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WWW.TVTECHNOLOGY.COM VOLUME 24, NO. 24 • NOVEMBER 15, 2006

WHAT'S INSIDE

Going to Extremes

Tackling the winter elements with today's gear

by Claudia Kienzle

HAMILTON, N.J.

When covering outdoor sports this time of year, getting the perfect shot at an outdoor sporting event means dealing with snow, wind, fog, and more. Severe, inclement weather conditions pose challenges for cameras and microphones, especially to their temperature-sensitive batteries, and camera crews go to great lengths to keep the equipment warm, dry, and reliably operational.

Unlike indoor sports where cameras can remain stationary on

EXTREMES, PAGE 16

Broadcasters Hone Tactics

NAB replaces 'multicast must-carry' with 'anti-stripping'

by John Merli

WASHINGTON

It looks like "must-carry" has gone the way of "stay the course." Broadcast groups, armed with a new term to replace what some in the industry have concluded was an outdated battle cry, are attempting to play hardball with cable these days and are increasingly using their fledgling digital signals and some older tools as leverage.

"We are repositioning the phrase 'multicast must-carry' to 'anti-stripping,'" said Dennis Wharton, NAB spokesman. Consequently, cable operators are being told to not delete any of a station's 19.39 Mbps, whether that fluid spectrum might entail a single HD channel, several SD channels, or a combination of both.

Hearst-Argyle Television President and CEO David Barrett, among others, had first suggested that must-carry was a "relic of an analog age" nearly a year ago.

"We should discard it," Barrett said. "Digital multicast streams are carried within—not in addition to—a single 19.4 megabit digital television signal."

According to David Donovan, president of the Association for Maximum Service Television, anti-stripping is actually a concept embodied in the 1992 Cable Act, which, in part, prevented cable operators from materially degrading a station's signal and required cable to carry a TV signal in its entirety. These provisions apply to both must-carry and retransmission consent stations, Donovan said. "Thus, the anti-stripping concept is merely an extension of existing law."

PULLING CHANNELS

When Hearst-Argyle's KETV, the ABC affiliate in Omaha, Neb., couldn't come to terms with Cox Cable several weeks

TACTICS, PAGE 20

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Panasonic ideas for life

*TFC info June 2006 report.

IN THIS ISSUE

P.14
Making room for HD

P.36
Eyeing the latest in editing gear

P.42
Editing, Graphics & Animation

NEWS

FEATURES

BUYERS GUIDE

EQUIPMENT

On the cover: Cinematographer Bob Scott attempts to stay dry while shooting Olympic action in Torino.

P.8
SMPTE honors Roderick Snell

CONTRIBUTING WRITERS

Gary Arlen

Tuning In

Few of us give a moment's thought when a local TV news department fetches video clips of the mayor's speech from last year or a decade-old historic storm. Same thing when a reporter quickly inserts footage of a memorable touchdown run... p. 26

Charles W. Rhodes

Digital TV

Among the comments on the digital-to-analog converter program being managed by the National Telecommunications and Information Administration, electrical power consumption seems to be a hot-button issue. These boxes... p. 30

Craig Johnston

Production Manager

How does that saying go: "I'm not getting better, I'm getting older?"
I've seen something on television over the past couple years that bothers me, and I've been trying to figure out if it's really a problem, or if I'm just old school. There's a morning news show... p. 32

FROM THE EDITOR

A Hi-Def Holiday

Will the 2006 holiday season be remembered as the year TV lovers find a new plasma screen under the tree? If you believe all the research that's been coming out in recent months, the answer is yes... but.

According to one study, "HDTV Growth Still Driven by Higher Income Households," New Hampshire-based Leichtman Research Group says more HDTV sets are in homes with six-figure annual incomes.

That might not exactly be "man bites dog news," but what the headline didn't reveal was that, although, we may be seeing a steady increase in HDTV sales, one of the driving factors in that rise is the increase in second HDTV sets in upper income households. More than one quarter of HDTV owners say they will own a second HDTV set and almost a third plan on buying another set within the next year. For the record, the majority of respondents—38 percent of households with incomes exceeding $100,000—own an HDTV.

This study was just the latest in a slew of research reports that arrive on our desks here at **TV Technology** every year, just in time for the all-important holiday season, one in which all eyes will be on HDTV sales.

But is HDTV just a toy of the rich, as the Leichtman report seems to indicate? Pricegrabber.com doesn't seem to think so. The consumer shopping researcher came out with its own survey recently, indicating that a little more than one out of five respondents plan on purchasing an HDTV set within the next year.

"Owning an HDTV is becoming more commonplace, with 30 percent of those surveyed already owning a set and 21 percent of respondents who do not currently own one expecting to buy an HDTV set in the next 12 months," the researcher said.

