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WHAT'S INSIDE

Discovery Bridges IT, Broadcast

by James E. O'Neal

STERLING, VA.

Television "in the round" might be the best way to describe the new Discovery Communications Discovery Television and Technology Center that began operations on Aug. 1.

This unusual facility is located in Sterling, Va., 20 miles west from Discovery's world headquarters in Silver Spring, Md. Sterling is a D.C. bedroom community and with the dawning of the "dot-com" era, has become part of the Washington "technology corridor."

According to John Honeycutt, Discovery senior vice president of television operations, the decision to cross the Potomac into Virginia was based on several factors. One of these was the post 9/11 realization that emphasis needed to be placed on facility decentralization and the relocation of critical operations away from large cities. Another consideration was easy access to both ground and air travel. (Interstate highways and Dulles International Airport are just a few miles away.)

But perhaps the most important consideration was the availability of a large and empty building that could be quickly built out for television purposes, which Discovery Communications located and purchased in 2003. Ascent Media Systems & Technology Services, assisted by Davis Construction, was brought in to turn it into one of the most modern television facilities in the world.

"The challenges were really those faced in any large scale facility of this type," said Tom Canavan, executive vice president of systems and technology services for Ascent Media.

DISCOVERY, PAGE 8

Verizon Debuts FiOS TV

Telco hoping consumers choose new fiber diet

by John Merli

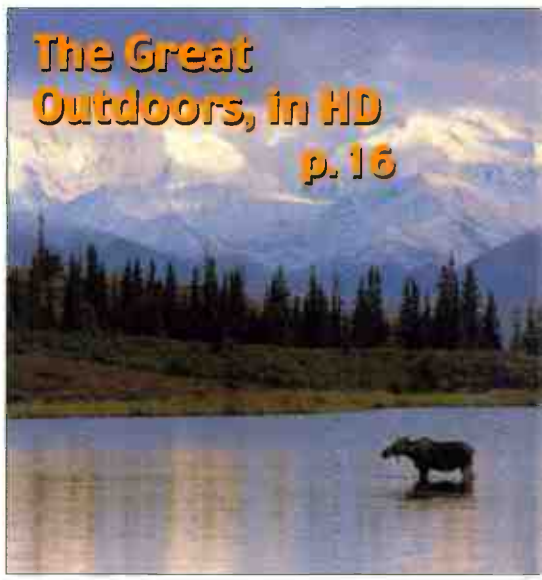
KELLER, TEXAS

When telco giant Verizon lit up its newly installed fiber-optic television service, dubbed FiOS, last month in this rapidly growing Texas suburb of 30,000 residents, the launch came amid the pomp and ceremony usually afforded momentous cultural events—with one Verizon exec labeling the occasion no less than "a seismic shift in pop culture."

In late September, Verizon also reached what it calls a "bellwether" for its new TV service by signing a 15-year franchise pact in its first major market—Fairfax County, Va., adjacent to Washington, D.C.

Located just north of Dallas, Keller is 90 percent non-Hispanic white, with a median household income of about $90,000, according to the U.S. Census Bureau. The area is already established Verizon territory (although it shares parts of it with SBC), where it boasts a ready base of 8,800 households for Verizon phone and broadband services.

FIOS, PAGE 18



all the news fits

Shoot more news more efficiently with Panasonic's new P2 Store drive. The AJ-PCS060 stores 60GB of DVCPRO footage on a one-pound*, ultra-rugged hard drive that simplifies ENG workflow. Plug in a P2 card, push the Start button and your DVCPRO content transfers to the P2 Store at faster-than-real time.

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The P2 line-up also includes the new, low-power AJ-SPC700 (pictured below) and the fully featured AJ-SPX800 DVCPRO50/25 P2 camcorders. To learn more about the new AJ-PCS060 and Panasonic's entire P2 family, visit **www.panasonic.com/p2** or call **1-800-528-8601**.

The new AJ-SPC700 DVCPRO50/25 P2 camcorder offers low power consumption and high cost efficiency for newsgathering.

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* Weight of AJ-PCS060 is 1.4 pounds

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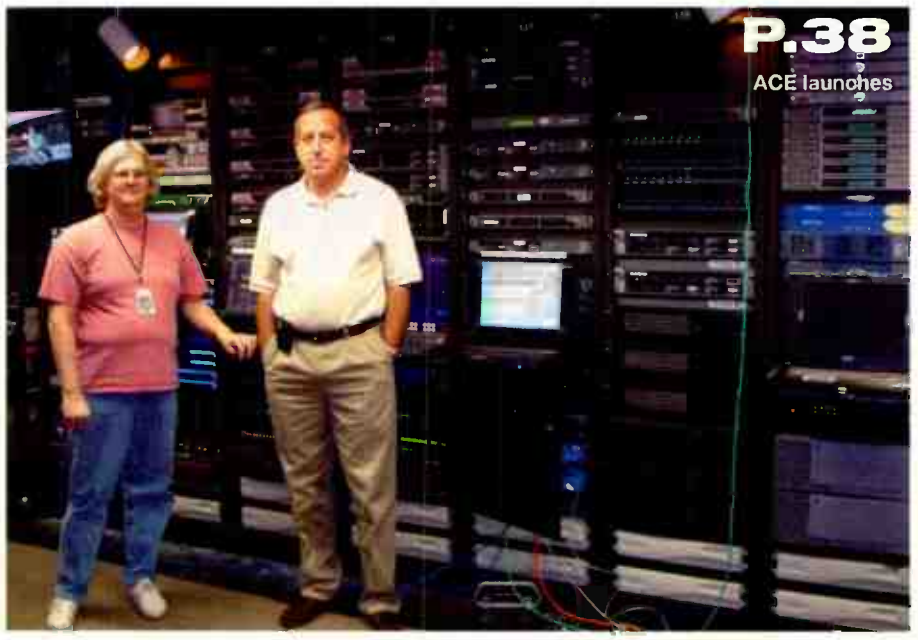
EQUIPMENT



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ACE launches

CONTRIBUTING WRITERS

Mario Orazio

The Masked Engineer

You might not have noticed that leeches and maggots have been in federal government news recently. Yes, this month's rant is about Hurricane Katrina and DTV. Being a normal, thinking human being, you might not have noticed the connection. A bunch of DTV... p. 30

Mary C. Gruszka

Audio By Design

As audio systems designers, we rely on manufacturers' specifications not only for a list of features, but for how a piece of equipment can be integrated into a system. As an example of how good spec sheets can help us and missing specs can hinder us, let's start... p. 36

Charles W. Rhodes

Digital TV

On Aug. 12, I sent my column for the September issue to my editor. Little did I know how soon the Emergency Alert System would come into play, nor the terrible destruction the homeland would soon suffer. After discussions with broadcasters and... p. 44

FROM THE EDITOR

New Kid in Town

There's a new player in the television business, and unlike the last new arrival, this kid has a bit more clout and influence.

For years now, the television business has been characterized by the triad of broadcast, cable and satellite. Each has its strengths and weaknesses, and each has been battling it out for viewers while a cautious FCC watches, carving out rules that attempt to balance access and competition, both within their respective industries and in the media landscape as a whole.

All of these developments have taken place in the shadow of the emerging Internet, which spawned new ways of distributing information and entertainment, leading to new and more efficient compression, which brings us to the new kids in town, led by Verizon and SBC, or "IPTV," for short.

But unlike DBS, which emerged as the first worthy competitor to cable a decade ago, the telcos don't have to start from scratch; they have an enormous customer and financial base from which to launch their deployments. They also have the kind of clout that has enabled them to change the rules of the game, i.e. the video franchise rules that led to the first deployment in Texas last month. The speed with which they were able to accomplish these changes to their advantage proves that they shouldn't be taken lightly by their competitors. Time will tell whether other states will follow suit and change their laws to make it easier for the telcos to compete.

The addition of a new competitor is a sign of an evolving and vibrant marketplace. So hop aboard, Verizon; we'll be watching you and SBC as you maneuver your way into the video world.

Tom Butts
Editor
tbutts@imaspub.com

LETTERS

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

Safety First

Dear Editor:

Thank you for your article on ENG safety standards in the Aug 17 issue of **TV Technology**. I was excited at the headline ("Do ENG Crews Put Safety First?"), because as the senior remote operations engineer at KIRO-TV, I am intimately familiar with ENG safety.

I want to point out that many of the points brought up in the article have, at one time or another, been discussed here at KIRO. For instance, long before the CAL-OSHA guidelines were instituted, our fleet met or exceeded almost all criteria. We had already installed Sigalarms, constant pressure mast up controls, and have had an ENG safety and certification program in place for years. We have added additional height alert systems and added heavier sidewall plied tires beyond the ENG integrators supplied tires.

Additionally, the four stations in our market that have ENG trucks hold a seminar every other year with the local power company about the hazards of overhead power lines (they actually customize it to fit ENG uses). Also, for the last several years, we have subscribed to Mark Bell's ENG Safety Newsletter and post it in the crew's office.

I have never heard a news manager at our station (I've been here for 10 years), tell a crew to speed, break any laws or safety rules, nor told anyone to bypass a mast up safety switch. On the contrary, our management has stood for safety and has actually disciplined crews for unilaterally bypassing these safety systems.

I must take issue with Mark on comments like "he had actually been taught by his station to get the generator going, and then move the lever to move the mast up, and secure it with a rubber strap." First hand, I have seen evidence and heard confessions of crews at our station teaching each other to bypass constant-pressure mast up buttons. These buttons were either installed at the factory or we retrofitted them once we discovered that crews were bypassing the older, switch style, controls.

In other words, I have only seen crews themselves bypass these systems and have never seen or felt, in 10 years of operating and managing these vehicles, pressure from a news manager to do anything unsafe.

I have been witness to these crews using the anonymous "they" to describe those that "pressured" and "encouraged" them to tape the mast switch up. When pressed (again, first hand information here), they would admit that they had assumed the pressure. During our biannual crew re-certification process, I am constantly surprised how often I hear negative comments on my safety comments and concerns—particularly my motives.

The point I am trying to make here is that safety is everyone's job, top to bottom and bottom to top. I endorse a cooperative stance on safety and recommend that other stations and industry publications do the same. Using terms like "stations" and "they" to describe individuals is unsafe and unwarranted. If a crew is actually asked or feel pressure to do something unsafe, they need to report it to their supervisor or human resources manager. Crews need to put themselves first and not blame an anonymous 'they' for bypassing safety systems.

Scott A. Webb
KIRO-TV
Seattle

Mark Bell responds:

I've been to many stations and presented safety information to about 13,000 people. I've had numerous discussions with managers and ENG vehicle manufacturers/integrators. The issue of switches being bypassed, altered, and safety devices being disconnected, is huge. The recent fatality in Canada with a CHIN radio truck also revealed that trucks are being operated with safety devices disconnected.

As there are many stations, managers, and operators that are vigilant with safety philosophies and enforcement of safety-oriented guidelines, many are not. Kudos to stations, managers and operators who are aware, as those at KIRO notably are. KIRO is a leader, which is also to say many are behind in regard to overall safety awareness and regard. Remember, safety is a habit, *not* an event!

Thank you for **TV Technology**'s regard for safety in the TV workplace!!

Mark Bell
Westfield, Mass.

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HDTV: MAKING IT HAPPEN

IBC: Mergers and Mobile TV

Industry's rapid changes impact European broadcast show

by Tom Butts

AMSTERDAM, THE NETHERLANDS

Common wisdom dictates that IBC, the world's second largest broadcast show, isn't usually as big of a newsbreaker as NAB, the world's largest. However, several recent industry developments impacted IBC 2005, making it more newsworthy than normal.

The show, held in Amsterdam, Sept. 9-13 boasted its usual lineup of quality conferences, white papers, exhibits and new technology demos. However, several announcements, including one of the industry's largest mergers and a major product introduction provided plenty of boothside talk. But perhaps the largest bombshell was dropped on the opening day of the exhibition.

Following the lead of Snell & Wilcox, which withdrew from IBC 2005 earlier this year, Panasonic Broadcast Europe, one of the show's largest exhibitors, announced that it would not return to IBC next year. Emphasizing that the withdrawal was not due to cost cutting, Panasonic agreed with Snell's contention that its marketing dollars can be spent more wisely, and that trade exhibitions may not be the best way to promote new products.

"Customers go to exhibitions to know more about manufacturer's directions, not to get information about products or solutions," said Jaume Rey, general manager, European Sales and Marketing for Panasonic Broadcast Europe. "Nowadays, exhibitions for larger brands like Panasonic take much more than just money; the drain on time and people is very heavy." Rey said.

As for Snell, company spokesman Joe Zaller harbored no regrets about its decision to back out and said that the company has not booked exhibit space for 2006. "I'd like to make a [final] decision in about three months to see what the fallout is," Zaller said.

OPEN STANDARDS

A company's most significant product introductions are usually reserved for the spring NAB show in Las Vegas, but Grass Valley chose IBC 2005 as the springboard for its new "Infinity" line, the company's major foray into the tapeless production sector, (see "GVG Goes Tapeless," **TV Technology**, Oct. 5).

Rather than follow the lead of Sony and Panasonic, which respectively chose optical-disk and flash memory storage platforms, Grass Valley opted for what it describes as the industry's first truly open standard format, based on Compact Flash and Iomega's REV disk-based storage platform and compact flash.

Avid had a more significant presence at the show, after dropping out of IBC several years ago. The expanded company, which completed its purchase of Pinnacle Systems a month before IBC, says it is giving its full attention to its largest ever acquisition.

The Pinnacle acquisition prompted Avid to restructure its business into three divisions: video, audio and its new consumer business, based on Pinnacle's consumer product line, and based at Pinnacle's headquarters in Mountain View, Calif.

Harris' pre-show announcement of its acquisition of Leitch was also the talk of the show. Both companies emphasized the "complementary" nature of their product lineup and Tim Thorsteinson, president of Leitch, noted that Harris has been diversifying its business, expanding beyond its government focus and more into broadcast.

"We pretty much sell to the same people," Thorsteinson said, "so strategically putting these two companies together made a lot of sense." He added that Harris' current plans are to market Leitch as a brand of Harris, but as to the eventual brand make-up, "no final decisions have been made."

Attendance increased 5 percent at the annual European broadcast show.

European broadcasters are more enthusiastic about mobile TV technologies than their American brethren and nowhere was this more evident than at the Mobile TV Zone, a new exhibit featuring more than 30 vendors.

"The Mobile TV zone proved to be a huge success," said IBC Exhibition Chairman John Holton. "The exhibitors were overwhelmed by the response."

Anystream, Axcera, Harris and Thales were among the exhibitors demonstrating mobile TV technology. Qualcomm, which is preparing for the launch of its MediaFLO mobile TV service in the U.S., was also at the show gauging European interest.

Digital archiving for broadcast also garnered a lot of interest at the show. "We saw traffic at our booth more than double over 2004, and our demo pods were busy through the last day of the show," said Michael Knaish, president of Front Porch Digital. "Many more broadcasters are considering purchases in the next six to twelve months, and new markets are rapidly emerging."

Annual speculation about IBC's future as an Amsterdam mainstay were also laid to rest, at least for the next three years as the organization opened the show with the announcement that the city had agreed to freeze hotel rates at 2005 levels through 2008. IBC exhibitors numbered 1,000, while attendance was pegged at 41,200, 5 percent more than in 2004.

For new production introductions for IBC, see pp. 58 and 65. ■

Thomson, LG to Develop Converters

WASHINGTON

NAB and the Association for Maximum Service Television (MSTV) have selected Thomson, SA and LG Electronics to develop prototype low-cost DTV converter boxes to receive DTV signals on conventional analog TV sets.

The two companies were picked from a group of more than a dozen proposals from companies that responded to a request from the two organizations in June to build the boxes which will be the prototype for a low-cost converter box that Congress wants to make available once analog broadcast signals are shut off. The general consensus on Capitol Hill is that analog signals will be terminated by 2009 at the earliest. Thomson is among the world's largest manufacturer of converter boxes while LG, through its ownership of Zenith, owns the patent on the 8-VSB reception standard.

"LG Electronics is honored to be selected by the NAB and MSTV and we're enthusiastic about joining forces with broadcasters to develop the next generation of DTV reception technology," said Dr. John Kim, vice president of research for LG.

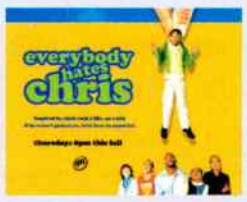
"We look forward to working collaboratively with the broadcast industry to meet Congressional expectations," said Barb Birnbaum, director of business development for Thomson's Access Platform & Gateways business.

DTV Transition

UPN, Google Stream Chris Rock Show

LOS ANGELES

UPN and Google partnered to stream the debut episode of the UPN series "Everybody Hates Chris" on Google's Web site.



For four days starting Sept. 26, viewers could watch the show about the life of a teenaged Chris Rock on Google Video (*http://video.google.com*) and the UPN Web site (*www.upn.com/ shows/ everybody_hates_chris*).

The Sept. 22 TV premiere set ratings records on UPN as the most-watched episode of any comedy series on the network, which is part of CBS Television, a unit of Viacom.

UPN also made streams of the show's "Sneak Peek" and interviews with the cast available on its Web site.

This is the second season in a row that the networks have aligned their season premieres with the Internet. In 2004, The WB teamed with AOL to preview the debut episode of the short-lived drama series, "Jack & Bobby." Excerpts from the show were available exclusively to subscribers of AOL for Broadband for two weeks and the entire episode was available online one week prior to its premiere on network television.

Streaming Video

"We had an aggressive strategy to create a tapeless, high-bandwidth, mission critical environment that also needed to support multiple file formats and be user friendly. We chose Omneon."

Alan Popkin
Director of TV Engineering
and Technical Operations
KLCS-TV/DT, Los Angeles

When KLCS embarked on an ambitious program to upgrade their station to DTV, they saw an opportunity to go far beyond just television. Maximizing their use of the digital spectrum, KLCS is providing nearly a million students and teachers with a host of new programming options.

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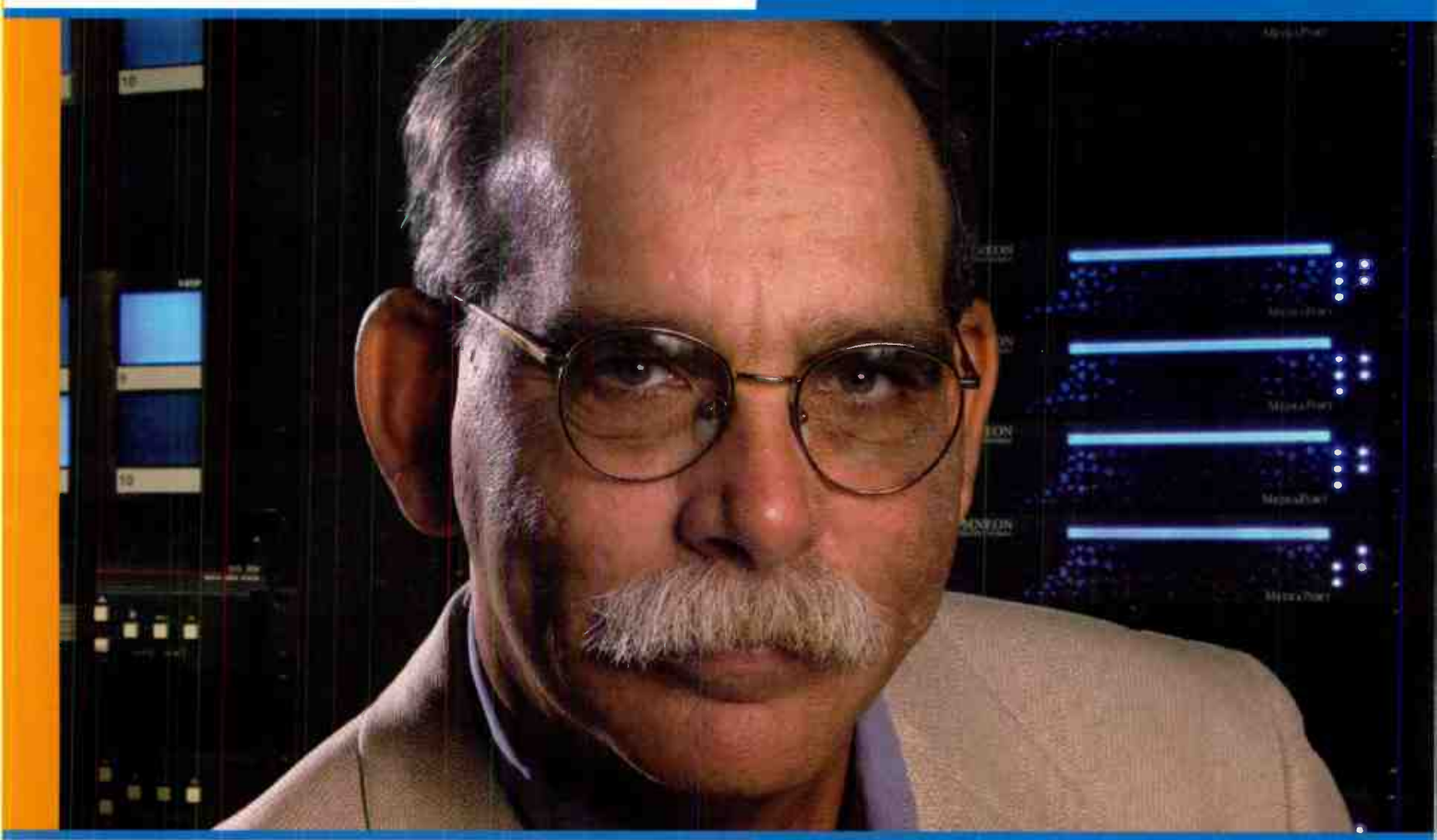
To learn more about the unique advantages of an Omneon Spectrum media server system visit www.omneon.com.



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Discovery

CONTINUED FROM PAGE 1

"Since this is more of an IT-based facility than than a video facility, prime concerns were with digital linking, file sharing and software. Various security measures had to be implemented too."

MILE ZERO

While not the largest part of the 53,000-square-foot complex, the master control room is perhaps the most interesting in terms of both appearance and design. It is completely round, with a diameter of approximately 70 feet and encompasses an area of nearly 4,000 square feet. As master control rooms go, this MC has a very high ceiling, with the central portion appearing almost rotunda-like. Almost every vertical surface in the room is occupied by television displays. It is somewhat reminiscent of a 360-degree motion picture auditorium.

According to Honeycutt, a single nail was central to the build-out of the master control and the entire facility. When construction started, the nail was embedded in the concrete slab in the center of the designated MC space and became the "mile zero" reference point for measuring distances outward from the plant.

While visually striking, the master control room is also very functional, supporting transmission of up to 64 program channels in any mixture of SD or HD. It is divided into 10 "pods," each with independent monitoring and switching equipment. Some pods are set up to accommodate multiple network feeds and others are designed to monitor and switch but a single path. One of the pods is used solely for training and simulation purposes. In the center of this "round house" are positions for three duty supervisors. These are not merely "people spaces," but are equipped to allow a supervisor to take over switching operations, should a problem arise in any of the surrounding pods.

Each pod is equipped with three Barco 61-inch projection displays, driven by Evertz MVP and VistaLink equipment. The Evertz display drivers not only provide audio level monitoring, but also display DTMF tone levels required for cable network operations. The large screen display provides a very visual indication that the tones were fired and levels were correct.

All program switching is accomplished with Miranda Oxtel MC switchers. In selecting Miranda for this application, Discovery gave special consideration to graphics features provided by the company's Imagestore system. The pairing provided a very tight integration of switching and graphics functionalities. Adjustment and reconfiguration of graphics material is easily and transparently accomplished and a full selection of DVE transitions is also provided.

FAILSAFE & REDUNDANCY

Eight months were required for physical construction and equipment installation. As soon as the construction phase was completed, a "shadow" operations period lasting two months was initiated. This was a shakedown interval, with the facility fully staffed and functional, but with the program feeds generated never going to air. After a high comfort level was reached, feed services were seamlessly rolled over from contract origination entities in Atlanta and Denver.

Failsafe and redundancy were key design concepts in designing the facility. Very large UPS units can float the entire plant for at least an hour should both 4,000 amp. utility company feeders fail. Two 1 MW diesel generators can be brought on line in case of a lengthy outside power interruption. Honeycutt estimated that on-site fuel is sufficient to power the operation at full load from four to six days. Great care was taken to physically separate critical electrical distribution equipment and feeders in order to prevent a malfunction in one area from disabling the integrity of the system. The UPS systems are located in three separate areas. Electrical installations required 71 miles of electrical conduit.

Honeycutt explained that in designing the plant's VLAN system, 16 different user groupings were identified. Isolated LANS for these groupings were created to greatly reduce the possibility of a data storm.

In a tour of the equipment racks housing the Cisco network switches, Honeycutt detailed the measures taken to ensure full redundancy—mounted adjacent to every LAN switch is an identical switch powered and ready to go. Network cables connected to all switches are sufficiently long enough to be plugged into the hot standby units, if necessary.

Additional insurance against disabling failures was tightly woven into the plant design. This is an alarm and reporting system, not limited to the IT structure, but also constantly monitoring the readiness of video server play-out, support equipment or even building physical conditions. When something is amiss, fault reporting is not limited to the Virginia address.

"If we have a problem, we not only get an internal alarm here, the Global Operations Center in Silver Spring gets an alarm as well," Honeycutt said.

