle Atlantic should get it.

FAST FACTS

Application

Mounting of professional audio/video/RF equipment

Key Features

Temperature monitoring, easily moveable rail sets, rugged construction

Price

$2,460, suggested retail. This includes the power strip, cable management hardware, side panels, doors and the integral temperature monitoring system

Contact

Middle Atlantic Products Inc.
973-839-1011
www.middleatlantic.com

I removed the sides to have a better look at the construction technique used (and also to make the thing a little easier to move around).

I should mention here that the side panels are almost a pleasure to take off and put on. There are no bolts or nuts in inaccessible places to try and reach with tools that are too large to go there. There are no clips or pins either. Middle Atlantic has constructed their rack sides with multiple "hooks" that are really extensions of the metal used in forming the sides. These fit into slots cut into the rack frame. The side panels have cushioned hand-holds (actually hand-sized slots) formed into them for easy lifting and carrying. To remove a side, all one has to do is turn a key in a lock cylinder and lift the panel off. Putting it back on is just as easy.

With the sides off, I had to do a double take when I saw how the unit was put together. On first appearance there are conventional wide horizontal braces welded to the vertical frame members. However, on closer examination this turns into an optical illusion.

The cross braces aren't welded at all.

The braces and frame are all one piece of metal.

In a world where nearly everyone cuts corners, it was refreshing to observe that the Middle Atlantic folks seem to have gone out of their way to build a rack with as few seams and welds as possible!

The side braces and vertical frame members are made from a single piece of steel, with the large side openings created by removing metal. They're laser cut and have no sharp edges. (The horizontal sections are stiffened by the addition of welded U-channel pieces. And even this construction is a bit deceiving as the spot welds and wrinkle finish covering them are so well done that it takes a really good eye to locate the weld points.)

There are basically two systems for mounting equipment within a rack. Some manufacturers supply mounting rails that have been drilled and tapped for the specified mounting screw size. Others provide rails that have oversized holes for removable clips, which engage the holes and provide anchor points for bolts supporting the equipment. There are pros and cons associated with either system.

It's nice to learn that Middle Atlantic gives you a choice of mounting systems. The WMRK rack that I received for review was equipped with the clip system. However, rails drilled and tapped for 10-32 hardware are available on special order.

Now I will readily admit that I've had my share of aggravation and wasted time with clip-insert mounting in the past. The clips are difficult to position and require tools to install (generally a large flat-blade screwdriver and small hammer) and are the devil's own if you need to relocate them (the rail finish job is invariably scratched up).

Did I forget to mention the load of frustration and swear words that follow whenever you're driving in the last mounting screw and the clip receiving it either manages to slide out of position, gets stripped by the screw, or bends back out of reach of the screw? I'm sure that a lot of us have been down this road.

It's not much fun having to remove that piece of heavy equipment just to replace that one failed fastener!

Middle Atlantic's removable clip system for receiving mounting bolts is made out of stronger stuff. Indeed, they have found a better way, and it's called "cage nuts."

The cage nuts are squarish threaded clips that engage any of a series of square holes formed in the rack rails.

These special devices are installed from the rear, with two tabs engaging opposite sides of the hole. Very little effort and no tools are required to push them into place.

Mounted freely within the confines of the clip assembly is a conventional square nut with 6 mm threads. As this is a true nut, rather than a two-dimensional clip, it's much more difficult to strip threads, and impossible to bend back out of the way of the bolt. These features should be sufficient to convert even the most diehard "rail with tapped holes" aficionado of the clip system.

Oh, I almost forgot—no masking tape or pencil marks on the rails are needed to line up nut placement with

One of the Middle Atlantic WMRK series of equipment racks

equipment spacings. Middle Atlantic thought of that too and silk-screened lines and numbers on each cluster of three holes. These 1 RU groupings should prove very convenient for locating the cage nuts needed for mounting gear.

Should it be necessary to adjust the horizontal location of the rear rails, this is also easily done. It's just a matter of slightly loosening some hex bolts and the rail is then free to travel along horizontal slots that run the depth of the rack. The bolts engage special elongated nuts that are captive within the slot. When the rail is in the desired location, it's a simple matter to lock it back in place.