A lot of those sets will be sold over the next two months. By the time you read this, some of you may have already devoured your Thanksgiving turkey and headed on over to your local massive-mart to be first in line for the specials that pop up on "Black Friday," traditionally one of the biggest shopping days of the year. Expect to see plenty of plasma and LCD screens to dominate such Black Friday specials.

And manufacturers are already hinting at a price war for HDTV this season. Panasonic has reportedly lifted the minimum advertised prices for Black Friday weekend, cutting prices $200-$300 on plasma TV sets; others have followed suit. Wal-Mart's slashing prices even further, offering a 42-inch Panasonic plasma HDTV set for less than $1,300.

Add in anticipated competition from Amazon and other online sellers, and CEA's prediction that the average price of an HDTV set will fall below $1,000 in 2007 could come true even sooner.

CRTs? Yeah, they're still on the shelves, but they're quickly moving to those areas of the store that were occupied by HDTV sets just a few years ago. For the first time since they went on sale in 1998, digital sets will have outsold analog this year, according to CEA.

For high-definition DVD, however, it's a different story. In the first year of its launch, there haven't been too many new products with a sorrier story to tell. High prices, defective products, lack of content and competing formats have dogged the product's introduction. It will be several years before hi-def DVD gains any traction in the marketplace.

But for HDTV, a "perfect storm" of a relatively health economy, lower prices and availability means that it's pretty safe to say that this will be a "hi-def" holiday for consumers.

Tom Butts
Editor
tbutts@imaspub.com

Opinions Wanted

Got a beef? Want more information on stories you read in **TV Technology**? Drop us a line at *tvtech@imaspub.com*!

LETTERS

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

The Rest of Us

Dear Editor:

Thank you for your editorial in the Aug. 23 issue of **TV Technology** ("The Plan").

Here is a different perspective on the DTV changeover: currently, I am living in a nursing home. Just to entertain myself one day a few months ago, I took an informal survey. I asked anyone who came into my room: "What is going to happen to television, as we know it now, in February 2009?"

Out of about a dozen people, nurses, aides, and housekeepers, only one had an idea of what I was asking. When I told them the answer, only three even knew what "the big switch" is!

I decided not to ask any residents.

I've spent over 20 years in the television business as a producer, director, production manager, and a decade as an adjunct professor at a local college. I have always been amazed how little people know about the technology of TV. I think the public needs to be better educated that the analog shutoff will happen, then prepare them for the transition.

I have posed this question to several administrators at this facility and a Medicaid caseworker: Are you prepared for the confusion, anger, and panic that you will have to deal with when Mr. Smith can't get his 1973 vintage TV set to "work" on a snowy, winter morning because he wasn't aware of the changeover?

One answered: "They are doing what?"

The primary source of information for most nursing home residents is television. For some, it is their only friend. I wholeheartedly agree with your editorial, but the problem is not just converter box technology.

I'm a 49 year-old man with MS who can still direct pretty well. I am prepared for the changeover.

Jim Funson
Syracuse, N.Y.

TV TECHNOLOGY

Vol 24 No 24 November 15, 2006

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TV Technology (ISSN 0887-1701) is published semi-monthly with additional issues in April and May by IMAS Publishing (USA) Inc. 5827 Columbia Pike, Third Floor, Falls Church VA 22041. Phone: 703-998-7600. FAX:703-998-2966. The international edition is published monthly along with the month's second domestic edition. Periodicals postage paid at Falls Church VA 22046 and additional mailing offices. POSTMASTER: Send address changes to TV Technology, P.O. Box 1214, Falls Church VA 22041.

For address changes, send your current and new address to TV Technology a month in advance at the above address. Unsolicited manuscripts are welcome for review; send to the attention of the appropriate editor. REPRINTS: Reprints of all articles in this issue are available. Call or write Emmily Wilson, P.O. Box 1214, Falls Church, VA 22041. (703) 998-7600 ext. 148 Fax: (703) 998-2966. Member, BPA International.

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DIGITAL JOURNAL

Bill Hayes

DTV: Beyond Transmission

Annual Iowa DTV Symposium shows there's still much to be done in the digital transition

JOHNSTON, IOWA

As I write this, the staff at Iowa Public Television is in the process of doing the post mortem on the 12th Iowa DTV Symposium, which took place Oct. 3-5 in Des Moines. As we do every year we are going through the feedback forms from the sessions and our observations of the sSymposium and figuring out what did and didn't work.

It is hard to believe that we have been doing this for 12 years now. I was told by one of our sponsors that they believe this is the longest running event focused on the digital conversion nationwide. The fact that it has been successful for so long and has shown consistent growth from year to year is a clear indicator to us that we are providing a service that is beneficial to the audience.

Over the years the event has developed and grown. In the beginning the focus was almost exclusively on transmitters, antennas and building high-powered facilities to replicate existing analog stations. For the last six years we have developed a content creation track that is focused on how to create meaningful content in the digital arena for distribution on multiple platforms. This year we added an executive track aimed at helping non-technical managers come to grips with new and evolving business models. All of this taking place over three days in early October in Des Moines.