Video file servers play a key role in the Discovery facility. There are a total of five Omneon server systems for the 13 Discovery networks and BBC America, providing enough storage (24 TB) for four full days of operation. In all, more than 2,000 hours of online video storage are available.

Server management and content play-out is a bit unusual at the Sterling facility. The air servers are loaded with scheduled material and controlled by an OmniBus automation system to play-out exactly three hours before the program is supposed to air. This three-hour-early stream is sent to Doremi time delay units that provide a three hour holdup of content. In this manner, last minute tweaks and changes can be invisibly made to the play-out stream. This allows for sponsor-requested commercial substitutions and correction of scheduling and other errors. Should this system fail, a "real-time" server is also rolling for backup purposes.

Programming is delivered on tape—Digital Betacam and IMX formats. The bulk of this material is from Discovery's Silver Spring post-production operation. Plans are in place to convert delivery from physical media to direct file transfers in 2006. Of the eight ingest rooms, seven are set up for SD and one for HD. Provisions have been made to expand this number to 10 if needed, as well as to increase HD capability. In addition, the facility's dubbing operation can also serve as an ingest point. There's enough storage space for 150,000 cassettes.

Near on-line and archival storage is provided by a StorageTek SL8500 device, which can provide up to 90 petabytes of storage. In planning the facility, floor space was left open to double the size of the StorageTek device, should future requirements make this necessary. Front Porch Digital software is used for archival management operations.

Live Events Control Room at the Discovery Sterling facility

Exterior view of the new Discovery Television and Technology Center in Sterling, Va.

"Television" side of the Discovery equipment room. The large open space in the foreground is for future expansion.

A rack room that would dwarf many entire television plants provides equipment support for the new Discovery operation. It is divided (at present) into two discrete areas—television and information technology. A space, larger than that occupied by either of these two groupings, was left open. When asked about future plans for installations in this vacant space, Honeycutt said that it would be left up to "whoever gets there first."

In discussing the extremely IT-centric nature of the operation, Canavan further elaborated on this equipment room expansion space.

"As the two ends of the equipment room converge with additional installations, it will be more and more difficult to tell where channel origination begins and IT leaves off, as the technology becomes more identical."

REACTION TIME

In addition to simplifying logistics and control matters, Honeycutt said that startup of the Sterling facility has

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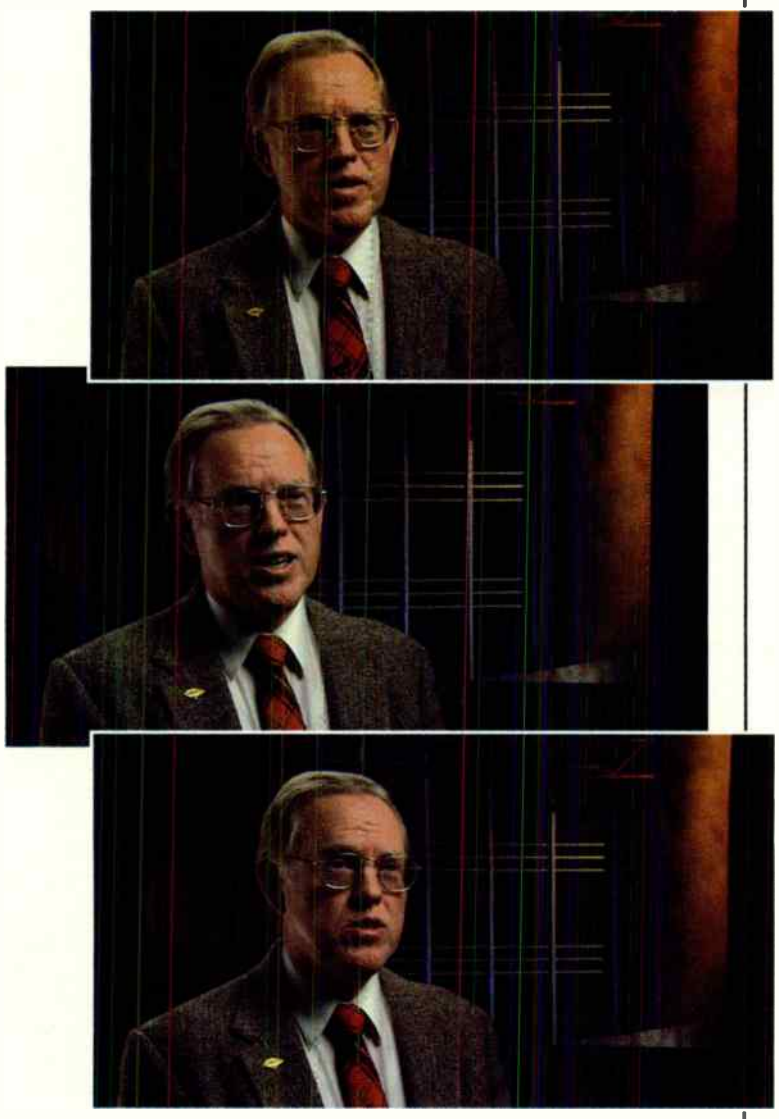
SONY

THE NEW WAY TO BROADCAST.



"We've been putting in three times as many head hours on deck as the typical commercial station."

Jim Gale,
Director of Engineering, KNME

Optical disc transforms the economics at KNME.

Tape-based studio operations are the old way of broadcasting. The XDCAM™ disc-based system is the new way. "The biggest challenge in public television is finding operating dollars, rather than equipment dollars," says Jim Gale, director of engineering and operations at Albuquerque's KNME. "We have to consolidate and become more efficient. We were desperate for a format that was very economical to not only use but maintain. That's a big reason why we fell in love with the XDCAM format. There are such great savings in operations. The media only costs $30 and lasts 50 years; there's no better bargain than that."

"Another reason we chose XDCAM decks: they have only three moving parts. We've been putting three times as many head hours on our decks as the typical commercial station. That's because we program every minute of the day, just like a network operator would do. We need a format, a video transport that is very reliable and easy to maintain. XDCAM delivers."

"The tests we've run have been perfect. In operations, there are no flaws whatsoever. I expected that when I saw the quality of the engineering in the product. And I've never seen *Mr. Rogers* look so good, because it looks like the satellite feed. It's really, quite frankly, the most exciting thing I've seen in my 30-year career."

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Broadcasters Embrace Video Over IP

Manufacturers facilitate the learning curve

by Robin Berger

LOS ANGELES

The TV industry—both actual and potential—are in the throes of honeymoon fervor for video over IP.

What's not to love? Trials and adaptation in the broadcast plant proved that moving packets of data from point to point over Gigabit Ethernet is a cheaper and a more efficient way to manage bandwidth than traditional alternatives. VOIP is also more flexible in accommodating and overseeing metadata, new services and technologies, and expansion. And, as a bonus, it is bidirectional, easy to use, and readily scalable.

COMMON BACKBONE

"When it comes to going all the way from the master headend to the local hubs, IP has been very well embraced by the industry," said Kanaiya Vasani, vice president of product marketing for Terayon Communication Systems. What's more, he notes, "video, voice and data services can all ride over a common backbone."

As such, the telecommunications industry's drive for "triple-play" services is also spurring the entire industry into considering VOIP from the plant to the retail customer.

"Currently they're focused on getting the video signal from the headends to the end user," Vasan said. "The next thing they're going to look at is how to make money off of these services—then they're going to focus on differentiating this offering."

Differentiation could take many forms: availability on various receivers, nonlinear delivery (time-shifted and on-demand), and interactive TV, he said.

Cable operators are right on the heels of their telco competition.

"The big driver behind DOCSIS 3.0 is going to be video over IP," Vasani said. "I think that cable is probably a couple of years out in terms of going MPEG-4 AVC and video over IP—satellite and the terrestrial guys might be behind cable."

But manufacturers and service providers know that no honeymoon lasts forever, and are gearing up to buffer customers vis-a-vis the ensuing learning curve.

"There are a lot of issues that customers don't know about yet," cautioned Dan McCrary, vice president of marketing for Path 1, a San Diego-based developer of VOIP technology.

"As content providers and network operators continue to migrate more of their live programming to IP networks, they have expressed a need for more visibility into how their networks are performing and how to make them bullet-proof," McCrary said. "We're introducing new monitoring solutions to help customers detect and prevent problems before they occur.

Path 1's new Vx8000 1.2 IP gateway—bridging the video world's encoders and IP world's routers—detects errors like jitter, latency, and the loss or reordering of data packets through a monitoring option called DASH (Diagnostic, Analysis and Stream Health) The app uses Pro-MPEG Code of Practice 3 standards techniques to rectify the problems and preserve video signal quality.

In addition, Path 1 notes that a single Vx8000 supports eight ASI ports, and the product's processing power can replicate each incoming MPEG stream up to 30 times.

McCrary noted that satellite and broadcast network operators (including U.S. teleport operator LBI Sat) and Tier 1 carriers are testing the equipment, as well as a "large station group in Northern Europe."

"We believe that all the headends and all the broadcast centers are migrating into transporting video over IP," said Mario Rainville, associate vice president of product marketing for Israeli-based Scopus Network Technologies. As such, they will "need devices that receive digital video and can do processing of that video in the digital domain [to] dynamically create a new channel lineup or change the bit-rate of video without having to decode and re-code it."

At IBC, Terayon demonstrated technology that inserts local ads using IP.

The latest Scopus solution is the IVG-7100 Intelligent Headend Video Gateway. Clients optimize the technology by clustering the full duplex, bidirectional IVG-7100s into a scalable network connected by a Gigabit Ethernet switch, which can be managed by a single entity.

The system is being deployed by a large U.S. cable operator whom Rainville declined to identify. He estimated that the deployment would last at least through mid-January.

TOOLS TO MANAGE

"We're providing the tools to manage the entire delivery chain from where the content enters the building to where it gets delivered to customers," said Danny Wilson, president of Singapore-based Pixelmetrix. Moreover, through Pixelmetrix's "cooperative monitoring" remote initiative, engineers in two different locations can log in and work through an equipment problem at a third site.

The latest Pixelmetrix achievement is a software upgrade that shows a "one screen snap shot of your entire network operation," said Wilson. The "snap shot" monitors the status of multiple program transport streams in terms of picture, program, PSIP, scrambling, compression and other heads up details.

The company has also expanded its logging capability with IP-specific information to facilitate trend analysis and capacity planning. Wilson believes this information will be particularly helpful for telcos, which are comparative novices in terms of video delivery.

"The statistical and mathematical models for the telcos are well understood—they know how many trunk lines they need at Christmas," he said. "For IP television, they're still figuring it out."

Wilson noted that "a few American telcos," as well as Australia's Telestra, and Spain's leading cable provider, ONO, are testing the new products.

Payback is also an obvious consideration. Terayon Communications Systems has raised the bar for digital ad insertion from MPEG-2 to MPEG-4 while enabling the delivery of targeted ads from "the very edge of the network," said Terayon's Vasani.

The breakthrough for this is "digital motion graphics" software that enables the overlay of static, animated or motion graphic images or digital video over an existing digital video stream. First deployed by Fox as a channel branding capability via Terayon's broadcaster-targeted platform (BP5100), the capability will be deployed over the company's entire DM platform, which is geared to cable and satellite operators and telcos with MPEG-4 AVC capabilities.

"We are in trials with several large operators now—either directly or through channel partners," Vasani said. ■

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SMPTE 2005 Expands Range

Digital cinema, HD newsgathering and IP featured

by Susan Ashworth

NEW YORK

Question the old, embrace the new: that's not a sentiment that's exactly close to the heart of veteran engineering and technical professionals that comprise the bulk of the national SMPTE membership.

But as the world of motion imaging has evolved, so must the organizations that attempt to represent it. And this year, SMPTE vows it's up to the task at its 2005 convention—Nov. 9-12 at the Hilton New York—that forgoes clever catch-all phrases in favor of an agenda that touches on all the major issues facing the industry today.

New York will host the annual SMPTE Technical Conference, Nov. 9-12 at the New York Hilton.

NO CATCHPHRASES

One of this year's organizers even went so far as to describe a list of 12 different topics, which range from expected content like advances in film technologies to more obscure subject matter, such as little-discussed quirks within media infrastructure.

"Past conferences have relied on a catch phrase [to describe that year's exhibition], but we don't need to do that here," said Peter Lude, editorial vice president of SMPTE who is also a senior vice president at Sony. "We're simply surrounding attendees with information on the latest advancements in motion imagery, bringing together existing thought leaders in the industry."

This year SMPTE is also catering to two burgeoning professional segments: the digital cinema crowd and the transportable media industry. SMPTE has seen a growing interest in its technological research and standards-setting procedures from several groups outside the broadcast industry, including heavy interest from IP- or Web-based content producers.

"They are facing many of the same challenges that broadcasters are addressing," Lude said.

The 2005 conference slate is wider and more diverse this year, with SMPTE slated to host discussions of 72 papers, divided into 12 sessions. Greater emphasis will be given to veterans of the engineering trenches this year. As opposed to more esoteric discussions on as-yet-unimplemented ideas, the bulk of papers will be given by "those who've put [the technology] to work," Lude said.

One of those more heavily touted sessions is the first-day forum on digi-

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Discovery

CONTINUED FROM PAGE 8

allowed Discovery to be much more flexible in its business operations.

"The world is changing. We needed to be able to react to this time of significant change in the media business. Decisions are being made really quickly and being in an outsourced environment just wasn't effective. We were constantly on the other end of a business deal when we would want to change our services. Now we can just reapply resources where we see necessary to address a business application," he said.

In addition to the MC, ingest and dubbing operations, the Sterling center also features two post-production suites and a live events control room. The facility serves as origination point for 13 of Discovery's U.S. networks and transmission of the BBC America service. Including West Coast delayed transmissions, a total of 17 network feeds are played out and monitored at the Sterling location. The center employs approximately 100, with 30 to 40 on a given shift.

Signals are routed via an nVision 512 x 512 matrix and the plant intercom system is supplied by Telex/RTS. Approximately 370 miles of video cable were used in constructing the plant. Motorola compression and encoding equipment is used to process signals for satellite transmission.

The Discovery facility is linked to contract satellite uplink operators in Alexandria, Va. and Atlanta, via 622 Mbps OC-12 circuits.

Key design features in this very functional plant were not left to chance. Honeycutt explained that as part of the planning and design process, an internal merger was performed to better address the structure of the facility.

"In Discovery, we have merged our television technology and information technology groups into one organization, which has been a really positive experience. This facility has been the byproduct of really strong television people and really strong IT people," he said.

In addition to the Sterling Television and Technology Center, Discovery has three other origination centers located in Miami, Fla., London and Singapore. Programming from these centers reaches 1.3 billion subscribers worldwide.

Launched 20 years ago, the Discovery Channel's new Virginia origination center marks another step in the company's growth and expansion from a single satellite-delivered program channel in 1985 to the present global operation with 90 networks representing 25 network entertainment brands reaching viewers in more than 160 countries and territories. ■

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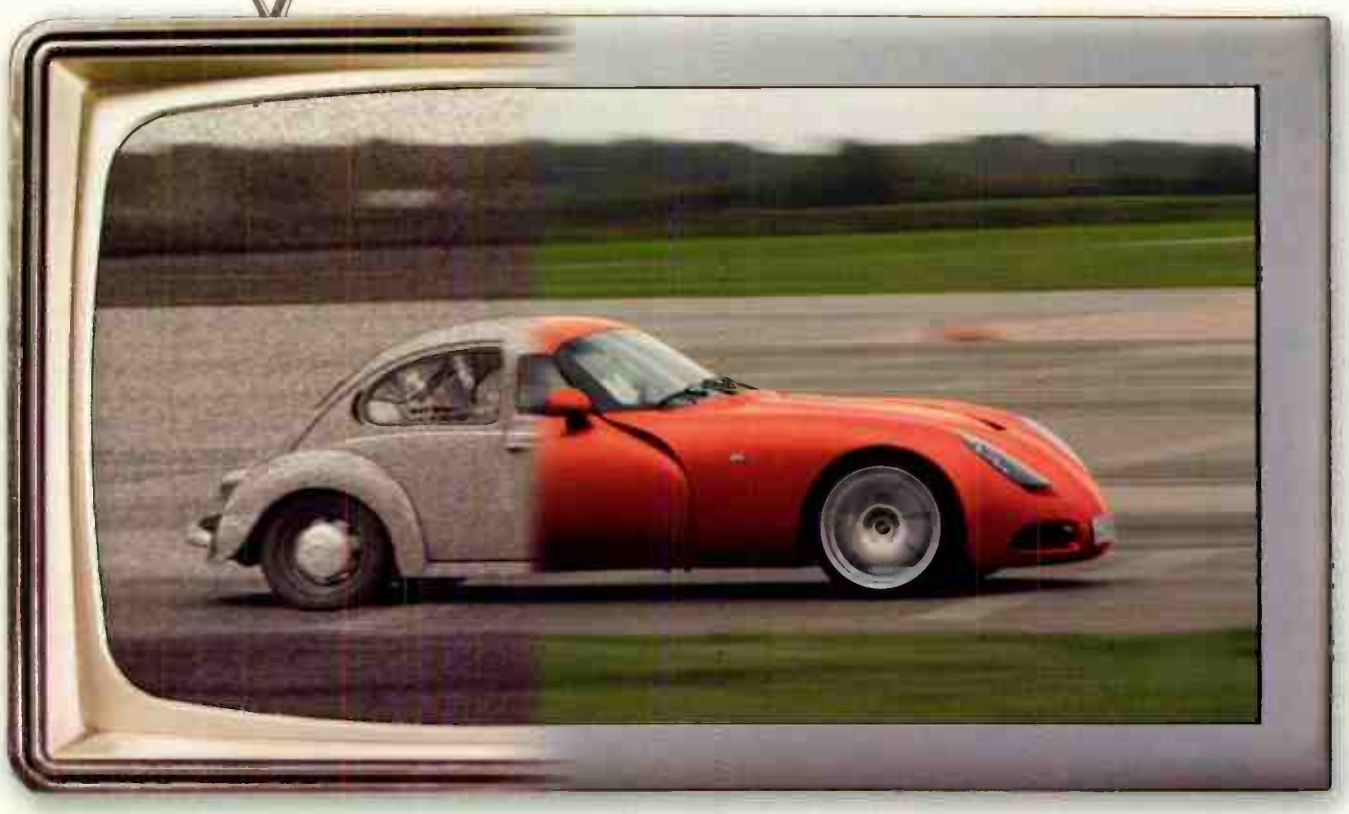

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USDTV Gets Green Light

$25M investment advances DTV wireless cable initiative

by Claudia Kienzle

SALT LAKE CITY

After announcing its launch in 2004 as an innovative and potentially lucrative method for broadcasters to pool their spectrum to offer a cable-like channel lineup, USDTV experienced a sophomore slump characterized by slow sales and marketing cutbacks. However, last month's announcement of a $25 million-plus investment could give the budding Salt Lake City startup just the financial shot in the arm it needs to move forward.

An investment group that includes Fox Television Stations, Inc., Hearst-Argyle Television, Inc., McGraw-Hill Broadcasting, LIN TV Corp., Morgan-Murphy Stations, and Telcom DTV, LLC, an investor in wireless communications, is ponying up the $25.75 million funding. All of these companies will provide the vital financial and strategic support to expand USDTV's low-cost, all-digital, over-the-air cable alternative. USDTV has spectrum agreements with additional stations that were not involved in the investment group but declined to identify them. More than 90 stations nationwide have signed up with USDTV.

"With this investment capital, we now have sufficient cash to take this business forward. We're now looking to execute on our business plan," said Steve Lindsley, chairman and CEO of USDTV, LLC. "In phase one, we built the service and conducted extensive testing in three pilot markets—Salt Lake City, Utah; Albuquerque, N.M., and Las Vegas, Nev. With this capital, we can now begin phase two, a nationwide commercial launch, followed by phase three, which is expansion."

The deal being offered to broadcasters by USDTV is little changed from its original intent: Offer participating DTV broadcasters the opportunity to carry 30 cable networks—including Discovery, Fox News Network, ESPN, ESPN2, The Food Channel, HGTV, Lifetime, Toon Disney, TLC, Lifetime Movie Network and STARZ—in the spare bandwidth of their 19.39 Mbps DTV channel. (To learn more about the technology, see "USDTV, The Technology," in the Sept. 22, 2004 issue of **TV Technology**).

With USDTV, "broadcasters will derive a new revenue stream which is not dependent on free-to-air advertising revenue," Lindsley said. He added that USDTV gives broadcasters new revenue that can offset the massive capital investment they've made in their DTV transmission infrastructure. Because it's over-the-air, it does not depend on "cable must-carry." It brings popular cable network programming to an under-served market that is unwilling or unable to pay for cable and satellite services; and gives cable networks access to a new audience.

VALUE-ORIENTED HOME

"Our target customer is the value-oriented home that values TV but doesn't want to pay $50 to $60 a month for hundreds of channels they will never watch," Lindsley said. "We estimate that 45 to 50 million U.S. homes only have basic or expanded basic cable; with 21 million 'cable-never' homes, giving us a target market of about 70 million homes."

USDTV believes that this "value-oriented" customer would be willing to pay about $20 a month for a limited number of select channels.

USDTV President Steve Lindsley

After the initial $20 for the set-top box and a VHF/UHF antenna, the viewer pays only $19.95 per month for DVD-quality video being sent over-the-air from multiple DTV terrestrial transmitter towers serving that market. Customers can buy the equipment and sign up for the service in the electronics department of their local Wal-Mart and Utah-based regional electronics dealer R.C. Willey stores; USDTV has plans to expand retail availability in the future.

One of the investors, station group LIN TV is an enthusiastic backer of the USDTV business plan.

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SMPTE

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tal cinema, an all-day tutorial for those attendees who are still unsure how the digital cinema movement is playing out.

Earlier this year the long-awaited Digital Cinema Initiative (DCI) d-cinema specification was finalized, , detailing the technical specs and key components necessary to set up and operate an end-to-end digital cinema system. The specifications were created by Digital Cinema Initiatives, LLC, a firm formed in 2002 whose members comprise seven of the major motion picture studios.

"The DCI standard has been three years in the making, and now that the standard is in place and there are real-world applications we can discuss; we thought a full-day forum was in order," Lude said.

Sources have estimated that at least 15,000 theatres across the nation will commit to installing digital cinema technologies within the next three years. Representatives from National Association of Theater Owners will outline their rollout model for digital cinema during the session.

"There's a concurrence in standards, the projection technology is now available and the financial model has been solved," Lude said. "The theoretical is now real, and so we've set aside a whole day for DCI specification discussions."

EXPLORING IP & HD NEWS

The conference will also devote sessions and paper discussions to IP-based video, advances in digital motion imaging, media storage, content protection and security, and display technologies, among other topics. One conference sure to elicit interest is an HD newsgathering session titled "HDTV Newsgathering—How About It?" that will look at the HD topic from the viewpoint of the broadcaster in terms of HDTV quality and workflow, as well as the latest equipment innovations on the market.

Sessions will also look at the way consumers are enjoying their content. "Consuming Content—An Unquenchable Thirst" will explore options available to consumers today in the field of digital connectivity as well as storage technologies for managing digital content in consumer homes.

The conference will also likely update attendees on ongoing standards efforts. SMPTE has been in the news of late with ongoing work on several long-awaited standards, including the SMPTE S22-10 Working Group on Data Exchange, which is developing protocols for the exchange of XML-encoded data within traffic, automation and content delivery systems. In September, OmniBus Systems announced that one of its content management systems would support the data exchange protocol that's currently under development.

More than 75 exhibitors are also expected to be part of the 2005 SMPTE conference this year, including Miranda, Sundance Digital, SGI and Tektronix. The convention will also host the annual SMPTE Honors and Awards reception.

"Our main goal is to keep the conference relative and interesting, and that can be a challenge," seeing that the conference comes on the heels of IBC, one of the bigger international broadcasting conventions, said Ken Fuller, SMPTE conference vice president, who is also the vice president of technology for Ascent Media Group. "We don't want to overplan, but at the same time we want to make sure we're on top of all the relative topics that are happening. [This year], the speakers and papers we have here are from folks who are making the headlines."

More information about the upcoming convention can be found at *www.smpte.org*. ■

Outdoor Channel Adds HD Cousin

Outdoor Channel 2 targets more diverse demographic tuned to HDTV

by Carl Mrozek

TEMECULA, CALIF.

Last summer, family-owned Outdoor Channel Holdings began running new and original programming for its new HD service, The Outdoor Channel 2. All of this programming was captured, edited and delivered in 1080i high definition, with a portion in 720p as well, (with plans to add 5.1 audio in the future).

The original HD programming is designed to ensure that The Outdoor Channel 2, (OC2 HD) has its own identity, distinct from its parent, The Outdoor Channel (TOC), which is distinguished by its menu of hunting, fishing and outdoor adventure programming in standard definition. With its soft-launch in mid-spring, TOC became one of the first independently owned cable programmers to offer a full-time HD program lineup.

"We don't upconvert anything," said Andy Dale, CEO of The Outdoor Channel. "Everything on Outdoor Channel 2 is shot, edited and delivered in full high def. Many of our shows overlap nature and sports, two genres that benefit most from HD. We want our viewers to experience landing a marlin, stalking a buck, or riding a bull... in the comfort of home."