The review model rack I received came equipped with front and rear doors. Both are designed to let equipment breathe. They are not louvered, but rather are constructed of a solid-steel frames with large area-perforated metal panels. They not only provide ventilation, but also allow gear kept under lock and key to remain visible. Fastening hardware is separate from a depressed handhold in the doors and is very adequate for the job. Latching the rear set of split doors was especially impressive, as when the handle was turned, heavy rods were driven into upper and lower frame recesses, very securely fastening the door. Both front and rear doors were a breeze to remove and install. The front door is hinged on larged tapered pins, eliminating the

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Snell & Wilcox Kahuna 4 M/E HD/SD switcher, BO; GVG M-2100 master cntrl switcher, $19600; GVG 100N prod switcher, $2499; GVG IPS-110 prod switcher, $6999; Sony DVS-8000C 2 1/2ME standard def prod switcher, BO; GVG 20-TEN w/20-Ten0SA stereo audio routing switcher, $5500; GVG 7000 very large matrix w/SDI video routing switcher, $85400; GVG Series 6000 32x32 VAA w/5 panels routing switcher, $8600; Leitch 128x64 V6 Integrator w/10 panels, $31500; Leitch 16x1 routing switcher, $1100; Lighthouse K Series 32x32 SDI vdieo, AES audio routing switcher, $11000. 818-551-5858 or 212-268-8800 or www.broadcaststore.com.

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Tektronix 1720 vectorscope, $900; Tektronix 1730 waveform monitor, $900; Tektronix WFM-601E waveform, $5200; Tektronix WFM601i waveform, $3750; Tektronix 1740A waveform/vector, $2950; Tektronix 1750A waveform/vector, $3800; Tektronix VM700A, BO. 818-551-5858 or 212-268-8800 or www.broadcaststore.com.

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TV PRO GEAR
Los Angeles New York

EQUIPMENT SERVICE INTEGRATION

TV Pro Gear opens new factory to produce $80,000 multi-camera high definition flypaks

TV Pro Gear's multi-camera HD-SDI Flypak™ is ideal for shooting concerts, sports, church services and corporate events. Other applications include training programs, surveillance and legal evidence. The system is capable of supporting up to eight cameras.

Works with any cameras that output HD-SDI and are genlockable. The cameras are attached to TV Pro Gear's Cambox™ (patent applied). A signal cable goes from the Cambox™ to the Flypak™ access panel.

The cable carries HD-SDI video, audio and intercom back to the Flypak™ while at the same time sending genlock, time code, tally lights and power to the camera.

The For-A HVS-500HS Video Switcher supports all HD and SD formats and frame rates. This 8-input digital switcher includes:
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Powerful Switcher Supports HD and SD

NAM, FAM, and 100 different preset wipe patterns. Color correction and color matching A vertical, horizontal or diagonal gradation matte can be used for assigning to backgrounds, wipe borders, and keyer mattes.

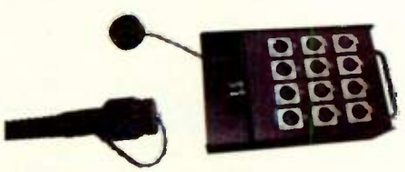
Record on DVCPro-100, HD-Cam or uncompressed on a DDR. The standard configuration includes a Panasonic AJ-HD1400 and Sony DVD recorder.

Flypak™ works with any type of VTR

The Miranda screen splitter feeds ten images into a 42" Panasonic screen display while simultaneously displaying tally, time-code, time of day and up and down timers. A Leader 7700HD rasterizer sends video levels and test signals to the monitor.

Signal distribution and patching. The inputs and outputs of every device in the Flypak™ are looped through patch panels. Under normal conditions no patching is necessary. However, the patch panels enable additional devices to be attached without having to change any internal wiring.

Ten Input Audio Mixer, Stage Box and other unique features. Audio is handled by a 10-input Sennheiser mixer. A stage box couples to a 150 foot audio snake with bayonet connectors on each end allow quick deployment. The stage box allows the signal from eight microphones to be sent to the Flypak™ while receiving program audio and two channels of intercom.



TVPG Audio Stage Box

The Flypak™ access panel has outputs for program audio and intercom. The access panel also has connectors for HD and SD component video to feed a floor monitor or projection system.

6-Camera Flypak™ Access Panel

A Clearcom MS-232 master station supplies two channels of intercom. Also included are a Clearcom RM-232 remote station, five beltpacks and seven headsets.