As the architect of the technical program, my goal is to provide three days of meaningful presentations that the attendees can learn from and take that knowledge back and apply it at their facility. There are more than enough presentations at various conferences that allow manufacturers to tout their hardware or present theoretical information on the next generation of digital products. Most of our attendees are working in the here and now and are more interested in how they can make their station or facility as technically reliable and efficient as possible while still serving the needs of their viewers and customers.

With that in mind, I want to share my thoughts on what I thought were the most useful presentations from the technical side. I don't mean to slight any of our presenters; the entire program was well received as the feedback forms prove. There were just some presentations that held my interest because I was able to relate what was being presented to what is happening at Iowa Public Television.

The fact that it has been successful for so long and has shown consistent growth from year to year is a clear indicator to us that we are providing a service that is beneficial to the audience.

THE VALUE OF EXPERIENCE

The presentation that I got the most out of was Integrated/Automated Master Control by Jim Klas of Wisconsin Public Television. Jim and his team have just gone through a complete digital retrofit or their operation and his presentation wasn't focused on the gear or technology but on the impact of the process on the people at the station.

The folks in Wisconsin put a lot of effort on the front end of their project, not just in selecting the best of breed hardware and all of the other buzz terms but on working through how this transition was going to impact the people that would be working in the environment before, during and after the project completion. As engineers, we all too often get wrapped up in the "cool" technology and don't work through the entire process. Not everyone will think the technology is cool or welcome it with open arms. One of the quotes from Jim's presentation that really stuck with me was one of his staff saying "10 years of knowledge down the drain." That is a pretty scary prospect for someone who sees their value to themselves and their organization in light of their experience and what they know. The fact that Jim was willing to share what worked and what didn't made for an extremely interesting presentation that is well worth reviewing.

Another very enlightening and interesting presentation was "Solving Lip Sync Problems In Hybrid Analog-Digital Television Facilities" by Steve Smith, president of Broadcast Technology Consultants, a consulting firm in Cleveland, S.C.

IPTV's annual DTV Symposium features an impressive roster of notable experts, covering areas from content creation to transmission.

Audio has long been a second-class citizen in the television world, but now in the DTV world, audio has finally come into its own. Even the lowliest MPEG-2 SD stream can have 5.1 channel Dolby Surround Sound. Unfortunately, once again little thought seems to have been given to audio in the early designs and now we have tremendous high-definition audio that can be two or three or more seconds out of sync with the associated video. Steve made a number of points that really hit home for me.

First, the problem starts at the very point where video and audio are captured and converted to digital. CCDs capture a clock out video at field rate while the audio is captured at virtual real-time. If you think about it, video has always gone through more processing than audio but in the analog world it was on a line by line basis and in the digital world everything is processed in frames so each device—rather than adding nanoseconds of delay—adds a full frame and those frames add up. Meanwhile, the audio proceeds on for the most part without delay and thus ends up ahead of the video. This is probably the most annoying and noticeable problem for the viewer because it is not only bad engineering but it also violates their understanding of the universe. Light travels faster than sound so we are more comfortable and understand when we see something and then hear the sound. Athletes that run track will often look at the starter pistol and come out of the blocks when they see the smoke and muzzle flash because it precedes the sound. Now with giant HD displays, it's even easier for the audience to see in great detail when the sound and the lips are out of sync.