LAUNCH LIBRARY

To prepare for the HD launch this year, the Outdoor Channel built its "HD launch library" in barely two seasons, starting with some of its most popular programs from TOC.

"We knew that many of our shows would look even better in high-def so we bought HD cameras and started HD boot camps to train our producers to shoot (their shows) in HD," said Gene Brookhart, vice president of operations for TOC. "For many [of the producers] it was their first experience working in HD and worked out really well. We letterbox these shows on Outdoor Channel 2, so framing for standard TV isn't a problem."

The first batch of HD programming began airing on OC 2 HD in April and included some of TOC 1's most popular programs including "Championship Bull Riding," "Familiar Waters," "Jim Zumbo's Outdoors," "Wings to Adventure," and "Shooting Gallery." These and more were shot in HD for OC2 HD and then downconverted for TOC.

Photo: Tom Kelsey

On the set of OC2 HD's "Cowboy."

From the outset, Dale realized that they needed to offer more than HD versions of programming on TOC.

"Our goal with Outdoor Channel 2 was to create a second outdoor channel with its own programs and identity, but in HD," he said. "Currently, half of the [HD] programs are from Outdoor Channel 1 and half are original." Dale explained that TOC's owners realize that to be viable long term, they need to broaden their audience beyond sportsmen and their families.

In the short run, however, they also need to appeal to a slightly older, more affluent demographic of early HD adopters.

"We're casting a wider net on Outdoor Channel 2 with shows for outdoors hobbyists," Dale said, including programs such as "Ready, Aim, Grill," "Wildlife Art Gallery," "Outdoor Photo Adventures," adventure programs like "Wings to Adventure," "Whitewater Trail, Ride to Adventure;" and travel shows including "Discovering America," "Discovering America's National Parks," "Inside Passage," "RV TV," "Prospecting America," "Sled Sense," and "Cowboys."

The new HD service, in turn, is part of a broader expansion strategy by the family-owned media company.

"We've been planning a second outdoors channel for some time to stay competitive," Dale said. "With HD coming on strong, it didn't make sense to launch a second standard-def TV channel, but an HD channel made good business sense, even though the audience is still comparatively small. Others believe that sales [customers] should drive programming, but our view is that sales follow programming, and our strategy is to put out a good product that people like enough to clamor for. That's partly how we got started more than a decade ago, with mom and pop cable operators. In fact, a number of local cable companies have begun offering HD after customers requested our programs."

To surmount the chicken-egg dilemma of how to create demand for programming they can't receive at home, TOC contracted with Premiere Rental Network to add a sampler of its HD programming to the sample loop playing in more than 1,000 home electronics outlets across America.

"People can now preview our HD programming in Costco, Wal-Mart and other electronics outlets," Dale said. "Most people have never seen true HD. They think DVD is HD, but once they see it they want it. With prices dropping, Wal-Mart is selling HD sets by the truckload. We're all hoping that this year's Super Bowl will be a super 'coming out party' for HDTV, after a strong holiday sales season. HD-DVDs should help too."

All of these offerings directly benefit cable programmers, according to Dale. "Once people have HD sets they want HD programming and if they can't get it on cable they'll go to satellite."

HD PREMIUM

Even with escalating demand for programming, financing a new HD channel remains a challenge as HD advertising revenues fall far short of those on standard TV.

To compensate, TOC timed the launch of its HD service to coincide with other long-term capital expenditures: the launch of a second channel and a new broadcast facility, after upgrading its service from analog to digital to free up enough bandwidth.

"The cost of adding a second channel was not nearly as great as the first," said Brookhart. "We had to add minimal staffing and buy some new equipment, but it's not like multiplying by two."

There was somewhat of a premium to pay for upgrading to HD according to Brookhart.

"We saved a lot of money on equipment by researching the best deals. We bought 13 HD camera packages including Sony HDW 730s and Panasonic HDX 400s with Fujinon and Canon HD lenses," he said.

But, surprisingly, apart from equipment, the cost of the new $2.6 million production facility was little impacted by the HD upgrade.

"We needed a new building with studios and office space anyway to handle our phenomenal growth of The Outdoor Channel, and upgrading to HD had a relatively modest effect on those costs," Brookhart said. "Since we own all of our HD programming, it should help us recoup much of our initial investment over time by reusing and repurposing it.

Brookhart anticipates that TOC will also be in HD within a few years, providing a second outlet for its HD library. ■

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FiOS

CONTINUED FROM PAGE 1

North Texas and Northern Virginia are hardly alone; shortly after the Keller launch, the telco announced its first agreements in the Northeast—Massapequa Park in New York and Woburn, Mass. The company also filed for a statewide franchise from the Texas PUC, which it expects to be approved by the end of October.

Areas in at least 15 states currently are seeing FiOS activity at various stages, although the entire U.S. is not currently on Verizon's To-Do List. Instead, the telco plans to heavily penetrate the regions it does choose to go headend to headend against cable.

Verizon's recently published rate card for Keller boasts prices noticeably below typical cable and DBS rates: Notably a bare-bones Basic package starting at $13 and an Expanded Basic package (as many as 180 analog, digital and music channels) for $40. It's offering at least 20 HD channels, and is bundling two dozen Spanish-language channels into one package. The HD set-top box goes for $10, and a combo HD-DVR service is $13. (Pricing in Verizon's future FiOS markets will vary.) Unlike typical cable offerings, FiOS TV also is offering Basic subscribers—not only digital customers—VOD and PPV options, too.

Verizon completed its sign-up of major content providers for the Keller rollout with a late long-term pact with Walt Disney Company that gives FiOS customers access to a dozen Disney channels—including retransmission consent from ABC-owned stations, the various ESPN and ESPN-HD channels, ABC Family, Toon Disney, and others. (Verizon would not confirm that deals with other content providers beyond the Keller market were in place yet.) Additional agreements to carry The Weather Channel, Lifetime Television, TV shopping network HSN, Jewelry Television and Ovation—The Art Network along with the WWE 24/7 video on demand subscription service were also announced as this issue was going to press.

A worker connects FiOS to new homes in Fairfax County, Va., outside Washington.

The not-for-profit public interest group Public Knowledge calls the Disney agreement a "win-win" situation for both sides in the ongoing debate over copyright protection and privacy in the digital era. PK President Gigi Sohn said the deal "affirms the obligations of carriers to work with content providers to stop the spread of illegal content by passing on notices to subscribers engaged in alleged unauthorized distribution."

According to Verizon spokesperson Sharon Cohen-Hagar, "We're talking about providing value...in regard to quality of service. But with our planned diversity of programming, like Disney, and with the [Expanded Basic] package at only $39.95, we think that's a much better value than cable is offering."

Cohen-Hagar said Verizon's ongoing rollout of fiber to the premises will mean, technically, there will be a lot of untapped capacity to quickly expand services in the future. "Fiber has enough capacity that we can easily provide even higher speeds down the line. It comes down to customer choice. If the customer wants more services, that's great. If not, that's okay, too."

Although she said Verizon would ideally prefer to have its subscribers sign up for bundled services—telephony, broadband and FiOS TV—it does not plan to impose higher rates for fiber-TV customers who do not use its other services—not directly, anyway. Customers who also subscribe to Verizon voice and computer broadband services will receive $10 off their FiOS bills (or $5 off for either service).

CREDIBLE ALTERNATIVE

A new survey by Maribel Lopez of Forrester Research points out that Verizon "beat SBC out of the gate" with its Keller launch, and says Verizon "now provides a credible content alternative for TV programming." Lopez suggests that Verizon "can't compete nationwide, but isn't trying to...That means it will be years before Verizon is available broadly enough to pose a threat to large cable operators."

Forrester Research finds about half of 4,752 U.S. consumers surveyed would switch TV providers in order to save $15 a month, while nearly a third would switch for $6 to $10 less in payments. And in what perhaps will only make competitors wince, Forrester finds that nearly one-in-five households (17 percent) "are likely to switch" from their current cable or DBS service to FiOS TV—even without lower rates.

Yet Verizon's big fiber dig has not been without some early problems. It's constructing a passive optical network (PON) with fiber extending from central offices to un-powered hubs, in which the fiber (laid to follow copper configurations) can be optically split up to 32 ways. In Fairfax County and elsewhere, power and cable lines accidentally have been severed. In some cases, as The Washington Post and other media recently documented, fiber tubing had been strewn haphazardly across private property and sometimes left unattended for weeks.

"With huge projects like this when you're overlaying copper wire with fiber, given the nature and magnitude of the problem, accidents unfortunately will happen," Cohen-Hagar told **TV Technology**. "We try to be as careful as humanly possible. In some cases, we found we had been using maps that obviously had become outdated over time."

Verizon typically disconnects (although it says it does not rip up) existing copper lines, once the fiber has been installed for new customers. This may prove to be a problem because fiber does not carry its own electric charge; it relies on existing electrical outlets at the premises, and if a customer loses power for any reason, FiOS TV (and fiber phone and broadband) will not work—including 911 calls. While Verizon installs a back-up battery at each dwelling, the company concedes the batteries only last about 4 to 6 hours.

Verizon is hoping to complete FiOS pass-bys for up to 3 million premises by the end of 2005. ■

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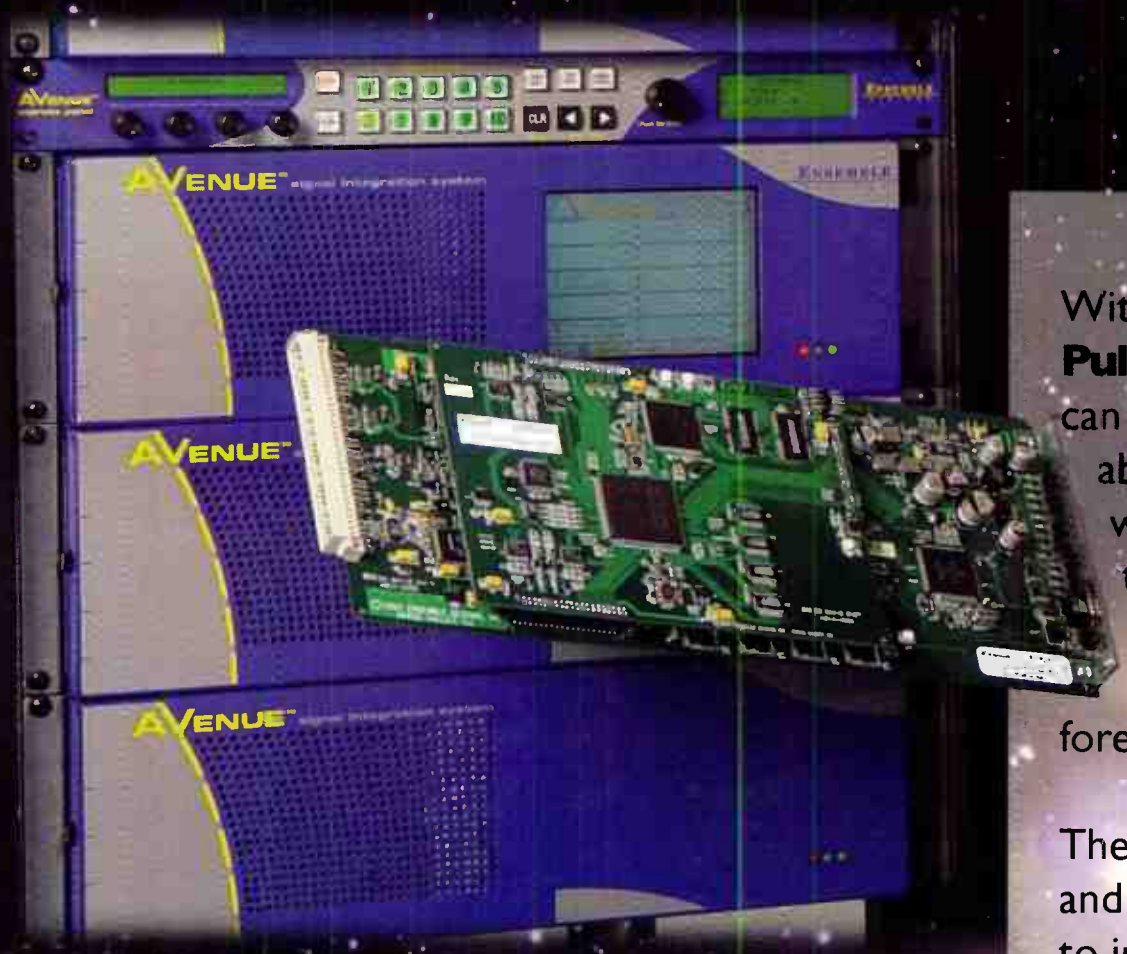

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USDTV

CONTINUED FROM PAGE 14

"From the standpoint of the broadcaster, it is the only plan that I have seen that unlocks the value in our digital investment. Before this initiative, there was no plan to increase revenue to monetize the tremendous capital costs we incurred to go digital," said Gary Chapman, CEO of LIN TV Corp., in Providence, R.I.

"Now we are essentially giving our analog spectrum back to the government, but this doesn't create new revenue. It's the same revenue we had before in selling our television time," he said.

LIN TV invested $82 million to go digital, including a full-power DTV transmitter, tower reinforcement, and a new antenna. This major station group includes 25 TV stations, representative of every major network, including ABC, NBC, CBS, Fox, and WB; and LIN TV is in the process of buying five more stations, including WAVY-TV8 (NBC) and WVBT-TV, Channel 43 (Fox), both in the Norfolk, Va. market.

HDTV NOT SACRIFICED

Chapman emphasized that the USDTV service will have minimal impact on HDTV broadcast from LIN TV stations.

"Let's say that CBS is broadcasting in 1080i HD, which they do in primetime, we would only have about 3 Mbps spare bandwidth there," he said. "But let's say another one of our stations is Fox. Well, Fox is broadcasting 720p HD, so we'd have maybe 6 Mbps there because their signal is taking less."

So in effect, participating in the USDTV initiative does not preclude LIN TV's ability to broadcast in HDTV, and viewers can still receive all HD and SD over-the-air channels using the same STB and antenna.

"The good news is that with this initiative, must-carry is no longer an issue," Chapman said. "Our goal is to have four to eight percent of TV homes in the market opt for this service in the next three to five years."

He estimated that there are currently about 10,000 subscribers in the three pilot markets. He conjectured that half of the subscribers never had cable, while the other half are looking for a low-cost solution.

"All those people that are not on the cable or on the satellite, when the 'give-back' date occurs, which might be Jan. 1, 2009, I believe it's that sector that will flock to the stores and buy this," Chapman said.

He speculated that if the government did decide to subsidize over-the-air converter boxes, the vouchers could theoretically be used to buy the USDTV reception equipment.

While Chapman would not disclose details about how much money LIN TV would receive by leasing its bandwidth to USDTV, he said there are three revenue opportunities to the deal.

"One is that you are paid per sub every time somebody signs up. You're paid for the digital spectrum itself. And then you are paid one-third of the revenue from the pay-per-view channel, which is STARZ." If the subscriber orders a movie on STARZ, the charge is in addition to the $19.95 monthly fee.

"There's 36 Mbps required to deliver the channels in the package [per market], so obviously there's room for a lot of broadcasters to participate," Chapman said. "And they don't have to be commercial stations. You could also have PBS, as well as Univision, Telemundo or other Spanish-language stations."

Regarding the financial viability of the USDTV initiative, Chapman said that cable and the telephone companies are basically going into channel-rich "bundled services, and they have a massive capital outlay to get the fiber to the house. So, their model depends on a $60 to $100 a month per customer. They would go broke if they had to depend on a $19.95 a month customer. It couldn't support their capital investment.

"So the issue here is to provide a low-cost alternative," he said. "And DTV is wireless; it's already here; and it's the most efficient means of transmission known to man."

The USDTV announcement comes on the heels of news that station group Emmis Broadcasting announced it would sell its 16 TV stations, effectively ending a similar initiative announced at NAB2004. With Emmis out of the way, the USDTV service may have a better chance of success, according to Gerry Kaufhold, principal analyst for In-Stat, a market research firm, in Scotsdale, Ariz.

"USDTV might have been further along had they not been slowed down by the competing initiative that Emmis was aggressively promoting a year ago," Kaufhold said. "Because of the Emmis plan, broadcasters had to spend time comparing the two and determining which one would succeed, and this muddied the waters. Now that Emmis has backed down, and is in fact selling off its TV stations to become a radio station-only group, USDTV's offering will probably gain momentum very quickly.

"This is quite an undertaking on the part of USDTV," Kaufhold added. "The company has built a tremendous amount of technological system expertise to multiplex content from up to six transmitters and deliver a signal that the STB can unscramble. But while the technology platform is impressive, they had to develop a working business model that would provide revenues for all parties. Solving all those problems was as impressive as the technology platform." ■

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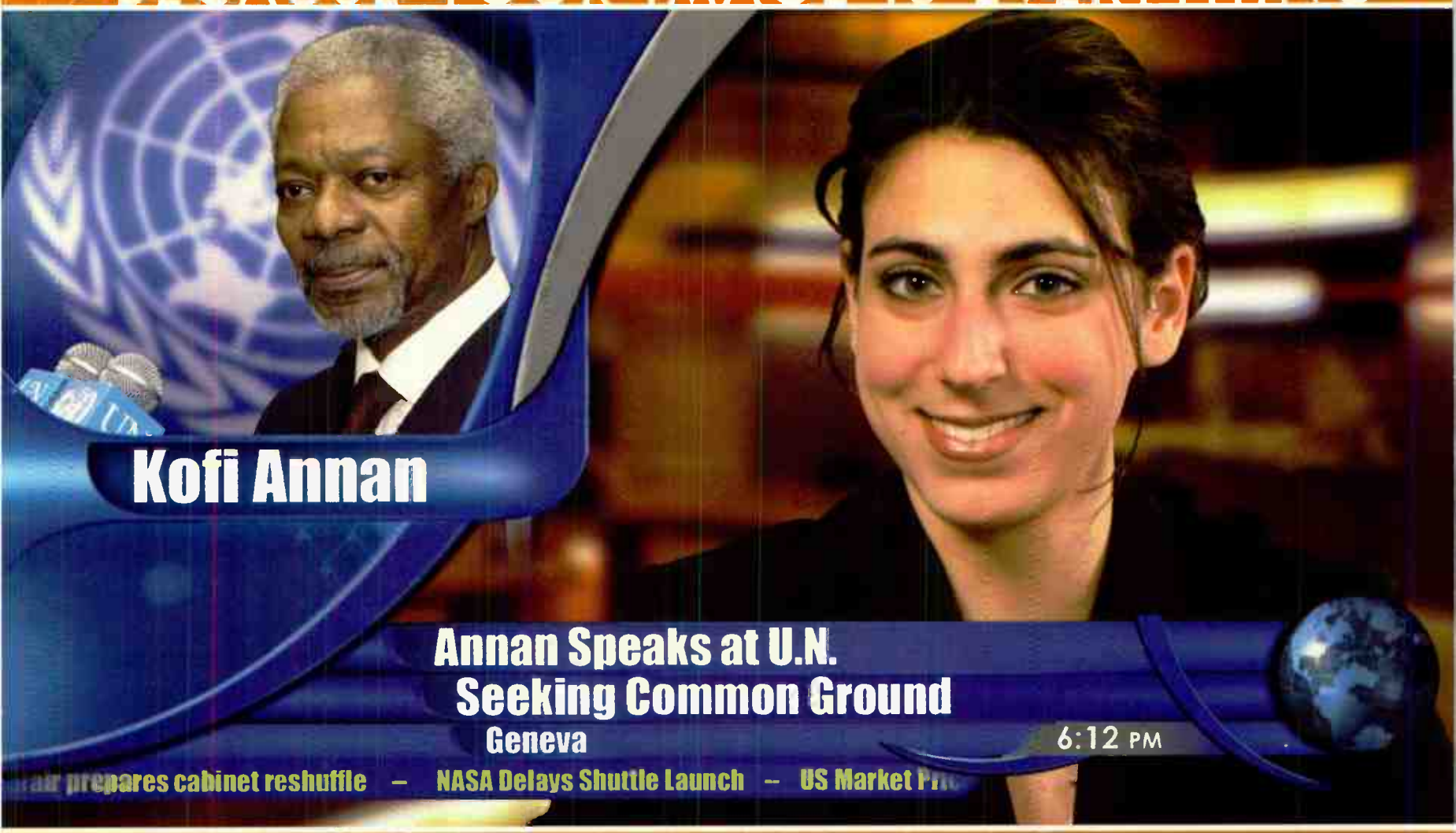

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WJW Sees High Ratings for High-Def News

Native HD news production helps Cleveland station lead the market

by Claudia Kienzle

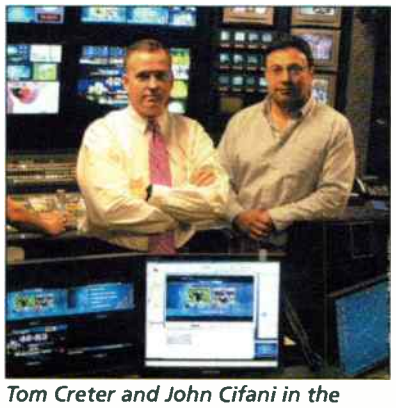
CLEVELAND

In November 2004, Cleveland Fox O&O WJW unveiled its native 720p/60 HDTV newscasts to viewers, which the station says helped to propel it to first place in the news ratings race. One year later, WJW now has a distinct advantage over its broadcast competitors who have yet to make a move to native HD news production. The station also finds itself a step ahead of some HD equipment vendors who are still developing solutions to meet all of WJW's needs.

"The transition to native HD news production is very complex, and it's not cheap. But if you plan it right, you can do it successfully," said Tom Creter, vice president of engineering for WJW-TV and DT.

Currently, WJW's efforts have centered on its HD newscasts, but there are plans to upgrade other local programming and commercials to HD in the future. Today, WJW is the sole producer of native HD newscasts in the Cleveland DMA.

"The difference between a native HD picture and one which is upconverted is substantial," Creter said. "HD definitely sets us apart from the competition, but eventually they will feel compelled to catch up and neutralize our advantage."



Tom Creter and John Cifani in the refurbished WJW control room

While the decision to transition to native 720p/60 HD news dates back to 2002, the station migrated slowly, first swapping end-of-life analog cameras for new Ikegami HDK 79D HD studio cameras, equipped with Thales Angenieux HD lenses, and mount-ed on Rada-mec robotic studio pe-destals.

In 2003, the station decided to refurbish its 20-year-old analog control room with its Grass Valley 300 switcher to a state-of-the-art digital HD control room equipped with a new 720p HD-only Grass Valley Kalypso HD production switcher; more HD box-type newsroom cameras; and two new Chyron Duet HyperX HD live graphics systems. Also installed was an Evertz MVP monitoring system, capable of multiplexing numerous HD and SD, and SDI signals on a single display—in WJW's case, as many as 16 small HD pictures on any one of four LG 42-inch TFT monitors at the front of the control room.

In addition to the four main LG monitors, the MVP provides four more discrete monitoring outputs for the director, producers, graphics and audio production. A Wheatstone 5.1 digital audio console allows the station to broadcast its HD news in 5.1 channel surround sound. The console features variable delay on all inputs and outputs—essential to correcting the timing of delayed audio sources.

"We knew we wanted to have an HD control room, but we didn't have much more money than would cover a digital SD control room," Creter said. "To maximize our tight budget, we decided to act as our own general contractor, construction manager and systems integrator. With the exception of some bulk wiring which we outsourced to a systems integrator, we designed and installed everything ourselves. Together with my Engineering Manager John Cifani, who was the system architect of this project, and our engineering staff, we worked out the design details and workflow issues."

IT'S A WIDE, WIDE WORLD

At WJW, only HD sources—the three Ikegami HD studio cameras, seven Panasonic AK-HC900 box cameras, and four channels of the Chyron HyperX HD—enter the switcher natively as 720p HD signals. But legacy video, live satellite and microwave feeds that arrive as 4:3 SD signals, are upconverted before connection to the Kalypso.

"If an upconverted 4:3 source is punched up, 'side curtains' are immediately generated and wiped 'on the fly' so that 'FOX 8' appears on the left side panel and 'HD' appears on the right

panel," Creter said. Some side panels coming off the Chyron HyperX HD also have animated backgrounds behind the text. The station's production crew always protects for the 4:3 picture for the analog audience.

"We're producing one HD output from our switcher which goes to our digital chain. But that same signal is also distributed to a center-cut down-converter, encoded and fed to our analog master control switcher," Creter said. "Analog viewers are actually seeing a product that was composed directly from our HD switcher, and this dramatically upgrades the look of the analog picture that most of our viewers receive in the home."

GOOD LOOKS MEAN GOOD BOOKS

Since "lighting up" the new HD control room in late November 2004, WJW saw a miniscule up-tick in ratings during HD newscasts in the Cleveland DMA. But the HD control room had only been on the air in the final days of the November 2004 ratings period.

However, "in the February, May, and July 2005 books, we have been number one in the market for news for almost every newscast," Creter said. "While our high-quality news content contributed to that success, you can't rule out the impact that the superior HD picture quality and enhanced sound had on both the digital and analog audiences.

"In tests of our HD equipment early on, we were stunned by the clarity of the HD picture, especially when we realized we could actually see the second hand sweeping around the anchor's wrist watch," he said. "This prompted tweaking of our news set, as well as the redesign of the lighting. With HD, you can see every little nick, scratch, and nail head on the desktop, which just wasn't evident in analog."