Clearcom MS-232 2-Channel Intercom

Highly portable. Designed to survive adverse conditions. The 42" Plasma screen electrically retracts into the case for shipment. The entire system is mounted in a jig welded, shock mounted aerospace quality frame capable of sustaining a 3g impact. An extreme-heat and dust resistant version of the Flypak™ is available that includes temperature controlled fans.

The entire Flypak™ runs off of a (UPS) uninterruptible power supply. TV Pro Gear's Flypak™ is completely immune to low voltage conditions or power spikes. If you lose power, the system will keep operating for over an hour. The Flypak™ draws less than six amps so even ancient household circuits are not a problem. 220 Volt versions are also available.

Warranty, Training and Documentation. The system comes with a ninety-day warranty. An optional one-year warranty is available. On site training is included.

The system comes with a full set of CAD drawings and operations manuals. Every wire in the Flypak™ is labeled at both ends designating where it goes to and where it comes from.

Call us for a quote on a system customized to fulfill your requirements.

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Sony UVW1800 Betacam SP rcdr/plyr, great cond, in my rack w/lw hrs, call for more details, have the manuals also, $3500/BO; Sony BVW35 portable Betacam SP rcdr/plyr, xlnt cond, PortaBrace case & all service manuals, etc, $2500/BO. M Schulze, 619-698-4336.

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KECI Director of Engineering: KECI-TV, the NBC affiliate in Missoula, MT is seeking a Director of Engineering. Previous experience a must. A college degree or equivalent with SBE certification is required along with an FCC First Class or General License. EOE. See www.keci.com for more information. Please send cover letter, resume and references to: Charlie Henrich; KECI-TV; 340 West Main Street; Missoula, MT 59802.

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World Radio History

Middle Atlantic

CONTINUED FROM PAGE 60

"pin the tail on the donkey" fumbling associated with other door mount systems I've used. The rear doors hinge via spring-loaded pins engaging upper and lower sockets. These are easy to locate and engage also. If I had to change anything about the door system, it would be to make the latching handles just a bit larger.

An interesting included feature was the rack's integral temperature monitoring system. (OK, digital thermometer!)

The display unit is powered from a supplied "wall wart" power and mounts in a special cutout at the top of the rack's front-frame face. A very small temperature sensor attaches to the display and is equipped with cable sufficient to allow it to mount just about anywhere in the rack. This is excellent for monitoring overall rack temperature or for keeping an eye on equipment prone to overheating. During my review, I kept the probe in free space and noticed that the display numbers closely agreed with a large wall-mounted digital thermometer nearby.

The rack's top and rear horizontal member are noteworthy too.

On the top, in addition to a large screened ventilation area, there are also six 4.5-inch diameter openings for cable access. A thick, yet flexible, rubber grommet-type closure is fitted to each hole. These have triangular petals to seal the opening. If the user decides to pass cabling through any of these ports, it's a simple matter to split the petals to accommodate the cables.

Cable access is also provided above the rack's rear door by a series of knock-out-sealed openings, the largest of which are slightly less than two inches in diameter.

These pre-engineered top and rear openings could potentially save a lot of time and effort spent with drills and punches or hole saws.

A sturdy power strip, which included overload protection, was mounted in the review rack. However, I was unable to test this, as it was wired with a molded 20 amp plug. Evaluation of the rack took place in an area unserved by 20 amp outlets and I was reluctant to cut the supplied plug from the line cord and refit it with the more common variety. At any rate, I'm sure that the power strip would prove up to the job.

SUMMARY

During the time the rack was in my custody, I performed the standard battery of tests for acceptance that should be performed at any facility. I examined it carefully to check for any overt or hidden shipping damage due to poor packaging and I checked for frame squareness. In addition I evaluated the unit for ease or difficulty in mounting gear and changing rail position. I've had the sides and doors on and off to determine how well they fit and how easy or difficult they were to remove and install. After all of this, I have to say that there's very little not to like about the Middle Atlantic rack. I'm very impressed with its showroom finish and sturdy construction. (I imagine that this rack is probably more crash-resistant than some cars on the road today.) To use another automobile analogy, I've kicked the tires and lit the fires and really can't come up with anything much I'd want to change—save for bigger door latching handles, but this is a personal preference, not really a flaw in the rack.

The Middle Atlantic unit is a very well thought-out and constructed piece of broadcast furniture. It is extremely sturdy and no doubt can take any reasonable amount of abuse and still last a lifetime. (It would not surprise me 50 years hence to not only see this rack in pictures of early 21st century broadcast installations, but also to find it still in use, provided someone doesn't come up with self-levitating equipment in the meantime.)