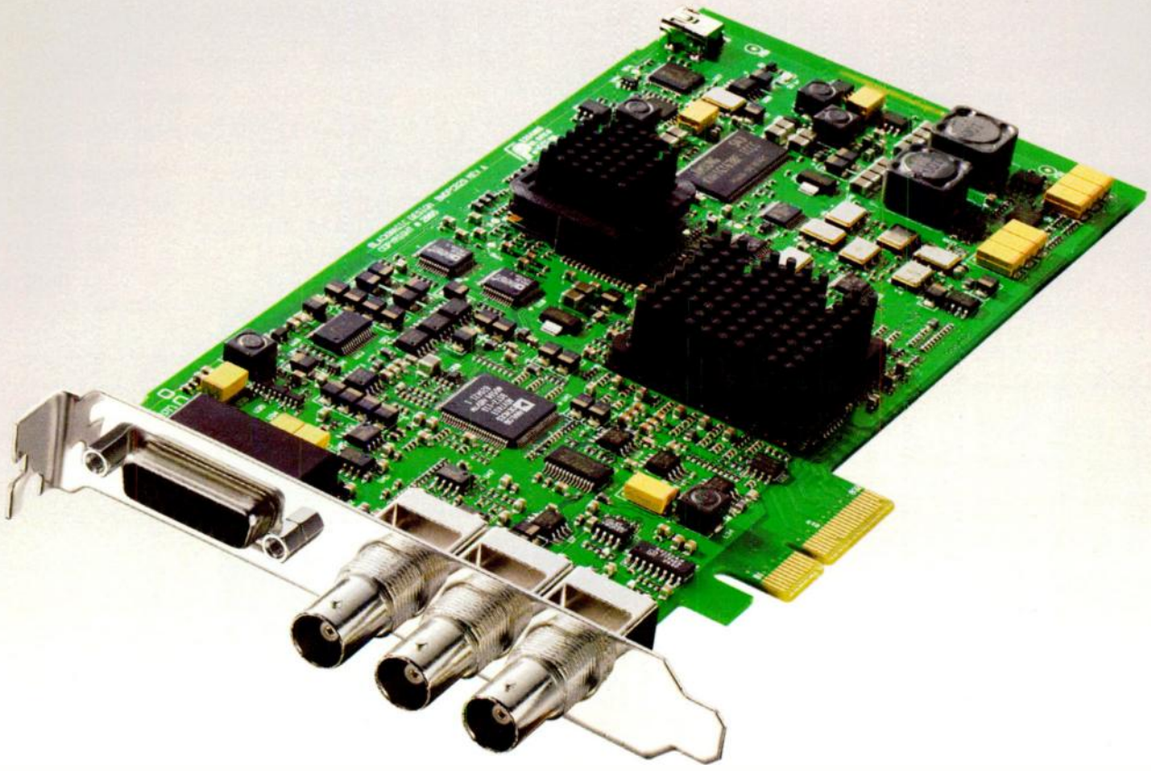
To make matters even worse, there are products available for the consumer at home that theoretically correct lip-sync error (*www. lipfix.com*). Steve's point at the end is that there are so many places beyond your control that can create lip-sync error, the best thing we can do at our facilities is to construct them in such a way as to not add any additional error.

CLOSE TO HOME

The last presentation that I want to talk about is Tom Silliman's presentation, "Tower Safety and Rescue." Evidently this presentation struck a chord with a lot of our attendees as it was voted to receive the "Brian Schwab Award of Excellence" that is presented to the top technical presentation at the DTV Symposium. Like all of the other presentations at the event, the focus was on practical information that can be applied in the real world. Regular readers of my column know that earlier this year three members of a tower crew died in a fall from our tower in Red Oak, Iowa. Here is a fact that I was completely unaware of: The

DTV, PAGE 8

Blackmagicdesign



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SMPTE: Looking Back, Moving Forward

Organization's annual gathering reviews past history, welcomes new executive director

by James E. O'Neal

HOLLYWOOD, CALIF.

The Society of Motion Picture and Television Engineers celebrated the organization's 90th year of existence with a four day birthday bash here last month, featuring presentations on the latest technology for both cinema and television industries, the introduction of the a new executive director and a day completely devoted to retro-technology.

More than 1,000 attendees descended on the Renaissance Hollywood Hotel for the organization's 148th Technical Conference and Exhibition, which featured more than 80 papers and panel discussions on television and motion picture related topics.

RAY DOLBY SPEAKS

One of the highlights of the SMPTE conference was an all-day Saturday event devoted to historical aspects of both film and television production. Presentations included the evolution of sound motion pictures, kinescope recording of television programs, a complete history of television, and a personal reflection on the creation of the videotape recorder provided by special guest, Ray Dolby, a member of the Ampex team that invented the recorder.

Dolby described how his relationship began with both Ampex and the videotape recorder project while he was a student at Redwood City (Calif.) High School. At the time, Dolby was a member of the school's motion picture projection club when Ampex founder, Alexander Poniatoff, contacted the school in search of a projectionist. Dolby was selected and Poniatoff showed him the company's fledgling video recording project the same day. Not long afterward, Dolby was placed on the company payroll.

"I was first hired by Ampex to make audio calibration tapes," Dolby said.

Later, he was assigned to the videotape recorder team and during his senior year of high school, Dolby was working some five hours per day on the project. After taking a leave of absence to complete his U.S. military obligation, Dolby returned and made significant contributions to the creation of the VTR, including an improved FM signal system. He was one of the six team members seeing the project through to a successful conclusion in 1956.

"We were so proud of that machine," Dolby said.

During his presentation, Dolby displayed a large number of personal photographs depicting the evolutionary progress of the video recorder.

A special museum devoted to early motion picture and television artifacts was created for the occasion and was open for viewing for the duration of the conference. Objects on display included very early motion picture cameras, a Vitaphone sound projector which included a synchronized record turntable, an underwater 3D camera used in filming "The Creature From the Black Lagoon" and a splicing block used for physical editing of two-inch videotape.

NEW EXECUTIVE DIRECTOR

Kimberly Maki, SMPTE's new executive director, was on hand for her first annual conference and was introduced to the general membership at the industry luncheon event. Later, Maki spoke to **TV Technology** about her plans for SMPTE.