WJW's Videssence flat lighting was augmented by 30 new tungsten fixtures and lighting gels for a more dramatic, filmic lighting scheme. In addition, a make-up specialist was brought in to teach the anchor teams new techniques for blending their makeup to avoid tell-tale flaws.

HD GRAPHICS ON STEROIDS

The Chyron HyperX offers two graphics layers per channel for HD output, and plays out real-time 3D animations in HD. The two HyperX CGs are equipped with Leitch Clip Players for playback of compressed moving HD video images with no visible pixilation or blocking artifacts.

Chyron's Lyric 2D/3D graphics composition software is used to create lower-third, over the shoulder, and even full-screen graphics for news. But Chyron operators can also employ HD graphics created on the Adobe After Effects systems which the art department transfer over the LAN. And sometimes HD graphics files are deposited onto the hard drive of a new Proximity Artbox asset management system, which is accessible to the Chyron operators.

"Our station was the first in the nation to install the Chyron HyperX CG system, and Chyron worked very closely with us to ensure that the systems were brought online very smoothly," Creter said.

A BIRD'S EYE VIEW

Live shots are captured using Sony Betacam SX cameras in widescreen mode. But, Creter said, "even when the SDI output of these cameras is run through the fantastic Teranex upconverter, it's still not even close to the native resolution of 720p/60. The difference is stunning. That's why we're investing the time and effort to push for fully digital, native 720p production from end-to-end."

Creter also wants to use a native 720p HD camera in place of the existing SD camera on the Sky Fox helicopter.

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Is HD-ENG Ready for Primetime?

With the BAS transition in place, broadcasters mull digital options

by Craig Johnston

SEATTLE

The BAS 2 GHz microwave relocation could make broadcasters feel like they've found a pot of gold at the end of the rainbow over the next few years, as Nextel replaces stations' 2 GHz analog microwave equipment with new, digital gear.

In many cases, the old equipment being swapped out was 20 or more years old and in need of replacement, which would have meant dipping into broadcasters' own capital budgets.

HERE TODAY

However, though stations are looking to do their newscasts in high definition in the years ahead, the BAS equipment swap is for standard definition capable gear.

"People under the FCC mandate were to be made whole, comparable facilities, and giving somebody an HD transmitter for an old analog is not 'comparable facilities,'" said Jeff Winemiller, president and CEO of RF Central in Carlisle, Pa.

"Not to worry," said representatives of the five microwave equipment suppliers TV Technology spoke with for this article.

"The technology is available today."

— Sunil Naik, Moseley Broadcast

Each of those companies are making gear for the BAS equipment changeover that include ASI inputs on transmitters and outputs on receivers. Plug an HD encoder into the ASI port the transmit end and a decoder into the receiver, and with sufficient bandwidth you're HD field microwave-capable.

"The technology is available today," said Sunil Naik, director of engineering at Moseley Broadcast in Goleta, Calif. "We're using the standards and industrial products which are in the market at the moment."

"All of our new products support external modulation through the ASI input of our microwave transmitters and the output of our receiver/decoders," said Jim Kubit, western sales manager for Poway, Calif.-based Broadcast Microwave Services (BMS). "It allows us to do things like take in external high-def encoders and transmit that signal across a microwave path."

All five ENG microwave vendors have tested JVC's DM-JV600U MPEG2 encoder and companion DM-D4600U decoder, which was demonstrated passing HD video across a microwave path at the 2004 and 2005 NAB. (see "Blimps Boost HD," TV Technology, Feb. 16, 2005)

A plethora of encoder/decoder systems, too many to list and more added daily, are in the marketplace as well.

Tests with the MPEG-2 encoders have shown that it's necessary to maintain a bit rate of 19-plus Mbps to pass the high definition signal. "If you get down below 18 Mbps it really starts to tear up the high-def signal," said John B. Payne Jr., chief engineer for Nucomm in Hackettstown, NJ.

"The bandwidth is strictly dependent on the channel characteristics, so if you're in an extreme multipath environment, it would be lower," said Mike Payne, vice president of marketing and business development for Billerica, Mass.-based Microwave Radio Communications (MRC).

"If you're in a more benign situation or in what we might call a pre-engineered path, then the bandwidth would be much, much higher."

Microwave Radio Communications teamed with Helinet Aviation and KUSA-TV in Denver to demonstrate the first HD airborne deployment.

Demonstrations at NAB2005 achieved 40 Mbps, well within the capability of the MPEG-2 encoder/decoder system to pass excellent HD images.

DEJA VU

Another factor in maximizing bandwidth is the modulation scheme, leading to a choice between single carrier (VSB and QAM) and multiple carrier (COFDM) modulation formats. Where COFDM is more robust in multipath environments, VSB and QAM seem better suited to passing higher bit rates in microwave frequencies.

"COFDM works fine in the UHF band, all the calculations are based around UHF," said Naik.


In 2004, Broadcast Microwave Services teamed up with JVC and several other companies to demonstrate HD-ENG to SBE chapters.

"When you go up in frequency, like where we're going to in the 2 gigs for ENG, or 6 gigs, it gets harder to use the whole capability."

"What VSB affords you is higher bit rates at comparable bandwidth of COFDM," said Nucomm's John Payne Jr.

Similarly, "QAM modulation with MRC's variable symbol rate (occupied bandwidth), offers a high level of flexibility for data throughput and transmission bandwidth depending on channel conditions," said MRC's Payne.

Several ENG microwave makers suggested they will be building in both single and multi-carrier modulation capability into next generation microwave transmitters and receivers.

If you can't increase the bit rate, going to a different encoding scheme may be the answer.

"Station people should look at the next generation of intra-frame compression, which is really motion-JPEG 2000," said Tore Nordahl, principal of Nordahl.tv, LLC.

"The validation of that really came at the recent IBC because Grass Valley Thomson made an announcement of their new Infinity HD camcorder series and support equipment, and they are in fact using motion-JPEG 2000."

He pointed out that H.264 MPEG-4 compression is fine for transport, but the latency issues make it less than optimal for ENG use with its live interviews.

(Nordahl's recently released "HD ENG & HDV Report" includes the IBC introductions and details the new offerings of ENG microwave radio vendors.)

RF Central's Winemiller asks broadcasters this question: "Every station in the country that has a 20 year-old transmitter is getting one brand new, so why couldn't he take some of his capital money that was going to replacing equipment and spend it on an encoder?"

After all, with the new BAS microwave equipment and its ASI input and output ports, the future of HD ENG microwave is now.

Asked to look into HD ENG's future, vendors said they are busy at the design table today.

"In the future you'll see more of a convergence of the radio technology with the encoder technology, where it will be much more user friendly to the broadcaster," said MRC's Mike Payne. "As with a lot of these technologies, over time it becomes less expensive and smaller and easier to integrate into your own equipment."

"You can only put so much bandwidth down an 8 MHz channel, an 8 MHz pipe," said Winemiller. "So that's why some people are doing things at higher frequencies, so they can push more data through."

Nordahl agreed on that point. "If you want to be upfront and an early adopter of a real, live, HD ENG news, you've got to go for a 7 GHz and 25 MHz bandwidth. That's the long-term solution for the TV broadcasters."

"A lot of our focus has been to make our things software driven," said John Payne Jr. of Nucomm, "so as the product changes, as the industry changes, we can then provide downloads into the radio to change as the market changes and as technology comes out." ■

P2 Brings Change to Media General

Station group expands adoption of Panasonic tapeless format

by Craig Johnston

RICHMOND, VA.

Station group Media General recently announced that it has expanded its adoption of the Panasonic P2 format. Group owner of 26 stations in the southeast United States, Media General was an early purchaser of P2 equipment, committing to the solid-state recording media system for all 20 of its stations that produce news. Ten stations have P2 equipment so far, with another six slated to receive equipment in 2006.

"It's a cultural change from over 30 years of managing content by managing physical media," said Media General senior vice president of broadcast operations Ardell Hill, describing his company's transition to the Panasonic P2 system for news acquisition.

"We had to develop a system before we ever put the first camera out on the street," said Hill. "We worked as a team with a group of folks to develop what we felt, as a roadmap, an overview, was a structure for implementing the system.

"One question was, could we get our folks to understand when they're shooting in the field they need to think about the content they were capturing and how they were going to manage that content from beginning to end?"

An early area of concern from Media General news staffers was that the content capacity of the P2 memory cards was limited and expensive, and would hinder their ability to cover news stories. Hill said he heard: "How am I going to live if I don't have three boxes, eight hours of tape so I can keep popping in tapes as long as I have batteries?"

Since there were no field-portable download devices available to offload video from the memory cards when the first P2 cameras were delivered to the company, it meant news crews had to think more carefully about what content they had shot and would shoot.

Hill recalled one photographer who took an immediate liking to this new discipline in the field. "'Now I can tell so and so I can't shoot everything in sight. He needs to tell me what he wants, and I'll shoot what he wants.'"

Nate Sykes, news photographer for WFLA used a Panasonic P2 camera to cover the shuttle launch in July.

WJW

CONTINUED FROM PAGE 23

The helicopter uses a FLIR gyro cam system, and there is currently no 720p HD camera available for this system; only a 1080i HD camera which would require cross-conversion. Creter said they'd prefer to wait for the availability of a 720p HD camera so as not to compromise picture quality.

Another pressing challenge facing WJW is the 2 GHz transition which will require them to microwave their digital 720p HD signal in a 12 MHz channel. "There are systems out there that promise to do this," Creter said. "However, the encoding of HD picture quality might result in a seven-second delay which we feel is unacceptable."

WJW is slated to test encoding solutions from several vendors that Creter said look promising, but he won't know until the tests are completed.

"It's going to take a lot of work to make HD signals work in the [2 GHz] domain," Creter said. "In the near future, we hope to be able to transmit 720p HD aerial shots from our helicopter, and with surround sound give viewers the sensation that the helicopter is flying around them. As a test, we took an HD camera up on a helicopter and microwaved the pictures back [using a Nucomm microwave solution] just to see how it would look. The images were mesmerizing." ■

"In reality," said Hill, "the system provides the ability to shoot continuously because that content can be offloaded." Since the time the first cameras were delivered, small, portable hard drive devices were made available that can pull content off the P2 cards, allowing the solid state memory cards to be reinserted in the camera to acquire new content.

"With five cards in the camera, it almost doesn't matter what the capacity of the individual card is, I can rotate cards continuously."

VIRTUAL FOLDERS

Media General also addressed what happens to content, when it's ingested onto the storage area network or network attached storage system back at the station, by which folder it's placed in.

Because of storage limitations only one copy of the content is recorded into the SAN or NAS, however the video can be accessed from any number of folders in the system.

"Everyone in the editorial news team has access to the raw content in terms of using it or making it available to them for what they're doing," Hill said. "Simultaneously four reporters can be looking at the same content at the same time, while marketing is producing a proof of performance spot."

Only the author of the content, which by default is the person owning the first folder the content resides in, can allow the content to leave the system entirely.

However, even though the first owner authorizes purging the video, if any other individual has a folder with a pointer to that content, the content will be retained. "If it's still active in anyone else's folders, chronologically the individual who is holding it first now becomes the new owner," Hill said. "So there's a process that's been thought through about how we manage that content flow."

Intra-group communication about how the P2 equipment is used didn't end once the cameras were on the street. "We have what is essentially an internal user group that has a conference call once a week," said Hill, "and it is open to all of the folks who are using the gear, whether that's the nonlinear editing or the P2 gear. "I think for the most part our guys are getting real aggressive about learning what the tools of the camera can do."

One popular feature of P2 is the camcorder's ability to display thumbnail clips of material on the media cards and allow the user to denote "in" and "out" points, then play back the resultant clips as an edited piece during a live shot.

"Rather than feeding tape back or feeding video back to the station," said Hill, "they can now play that content directly from the camera and insert it into their live shot."

Hill said he looks at Grass Valley's IBC announcement of a similar solid-state media camera system as validation of the technology.

"Both of those two systems are file-based management of the content, and they are very compatible with each other," he said. "I hope other manufactures continue along the same path."

Regarding P2 HD, Hill noted that Media General's typical lifecycle for field camera gear is in the five- to seven-year range. "At the time that the life cycle of most of this equipment is ready to get changed out, I'm very confident that we'll be replacing these devices with high-definition devices."

In the meantime, Hill said the company will make a high-definition purchase of equipment to be available as a resource should an individual station have a special project to be produced in HD. But he said he feels the all-digital tapeless pathway P2 has allowed is already showing up in better on-air picture quality.

"One of the wonderful parts of digital is I get to capture it at the quality that the camera outputs, and that quality gets all the way to the consumer's home," he said.

"The video quality of our images is just popping off the screen It's so dramatically improved from where it was that in many cases significantly differentiates us from our competitors." ■

FOCUS ON EDITING

Jay Ankeney

Editing at the Emmy Level

"Editing is starting to become recognized as the true art form that it is," 2005 Emmy winner Michael Berenbaum reflects. "When dealing with modern digital edit systems, it has become far less a technical skill and much more a huge contribution to the craft of storytelling."

Berenbaum should know, having received this year's Emmy award for "Outstanding Single-Camera Picture Editing for a Comedy Series" during the Creative Arts Primetime Emmy presentations at the Shrine Auditorium in Los Angeles Sept. 11 for cutting the pilot of ABC's wildly successful "Desperate Housewives" series.

"From the minute I read the script, I knew this show would be a hit," he said, "and having worked with its director, Charles McDougall, on several projects before we knew the show was going to be something special."

For those few who have not yet been hooked by it, "Desperate Housewives" is the ongoing comedy/drama/evening soap opera from Touchstone Television about the women (and their men) who live on Wisteria Lane. Their only bond, as one of the girlfriends, Susan Mayer (played by Teri Hatcher), says in the pilot is trying to avoid "living lives of quiet desperation." The efforts of her fellow female combatants against complacency often lead to combinations of plot, character and confusion that have made "Desperate Housewives" one of ABC's top-rated weekly series.

Berenbaum had been fascinated by editing ever since he started making 8mm amateur productions by age 10. He majored in film at New York University and got his first chance to hang out on a set during the filming of Francis Ford Coppola's 1984 "The Cotton Club" while he was an intern at Kaufman-Astoria Studios, where he tended to haunt the edit bays. Berenbaum moved slowly up the ranks of assistant editors, most significantly working on three Coen brothers films ("Raising Arizona," "Miller's Crossing" and "Barton Fink"), and where he gained insight into the essence of filmmaking.

Emmy winner Michael Berenbaum edited the lawn-mowing scene in "Desperate Housewives" to the beat of a piece of salsa music.

"Joel Coen had been an editor before becoming a director and I learned a great deal from him," Berenbaum recalled. "I still find myself asking how he would do things when I am cutting a sequence today."

Berenbaum's first opportunity to sit in the editor's chair came on Daniel Iron's 1988 comedy, "Bum Rap" and he moved on to work on films such as "Mac" and "Illuminata" with John Turturro in the '90s, and 2000's "Chinese Coffee" directed by Al Pacino.

But by then, Berenbaum had also expanded into television, editing the pilot for a modest little cable series called "Sex in the City" for HBO which, in 2002, brought him his first Emmy nomination along with an ACE Eddie Award. He had become so proficient on the Avid Media Composer that he was often cutting episodes from two different series on the same day. Then last year, when "Sex in the City" director Charles McDougall was signed for the pilot of "Desperate Housewives," McDougall brought Berenbaum out to Hollywood to cut the project.

The pilot's quirksome plot and tone are established during a prologue scene when Mary Alice Young (Brenda Strong) tops her perfect suburban housewife day by shooting herself in the head. The rest of the show is structured around her ongoing posthumous narrative, sort of like an "Our Town" from the grave, and Berenbaum often used this voice-over as the spine around which to pace his edits.

The copious coverage provided by director McDougall and wrangled by Berenbaum's tireless editing assistant, Judd Maslansky, gave him many opportunities to fine tune the scenes

"We found a piece of salsa music in a library, and I adjusted the cuts to match the music which punched up the humor."

—Michael Berenbaum, Emmy-winning editor

through his editor's art. For example, during the opening suicide scene, we originally would have been shown the woman's body falling out of frame after pulling the trigger. But this seemed too graphic, so Berenbaum matched the action of the body's collapse with its reflection in the glass of a family photo on the mantlepiece.

This was an editorial selection of particular sensitivity since the script called for the next shot to begin with the nosy neighbor, Martha Huber (Christine Estabrook) dipping her finger in some spilled tomato sauce just as she hears the gun go off. If the shot selection during Mary Alice's suicide had been less delicate, the blood/sauce juxtaposition would have given the audience a dramatically different expectation of the comedy to come.

Michael Berenbaum, winner of the 2005 Emmy for "Outstanding Single-Camera Picture Editing for a Comedy Series" for the pilot of "Desperate Housewives."

Another scene enhanced in the edit bay came during the fourth act when Gabrielle Solis (Eva Longoria) is forced to attend a party with her husband Carlos (Ricardo Antonio Chavira). On the way, Carlos notices their front lawn has not been mowed. Gabrielle panics because she had waylaid their teenage gardener into her bedroom that afternoon, so she disappears from the party and feverously cuts the lawn while still in her party dress.

"I had edited the scene together, and it was kind of funny with Gabrielle's long dress dragging through the lawn clippings behind the mower," Berenbaum says. "But then we found a piece of salsa music in a library, and I adjusted the cuts to match the music which punched up the humor. It was a challenge to make the scene work with temp music, but the results fit so well that even though Danny Elfman eventually wrote the theme music for the show, the producers kept that original temp track in for the final version of the lawn mowing sequence."

Later, lovelorn single mom Susan Mayer (Teri Hatcher) learns that serial divorcee Edie Britt (Nicollette Sheridan) may have invited plumber Mike Delfino (Jamie Denton) over for an evening's tryst, so Susan sneaks into Edie's living room to spy on them. Finding a dress and undergarments cluttered on the floor, Susan sits down to console herself with a chocolate bonbon and despondently flips the discarded bra over her shoulder. Unseen, it knocks a candle into the drapes and catches the house on fire. Things like this seem to happen not infrequently on Wisteria Lane.

But while the scene was being filmed, the curtains sprang into flame too quickly for Susan's emotions to have time to properly play out. So Berenbaum stole the image of a piece of intact drapery from a different take and composited it over the section where the curtains had prematurely started to burn. This let him delay the advent of the fire to extend the emotional tension of the scene.

Although Berenbaum was cutting the scene on an Avid Film Cutter, the trick worked successfully for preview audiences at the Academy Theater even when they saw the episode in HD projection before it was in its final form. Later, Richard Russel, the online editor at Modern Video Film in Burbank who mastered the pilot episode using a Sony BVH-9100 linear system with a Sony MDVS-8000 switcher, was able to tweak the composite so successfully that the replacement for the burning drapes in the final air version is undetectable.

Not wanting to stay away from his family in New York for too long, Michael Berenbaum left the rest of the season of "Desperate Housewives" to other West Coast editors. He's now back in the Big Apple editing a feature film directed by Allen Coulter called "Truth, Justice, and the American Way" about the mysterious death of TV's Superman, George Reeves.

"Editing is an invisible art," Emmy-winning editor Berenbaum said, " and most people have no idea about its contribution to either TV shows or movies. But in reality, what we create is the final version of an idea that started out on paper. It's a skill that needs to be appreciated." ■

Jay Ankeney is a freelance editor and post-production consultant based in Los Angeles. Write him at 220 39th St. (upper), Manhattan Beach, Calif. 90266, or e-mail him at JayAnkeney@aol.com.

THE MASKED ENGINEER | Mario Orazio

It's Not the Frequencies, Stupid

You might not have noticed that leeches and maggots have been in federal government news recently. Yes, this month's rant is about Hurricane Katrina and DTV.

Being a normal, thinking human being, you might not have noticed the connection. A bunch of DTV stations carried all-Katrina-all-the-time on secondary multicast channels, a bunch of TV stations that lost analog transmission lost digital, too, and that's about it. But some representatives we've elected ain't normal and don't always seem to think.

Sen. John Kerry is one I had in mind. Even before the water level started to drop in New Orleans, he tied hurricane communications problems to DTV.

Katrina communications problems were caused by downed towers, power loss, broken connections, drained batteries, missing generators, and equipment underwater. Pick one or more. They were *not* caused by a lack of access to frequencies used for analog TV.

I'm here to rail against pretending the DTV transition will solve public-safety communications problems.

Sen. John McCain has made similar DTV-transition complaints based on 9/11-communications problems. But The 9/11 Commission Report has nothing about frequency problems.

"Most Port Authority police commands used ultra-high-frequency radios [same as UHF TV]. Although all the radios were capable of using more than one channel, most PAPD officers used one local channel. The local channels were low-wattage and worked only in the immediate vicinity of that command. The PAPD also had an agencywide channel, but not all commands could access it."

What else caused communications problems that day? The commission reports on a fire-department repeater. "The activation of *transmission* on the master handset required, however, that a second button be pressed. That second button was never activated on the morning of Sept. 11." Is the DTV transition going to press the second button?

In hurricanes, when nature packs enough wallop to topple buildings and breach concrete levees, even a fiber-optic or copper communications cable ain't likely to stay in one piece. And without a connection, a transceiver ain't going to aid much communication at any frequency.

You want improved disaster communications? Think about those maggots and leeches.

Even in this age of miracle drugs and microsurgery, it looks like nothing will clean dead tissue from a wound like maggots. And, when a body part gets reattached, the anticoagulant, vasodilator and dispersion agents in a leech's bite seem to work better than anything else at getting and keeping blood flowing. So the FDA's looking into giving both sets of critters their stamp of approval.

The moral is that sometimes old technology works better than new. Now, then, I ain't suggesting FEMA use smoke signals and one-if-by-land/two-if-by-sea lanterns. But I *am* talking about a version of World War II barrage balloons.

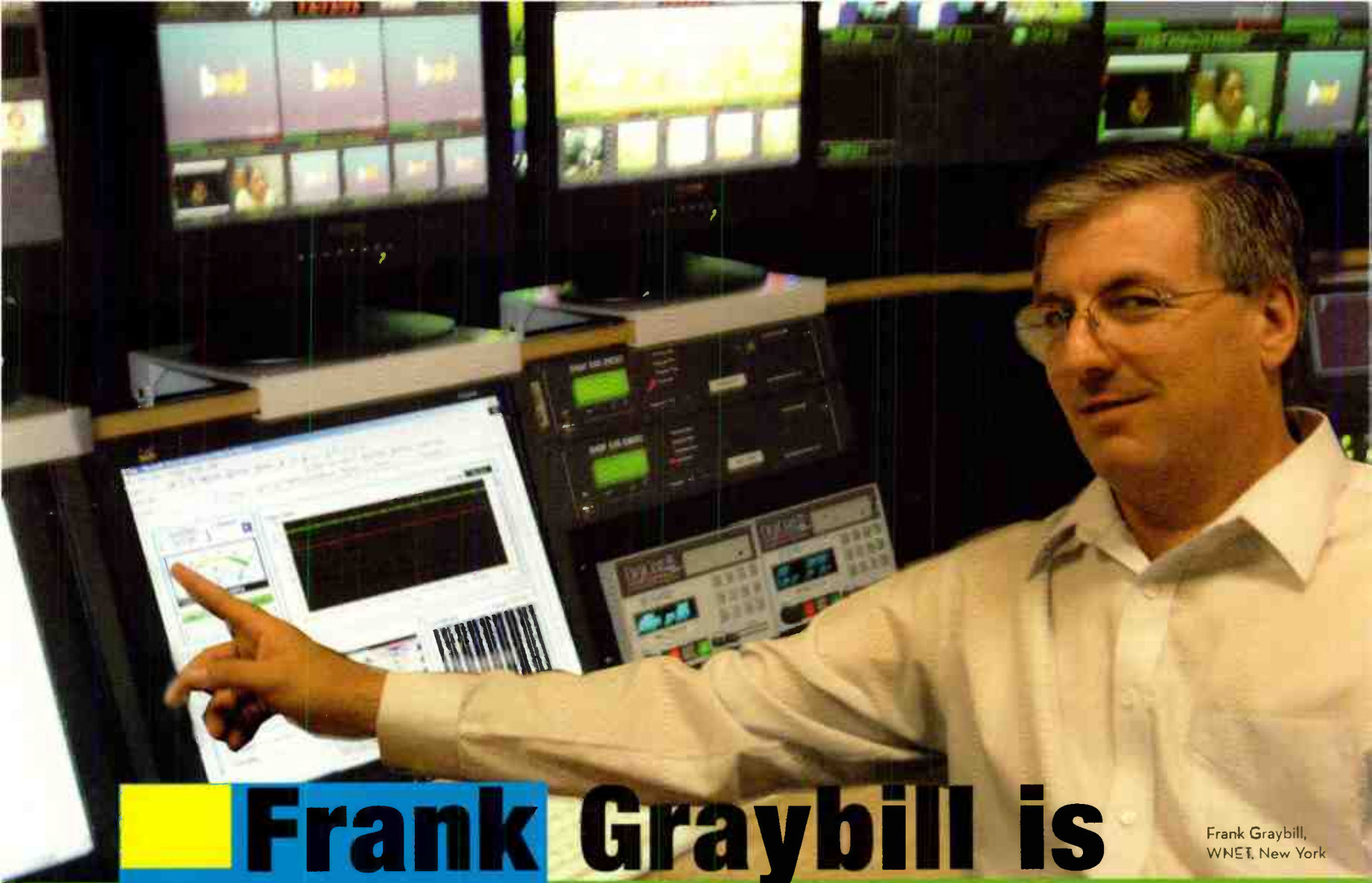
They're currently deployed by the U.S. military in Afghanistan and Iraq, where they're called RAID. Rather than bug spray (sorry, maggots) or redundant disk arrays, the letters stand for Rapid Aerostat Initial Deployment systems.