James E. O'Neal is technology editor at ***TV Technology*** *and is also a retired broadcast engineer with four decades of broadcasting experience.*

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World Radio History

Private Equity Firm Gains Control of Intelsat

PEMBROKE, BERMUDA

BC Partners (BCEC Funds), along with other investors is acquiring about 76 percent of Intelsat Holdings Ltd., the parent company of Intelsat Ltd., a major provider of fixed satellite services. Intelsat's current shareholders, which include Apax Partners, Apollo Management, Madison Dearborn Partners, Permira and management are expected to receive more than $4 billion in the transaction and will continue to own approximately 24 percent of Intelsat Holdings Inc.

Dave McGlade, Intelsat CEO, said that the acquisition represented additional opportunities for the company.

"This transaction highlights the significant value that Intelsat has created for its shareholders and the tremendous opportunities the business and employees will enjoy going forward," he said. "The company has thrived under private equity ownership, including the 2006 completion of the transformative PanAmSat combination that firmly established Intelsat's global leadership position. As a result, we have a keen appreciation for the financial and strategic support that a firm such as BC Partners can provide. We are confident that they will continue to endorse Intelsat's objectives for revenue growth and operating improvements."

McGlade is expected to remain in his post and the company's business interests will continue to be focused on service to the global base of Intelsat customers, which include media, networks and government.

BC Partners is an international private equity firm, which operates through teams located in Geneva, Hamburg, London, Milan, New York and Paris. The firm has been in operation for 20.

The acquisition is expected to be completed within six to nine months and is subject to regulatory approvals.

DG FastChannel to Purchase GTN Inc.

IRVING, TEXAS

DG FastChannel Inc. has agreed to purchase privately held GTN Inc., for $11.5 million cash. Detroit-based GTN provides advertising media services including distribution for standard definition and high definition commercials, production, post production, asset management and archival services. It focuses mainly on the automotive advertising market. The Detroit-based company said in 2006 it generated about $15.8 million in revenue, 32 percent of which were generated by the ads distribution operations.

DG FastChannel expects its management of GTN's ads distribution operations to generate EBITDA margins of about 35 percent and believes the transaction will be accretive to its operating results.

Scott K. Ginsburg, chairman and CEO of DG FastChannel said the acquisition of GTN further diversifies the company's ads distribution revenue base and customer lists, as well as strengthens DG FastChannel's presence in Detroit.

The acquisition marks the third transaction for DG FastChannel in as many months. In April, the company announced it was acquiring Pathfire. It has also agreed to acquire the advertising operations of Point.360.

Upon completion of the transaction, DG FastChannel intends to divest GTN's non-core production and post-production assets and operations. The deal is expected to close in the third quarter.

News Corp. to Sell Nine TV Stations

NEW YORK

News Corp. plans to sell nine of its Fox affiliated television stations, the global media company said in June.

The stations up for sale include WJW in Cleveland; KDVR in Denver; KTVI in St. Louis; WDAF-TV in Kansas City, Mo; WITI in Milwaukee; KSTU in Salt Lake City; WBRC in Birmingham, Ala.; WHBQ-TV in Memphis, Tenn.; and WGHP in High Point, N.C.

News Corp., which is owned by Rupert Murdoch, has 35 owned-and-operated stations in the United States. Following the sale, Fox will have 26 stations including nine major market duopolies.

News Corp. had total assets of about $62 billion, as of March 31, and total annual revenues of about $28 billion. News Corp. said it has retained Allen & Co. to advise it on potential transactions.

Italian Eyewear Firm Acquires Red Camera Parent Company

FOOTHILL RANCH, CALIF.

Oakley Inc., the parent company of the Red One 4K electronic cinema camera that drew long lines at NAB2007, announced last month that it is being sold to Italian eyewear company Luxottica Group SpA.

Oakley is better known outside the video industry as marketers of expensive sports eyewear. Jim Jannard, founder, chairman and principal shareholder of Oakley, has been the "Pied Piper" of the Red One camera initiative, bringing a high-quality 4K camera to the film industry that is priced at $17,500. The company has taken over a thousand deposits from potential Red One owners to fund development of the camera, and finally had working prototypes to show at NAB2007.