"I want to keep the interests of the society strong and relevant, and from what I'm hearing and seeing, there are a lot of people who have given their hearts and souls to the society," she said. "The core membership has been very involved and dedicated. They have a lot to give and share, in terms of wanting to be the ones who teach something to the next generation within the industry."

Maki assumed her new position with SMPTE just two days before the conference began. She previously served as vice president of marketing and business development for the Society of Cable Telecommunications Engineers and was also vice president of public affairs for Time Warner Cable's Houston, Texas division.

When asked about her early career interest and progression, she said, "My first declared major was broadcasting, and while working in cable, I developed a deep appreciation for the engineering side of the business. While I'm a marketing person, one of the things that I enjoy most is representing the engineering side.

"I also have a love of legislative politics and processes, which is why my final degree was in public administration/policy. So, it makes sense that I would eventually tie all of that together with a career with an engineering society in the television and film industry. As you know, associations by nature are run similar to a legislative process."

In commenting on her thoughts and plans for extending the reach of SMPTE, Maki said, "I want to reach out to the younger people working in the industry with Webinars and other tools. I believe in keeping the integrity of the white paper process and opening up new processes."

As part of her responsibilities, Maki will serve on the IBC Partnership Board.

> **"I want to reach out to the younger people working in the industry with Webinars and other tools. I believe in keeping the integrity of the white paper process and opening up new processes."**
>
> **—Kimberly Maki, SMPTE**

SMPTE Executive Director Kimberly Maki

EXHIBITORS AND SPECIAL EVENTS

More than 50 equipment manufacturers were on hand during the show to demonstrate their latest products for the industry.

Another of the special events at the conference was the Friday night Honors & Awards Ceremony. Twelve new Fellows were inducted into the organization, and special awards were presented to individuals in recognition of their outstanding achievements in the motion imaging industry. These included the awarding of the Society's Progress Medal Award to Roderick Snell, co-founder of Snell & Wilcox.

As part of the Hollywood experience, attendees were bussed from the conference hotel to Warner Bros. Studios for a reception and special digital cinema screening of the studio's new movie, "The Departed."

SMPTE, which was founded in 1916 by C. Francis Jenkins, a prolific inventor, and a person whose talents and interests ranged from developing the first motion picture projector in 1895 to constructing and operating a broadcast television station in 1928. The organization has grown from a membership of 10 engineers in its first year to more than 5,000 members worldwide now. SMPTE is recognized internationally as a leader in developing industry standards and practices.

Next year's conference and exhibition, scheduled for Oct. 24-27, will be held at the Marriott Brooklyn Bridge Hotel in Brooklyn, N.Y. ■

DTV

CONTINUED FROM PAGE 6

life expectancy for a person in a tower climbing harness hanging from the back D ring is less than 30 minutes. So if you think that the crew going up the tower is safe because they are wearing their harnesses and are attaching themselves to the tower in the prescribed manner and interval, think again. As was pointed out in this instance, if a worker is hanging on the tower waiting for the fire department or rescue service to arrive on site, it is very likely that the worker will die before help arrives. The take aways that I got from this presentation were the importance of requiring certification for anyone climbing our towers and the need for a comprehensive safety and emergency plan.

These are just a few of the presentations that were part of the symposium. The rest of the presentations and audio recording of the sessions are available at our Web site at *www.iptv.org/dtv/2006/*. The event is free and the 13th Symposium is scheduled for Oct. 2nd-4th, 2007 at the Hotel Fort Des Moines. As I said in the beginning, we must be doing something right because the event continues to grow and this year we had our first international attendee, an engineer from KBS in Korea. Please visit the Web site and take a look at what we presented and make plans to join us next year. ■

Bill Hayes is the director of engineering for Iowa Public Television. He can be reached via **TV Technology.**