An aerostats an airship-like balloon designed not to move. These have a fiber-optic and power tether, and their payload can be communications repeaters. Tethered communications led to the name TCOM, the Westinghouse division spun off with its 35-year-old technology.

Think of them as instant towers. In antennas, as in real estate, the top three characteristics are location, location, location, or, to put it another way, height. TCOM sells an aerostat that hangs at 15,000 feet (it'll do 25,000) for a month before needing service. At that height, one balloon could provide communications for most of the disaster area.

Although they can handle *some* wind, a nasty blow could snap the tether. But the first post-hurricane truck near the area (no need to go

FREQUENCIES, PAGE 32



Frank Graybill,
WNET, New York

Frank Graybill is Choosey...

"We needed 8vsb Analyzers for both WNET DT New York and WLIW DT Plainview, NY. I made a list of parameters that we needed to analyze and priced equipment. I thought we'd have to spend $30,000 or more, then we discovered the 8vsb Analyzer from Modulation Sciences for under $10,000."

When WNET Needed 8vsb Analyzers, Frank Picked MSI

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Frequencies

CONTINUED FROM PAGE 30

into the water) could quickly launch one (remember "rapid... deployment?"), and all that's needed would be adjusting frequency-agile repeaters to the channels used.

"But, Mario, what if the winds are still too strong?"

No problem. Just go a little ways earlier than TCOM to Stratovision, another Westinghouse development, a plane with communications antennas under its belly. The Midwest Program for Airborne Television Instruction used the system to feed schools (almost 1,800 at a time by 1967) as the plane flew lazy eights (making technicians *really* appreciate the value of VTR reel locks). But I ain't here to write about improved disaster communications; I'm here to rail against pretending the DTV transition will solve public-safety communications problems.

It won't. But it surely could endanger the public.

THERE WHEN IT COUNTED

When the order came to evacuate (which probably saved hundreds of thousands of lives), most folks learned about it from their TV sets. When levees broke, TV spread the news (while a FEMA official was denying it). WLOX in Biloxi stayed on the air and kept delivering the news even when the roof blew off its newsroom and a foot of rain flooded the building.

Radio was important, too, but both radio and TV stations were knocked off the air. People who wanted information turned to whatever they could get, which was sometimes just TV. The Louisiana and Mississippi broadcasters associations provided 1,300 battery-operated AM/FM/TV receivers to public-safety providers. Here is how many battery-operated DTV receivers exist: zero. Here's one reason why: the power drawn by the digital demodulator and video and audio decoders.

Our Beloved Commish, the FCC, performed superbly, staying open over the Labor Day weekend, helping the Red Cross get the phone number 800-RED-CROSS, and bending rules to help stations knocked off the air get back on, allowing noncommercial stations to carry commercial feeds to help spread the news, facilitating satellite communications and more. My hat's off to them—and to everyone else working on TV during the Katrina disaster.

Here's "The 9/11 Commission Report" quoting a New York fire chief. "People watching on TV certainly had more knowledge of what was happening a hundred floors above us than we did..."

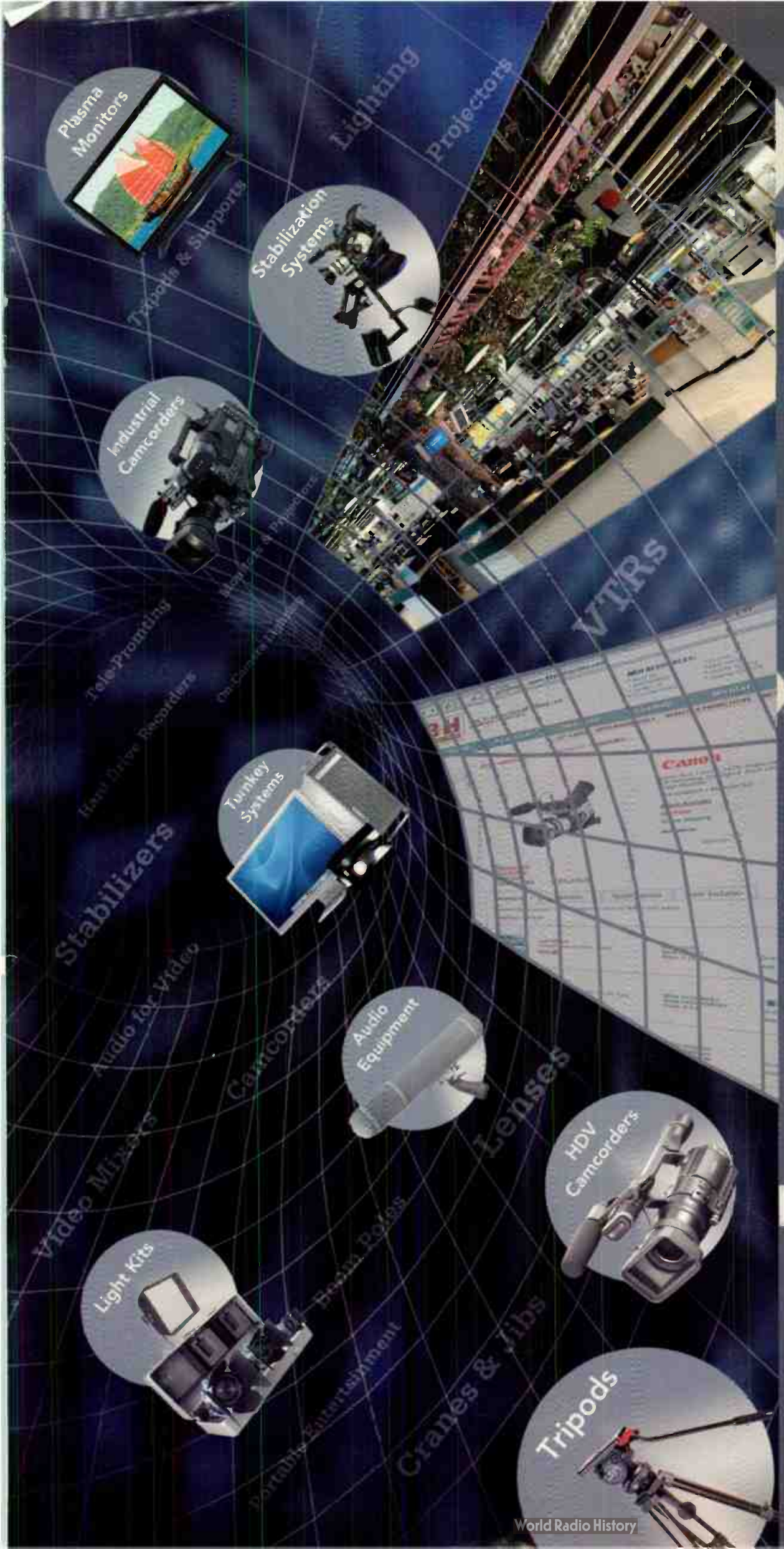
During the Katrina disaster, broadcasters told the government about the evacuees in the convention center. TV reporters got through right from the start, communicated with their studios, braved snipers and high water, and even rescued the stranded.

TV is a first responder. ■

"The activation of transmission on the master handset required, however, that a second button be pressed. That second button was never activated on the morning of Sept. 11."

—The 9/11 Commission Report

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



INTO THE SOURCE

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THE BIG PICTURE

Frank Beacham

Hurricane Katrina Energizes TV News

Live 8, the return of the space shuttle, and the London subway bombing each had an enormous impact on television technology in the summer of 2005. Then, Katrina paid a visit to the Gulf Coast.

With that historic storm began still another turbulent period for television broadcasting. Now, a few weeks after facing this dire crisis, it may be that broadcast news coverage has been strengthened by the experience.

As old broadcast infrastructures were washed away along with fleeing local viewers, television's recent marriage with the Internet took on important new meaning as a critical way to communicate with local citizens.

In the tense days following the storm, the people of New Orleans found little value in antennas, coaxial cable, telephone or wireless communications—almost nothing worked. Emergency personnel were forced to share a single two-way radio channel.

Louisiana's governor, Kathleen Babineaux Blanco was furious at the loss of wireless communications, a situation that will no doubt be blamed by members of Congress on the sluggish DTV transition.

Not only did the storm unmask weaknesses in conventional technology, it also gave new illumination to issues related to media independence. Expect to hear much more on this subject when the FCC debate resumes on media ownership rules.

Louisiana's governor, Kathleen Babineaux Blanco was furious at the loss of wireless communications, a situation that will no doubt be blamed by members of Congress on the sluggish DTV transition.

What we did learn is that the Internet has not only become a critically important television news outlet for broadcasters, but also for those independent voices who found government bureaucrats trying to become gatekeepers of information.

For CNN, which had started offering free online video clips in late June, the number of Web viewers surged with the rising flood waters. Katrina tripled CNN's previous online viewing record, set on the day of the London subway bombings back in July.

In local television, frivolous blow-dried anchors moved aside for ingenuous wind-swept reporters, some of whom proved to be first-rate journalists while under the gun.

New Orleans TV stations such as WWL and WDSU switched broadcast gears, using their Web sites to follow viewers in exile.

WDSU alone provided more than two million video streams of the station's live coverage in the early days of the disaster. On a single day, WWL had more than 10.5 million page views on its site.

ON AIR DURING KATRINA

With missing viewers and shut local businesses shuttered, the future economic base for television broadcasting in New Orleans remains uncertain.

"I think it's a fair statement to say the advertising base has been wrecked," Belo Senior Vice President Rick Keilty told The New York Times. "We're in the process of strategizing how we'll deal with that now."

Belo's WWL, the only station that never left the air in New Orleans throughout the crisis, has no clue how many on-air viewers were actually watching its broadcast signal in the days after the storm. Ratings measure-

ment activity ceased.

But some of WWL's advertisers followed it to the Web site, replacing spots with online ads.

"We're going to be looking more and more to the Web site for advertising revenue," Keilty said.

Innovative reporters and news directors used Katrina to further refine a new generation of TV news coverage—a mix of traditional news video with personal blogs, citizen reports with images, narrated slide-shows, constantly updated text, and forums to help find missing persons. Coupled with the interactivity of the Web, it all made a compelling alternative to the television newscast of only a decade ago.


AP Photo/David J. Phillip

Floodwaters from Hurricane Katrina surround homes near downtown New Orleans, Wednesday, Aug. 31.

Of course, the New Orleans story had many dark sides, and one of the most outrageous was the dismal performance of the Federal Emergency Management Agency. Not only did FEMA botch early rescue efforts, but the agency shamefully tried to hinder media coverage and impede the flow of independent information to the public.

In one example, FEMA shut down an all-volunteer low-power radio station at the Houston Astrodome that would have broadcast relief information for evacuees.

This was not pirate radio, mind you. It was an organization of volunteers with broad public support. The FCC quickly granted the station a temporary license to broadcast inside the Astrodome and the adjacent Reliant Center. The station was also endorsed by the governor of Texas and the mayor of Houston.

FEMA KO'S KAMP

Yet, as local officials tell it and the Village Voice reported, bureaucrats at FEMA KO'd the station—dubbed KAMP "Dome City Radio"—because of "security concerns."

FEMA apparently didn't want an independent media presence in the Astrodome complex and added that they could not allocate "scarce" electricity, office space, and phone and Internet access to the volunteer station even though the station's operators offered to run the station on batteries and use their own cell phones.

"I'm very disappointed," council member Ada Edwards, who represents a mostly black district in central Houston, told the Voice. "One of the real challenges of this big tragedy has been access to communication—open and honest communication. I really hoped this would be an open outlet for people to get information that was unscripted and that would really address their needs."

But, Edwards noted, the bureaucrats are trying to manage the news. "It's really sad when these people feel they have to sanitize all the time."

FEMA also told the news media not to photograph the dead bodies as they are recovered. The agency rejected journalists' requests to accompany rescue boats searching for storm victims.

Journalist groups, including PEN American Center and Reporters Committee for Freedom of the Press, protested the move.

"It's impossible for me to imagine how you report a story whose subject is death without allowing the public to see images of the subject of the story," PEN's Larry Siems told Reuters.

FEMA's policy of excluding media from recovery expeditions in New Orleans is "an invitation to chaos," Tom Rosenstiel, director of the Project for Excellence in Journalism, a part of Columbia University's journalism school, told Reuters.

"This is about managing images and not public taste or human dignity," Rosenstiel said.

FEMA's refusal to take journalists along on recovery missions meant that media workers would go on their own, he said.

Rosenstiel also noted that U.S. media, especially U.S. television outlets, are generally reluctant to show corpses.

"By and large, American television is the most sanitized television in the world," he said. "They are less likely to show bodies, they are less likely to show graphic images of the dead than any television in the world."

Of course, at the end of the day, the refugees will get the unvarnished news—including the images of bodies. A free and open Internet—a place where anyone can now have a TV channel—will ensure that.

Storms have a way of unmasking flaws, whether they be in building construction, communications infrastructure, bad policy, or incompetent government agencies.

The bright side of Katrina is that television news—both the corporate and independent variety—broke through to find higher ground. Let's hope they stay there. ■

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

AUDIO BY DESIGN

MARY C. GRUSZKA

The Importance of Specifications in Design

As audio systems designers, we rely on manufacturers' specifications not only for a list of features, but for how a piece of equipment can be integrated into a system.

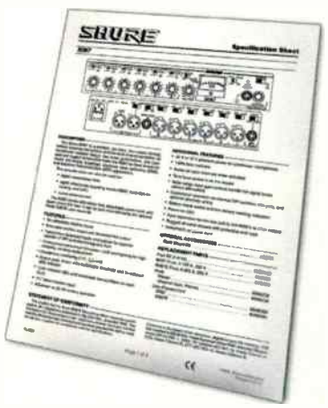
As an example of how good spec sheets can help us and missing specs can hinder us, let's start to design a hypothetical but typical audio system for a TV station where there will be both analog and digital subsystems.

The nominal analog audio level is +4 dBu. The lower case 'u' means that the reference voltage is 0.775 volts.

The nominal digital level is -20 dBfs or "decibels below full scale." Full scale is the digital clipping point—the point where there are no longer any bits left to encode the signal.

(Another common digital operating level is -18 dBfs, used more in Europe than in the United States. Check the specs on what digital operating levels the equipment provides. Often, the user will be able to select the desired level.)

The digital sampling rate for our system is 48 kHz, and we're going to use 75 ohm coax for digital audio wiring.



Let's take a look at some spec sheets.

First, a digital mixing console—according to an actual spec sheet of one particular mixer, the digital (AES/EBU) input and output connectors are XLR. The spec sheet doesn't specifically indicate that these are XLR-3 connectors, nor that these are balanced signals. It may be implying that by indicating the digital I/Os follow AES/EBU standards, but to verify, you would need to look to a diagram of the connector panel, and for any wiring information the manufacturer provided.

Unfortunately, this level of information can often only be found in equipment manuals, which means spending more time to dig it out. Fortunately, more and more companies are putting manuals online, but it's very helpful to have basic connector and signal information right on the spec sheet.

Back to our mixer. Since it uses XLR connectors for digital I/O, we know we'll need baluns to convert to/from 110-ohm balanced XLR to 75-ohm unbalanced BNC for our distribution scheme.

I like the way Shure writes its specs for the M367 mixer. The spec sheet indicates the actual internal output impedance, and the impedance for which the output is designed to work.

The spec sheet does not spell out the sampling frequency or frequencies that this console operates on. That's not good. It does offer one clue in giving the total delay between input and output at 48 kHz sampling frequency.

So we may infer that this is the sampling frequency, but it would have to be verified.

For this console, the delay is 2.5 milliseconds, less than a video frame, so one pass through the console shouldn't be a problem. But audio delay needs to be looked at on a systemwide basis, so this number should be kept in mind as the system develops.

The spec does indicate that the mixer has a reference video in through a BNC connector (a good thing), and what kind of reference it will accept. It also describes the reference word in and out (often referred to as "word clock" in other specs).

We will use the reference video for our system to make sure all devices with digital audio are synchronized.

On the analog side, the spec sheet lists the various inputs and outputs, levels, and the type of connector used for each.

Some examples—the A-side inputs are balanced, use XLR connectors, have an input impedance of 4,700 ohms, and accept input signals from –60 to +10 dBu with +24 dBu maximum. The level range indicates that these inputs can be used for mic and line-level inputs, but I would consider the impedance on the low side for line-level inputs when using a bridging topology.

The B-inputs to this console have the same specs, except that the connectors are 1/4-inch tip-ring-sleeve (TRS) connectors instead of XLR, and that the input impedance is 10 kohms. Since the console uses different connector types for the various I/Os, I would make up wiring diagrams for each of the connectors to ensure that they are all wired correctly.

The program outputs use both 1/4-inch and XLR connectors (simply in parallel or fed through an internal DA? The specs don't say). Also output impedance is spec'd at 150 ohms and level at +4 dBu (10 kohms). I take this to mean that we are to use this console in a bridging mode as opposed to terminating the outputs. This is just what we want, although it may not be written as clearly as it could be.

GREATER CLARITY

I like the way Shure writes its specs for the M367 mixer. The spec sheet indicates the actual internal output impedance, and the impedance for which the output is designed to work.

The Shure specs also indicate which signal paths through the mixer are inverting (polarity reversed from input to output).

Mic-line in to mic-line out is noninverting (same polarity for input and output) but for mic-line in to mix bus, and from mix bus to mic-line out, each is inverting. If the mix bus from one unit is connected to the mix bus to another unit, as per its intended application, then noninverted end-to-end signal polarity is maintained. It's only if the mix bus is used for another purpose and fed to another device that the out-of-polarity signal could cause problems.

It's not uncommon for out-of-polarity signals from input to output to be designed in, whether by intention, as the Shure mixer, or not. I've seen this on some audio distribution amplifiers, where half of the outputs are in polarity, and the other half are out. This is a very useful thing to know, but I rarely see it on spec sheets.

Another place where polarities may be reversed is the audio mixer insertion I/Os. The inserts also are often unbalanced and at a different level than the main program level. This is very typical for low- to mid-priced consoles, although not all.

While we aren't told about polarity for our first example console, we are told that this mixer uses 1/4-inch TRS unbalanced connectors. This implies that either one of the contacts and the shield is used for the send and the other contact and the common shield is used for the return. But spec sheet doesn't give details on which way these connectors are wired. This is something else to note, especially since this console uses 1/4-inch TRS connectors for both balanced and unbalanced signals.

The insert levels are listed at 0 dBu, +20 dBu (10 kohm) with send 150 ohms and return 10 kohm. Is this a little unclear to you too? I'm assuming that +20 dBu is the maximum level before clipping. I would need some clarification about the way the impedance is spec'd, but what is clear is that we have to deal not only with an unbalanced signal, but one that is 4 dB lower than our system nominal operating level.

The most common solution is to install a balanced/unbalanced converter for each insert point. I would look for an active box that had a level control to bring up the send level and drop the return level. An audio mixer with unbalanced and lower-level inserts may seem like a great deal until you factor in the cost of these add-ons.

Converters take up a lot of rackspace and power strip space for all the wall-warts, especially as the number of input channels increases. Frame-mounted converters connected to a central power supply are a big help in this situation. To keep unbalanced lines short, converters should be mounted close to the audio mixer.

Next time, there'll be a bit more to say about our mixer specs. Then we'll add some more gear to our system, and continue to explore the wonderful world of specifications. ■

Mary C. Gruszka is a systems design engineer, project manager, consultant and writer based in the New York metro area.

COUNT ON IT | André V. Mendes

Achieving Efficiency Through Standardization

By the time you read this, the ACE master control solution developed by the PBS Enterprise Technology Department will be installed and operating in three markets; on the verge of deployment in a fourth; and being readied to drive content distribution at PBS itself.

Culminating a two-year process of discovery, development and cooperation, ACE brings to each participating station a standardized solution that addresses some issues that are common to all of them, and creates some unique pain points for each one as well.

The first station that went live with ACE turned out to be WMHT in Schenectady, N.Y. Having a hard deadline of Sept. 26 for bringing their completely new facility online, they benefited from the tremendous flexibility and understanding of the other three PBS member stations already in line for installation, and jumped to the top of the queue.

For WMHT, ACE represented the first foray into automation, IP-based monitoring and alarming, and the use of an IT-based archiving solution. The plant looks fantastic and is a true testament to the excellence that can be achieved when you combine thoughtful planning, a bold vision of an integrated digital future, proper executive support, state-of-the-art technology and top notch collaboration between integrator houses (while the station's ACE was assembled by Ascent Media, the rest of WMHT's facility was put together by CEI).

The second station to go live was Iowa Public Television. Originally slated to be the first member on the air with the ACE system, IPTV conducted a very successful on-air test for four hours in late July, effectively representing the first time that content being pushed out by an ACE system was actually being watched by the general public. It was a very gratifying moment to all the people who have toiled very hard to make it happen.

Again, for IPTV, this represented a quantum leap from their previous modus operandi and my esteemed colleague and fellow columnist Bill Hayes will tell you more about his stations' deployment in his own column (warts and all!).

BACK TO THE FOLD

The third station wanted to address a different pressure point. For the last few years, Hawaii Public Television had outsourced its master control operations to a local network affiliate station and wanted to bring its operations

Marilyn Pierce, the engineer behind the ACE concept, and Richard Moore of Cisco.

back in-house. The pre-designed ACE environment allowed those wishes to come through with a much lower degree of integration effort than it would otherwise have been required, while giving our Hawaii member station access to some of the most innovative technologies and workflows available in the marketplace. It should be noted that going forward, our Hawaii colleagues are expecting a substantial reduction in yearly operating costs due to the intrinsic efficiencies of the ACE operating paradigm.

Last but certainly not least, New Hampshire Public Television will be going live around the time you read this article. In this case, ACE will be replacing an existing automation system, leveraging an existing LTO-based digital tape archive and integrating with an ACE-inspired remote transmitter monitoring system that uses a combination of ILC, Miranda and Cisco equipment to provide NHPTV with real-time monitoring that it never had before.

In a remarkable tour de force made possible only by standardization, from mid-July to late August, three of these systems were completely assembled and pre-commissioned over five weeks by a small number of very dedicated people. Within that time frame, in an assembly line process, the systems moved from racking to cabling, to power-up, to operating system installation, and to networking configuration. Once all of the servers were configured, it was time to build the baseline IT infrastructure.

With an enterprise class Cisco router employing dual supervisor modules and redundant active directory domain controllers, and with a clustered SQL server database at its core, the entire system started to take shape. Every piece of equipment is assigned an IP address that is consistent across all ACE systems. For example, the Miranda HD Imagestore in the WMHT system has exactly the same IP address as the same piece of equipment in the Hawaii ACE configuration. Made possible by NAT (Network Address Translation), this allows for faster, more efficient system configuration, and later, for quicker troubleshooting, diagnosing, resolution and eventually, upgrading. Once that was done, the automation was configured, the archive manager integrated and the system was ready for shipment.

As you can see, four different stations, with four different circumstances and operational needs were able to leverage the ACE architecture to address different requirements—a perfect picture of standardization in engineering, enabling more efficient customized solutions for different markets. After all, each and every one of these systems was pre-assembled at the Ascent Media Northvale, N.J. facility, trucked, or in Hawaii's case, airlifted to its destination and then integrated into the existing facility where the final commissioning took place. This was followed by systems and application training, migration of metadata into the Broadview traffic system, a parallel run to iron out any last details and a final cut-over to the new system.

Over the last two years, a lot of people have played crucial roles in making the ACE dream a reality—from the general managers and chief engineers at these stations that had the vision and fortitude to embrace this concept, to the consortium partners that have worked diligently to make it possible. But at the end of the day, the bulk of the credit has to go to two people that by virtue of their vision, unwavering dedication and astonishing work ethic have made it happen.

Marilyn Pierce, the engineer behind the ACE concept, and Richard Moore, our Cisco, TCP/IP and general IT expert, have created a replicable model that has proven to be as reliable as it is efficient. At the end of the day, these first four stations, PBS and any subsequent participants in the ACE process will owe a portion of their success to these uniquely talented individuals.

You can count on IT! ■

André V. Mendes is the chief technology integration officer for PBS.

INSIDE BROADBAND **Will Workman**

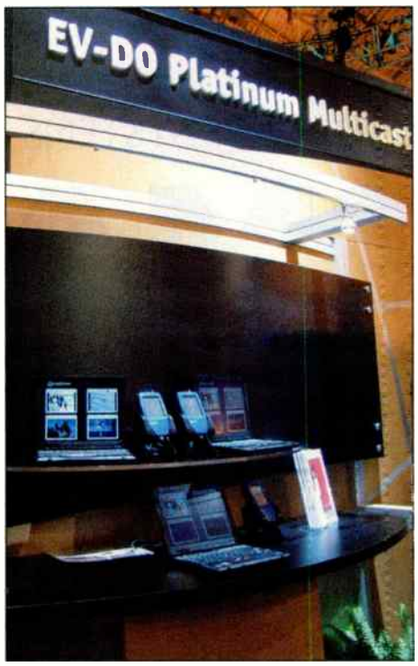
Evolution Revolution: EV-DO Set to Wack Wi-Fi?