The joint press release on the sale made no mention of Red One. As to Jannard's future plans, the release does quote him as saying: "Given the opportunities in front of us, I wrote Mr. Del Vecchio [Luxottica Group chairman] this morning indicating my intent to make an investment in the company after the transaction closes."

T-VIPS Hires Steve Sloane to Drive U.S. Operations

GREENWICH, CONN.

T-VIPS, an Oslo, Norway-based designer and supplier of solutions for the backhaul of broadcast-quality video signals over IP networks, has recruited industry expert Steve Sloane to manage its U.S. subsidiary T-VIPS America Inc. office, based in Greenwich, Conn.

The company announced the U.S. expansion in April when it launched new products specifically designed for the North American market at NAB2007.

Sloane brings more than 20 years of distribution, sales and management experience to T-VIPS America. Most recently he worked for Triveni Digital Inc.—an LG Electronics Co. Previously, he held sales and marketing management positions with Snell & Wilcox, PESA Switching Systems, and for Chyron, both in the United States and the United Kingdom.

In his new position as North American director of sales for T-VIPS, he is responsible for setting up T-VIPS sales and support operations in Greenwich, as well as spearheading T-VIPS' North American pre- and post-sales support activities.

"Steve Sloane is the right executive to drive our North American market expansion and build direct relationships with partners and customers to ensure that our solutions gain the recognition in North America that they have already achieved in Europe," said Janne T. Morstøl, president of T-VIPS America Inc.

For-A Opens Miami Office

CYPRESS, CALIF.

For-A says that business in the Latin American and Caribbean markets is growing and the audio/video manufacturer is gearing up to accommodate it.

For-A has opened a Miami office to serve customers in these regions. Pedro Silvestre is For-A's Caribbean and Latin American regional sales manager and says that the new office will make it easier to serve this expanding market.

"Our presence in Miami not only reinforces our position with our existing Latin American and Caribbean distributors, it allows us to focus on introducing For-A's innovative products into new territories," Silvestre said.

He cited recent For-A sales in this trade area, which included a VPS-700 switcher that went to Gayelle TV, a privately owned broadcast operation serving Trinidad and Tobago. For-A's VPS 700 and HVS-500 switcher products are also in use at Media 21, a multimedia service provider operating in Trinidad and Tobago. Media 21 provides audio and video feeds to corporations and hotels throughout the Caribbean.

IABM: Sales Increase But Rate Drops Off

TEWKESBURY, ENGLAND

Global broadcast equipment sales continue to increase but at a slower rate than before.

According to the International Association of Broadcast Manufacturers, which tracks 62 companies active in broadcast manufacturing and media technology, its index shows global sales increasing 10.7 percent year to year, but the monthly trend shows the rate of increase falling.

"Sales by North American companies have risen more than for European companies. The increase is greatest for large companies, with small companies seeing no share of market growth," IABM stated.

About three-quarters of respondents told the organization that they were profitable, leaving "a significant" 26 percent posting losses.

"Profitability is still increasing much faster [28 percent year on year] than market growth, so aggregate performance is improving," IABM found.

Businesses covered are based in 15 countries: Belgium, France, Germany, United Kingdom, Netherlands, Switzerland, Norway, Sweden, Denmark, Finland, Greece, Israel, Canada, the United States and Australia.

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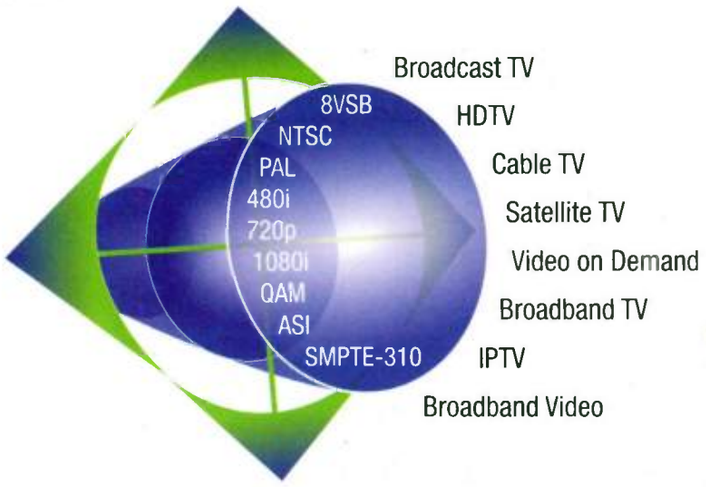

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