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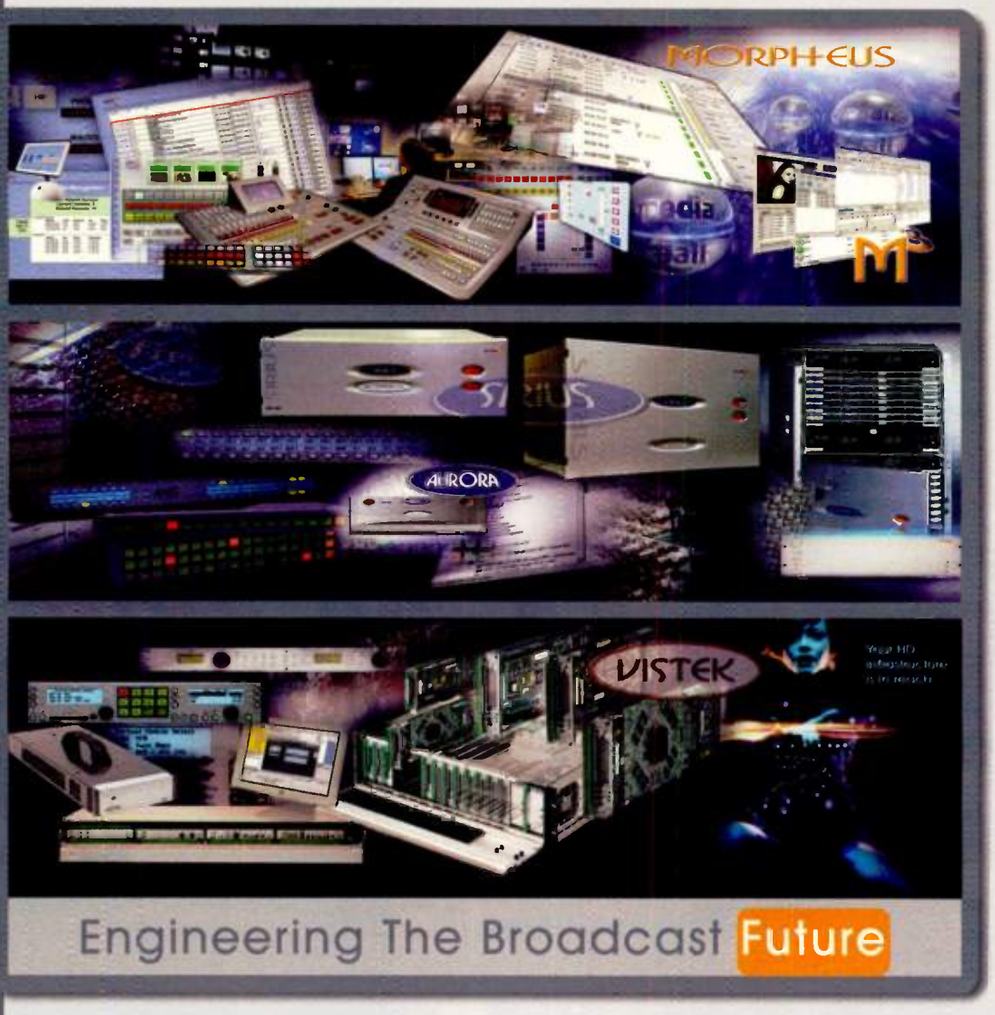

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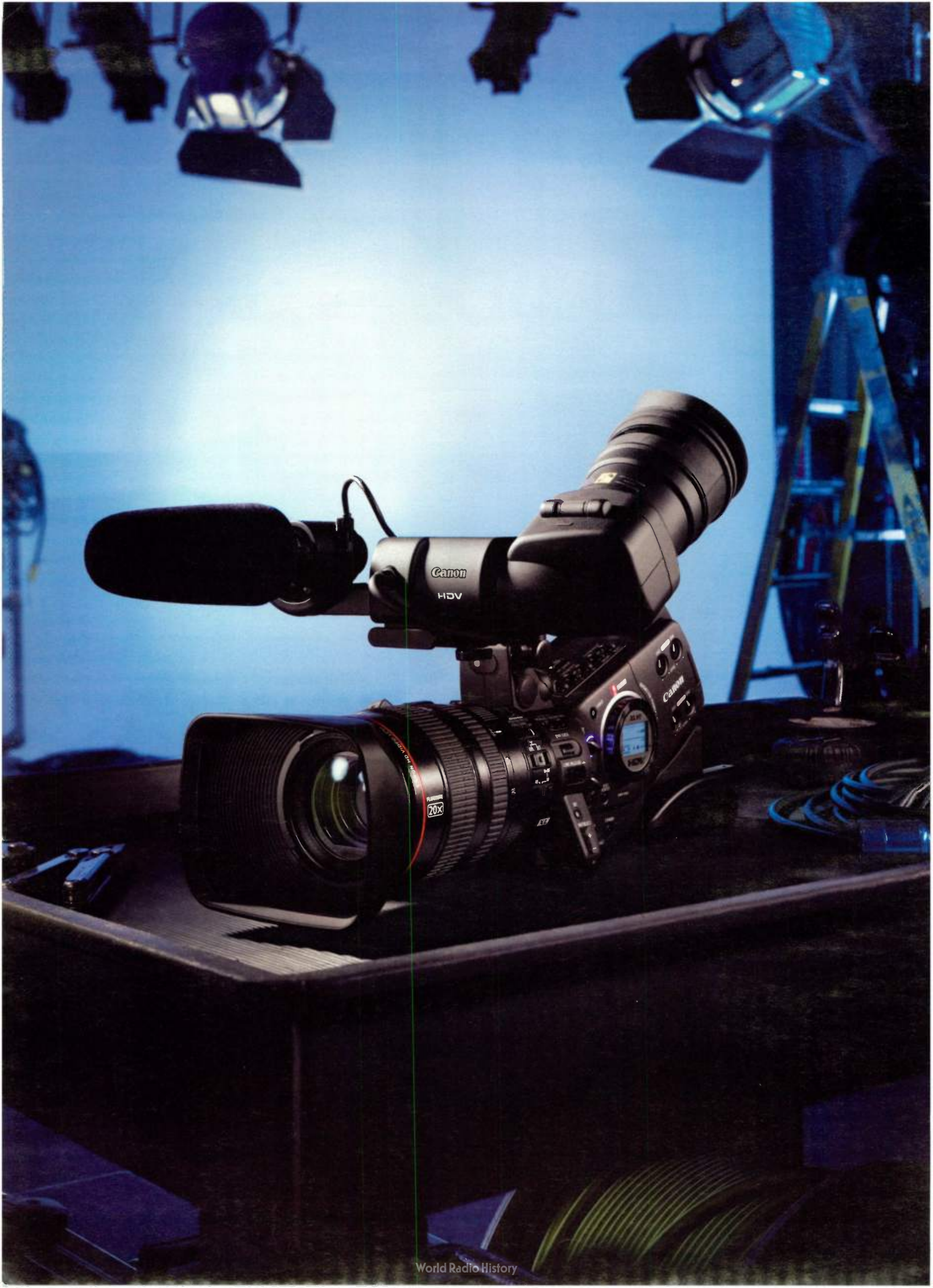