How much would you pay for wireless broadband access? That all depends, right? Where you are; where you're heading; what device you're using; what the access speed is (real, not posted); and how secure the network is.

So far, wireless broadband has been dominated by Wi-Fi. Quite a leap forward from no service, Wi-Fi is nonetheless limited in range, unreliable in speed and security, and, often inconvenient or pricey. Plus you can't access it wherever you go.

But that was before evolution, or rather EV-DO.

Broadband news in recent months has been abuzz with this latest challenger to Wi-Fi. EV-DO (Evolution Data Only, or Evolution Data Optimized) is a wireless radio broadband data protocol that CDMA (Code Division Multiple Access) mobile phone providers are deploying across the globe in countries such as Canada, Australia, Japan, Korea, Brazil and the United States. Boasting



terminal download speeds of up to 2.4 Mbps, it can run significantly faster than the competing EDGE (Enhanced data rates for GSM Evolution) networks being employed by GSM providers such as Cingular Wireless (and several in Europe), which clock in at up to 384 Kbps in packet mode.

EV-DO's biggest advantage over Wi-Fi: users can get service wherever they get a cell signal, compared to the 350 feet or so of indoor signal Wi-Fi offers. (I can already see the new ad: "Can you connect me now?")

Major cellular player Verizon Wireless (owned by Verizon Communications and Vodafone) roiled the waters in August when it made a pre-emptive pricing strike, lowering its new EV-DO service from $80 to $60 per month (as long as you also take the voice service) and announcing seven new markets to bring its total to 60. Verizon followed up several weeks later announcing deals with Dell, HP and Lenovo to both market EV-DO and integrate the technology into those companies' products.

EV-DO's biggest advantage over Wi-Fi: users can get service wherever they get a cell signal, compared to the 350 feet or so of indoor signal Wi-Fi offers.

Verizon is getting the jump on major EV-DO competitor Sprint-Nextel, which has also announced rollouts for major markets with service plans at $80 per month. Cingular, meanwhile, is relying on a new gener-

ation of handset equipment to boost its offerings, and has already announced a laptop integration deal with Sony. In fourth place, Deutsche Telekom-backed T-Mobile USA has built more than 5,000 Wi-Fi hotspots nationwide, which may soon be eclipsed by EV-DO.

EV-DO ain't cheap. And commitment-phobes will balk. An EV-DO Dell PC comes equipped with a card costing $249 and requires a two-year contract for $59.99 per month for the broadband and $79.99 for the voice service. Laptops from Dell and HP will roll out next year; Lenovo's new EV-DO Thinkpads, starting at $799, will hit stores Oct. 11.

Verizon says users will experience network speeds of 400 to 700 kbps. If true—a big "if," according to some naysayers—that's about the same speed as low-cost DSL and cable modem services, only you're not tethered. You can also roam from market to market as long as it's covered by your provider.

LESS SPEED?

The bigger "if" is whether or not the tragedy of the commons will take place in any given market. Because of an overall spectrum shortage, critics contend a significant increase in users could severely degrade average access speeds. Early blog activity on EV-DO indicates some customers aren't picking up signals right away, but these are apparently early kinks in taking networks live.

EV-DO providers are banking on consumer research indicating an increasing demand for mobility, and especially for mobile video content (where the real revenue generator lies). One in eight mobile phone users surveyed said they'd purchase mobile video from their wireless provider, according to research firm In-Stat, which forecasts mobile video subscriber growth from 1.1 million in 2005 to more than 30 million in 2010, with a concomitant revenue surge.

The technology travails behind these announcements are illuminating. What Verizon and Sprint aren't mentioning is the difficulty they had two years ago deploying Wi-Fi networks in major markets. Plus, first-to-market considerations forced them to bypass a more superior technology, EV-DV, or Evolution-Data/Voice, a competing standard developed by Motorola, Nokia and Texas Instruments.

They're also not talking about the insidious industry lobbying campaign underway by telcos and cable operators to convince state legislatures to pass laws blocking municipal deployment of free or low-cost Wi-Fi networks. Fourteen states so far have done so, falling sway to the argument (or is it the campaign funding?) that public municipalities cannot and should not compete with private enterprise.

EV-DO providers envision a future in which a wide range of mobile devices, from laptops to cell phones, can tap into a dazzling array of broadband content, dominated by video (e.g. video streaming, online gaming, video conferencing) and all without an umbilical cord.

Anyone using Wi-Fi the last few years has been both pleasantly pleased when they stumble on a free hotspot and accursed when they can't access or won't pay for it.

That would seem to make EV-DO or EDGE networks a no-brainer.

But that's only looking at the issue from a utilitarian standpoint. Sure, competition is good, and will likely drive wireless broadband pricing down. But there are many, many people out there, not all of whom used to live in New Orleans, who can't afford hundreds of dollars a year for access to information. EV-DO isn't for them, so perhaps it's not as evolved as it appears. ■

Will Workman is a former senior editor of Cable World magazine and editor of MediaView, a monthly newsletter for the Asian cable industry. You can reach Will at wworkman@aol.com.

PRODUCTS & SERVICES SHOWCASE

PRODUCTS & SERVICES SHOWCASE

DIGITAL TV

Charles W. Rhodes

Developing a 24/7 Digital EAS System

On Aug. 12, I sent my column for the September issue to my editor. Little did I know how soon the Emergency Alert System would come into play, nor the terrible destruction the homeland would soon suffer. After discussions with broadcasters and before Katrina, I started to study the EAS.

It was designed for analog terrestrial transmission systems, which can carry one and only one program at a time. All DTV systems worldwide are packet-based systems that can simultaneously carry multiple datastreams to their intended audiences.

These packets carry a header that identifies what the packet contains—video, audio or data such as an emergency alert. Therefore, DTV instantly can deliver warnings to the public in threatened areas. No other media can do this. Not even the Internet, because who would ever believe it wasn't a hacker's prank or even worse? Broadcasters have the only means to deliver credible emergency alerts to the public and they can do it digitally. Here is how I would go about doing it digitally.

EAS CODES

First, the ATSC should incorporate into its terrestrial DTV standard a table of EAS codes for the headers to be transmitted to the public. For example, let every EAS DTV header start with 111. The remainder of each EAS header to be transmitted via DTV defines the nature of the alert and the area affected, for example.

There is also one additional EAS DTV header, a null header. This is the key to a digital EAS. It starts with 111 followed by 000 000—a null packet. It means there is no emergency, hence all those zeros in this header. Broadcasters would transmit this EAS null header continuously in every field. The purpose of the EAS null header is to continuously indicate that the EAS is operational. A broadcaster could monitor their EAS compliance at home.

Consumer electronic manufacturers would design DTV-NTSC downconverters and DTV receivers (appliances) to detect EAS DTV headers. When a DTV appliance detects the EAS null header, a green LED on the front panel lights. This indicates that the station tuned in is part of the EAS, and that the signal is actually being received properly.

If the station goes off-the-air for any reason, that green LED goes off. The appliance is programmed to look for other signals in the locality to see if they are transmitting the EAS null header. If the EAS null header is being received from other local stations, the receiver takes no further action as there is no EAS alert.

Now suppose that the appliance decoded not the EAS null header, but one of the EAS alert headers. The appliance is programmed to determine whether the EAS alert header is on consecutive fields, or perhaps on a majority of consecutive fields.

If so, it tunes the receiver to a second local channel to see if both stations are sending the same EAS alert. If so, it concludes that there is an EAS alert. Now it turns on a flashing red LED visual alarm and a Sonalert, which gives off an audible alarm (like a truck backing up).

Now we have both audible and visual alarms to, if necessary, awaken the household. Would broadcasters ever do that? If, and only if, they are convinced that false alarms will not happen. With the measures I've described; redundant EAS alarms on multiple fields, and on multiple stations, I believe that the only possibility for a false alarm rests with the link from the governmental agencies that originate the EAS alarms and the key broadcasters.

ORIGINATION

There are presently 34 key broadcasters, from which the remaining broadcasters receive EAS alarms by monitoring two or more of these key stations. I believe there will need to be more key broadcasters—at least three serving the same community. If the federal government cannot protect such messages from hackers and other terrorists, then we've got a much big-

ger security problem than I care to discuss here.

In the case of DTV/NTSC downconverters, the audible and visual alarms tell households to turn on a radio or TV to receive an emergency message. DTV receivers can activate displays and audio circuits automatically.

Lets talk about awakening people. The small signal electronics needed to tune, demodulate and decode the DTV signal must always be powered up, just as the circuits in modern TV sets respond to commands from a remote control. These are never turned off, just asleep awaiting a wake-up call from the remote control.

Eventually, we may have 250 million such appliances. Each may require 7 watts of power continuously to provide 24/7 EAS monitoring. That power could be cut to milliwatts per appliance if the monitoring circuits are enabled only for a few seconds, say, every three minutes. Electric clocks consume much more power.

This power pulsing would be done in software and random executed so there is no transience on the power grid. However, a battery backup should be provided. If the power grid goes down, families could turn on a battery-powered radio.

INCREMENTAL COSTS

Lets talk about the incremental cost to provide this 24/7 EAS monitoring and alarm function. Let's start with the really big-ticket item, the Sonalert. I think these would be 50 cents in quantity to manufacturers. I've bought them at Radio Shack for about $2.50. The two LEDs would be five cents. The software development spread out over 1,000,000 appliances is negligible.

MSTV/NAB have put out a Request for Quote on a DTV/NTSC downconverter. The notion is that if needed, the federal government would subsidize these so that low-income households could still enjoy their free over-the-air TV after the NTSC sunset—tentatively, 2009.

My notion is that the Department of Homeland Security would be much more willing to subsidize the first 10 million downconverters if they got something out of the deal, namely 10 million homes fitted with the world's first 24/7 Emergency Alarm System. That the first 10 million will go to economically hard-pressed people won't hurt either.

That is just the seeding process. While more affluent elements of our populace usually get TV signals via CATV or DBS, those homes have multiple TV appliances that will need a downconverter in 2009, unless they are by then connected to CATV or DBS, which today is the exception, not the rule.

DTV receivers would be more attractive to prospective buyers if they have this 24/7 emergency feature than sets without it, and as you see, even bean counters would see this as an inexpensive feature of their product, especially in the aftermath of Katrina and the prospects of other natural disasters of such proportions.

The West Coast takes Tsunami and earthquake warnings seriously. The entire Midwest knows what tornados or cyclones can do harm quickly, and a manmade disaster may befall a large community anywhere.

If the federal government really wanted to get behind this concept, perhaps receiving appliances with this EAS 24/7 feature would be shipped with a rebate coupon.

That rebate coupon would rebate the sales tax on the purchased appliance. That would lower the cost of EAS 24/7 appliances below that for similar models without the EAS 24/7 feature. Who then would buy the more expensive model without the EAS 24/7 feature? Of course, the Department of Homeland Security would administer and fund this rebate program to stimulate early adoption by the public of this EAS 24/7 warning service.

My notion is that the Department of Homeland Security would be much more willing to subsidize the first 10 million downconverters if they got something out of the deal, namely 10 million homes fitted with the world's first 24/7 Emergency Alarm System.

EAS TO GO

Looking a little further out, wouldn't it be nice if automobiles were equipped with this EAS 24/7 feature? A lot of people think the world wants to receive DTV in moving automobiles, at least in the back seat. But how about emergency alarm messages where the driver can be warned?

There are people in Korea and Japan already walking about with a personal portable DTV/cell phone appliance. I saw these at the last Consumer Electronics Show. How long before such appliances show up on the streets of New York? Why not warn those pedestrians too?

In fact, to reach these walk-abouts and drive-abouts, why couldn't TV broadcasters carry in their DTV bitstream the digital audio of their own radio stations, and perhap$...? (No that is not a typo, broadcasters might sell some of their data capacity to other radio stations.)

Indeed, when we hear about one-chip DTV receivers, (a slight exaggeration, to be sure), where is the distinction between DTV and digital radio? Such electronic appliances should all have this EAS 24/7 feature. If broadcasters get behind this digital form of the EAS, I predict it will all happen.

Broadcasters will find that meeting their obligation to provide a digital EAS is less costly over their DTV channel than it is with NTSC, and they can expect the digital EAS to be more reliable. What I've described shows how much more effective a well designed DTV EAS would be compared to what we have today. ■

Charlie Rhodes is a consultant in the field of television broadcast technologies and planning. He can be reached via e-mail at charleswrhodes@worldnet.att.net.

DISK RECORDER

Focus Enhancements Firestore FS-4 DDR

by Stephen Murphy

With the introduction of the FireStore FS-4, Focus Enhancements brings its professional direct-to-edit (DTE) DV disk recorder technology down in size and price, putting tapeless acquisition in range of the large consumer and prosumer markets. Call it "The People's DTE" if you like.

The FS-4 ($799) follows in the footsteps of its pro-oriented big brother, the FS-3/DR-DV5000 (see the April 21, 2004 **TV Technology** review, "Focus Enhancements FireStore DR-DV5000"), allowing tapeless or tape-plus-disk confidence recording of DV signals through a FireWire connection.

FEATURES

Unlike the FS-3, which features removable hard drives and is powered by the camera's battery, the FS-4 is a self-contained, fixed-40 GB hard disk recorder with an internal rechargeable battery. An FS-4 Pro model is also available in 40 GB ($1,195) and 80 GB ($1,595) sizes, with enhanced file compatibility and record-mode features.

The Focus Firestore FS-4 DV 40 GB disk recorder features an internal battery and FireWire connectivity.

Also, unlike the boxy FS-3, the FS-4 is a sleek, palm-sized affair measuring 5.6-by-3.74-by-1.59 inches (H-by-W-by-D) and weighing in at just under 1 pound. The FS-4 includes a quick-release, rechargeable Li-ion battery pack that provides an estimated 90 minutes of run time. A 15 VDC wall-wart adapter is included for A/C operation and recharging the battery.

On the front of the unit, a 14-character by 7-line (about 2.5-by-1.5 inches) backlit dot matrix LCD screen is used to display menu settings and operational status. A set of four directional buttons and a select key are provided for navigation through the various menu pages; three "soft" buttons are located just below the LCD screen for context-specific parameter selection and quick access to user-definable functions. While on the default "home" page, a full set of transport buttons provide record, play, pause, search and skip control of video clips.

On the top of the unit are two full-size (6-pin) FireWire connectors, one for DV I/O and the other for computer I/O. The FS-4 uses a 5,400 RPM (8 MB cache) internal hard drive formatted as FAT-32. Desktop and notebook computer systems running Windows 98SE/ME/2000/XP or Mac OS 9/OS X can easily access the FS-4 disk for transferring or direct editing of video clips. Also on the top are two multifunction LEDs that display power and operating status information, and a 3.5 mm TRS mini jack for GPI/RS232C control or use with an optional wired remote control.

Users can elect to record DV clips in a number of common or NLE-specific file types including:

- RawDV
- AVI type 1
- AVI type 2
- AVI type 2/24P
- Matrox AVI
- Canopus AVI
- QuickTime
- QuickTime/24p

The FS-4 Pro model adds Pinnacle AVI and Avid DV OMF file support. The DV FireWire I/O is compatible with standard 25 Mbps 8-bit 4:1:1 NTSC-DV or 4:2:0 PAL-DV video (model dependent) with embedded two-channel (48 kHz/16-bit) or four-channel (32 kHz/12-bit) audio. A user-installable upgrade to add HDV compatibility is expected to be available soon for $299.

Other FS-4 features include a six-second retro-cache record function, several loop playback features and the

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FAST FACTS

Application
Prosumer/Consumer DV disk recording

Key Features
Supports numerous DV recording file formats; 10 second shock buffer

Price
Basic FS-4 $799; FS-4 Pro $1,195; 80 GB model $1,595

Contact
Focus Enhancements Inc.
408-866-8300
www.focusinfo.com

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MONITOR

DataVideo TLM70D DV Monitor

by Michael Hanish

There's almost always a use for an extra monitor. This is particularly true on a shoot, when absolute confidence is a necessity. DataVideo's TLM70D 7-inch TFT LCD monitor fills the need nicely for a compact, highly portable, high quality, flexible input monitor.

FEATURES

Physical descriptions first. The 7-inch monitor itself is housed in a rugged steel enclosure 7.5-by-5.5-by-2.5 inches (W-by-H-by-D) and weighs in at 3 1/2 pounds (with speakers). Tiny metal-enclosed speakers are included and plug into each side of the monitor, adding about an inch each to the width. A wraparound sunshade that attaches magnetically is included and a combination handle and adjustable stand is attached to the back.

Front panel controls include a power switch, push button source selector (DV or composite video, with a confirmation LED above), a flip/aspect button (more details later), a volume control knob, headphone jack and a tally light. On the rear panel are the I/O ports that make this monitor so interesting. From the left, at the bottom, are two FireWire ports (input and bypass), composite video and unbalanced audio inputs, A/V bypass and decode (see description below) outputs and 12 V DC power input. Above them are the external speaker outputs from the 1 W internal amp, a "D-sub 9-pin" connector for auxiliary RGB/S video input and a "D-sub 15-pin" connector for tally connections. The user will also find image controls (tint, color, brightness and contrast) along the right side, as well as a bank of dip-switches for configuration purposes. The image controls only have an effect when the source is composite video, not DV. In use, it draws about 20 watts, easily provided by battery power.

The two FireWire ports, for input and loop-through output, are a welcome addition and indicative of an interesting and useful feature. The internal converter, in addition to looping the DV signal, decodes it into composite video and unbalanced audio. These signals are available on rear panel jacks. These same jacks also function as a loopthrough when a composite video and separate audio sources are used.

The monitor is switchable between 16:9 and 4:3 aspect ratios via a front panel button. The button also controls two other potentially useful functions: vertical flip (vertically inverted image), and mirror (horizontally inverted image).

DataVideo's TLM70D 7-inch monitor

Speakers plug into each side of the monitor. Very solid connectors here ensure they won't fall off after a bit of jostling. Needless to say, these speakers are strictly for confidence monitoring or playback. The headphone output is better, but not the one I'd prefer to use for really high-quality monitoring during a shoot, and I wouldn't expect it to be.

IN USE

I put the monitor to the test on a shoot with DP Rawn Fulton of Searchlight Films in Bernardston, Mass. It was mounted on his rather formidable Ikegami camera. AC power was easily available, so we weren't forced to use batteries. The power supply is of the line-wart variety, with enough cabling to be easily kept out of the way.

The shoot was multi-faceted: interviews, b-roll and some historical photographs on a makeshift animation stand. We immediately noticed the solid, but heavy feel of the monitor. For tripod use, the weight addition to any camera won't make much difference. However, for handheld use, any extra weight is more critical. This monitor was a bearable addition with the Ikegami, but could overwhelm a smaller camera. (This is not a criticism, just a caveat).

Using the monitor was quite a pleasant experience. It had a very decent viewing angles and plenty of brightness and contrast. The sunshade aided the viewability of the image, which was crisp and easy on the eyes, even in bright sun.

It did seem to us that the DV image was on the dark side. This was not a deal breaker, as we could use the composite input and adjust the image to match. The image controls are recessed into the back, making them somewhat difficult to reach for quick adjustments.

The image has sufficient resolution to allow it to be used as a focus assist device. With its wide viewing angles, the monitor can easily be used by two people; e.g., an operator and a focus puller. I've also used it in my studio as a client monitor. The client really appreciated having a monitor, and was able to participate better and more comfortably in the edit and design process.

SUMMARY

There's no question that this is a great monitor—versatile, accurate and a pleasure to use. I compared the DataVideo with similar monitors and found it to be on the less expensive end of the spectrum. Its plusses are many and drawbacks few. Ironically, one of the plusses (heavy duty solid construction) could be a potential drawback—the monitor is too heavy for direct mounting on many of the smaller DV cameras. The product manual is sparse. While use of the monitor is pretty self-explanatory, more information on technical details of setup and connections would help.

There is a lot to like and recommend about this monitor. DataVideo is to be commended for bringing to market such a high-resolution device for such a reasonable price. The DV loop-through and integrated converter add to the reasons to recommend the TLM70D. ■

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

FAST FACTS

Application
Portable high quality A/V monitor

Key Features
DV, composite, RGB inputs

Price
$1,299

Contact
DataVideo
562-696-2324
www.datavideo.com

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PORTABLE PRODUCTION

Sony Anycast Station

by Geoff Poister

The Sony Anycast Station is designed to simplify the task of covering live events with a simple multicamera set-up. Basically, it is a video switcher, audio mixer, and Web stream encoder compressed into the size of an electric typewriter, that can connect to a variety of sources, monitor them on an LCD screen and switch and mix them live. It is ideal for handling presentations that may require mixing a variety of signal inputs: PC graphics such as PowerPoint, stills, stored footage and live four-camera switching.

The program output from the switcher can be streamed live over the Internet, LANs, or private lines, or sent to DV tape.

FEATURES

The most significant feature of the Anycast Station is that it combines all of the equipment necessary for recording a multicamera shoot into one 17-pound unit. It looks like a large laptop with a high resolution LCD screen that emulates a television control room.

Camera switching is similar to other basic switchers. You can connect up to four video cameras (the version I tested was reconfigurable to a full complement of six cameras) with IEEE-1394 cables, S-Video or BNC analog cables. The switcher has the familiar double row of buttons, allowing you to preview shots before sending them to program. There is also a slider for executing dissolves between sources and an Auto Transition button to do them automatically. The switcher includes the customary assortment of wipes and transitions, as well as the ability to perform luminance keying. The video switcher provides 1280 x 1024 100 MHz/4:2:2 8-bit processing.

Contributing to the "one-man band" design, cameras can be operated via remote control. Anycast offers VISCA control functions for compatible Sony pan/tilt/zoom cameras.

The LCD monitor displays seven windows that can be configured to monitor different sources. A typical setup may consist of three cameras, an input from a laptop, video stored on a hard drive and stored titles and graphics. One of the strengths of the Anycast Station is its versatility in accepting different source material with video inputs for analog composite, S-Video and DV and two RGB computer inputs that accept VGA, XGA or SXGA.

Of the eight audio inputs on the back, six are mic/line-switchable balanced audio inputs, although only two of them are XLR. They feed into a small audio mixer on the console that boasts 48 kHz/24-bit processing. Each audio channel contains a basic equalizer, limiter, and compressor. Audio channels can be monitored on a level meter, either independently or as a mix. The unit includes built-in stereo speakers and a headphone connection, and even includes talkback or intercom capability.

The Program output can be either streamed, displayed on a monitor or large screen projector via one of two PGM RGB 15-pin connectors, fed to a microwave transmitter via a composite video BNC output connector, or sent to tape. The signal to tape can be standard IEEE-1394. For streaming, the Anycast employs a RealMedia encoder. You can also record raw footage from up to four cameras on external hard drives in case you want to re-cut the material on an NLE.

The Sony Anycast Station

IN USE

I connected three Sony PD-150 DV cameras to the Anycast Station in a studio with a modest set. I chose to connect the cameras using IEEE-1394 cables, as I wanted the convenience of combined video and audio.

Upon connection, the images from the cameras were displayed in the monitor boxes at the bottom of the LCD screen. I was instantly able to switch between cameras and perform wipes and keys just as I would on our studio-based switcher.

Initially, I was unable to get the audio from the cameras into the mixer. This required a venture into the menu, and some trial and error before the audio signals came through with levels displayed on the PGM meter. The manual was not very helpful in this pursuit.

Finally, the results were quite satisfactory. I essentially had a small control room at my fingertips, allowing me to execute a three-camera shoot, complete with audio.

Next, I decided to create some titles. This I found a bit awkward, because one must exit the Anycast operating system to run the title program. After I created the titles, I had to shut that utility down and restart the main software. This is a significant drawback if you ever need to make any corrections to your titles or lower thirds during a live production. As is, you have to make sure any titles you use are perfect before you get started. Changing them in the middle of live streaming is not an option.

While it is convenient to use IEEE-1394 camera connections, I discovered that they are very limited in terms of distance. The Anycast manual does not recommend runs longer than about 12 feet. That's not a lot of coverage for a multicamera shoot, which means that long S-Video or BNC cables may be required. Separate audio cables will then be required, as you will have to give up the combined audio-video signal that IEEE-1394 provides.

When I decided to record to tape, I found little help in the manual. The one I was using was for Version 1.0 and I found that it contained fairly thorough documentation for streaming the signal, but almost nothing about recording to tape or hard drive.

I discussed this with Mel Medina, senior product manager for Sony Professional Video, who informed me that they are now shipping the unit with software version 1.10. The new manual describes recording to tape and hard disk in more detail.

There are two ways to record the output from the Anycast Station. You can record the Program Out directly to DV tape, which requires a simple channel reassignment in the menu, or you can record up to four independent sources to a hard drive. The Version 1.0 manual is primarily geared towards

FAST FACTS

Application
Reasonably sized multicamera live or recorded event coverage

Key Features
Video switcher, audio mixer, CG monitor, Web encoder and camera remote control in a typewriter-sized package

Price
$19,500

Contact
Sony Electronics
800-686-SONY
www.sony.com/professional

streaming the Program Out.

IEEE-1394 is not an ideal connection method because the inherent compression introduces a delay into the system. Also, the maximum recommended distance is four and a half meters, just shy of 15 feet. The cable length issue can be overcome with some additional hardware, but Medina recommends connecting cameras with BNC cables that can run as far as 1,000 feet. An SDI interface is coming soon, which will help alleviate this problem. I was also advised to beware of using long cables without heavy shielding, as interference pickup may be a problem.

These limitations, I presume, point to what the Anycast Station was originally designed for: live streaming of lectures or performances in reasonably sized spaces. You may be wise to avoid attempting coverage of the Super Bowl. In more contained spaces, the Anycast Station can perform brilliantly. You can cover a presentation with three or four cameras, and input images from a laptop. Audio may consist of a couple of onstage microphones and up to four more if needed. Everything can be expertly mixed and streamed live over the Internet or recorded to DV tape.

As with all devices, you need to know what it is best suited for. The Anycast Station is perfect for producing live events of a reasonable scale: lectures, presentations, small theater performances, and small sporting events. It is not designed to replace a remote truck with a microwave link that covers major league baseball with eight cameras connected over miles of heavily shielded cable.

SUMMARY

Anycast Station will have greatest appeal to event producers, educational facilities, government and media services organizations that require inexpensive, live mobile coverage for Internet or LAN distribution. But it is also sophisticated enough to be a good multicamera production facility for taping as well.

While perusing Internet forums discussing the Anycast Station, I came across some complaints similar to mine about inadequate documentation in the manual and certain features that are not yet available. A lower price would also help. In my discussion with Sony's Mel Medina, I realized that software and manuals are going through stages of revision and refinement. Sony acknowledges this and is providing free downloads of software updates. I would say that anyone who was under-impressed by Anycast should take another look now and again in the near future.

Anycast needs a manual that is more thorough. Anyone working with the Version 1.0 manual is going to be in the dark about a lot of things and they should get their hands on the new and improved Version 1.10 manual, currently posted on the Anycast Station Web site (*www.sony.com/anycast*). Anycast would also benefit from some refinements in the user friendliness of its menu, and a price reduction to match its current user base. Once these issues are addressed, it will be a tremendously useful product in a class by itself. ■

Geoff Poister, Ph.D. is a member of the Film and Television faculty at Boston University and a regular contributor to ***TV Technology****. He may be contacted at* poister@bu.edu.

MONITOR

Marshall V-R70P-HDA HD Monitor

by Bob Kovacs

Recently, I was at an electronics flea market where I spotted an expensive broadcast TV monitor selling for $10. The high-quality CRT color monitor, made by a defunct manufacturer, had clearly visible burns on its CRT, rendering it unusable for any serious monitoring.

This is a fate that will never befall an LCD monitor, since this technology is impervious to burn-in. Thus I looked with new appreciation at the Marshall V-R70P-HDA HD LCD monitor.

FEATURES

The Marshall V-R70P-HDA is a small LCD monitor targeted at field and studio confidence-monitoring applications. The compact display has a 16:9 screen measuring a smidgeon less than seven inches (diagonal), housed in a rugged steel chassis.

The V-R70P-HDA has BNC analog inputs for composite video, S-Video and component (Y/Pr/Pb) HD video. All inputs are of the active-looping variety, meaning that you do not need termination resistors for the looped outputs but you do need to have power fed to the unit whenever you loop video.

On the back of the unit is a steel handle protecting all the BNC connectors. In addition, the back has a mount for an IDX battery, which plugs directly into the monitor without any pigtails or cables. Also on the back is a four-pin XLR power connector and a 15-pin tally connector.

The front of the V-R70P-HDA has all the unit's switches and controls, including power on/off as well as selector switches for composite video, S-Video, component video and a built-in color-bar generator. Each of the switches has an associated LED to indicate which input is active.

To the right of the selector switches are four pots to control brightness, color level, tint (hue) and contrast. The tint control works only with composite video and S-Video signals and has no effect on HD component video. Two small steel handles flank the selector switches and control pots, offering some physical protection.

The seven-inch LCD screen itself features 800 x 480 pixel resolution. The surface of the LCD has a glossy finish that enhances image quality, similar to the finish now popular on many wide-screen laptop computers.

The screen has a single color temperature setting of 6,500 K and a SMPTE-C color gamut. Brightness is specified at 400 cd/m^2 and pixel

FAST FACTS

Application
Field and studio HD monitoring

Key Features
7-inch 16:9 LCD display; built-in color bars; tripod mount

Price
$1,599

Contact
Marshall Electronics
800-800-6608
www.lcdracks.com

response is rated at 30 ms. The monitor can automatically display PAL, NTSC, 720p and 1080i.

The V-R70P-HDA is powered by a small external power supply. On the bottom of the monitor's chassis is a 1/4-inch threaded hole that mates with any tripod, making for a convenient field mount. The overall size of the monitor is 5.25-by-7.5-by-3.5 inches (H-by-W-by-D) and the unit weighs about three pounds.

Marshall also makes an HD-SDI version of this monitor, called the V-R70P-HDSDI.

IN USE

The Marshall V-R70P-HDA was a breeze to set up and connect. I fed it HD 16:9 component analog signals from my off-the-air HD receiver. The tripod mount on the bottom of the monitor's chassis was ideal for my use and the unit perched on my tripod for much of the time I used it.

Seeing the looping inputs, I initially twisted some 75-ohm terminators in place to prevent impedance problems. Then it sunk in that the monitor had *active* looping inputs, which meant that terminators were not required. I ended up feeding the looped outputs to my normal HD monitor so that I could view the Marshall side-by-side with my large HD monitor.

This brought up an interesting side-effect when a thunderstorm blew through my neighborhood: I disconnected power to the Marshall monitor to protect it and found later that it had to have power applied for me to view my HD monitor through the Marshall's looping inputs. The Marshall monitor did not have to be turned on but it did have to be connected to power to enable the looping inputs.

The Marshall V-R70P-HDA monitor in use

The V-R70P-HDA's image quality was very good, and even held up well when operated next to a large window flooded with afternoon light. Although the monitor's 30 ms pixel-response time implies that there should be ghosting on moving images, I did not see any such ghosting; the image was simply clear and bright.

I appreciated the intuitive front-panel controls, which made it easy to tweak the V-R70P-HDA for my image preferences. Overall, the HD image was slightly yellow but still natural-looking.

Another feature I appreciated was the built-in color bars, which spread completely across the monitor's 16:9 display. Tapping the Bars switch a second time puts the monitor into "blue-only" mode to simplify tweaking the Color and Tint controls for correct on-screen color. (This blue-only adjustment is applicable to NTSC and S-Video signals; the Tint control has no effect on component HD signals.)

The display on the V-R70P-HDA was visible over a wide range. Moving from side to side, the image is still usably visible at the widest angles. Moving above and below the monitor, the image stays visible well above the center of the display but it became unviewable as I moved below the display. The V-R70P-HDA is best when the vertical viewing angle is on-center with the display or viewed from above.

The construction quality of this Marshall monitor is solid and the unit can easily handle abuse from a field shoot. I unscrewed the front panel, and admired the neat and professional construction of the V-R70P-HDA.

The monitor does make some heat in operation, although never getting close to being too hot to touch. Nevertheless, it's probably best to make sure the unit's vents are unobstructed for field and rackmount use.

SUMMARY

The Marshall V-R70P-HDA is attractive, compact, easy to use and makes nice pictures. With its convenient tripod-mount fitting, it's a snap to set this up at the right angle for best viewing. The integrated battery mount is also nicely done and will work well for field use.

The V-R70P-HDA is rugged enough to hold up to field use and its clear pictures will go over well in a control room for confidence monitoring. With its bright, sharp and burnout-proof LCD image, I don't think a Marshall V-R70P-HDA will soon be on someone's tailgate at an electronics flea market with a fire-sale price tag. ■

Bob Kovacs is a broadcast engineer and frequent contributor to ***TV Technology****. He can be reached at* pvreditor@yahoo.com.

Focus

CONTINUED FROM PAGE 46

ability to daisy-chain two FS-4 units for extended and uninterrupted recording time.

IN USE

When I reviewed the FireStore FS-3/DR-DV5000 a year and a half ago, I said that the joy of shooting with the hard disk recorder and having clips instantly available for transfer and editing was hard to understate. That, plus the security of shooting in a tape-plus-disk confidence mode made the idea of returning to tape-only acquisition, "quite the loathsome prospect." Those statements still hold true, and with the introduction of the moderately priced FS-4, hopefully lots more people will get to enjoy the "joy of disk."

There is nothing difficult or prohibitive about using the FS-4 or incorporating it into your current recording scheme. Of course, that is the whole point of recording direct to disk: it makes your life easier. To that end, Focus Enhancements did an excellent job of streamlining the basic operations of the FS-4 so that one can go from opening the box to using the recorder in a matter of minutes.

For this review, I used the FS-4 principally with a Canon XL-2, though I also got a little time in with a Sony HDR-FX1 (in SD mode) and a Panasonic consumer camcorder. Once the unit was connected to a camera via the supplied FireWire cable and powered up, it was a simple matter of setting the time and date and picking a file format before it was ready to record. Even the manual need not get in the way for rudimentary operation. That said, the well-written and easy-to-follow manual is key to unlocking the higher functions of the FS-4.

The FS-4 powers up by pushing the power button for two seconds; the boot process takes about 12 seconds to get to the main screen. Powering down requires pressing the stop button for three seconds to prevent unintentional switching-off. For extra security, the third of the three user-definable function keys (referred to as FA, FB, and FC) is set to an operational lock/unlock mode by default.

The specific function for each of

the three "soft" keys can be picked from a predefined, non-overlapping list of functions (in other words, only certain functions are available for FA, another set for FB and so on). While the user-definable keys are certainly a welcome feature, I wish the full function list were available to each function key. Now, if I want LCD Backlight on/off *and* Sync Mode toggle on function keys, I'm out of luck (they're both on the first button's list and no other).

For field use, I mounted the FS-4 on my belt, using the included locking/quick-release belt clip, though it can also be mounted on-camera using an optional $129 kit (not provided for this review). The case and overall build of the unit seemed quite rugged and roadworthy (though on some of my field tests I appreciated the 10-second shock-protection buffer built in to its read/write operations). The FS-4 does make some low-level hard disk fan noise, and the LCD screen emits some whiny interference, so avoid placing the unit near on-camera mics or unbalanced cables.

In general, getting around the various settings menus was an easy process, thanks to the FS-4's dedicated navigation controls (the lack of which on the FS-3 made for some frustrating experiences). Simply hitting the right or left arrow button cycles through the eight menu headings (Record Mode, HDD Mode, DV Formats, Setup, Functions, Utilities, Play, and Control). The menu system has been stripped down to (for the most part) single-level architecture, with most parameters instantly accessible.

The FS-4's "syncro-slave" recording mode—where the camera controls the recorder's operations—worked fine with Sony and Canon cameras, allowing essentially hands-free operation as far as the FS-4 was concerned. However, I was not able to get this to work with an old (and battered) Panasonic consumer camcorder (Ed. Note: Focus introduced the DTE FS-100 portable DTE recorder for the new Panasonic DVCPRO HD P2 at IBC 2005; it's scheduled to ship in early 2006).

Whether dumping the files to a Mac or PC, I had absolutely no trouble mounting the FS-4 drive or accessing the files themselves. One thing to note about the FAT-32 file system used by the FS-4 (presumably for its wide compatibility) is that it has a maximum file size limitation of 2 GB. Shots lasting more than approximately nine minutes were automatically broken into separate clips by the FS-4. It's a simple matter, however, to sort the clips by time/date and drag them onto the timeline en masse for reassembly.

I was disappointed to see that two of my favorite features from the FS-3 were absent from the FS-4: user-definable time-lapse recording, and multi-folder (reels) file organization. These features, plus additional video file format support and enhanced retro-record functions are now incentives to move up to the FS-4 Pro models.

SUMMARY

While lacking some of the advanced features of its more expensive FireStore brethren, the FS-4 is a top-notch, rugged and professional tapeless DV acquisition and playback tool. Kudos to Focus Enhancements for its streamlined operation, and for making the FS-4 flash-upgradeable, paving the way for further functionality such as a forthcoming HDV option.

The peace of mind that comes from recording to tape and disk simultaneously, and being able to say goodbye to the wear and tear (both physical and mental) of ingesting video in real time make the modestly priced FS-4 an excellent value in my book. ■

Stephen Murphy, studio and technical editor of **TV Techology**'s *sister magazine* **Pro Audio Review**, *is a video editor and audio engineer with more than 20 years of broadcast and production experience.*

EDITOR

Sony Vegas 6 Editing System

by Stephen Murphy

Over the last four or five years, I have reviewed several versions of Vegas for **TV Technology**. I have seen the program grow up and move away from its parents at Sonic Foundry, settle in at its new home with Sony, suffer a little middle-age bloat and identity crisis and ultimately mature into an innovative and thoughtful editing solution.

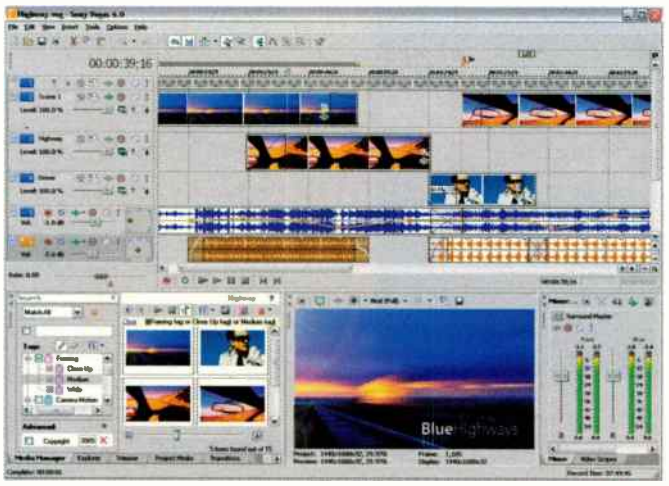
With the release of Vegas 6 ($599), one could say that the program has even grown wise.

Having firmly established Vegas' viability for professional use in Version 5, Sony did not need to reinvent or significantly overhaul the program's intuitive interface. Instead, Vegas 6 builds on that foundation with a number of smart media management, compatibility and workflow enhancements

FEATURES

In addition to its availability as a standalone application, Vegas 6 can be purchased as part of the Vegas+DVD bundle that includes the comprehensive DVD Architect authoring software and a Dolby Digital 5.1 surround encoder for $899.

As the Vegas interface has not changed significantly from its previous incarnation, I will only briefly cover its basics.


Sony Vegas 6 GUI

The primary Vegas editing interface is very similar in design to multitrack audio editing applications, with an unlimited number of video and audio tracks displayed in horizontal rows. Video and audio clips can be dragged, dropped, repositioned, slipped and shortened/lengthened on the timeline.

Clips and tracks can be modified with easy-to-use keyframe effects, and pan/crop and 3D track-motion interfaces. Video clip playback speed and audio clip volume and panning can be controlled using event-based envelopes.

Vegas supports video of any aspect ratio and frame rate within the same project (or even on the same track), and can render out to nearly every commonly used or customized resolution. Three-wheel primary and secondary color-correction tools are included, as are vectorscope, waveform, histogram and parade video scopes.

The program provides nearly 200 each of drag-and-drop, keyframeable video effects and real-time transitions. Purchasers of the Vegas+DVD bundle receive additional third-party titling and effects software (Boris Graffiti Ltd, Boris FX Ltd for Vegas and Magic Bullet Movie Looks HD50).

The most prominent new features in Vegas 6 are heavily weighted towards real-world compatibility and interchange, improved productivity and media management.

Although HDV support was added as an adjunct feature in an update of Version 5 through collaboration with CineForm, HDV capture and transcode support are now integrated into the Vegas workflow. Frame-rate conversion (including 24p), 601/709 color spaces and upconversion for HD-SDI mastering are provided within Vegas, as is export to Windows Media 9 HD, Real Media, QuickTime and the Sony YUV codec. Support is also added for Blackmagic Design DeckLink cards, allowing capture, monitoring and output to SDI and component SD and HD devices.

In addition to its timesaving network-rendering engine (support for two render-only computers is included with the program, and additional computer support can be optionally added), the Vegas programmers have significantly reduced render times by streamlining the program's multiprocessor, Hyper Threading and multicore system support.

Editing workflow improvements include Vegas project nesting, automatic audio/video synchronization error detection and repair, enhanced event rippling and repositioning with visual and numerical information feedback, and a new systemwide media management database.

On the audio side, the most significant new features are broadcast WAV file support, VST plug-in format support and variable-speed, tape head-style audio scrubbing in sync with video tracks. Vegas 6 also adds import/export support for Advanced Authoring Format files.

FAST FACTS

Application
Professional NLE

Key Features
Supports HDV, SD/HD-SDI, VST audio plug-ins; features A/V scrubbing and sync repair.

Price
$599

Contact
Sony Media Software
www.sonymediasoftware.com

IN USE

I tested Vegas 6 on a brand-new 3 GHz Intel PentiumD Dual Core system with 1.5 GB of RAM, Windows XP and a Blackmagic Designs DeckLink HD Pro video card. Like all Sony Media Software applications, installation was a breeze, with no inordinately difficult copy protection schemes—just a simple serial number/online registration check.

Note that Vegas 6 requires the DirectX 9 update, and the new Media Manager requires the .Net 1.1 update—both free downloads from Microsoft.

As I mentioned earlier, I have had the opportunity to review several previous versions of Vegas, and am still impressed with its intuitive, low learning-curve interface. Familiar drag-and-drop operations make typical video and audio editing operations a breeze.

Digging deeper into its unassuming interface yields a full set of professional 3D track motion, compositing and mastering tools that will please most video editors. The biggest challenge Vegas has always faced is how to win over editors steeped in the traditional source/record windows and four-point editing models.

Of the new features, several proved to be real winners when put to the test. Most immediately noticeable was the decrease in rendering time. In my tests, Vegas maintained the impressively clean rendering quality (especially noticeable in overlays and transitions) of previous versions while reducing rendering times by as much as 50 percent. Actual mileage may vary depending on the project complexity and computer system.

The new project-nesting support was also a real timesaver. This allowed me to drop Vegas project files directly

into another project without rendering the incoming project first. Assembling a long-form video project, for instance, demonstrated this new feature's value.

Individual segment and bumper projects were quickly dragged into a master project. Changes and tweaks to the "sub projects" were made right at the source projects, and the master was automatically updated without any need to re-render or re-import. This feature could prove particularly useful for projects on which several people are concurrently working.

Two other handy features were the ripple and repositioning editing enhancements and the A/V sync repair tools. When moving clips in ripple mode, the display of all affected elements is updated in real time for excellent visual feedback during the operation. A new display box now provides real-time offset and overlap information during rippling, repositioning and crossfade.

Vegas now includes a comprehensive Media Manager interface, adopted from its Acid audio application. Though it took some extra organizational effort at the outset, this searchable and customizable database has proved to be indispensable for managing large libraries of disparate media files. In addition to predefined attributes, the ability to use custom checkbox identifier tags and rate clips by number of stars has really sped up my logging process.

The addition of direct support for the Blackmagic DeckLink line of video capture/output cards brings long overdue SDI and component SD/HD I/O support to the program. New preference settings allow the selection of the DeckLink card as the video preview and print device target. Needless to say, I am very happy to be able to use the DeckLink HD Pro card directly within Vegas.

On the audio front, the addition of VST plug-in support solves one of my last big complaints with Vegas. I can now use the large collection of VST plug-ins I routinely use for audio post within Steinberg's Nuendo (which also directly supports DeckLink).

DSP cards such as the Universal Audio UAD-1 and TC PowerCore can now also be incorporated into a Vegas system through VST. The new tape-style audio/video scrubbing, though not perfect, greatly expands the potential use of Vegas for SFX spotting and ADR use.

While the HDV support is vastly improved from the previous version, transcoding via the third-party CineForm codec is still required in order to work on the Vegas timeline. This non-native approach does save considerable time and processing power during editing operations, but requires the full project to be rendered at completion—not just the parts that have been changed, as in other applications.

In the "This Just In..." department, the latest maintenance update of Vegas (Version 6.0c), which I installed just before completing this review, fixes a few niggling bugs and adds the ability to export to Sony PlayStation Portable systems, and Sony pro XDCAM source-file support without transcoding.

SUMMARY

With new support for AAF and broadcast WAV files, plus direct support of SDI and component HD/SD I/O via Blackmagic Decklink cards, Vegas has broken through many long-standing barriers that have kept it from fully entering the professional editing arena. Its already intuitive interface benefits even more from useful enhancements such as the comprehensive Media Manager database and project-nesting support. In short, the Sony programmers have done an excellent job of focusing their efforts on effecting a number of essential improvements and innovative additions toVegas 6. ■

Stephen Murphy is a video editor and audio engineer with more than 20 years of broadcast and production experience.

PRODUCT REVIEW

Highlighting the latest products introduced at IBC 2005

Video Capture Card

The new KONA LH, video capture card from AJA Video handles 10-bit uncompressed video for editing on the Apple G5 equipped with Final Cut Studio. According to AJA, the KONA LH is the only PCI card available for Final Cut Studio that offers HD as well as analog and digital SD I/O on a single card.

The card also supports DVCPRO HD, HDV playback, DV50 and others, with hardware acceleration onboard for the playback of DVCPRO HD, HDV, and Apple Dynamic RT Extreme.

KONA LH offers 12-bit HD component analog I/O, aimed at interfacing with current HDV cameras and decks. It allows a user to then digitize HDV to 10-bit uncompressed, DVCPRO HD and many other codecs. Analog I/Os also can be configured as 12-bit SD component/YC/composite, via three BNC connectors. For SD and HD digital I/O, KONA LH offers SDI/HD-SDI input and two SDI/HD-SDI outputs. Broadcast-grade Genlock is also included.

For more information, contact AJA Video Systems at 530.274.2048 or visit www.aja.com.

HD Display Processors

Two Miranda HD multi-image display processors—the Kaledio-Alto-HD 10-input processor and the Kaleido-Quad-HD 4-input processor—have been added to the company's product line.

The Kaledio-Alto-HD 10-input processor features auto-sensing HD-SDI/SDI/analog composite video inputs. The processor accepts any HD format and 525/625 SDI, and also analog composite inputs, to any of the 10 rear BNCs. This processor provides a high quality DVI output with up to 1920 x 1080 pixels and offers a full choice of monitor resolutions, sizes and ratios (4:3 and 16:9).

The Kaleido-Quad HD is a quad-split processor with auto-sensing HD-SDI/SDI/analog composite video inputs and features flexible layout creation, which allows different monitor resolutions, sizes, aspect ratios and positions to be displayed.

For more information, contact Miranda at 514.333.1772 or visit www.miranda.com.

Digital Matrix Intercom

The new Artist line of intercom frames is a fiber-based, masterless digital matrix intercom platform by Riedel that distributes analog and digital audio and TCP/IP data.

This next-generation of Artist allows all frame sizes to use the same type of controller and client cards. It features a speed boost via a doubled CPU clock, increased memory for complex, multinode installations, optimized cooling concept for quiet operation, compatibility with other Artist frames, and a flexible fiber option that enables users to easily change from single to multimode or high power.

The Artist series comes in three mainframe sizes with a maximum number of 32, 64 and 128 ports per frame.

The new 2000 panel series joins Riedel's 1000 series to offer adjustable, wide-ranging control options for any Artist intercom infrastructure.

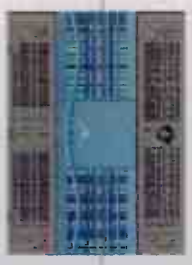
For more information, contact Riedel at 818.563.4100 or visit www.riedel.net.

Multiformat Switcher

The Leitch Platinum is a multiformat routing switcher that provides signal routing up to 256 x 256 in 15 RU and 512 x 512 in 28 RU.

The small footprint Platinum switchers support a mix of most types of signals within the same frame, including high definition.

Designed for network, local broadcasters, mobile production and more, Platinum helps address space and workflow issues for broadcasters in a variety of environments.



Platinum features redundant, load-sharing power supplies and fans that are individually replaceable without taking the system off-line.

The switcher scales in increments of eight inputs or outputs, thereby limiting the number of signals affected by any one module.

Additionally, the Platinum front-loading, hot-swappable modules ensure that the system remains online even during upgrades.

Platinum is supported by Leitch's Command Control System and a complete line of control panels and applications.

For more information, contact Leitch at 416.445.9640 or visit www.leitch.com.