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XL H1

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A Bit About Audio Processing

New coders for surround sound and beyond

by Mary C. Gruszka

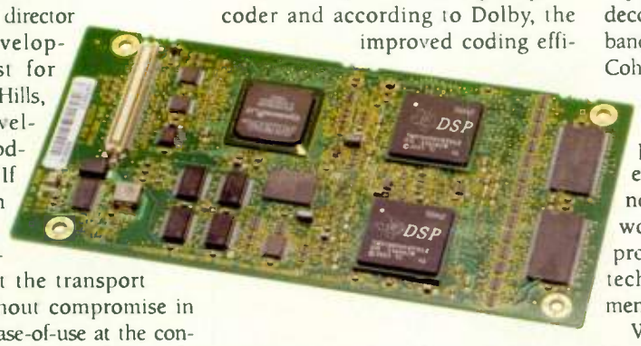
NEW YORK

Just as a new generation of video coders is finding its way into the market, audio is keeping up the pace. Audio coders handle both ends of the bit-rate spectrum (and in the middle as well). Low bit-rate coders for 5.1 surround sound are a good match for the higher efficiency video coders. At the other end, higher bit-rate audio coders handle the ever increasing number of channels required, including multiple-language 5.1 channels along with description channels.

LOW BIT-RATE CODERS

Increasing efficiency in the emission path is driving the core market for low bit-rate coders.

"HD video uses considerable bandwidth," even with advanced coding techniques such as H.246 and VC-1, said Ted Laverty, director of business development, broadcast for DTS, an Agoura Hills, Calif.-based developer of audio coding technology. "If a broadcaster can reduce the requirement for carriage of audio at the transport stream level without compromise in the quality and ease-of-use at the consumer end, then that leaves extra capacity. This can be used to either boost video quality, add extra audio services [extra languages, descriptive narrative etc.] or even introduce more channels on a given transponder due to cumulative data-rate savings."



CAT. No. 561 Dolby Digital Plus Encoder Module

aacPlus, a low bit-rate perceptual coder from Coding Technologies of Nuernberg, Germany, can produce 5.1 audio channels at rates as low as 128 kbps, and combines three technologies: advanced audio coding (aac), spectral band replication (SBR) and parametric stereo (PS). According to the company, these three technologies are part of the ISO/IEC standard for MPEG-4 and are also standardized by the European Telecommunications Standards Institute, for coding for DVB services over IP and for broadcast applications.

Applications include satellite transmission, cable systems, and DVB, systems that aren't bound by ATSC standards, according to Tim Carroll, founder and president of Linear Acoustic, a developer of audio processing technologies in Morris Plains, N.J. Linear Acoustic incorporates aacPlus coding in its Aeromax 5.1 audio and metadata encoder for transmission applications. "I didn't believe the quality of the coder could be this good at this low bit-rate, but it does sound excellent," Carroll said.

For Dolby, its enhanced AC-3 (E-AC-3 or Dolby Digital Plus), is an extension of Dolby Digital (AC-3) coding for multichannel, stereo or mono. Dolby Digital Plus expands the range of data rates down to 32 kbps and up to 6.144 Mbps, compared with AC-3 range of 56 to 640 kbps, with ATSC specifying either 384 or 448 kbps.

At the lower end of the bit range "Dolby Digital provides for lower data rates for efficiencies when the bandwidth is strained, like for satellite and next generation IPTV," said Rocky Graham, director of broadcast products at Dolby. For this application, Dolby Digital Plus can code 5.1 channels in around 200 kbps. Enhanced AC-3 is part of the ATSC standards for the robust data channel, Graham said.