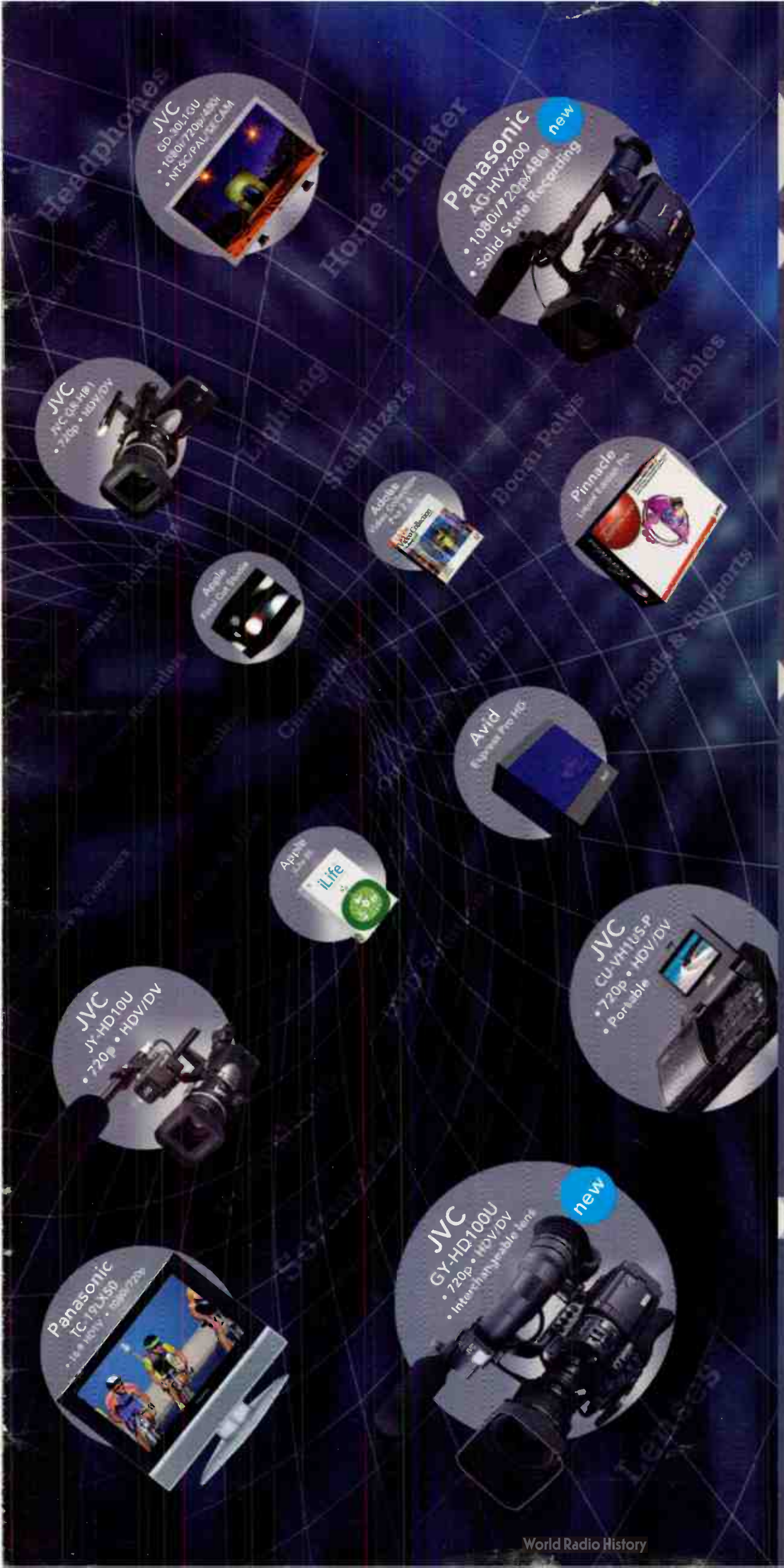
Signal Generator

The new SG5070 SDI-HD/SDI video signal generator by Telecast Fiber Systems produces four different video test patterns in seven HD formats and six SDI formats, and is designed to complement the company's existing Viper II line of fiber-optic products.

The SG5070 has 75 ohm outputs and features an option for fiber-optic ST connector outputs that enable direct-to-optical testing.

The new module can be used in the Viper II frame or as a stand-alone module outfitted with an external 12 VDC power supply.

For more information, contact Telecast at 508.754.4858 or visit www.telecast-fiber.com.



IN-DEPTH WITH HDV

What is HDV?

HDV is a new video recording format that enables **High Definition** video to be recorded onto MiniDV tapes. This revolutionary technology provides almost **6 times the picture information** of standard definition, while keeping the cameras **small & affordable**. Just like standard DV, the HDV signal can be transferred to your computer editing system via Firewire. This keeps the HDV edit workflow easy, familiar and manageable.

B&H: Your HDV Source

B&H offers every solution for your HDV video production: Cameras, Decks and Editing Systems. Our knowledgeable sales staff is on hand to help you make the best possible choice. For **Broadcast, Corporate, Event Videography** and **Digital Filmmaking**, B&H has the products needed to take you through editing, mastering and delivery.

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ANTENNAS/TOWERS/ CABLES

Want to Sell

Bogner side mount, set on chnal 47; Bogner top mount, set on chnl 67; Scala 4DR panesl, set on chnl 60, total of 8 w/power dividers, good for 6 or 7 chnls up or down, BO. R Tanner, 419-224-8867 or fox25@foxlima.com.

AUDIO PRODUCTION

Want to Sell

Bittree & ADC Audio and Video Patch Panels from $300; Stantron 45RU racks from $450; Mackie 1604 VLZ Pro, new, too low to quote; Mackie 1604 VLZ, used, $625; Tascam M-2600 MK II 16-Channel Mixer, $1,750; Sony MXP-390 Mixer, $1,000; Digidesign 888, $650; Sony PCM7040 DAT, $3,990; Crown D75 and D150 amps, low $$; DPS Stereo Audio Synchronizer, $1,000; Panasonic SV-3700 DAT, $250; Panasonic SV-3800 DAT, $300; Alesis M1 Active Speakers, $295/pair; HHB Circle 5A Studio Monitors, pair, $950; Wohler Amp 1-A, $425; Wohler AMP-1A-VTR, $550; Wohler AMP-1AP, $450; Wohler Amp-1APF, $450; Wohler AMP-1APS, $450; Wohler MSH-8AL Audio Level Meter, $900; Wohler VMQ-4, $500; Audio Monitor Neumann U87 Ai Studio Microphone, $1795; AKG C 414 B ULS Microphone, $1,250. 818.788.4700 or www.tvprogear.com.

CAMERAS

Want to Sell

Sony BVW400A Betacam SP camcorder, $3,995; Sony DXC-D30 w/PVV-3 Docking Camcorder, BO. 818.788.4700 or www.tvprogear.com.

CAMERA ACCESSORIES

Want to Sell

Cartonl Beta Head & Single Stage Sticks, $1,750; Sachtler Vario-Ped 2-75, $12,500. 818.788.4700 or www.tvprogear.com.

EDITING EQUIPMENT

Want to Sell

Avid Adrenaline Assurance, new, $21,500; Avid Symphony Version 3.5 on IBM Intelli-station, $15,500. 818.788.4700 or www.tvprogear.com.

LENS REPAIRS

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

MICROWAVE/STL

Want to Sell

M/A-COM 7 GHz, 13 GHz and 23 GHz, broadcast-quality radios in-stock. Excellent for STLs. Refurbished, repaired, retuned, tested and warranted. Save thousands of dollars over new radios. Antennas and waveguide also available. 100% Customer satisfaction. Massachu-setts Microwave (978) 6351556. www.massmicrowave.com.

MONITORS

Want to Sell

Sony PVM20L5, new, $2,895; Sony PVM-14M4U, $1,095; Sony PVM14L2, $1,295; Sony PVM9L3, $900; Sony PVM8042Q, $400; Sony PVM8044Q, $500; Sony PVM8045Q, $700. 818.788.4700 or www.tvprogear.com.

SIGNAL PROCESSING

Want to Sell

Key West Video Gizmo character generators, (3), BO. R Tanner, 419-224-8867 or fox25@foxlima.com.

Leitch FR-684 Dual PS 2RU Frame, $295; Leitch FR-884 Dual PS 2RU Frame, $295: Leitch Mix-7001 Multi-function digital frame, $400; Leitch 6804 Mounting Frame w/Pwr sply, $250; Leitch SPG-2602N Pulse Gen, $1,250; Grass Valley Series 8900 Frames w/redundant pwr sply, $600; GVG 8501 Video DA's, $125; GVG 8551 Audio DA's, $100; Sony BVX-D10/BVR-11, $3,990; Leitch DPS-290 Component

EDITING EQUIPMENT

TEST EQUIPMENT

Want to Sell

Leader LV-5100 Component Digital Waveform, $3990; Videotek TVM-821D SDI Waveform/Vector, $3,995; Tektronix WFM601M SDI Waveform, $5,500; Tektronix WFM601A SDI Waveform, $4,500; Tektronix WFM601 SDI Waveform, $3,990; Tektronix 1731D PAL SDI Vectorscope, $2,000; Tektronix 764 Digital Audio Monitor, $1500; Tektronix 760a Audio Monitor, $1000; Videotek VTM-100 On Screen Monitor, $1,850. 818.788.4700 or www.tvprogear.com.

TBC, $1,200; Leitch DPS-465 TBC/Digital Component Synchronizer, $2,250; Leitch DPS-470 Digital Component AV Synchronizer, $2,990; Leitch DPS-575 Digital Processing Synchronizer, $4,750. 818.788.4700 or www.tvprogear.com.

STATIONS

Want to Sell

Class-A UHF TV station for sale in Muskegun MI, market 38. On-air for 14 years, owner retiring. Can be see on web at http://hometown.aol.com/wmkg/index.html, please submit all offers, asking $750,000. This station could possibly be moved to a larger city. Bud, 231-733-4040.

SWITCHERS

Want to Sell

Videotek Prodigy Component Switcher, $2995; Videotek RS-12DVA SDI Routing Switcher, $600; Miranda Digipath 16x16 SDI Router (w/remote panel), $3,500; Leitch 4x4 MB Routers, $175; GVG Ten X, $600; Kramer 5X4 A/V Switchers, new, $475. 818.788.4700 or www.tvprogear.com.

ACTION-GRAM

Equipment Listings

TV Technology's Equipment Exchange provides a FREE listing service for TV stations and studios only.
All other end users will be charged. Simply send your listings to us and please indicate in which category you would like your listing to appear. Mail your listings to the address below. Thank you.

Please print and include all information:

Contact Name _____
Title _____
Company/Station _____
Address _____
City/State _____
Zip Code _____ – _____
Telephone _____

Brokers, dealers, manufacturers and other organizations who are not legitimate end users can participate in the Equipment Exchange on a **paid** basis. Line ad listings & display advertising are available on a per word or per inch basis.

Are you currently a subscriber to TV Technology?
❑ Yes ❑ No

Signature _____ Date _____

Please check only one entry for each category:

I. Type of Firm

- ☐ A. VHF-TV station
- ☐ B. UHF-TV station
- ☐ C. Prod/post-prod studio
- ☐ E. Cable TV
- ☐ G. Network/group owner _____
- ☐ R. Broadcast consultant
- ☐ S. Mfg, dist, or dealer
- ☐ L. Corporate TV facility
- ☐ M. Medical TV facility
- ☐ N. Gov. TV facility
- ☐ P. Edu. TV facility
- ☐ Q. Record. studio
- ☐ K. Other (specify)

Purchasing Authority (check one only) ☐ 1. Recommend ☐ 2. Specify ☐ 3. Approve

II. Job Function

- ☐ A. Corporate mgt
- ☐ B. Engineering mgt
- ☐ C. Engineering staff
- ☐ D. Prod/oper mgt or staff _____
- ☐ E. News mgt or staff
- ☐ G. Traning
- ☐ F. Other (specify)

WTS ❑ WTB ❑ Category: _____
Make: _____ Model: _____
Brief Description: _____
Price: _____

WTS ❑ WTB ❑ Category: _____
Make: _____ Model: _____
Brief Description: _____
Price: _____

WTS ❑ WTB ❑ Category: _____
Make: _____ Model: _____
Brief Description: _____
Price: _____

*Listings close every other Friday for the following month's issue. All listings are run for one issue only.

Broadcast Equipment Exchange
PO BOX 1214, Falls Church, VA 22041 • Tel: 800-336-3045 x. 153 • Fax: 703-998-2966

TRANSMITTERS/EXCITERS

Want to Sell

TV1000EE/U 1kW, needs tube, set on chnl 65; TOA-100A 100W, set in chnl 22; TTU10RM 10W, condition unknown, BO. R Tanner, 419-224-8867 or fox25@foxlima.com.

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

VTRs/VCRs/RECORDING MEDIA

Want to Sell

Sony UVW-1800, lw hrs, $5,000; Sony PVW-2800 from $5000; Sony BVW-70 from $5,000; DSR-1500A, new, $5,150; Sony DSR-45, new, 3,895; Sony VO 9850 w/timecode, $1200; Sony VO 9800 w/timecode, $1000. 818.788.4700 or www.tvprogear.com.

EMPLOYMENT

Engineer in Charge: National Mobile Television, a leader in sports entertainment broadcasting, has openings for Engineer in Charge (EIC) in Miami, Florida, Boston, California and the New York/New Jersey area. The EIC is responsible for the overall management, operation and quality of a mobile broadcast unit. As supervisor on the unit, the EIC must maintain the unit and must also conduct necessary training of new engineers, assistant engineers and engineer trainees. In addition, the EIC must supervise technical crew and assist them with any technical problems related to NMT owned or NMT rented equipment. As part of the client service team, the EIC must maintain a courteous and professional demeanor at all times, representing the Company's best interest and, leading by example, must ensure the other engineering staff on the unit maintain the same helpful, client friendly attitude. This position requires a comprehensive understanding of Analog/SD/HD video and audio broadcast production systems. In addition to demonstrated engineering skills, the ideal candidate must possess good written and verbal communication skills and the ability to manage both staff and freelance technical crew. An AS Degree in Electronics (minimum) and SBE Certification or equivalent broadcast experience is required. If you meet the stated qualifications and are interested in applying for consideration, please submit your resume, with salary history to careers@nmtv.com. National Mobile Television, Inc. is an Equal Opportunity Employer and maintains a drug-free work environment. This is an IBEW Local 45 Union Position. Our benefits package includes Medical, Dental, and 401(k), paid holidays and paid vacation accrual. For more information about our company and what we do, visit our website at www.nmtv.com.

nep

NEP Broadcasting is seeking experienced Mobile Unit Engineers to monitor broadcast operations at remote sites, perform preventative maintenance, trouble-shooting, execute changes and engineering updates on the mobile unit. Degree, training, 3+ years experience in broadcast technology, equipment, facilities, and production or any combination will be considered. Maintenance engineering background a plus. Please send resume and salary history to NEP Broadcasting LLC, hr@nepinc.com, Fax: 412-820-6045, 2 Beta Drive, Pittsburgh, PA 15238. www.nepinc.com.

TV TECHNOLOGY .COM
THE SOURCE FOR VIDEO PROFESSIONALS

Engineering Manager. Supervise maintenance and on-air operations engineers, manage building maintenance and repair, assist in construction of new equipment or modification to existing facilities, perform repairs and adjustments to equipment as required. Requires background in analog and digital component level troubleshooting, UHF TV and FM transmitter experience, ability to quickly read and comprehend regulations, procedures, and technical diagrams; FCC General License; acceptable driving record and personal auto insurance. Resume to: Human Resources, WMFE-TV/FM, 11510 East Colonial Dr, Orlando, FL 32817; fax: 407-206-2791; e-mail: jobs@wmfe.org. EOE and DFW.

WCIA-TV in Champaign, IL has an immediate opening for an RF/Broadcast Engineer. The successful candidate will possess skills in the following areas: VHF, UHF, microwave, satellite, audio/video, and IT. College education and SBE certification preferred. Resumes only sent to employment@wcia.com, no phone calls please. EOE/m/f/v/h.

Avid Symphony Editor needed in New York. 7+ years of editing experience. Skilled in long form documentary and news magazine style. Proficient with effects. This is a temporary freelance position. Shift starts at 6pm. Fax resume 212-664-8994. Please have reel and references.

THE SYSTEMS GROUP

A nationally recognized systems integration firm (design/build) is seeking specialized professionals. Located across the river from Manhattan, we are currently under contract for a number of high profile DTV facilities serving top markets in broadcast/cable.

Project Managers 3+ years television systems integration experience, skilled in project planning/implementation, strong interpersonal/creative problem solving skills, supervisory or managerial experience required, including direct interaction with project teams, vendors, project associates (architects, General Contractors, etc.) and clients. Budgetary responsibility and management skills necessary. Advanced Proficiency in MS Office/AutoCAD required.

Documentation Coordinator : 2 years AutoCAD and Microsoft Office equivalent; a background in or relative technical experience in Broadcast; Tele/Data;Fiber Optic; Sound & Audio reinforcement, or Home/Industrial AV systems is recommended. Broadcast Systems Integration Experience or equivalent in a position of responsibility regarding systems documentation, integration, and/or construction preferred.

Installation Supervisor: 2 years supervisor or technical leadership experience required. A background in or relative technical experience in Broadcast; Tele/Data; Fiber Optic; Sound & Audio Reinforcement, or Home/Industrial AV systems is recommended. Broadcast Systems Integration experience or equivalent in a position of responsibility regarding systems documentation, integration, and construction as well as the ability to handle clients on a professional level.

We offer a competitive compensation and benefits package, high energy work environment, and an established team of dynamic professionals. Forward resume/salary requirements to: careers@tsg-hoboken.com or

TSG Human Resources
317 Newark Street
Hoboken, NJ 07030
No phone call or faxes please.

PRODUCT REVIEW

Highlighting the latest products introduced at IBC 2005

Clip Manager

The Omneon ProBrowse is a complementary system to the company's Spectrum media server for creating and displaying proxies of full-resolutian material contained in the server system. Features include automatic proxy generation, user-selectable thumbnails and metadata searching.

The ProBrowse system monitors content directories within networked Spectrum servers and automatically generates 1 Mbps lower-resolution versions of material, including new material being ingested or copied into the Omneon Spectrum server through live recording or IP transfer.

Users can select a specific frame to serve as the visual representation of the clip. An integrated synchronization capability ensures that all metadata modified or added by users in the low-resolution proxies will be applied to the full-resolution versions within the Omneon Spectrum.

For more information, contact Omneon at 408-585-5000 or visit www.omneon.com.

Routing System

The Cheetah 128NE/XE/WE routers by PESA Switching Systems are designed to offer the same functionality and space savings provided by the company's 64 models.

The 11 RU Cheetah 128XE provides broadcasters with the flexibility to select between a 128 x 128 configuration with output options, or output expansion up to 128 x 256 without option slots available.

All three routing systems use the new 128 x 128 HD-multirate crosspoint card and, when populated with digital cards, support SDI and HD video and data signals from 3 Mbps to 1.5 Gbps with reclocking at both SD and HD-SDI as well as input EQ to 300 meters for SD and 100 meters for HD-SDI.

The three systems support dual matrix frame controllers, and Viewport Windows Diagnostics software and SNMP support are standard. Additonally, the company's 3500PRO control software provides high-level diagnostics.

For more information, contact PESA Switching Systems at 256-726-9200 or visit www.pesa.com.

Disk Recorder

Focus Enhancements has teamed up with Panasonic to expand the company's FireStore direct-to-edit line of disk recorders to support the Panasonic DVCPRO HD format.

The upcoming FireStore FS-100 portable DTE recorder will be optimized for the Panasonic AG-HVX200 DVCPRO HD P2 handheld camcorder.

The FS-100 will allow videographers to record DVCPRO, DVCPRO 50 or DVCPRO HD video streams via FireWire while in the field. Users can connect directly to a notebook or desktop computer to edit content directly from the FireStore, without having to digitize footage.

For more information, contact Focus Enhancements at 408-866-8300 or visit www.focusinfo.com.

ADVERTISERS INDEX

While every care is taken to ensure that these listings are accurate and complete TV Technology does not accept responsibility for omissions or errors.

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32	AJA Video	www.aja.com
40	Anton Bauer	www.antonbauer.com
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wwg@imaschina.com

TV TECH BUSINESS

Modulus Receives $10M in Venture Cap

SUNNYVALE, CALIF.

Modulus Video Services, a developer of MPEG-4 AVC video compression systems, has secured $10 million in venture capital from Thomas Weisel Venture Partners (TWVP) and Trinity Ventures.

MPEG-4 AV enables the delivery of standard- and high-definition video over satellite, cable, terrestrial and IPTV networks.

Additionally, Modulus announced that Mangesh Pimpalkhare, a venture partner of Palo Alto, Calif.-based Thomas Weisel Venture Partners, has joined the Modulus Video Board of Directors.

Mangesh joined TWVP in 2001 and currently focuses on investments in communications, storage and semiconductor companies.

SeaChange Acquires Euro VOD Company

MAYNARD, MASS.

SeaChange has acquired On Demand Group Ltd., a London-based provider of on-demand and pay-per-view programming and services in Europe.

SeaChange—which already owned 28 percent of the company—is paying approximately $13.4 million in cash for the remaining 72 percent. ODG will now be a wholly owned subsidiary of SeaChange.

The company will also pay $9 million if On Demand Group meets its annual performance goals with the maximum payment being approximately $11.4 million.

According to SeaChange, the company plans to pay up to 50 percent in shares of SeaChange common stock with the rest payable in cash. At the time of the acquisition, On Demand Group had $6 million in cash. ODG, which counts U.K. cable companies ntl and Telewest among its customers, has 50 employees and ended its latest fiscal year on Aug. 31, 2005, with unaudited revenues of approximately $10.7 million and after-tax earnings of approximately $1.4 million.

In 2002, SeaChange entered into a non-exclusive agreement with On Demand Group to develop video-on-demand technologies worldwide. On Demand Group recently prepared ntl for the 2005 launch of that company's on-demand service, which supplies a range of movies, children's programming, television and music video content.

In 2004 On Demand Group, Sony Pictures and the Walt Disney Co. founded FilmFlex to provide a new movie on-demand service. Both ntl and Telewest use FilmFlex to provide their on-demand films offering, with systems and software from SeaChange. SeaChange VOD servers support more than 100 broadband networks.

Belden Appoints New Chief Executive

RICHMOND, IND.

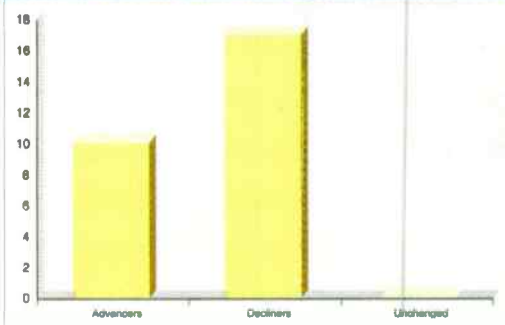
John S. Stroup is replacing C. Baker Cunningham as president and CEO of Belden CDT effective Oct. 31, 2005.

In addition, Cunningham and Fred Kuznik have retired from the board of directors.

Stroup, 39, joins Belden from Danaher Corp., where he was the group executive of Danaher Motion, which develops precision motor control technologies for factory automation, aerospace, defense, transportation and medical markets.

Prior to working for Danaher, Stroup served as vice president of marking and general manager of Scientific Technologies and 10 years at Parker Hannifin's Compumotor Division.

WIN-LOSE RATIO



TOP ADVANCERS BROADCAST STOCKS
(Sept. 16 - Sept. 30)

Nexstar	+ 7.30%
Univision	+ 4.37%

TOP DECLINERS BROADCAST STOCKS
(Sept. 16 - Sept. 30)

Paxson	- 19.64%
Tribune	- 9.87%

TOP ADVANCERS TV STOCKS
(Sept. 16 - Sept. 30)

SeaChange	+ 8.72%
Tektronix	+ 6.77%

TOP DECLINERS TV STOCKS
(Sept. 16 - Sept. 30)

Ciprico	- 9.86%
Belden	- 7.70%

To have your company listed, contact Deborah McAdams at dmcadams@imaspub.com.

TV Tech STOCKS as of September 30

Company Name	52-Week Range	Sept. 16	Sept. 30	% Change
Avid	36.78 - 68.35	43.87	41.4	-5.63%
Belden	17.65 - 24.59	21.05	19.43	-7.70%
Ciprico	3.23 - 4.90	4.97	4.48	-9.86%
Harmonic	4.25 - 12.40	5.85	5.82	-0.51%
Harris	24.85 - 41.82	40.05	41.8	4.37%
Leitch	6.72 - 11.50	13.84	13.87	0.22%
LSI Logic	4.01 - 10.75	9.5	9.85	3.68%
Sci. Atlanta	24.61 - 39.89	39.1	37.51	-4.09%
SeaChange	5.60 - 19.75	5.85	6.36	8.72%
Tektronix	20.97 - 34.39	23.63	25.23	6.77%

Broadcast STOCKS as of September 30

Company Name	52-Week Range	Sept. 16	Sept. 30	% Change
Acme	3.30 - 7.45	4	3.89	-2.75%
Belo	21.95 - 26.45	23.58	22.86	-3.05%
Emmis	15.29 - 24.49	23.4	22.1	-5.56%
Entravision	7.06 - 9.50	7.55	7.87	4.24%
Fisher	42.56 - 52.60	48.99	46.56	-4.96%
Gray	10.10 - 15.74	11.6	10.59	-8.71%
Hearst Argyle	23.73 - 26.48	25.58	25.69	0.43%
Nexstar	4.52 - 9.56	5.34	5.73	7.30%
Lin TV	13.68 - 19.89	15.27	13.95	-8.64%
Paxson	0.42 - 2.15	0.56	0.45	-19.64%
Sinclair	6.12 - 9.75	9.39	8.87	-5.54%
Liberty	34.32 - 48.05	47.34	46.91	-0.95%
Univision	25.00 - 32.94	25.42	26.53	4.37%
Young	3.15 - 12.59	3.67	3.49	-4.90%
Tribune	33.53 - 44.32	37.6	33.89	-9.87%
Meredith	44.51 - 54.57	50.17	49.89	-0.56%
EW Scripps	44.73 - 52.91	49.39	49.97	1.17%

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Production

OTHER SURFACES can share common audio resources

Studio 2

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Engineering

Engineering

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