Like AC-3, E-AC-3 is a perceptual coder and according to Dolby, the improved coding efficiency is the result of improved filter bank and quantization, enhanced channel coupling, spectral extension, and transient prenoise processing.

As for applications, Graham said, "don't expect to see MPEG-4 in cable systems right away, but you will see it sooner in satellite systems and IPTV. Satellite will deliver many hundreds of channels and needs to deal with reducing data rates significantly."

THE CONSUMER SIDE

Using low bit-rate highly efficient coders does indeed save precious bandwidth at the transmission and distribution end, but what about the home consumer? A typical home theatre receiver (at least those available today) can't decode E-AC-3 or aacPlus.

So the output from the low bit-rate coders needs to be converted back into whatever format the A/V receiver supports. Two of these formats (there are others) are Dolby Digital, and DTS Coherent Acoustics.

Dolby has developed a transcoding scheme that converts E-AC-3 to AC-3 without going to baseband PCM. This is because "with Dolby Digital and Dolby Digital Plus, you share features and common building blocks," Graham said, and avoid needing a decode/re-encode cycle.

Linear Acoustic is incorporating DTS Coherent Acoustics in its StreamStacker-HD products.

To convert aacPlus to something a consumer receiver recognizes, Coding Technologies partnered with DTS to create what the companies refer to as a transcoder to convert the aacPlus signal to a 1.5 Mbps DTS Coherent Acoustics signal in the consumer set-top box. The conversion involves decoding the aacPlus signal to baseband PCM then re-encoding it to DTS Coherent Acoustics.

"DTS has never had consumer applications allowing any third party codec to be fed into a DTS-enabled home theatre system until now," Laverty said. "We also have worked closely together to create proof-of-concepts, demos and give technical support to silicon implementors."

Whatever the process, the end product is the chips that will find their way into the next generation of set-top boxes. For Dolby, Graham said that Conexant, Broadcom and MIPS currently have chips available.

"STMicro [STMicroelectronics] is currently undergoing certification and [chips] will be available in the first quarter of 2007," Graham said. "There are additional ICs that will be available soon but have not yet been announced."

For aacPlus/Coherent Acoustics, chip makers Broadcom and STMicro have made public announcements on DTS. Others are in the pipeline, Laverty says, but haven't gone public as yet.

"We have considerable interest from some significant U.S. broadcasters," Laverty said. "We believe we have a technology application that meets the needs and aspirations of broadcasters and consumers with the widespread roll-out of HD video. Time will tell how it works out, but the commitment that each company is giving to this program is an indication on how big a deal we believe it to be."

At the higher end of the bit-rate spectrum, the Dolby Digital Plus "technology itself can go up to 6 Mbps and beyond, but HD DVD constrains the maximum to 3 Mbps, and Blu-ray allows a maximum of 1.7 Mbps," Graham said. With these bit rates, more channels can be encoded.

Dolby Digital Plus also supports stream mixing, where the audio channels on a DVD can be mixed with those from an Internet stream. "The disc player would be connected to a broadband connection and be able to receive additional updated content, for example, mixed in with the audio from the disc," Graham said. "It's not clear yet exactly how content creators will want to use this capability, but we support it."

Dolby Digital Plus debuted in the Dolby Media Producer for authoring packaged media formats and early tools were available to Hollywood studios for months before that, according to Graham.

Linear Acoustic is incorporating DTS Coherent Acoustics in its StreamStacker-HD series of products along with its own technology to create a new mezzanine format called "e2" (e-squared) which carries up to 16 channels and metadata in a 2 Mbps AES-compatible stream.

e-squared relies on the ADPCM (adaptive differential or delta pulse code modulation) nature of Coherent Acoustics that Carroll said prevents clicks, pops or noise bursts when there's a bit error. The e2 signal is locked to an audio reference rather than a video frame rate and is editable.

"There's about one NTSC frame of delay through the box, and it won't change with different video frame rates," Carroll said.

e-squared supports advanced audio metadata and full Dolby-E metadata, according to Carroll. Incoming metadata can be received via RS485 or through the VANC (vertical ancillary data) embedded in an HD signal.

"We need to send more channels than anyone ever expected," Carroll said. "As we began looking at the rest of the world, we found that countries like China and those in Europe need multilanguage. It's more important than in the United States. There it's a fact of life and mandated by law, so we looked at how to make the change." ■

HD Syndication Presents New Challenges

Storage space becomes a premium as stations expand HD offerings beyond network feeds

by Craig Johnston

SEATTLE

As the high definition revolution marches on at local affiliates, they're seeing their video storage needs grow.

HDTV has come to these local affiliate in waves. The first wave was network HD, which could simply be passed on to the viewer by sending the network feed directly to the transmitter. Since it went to air as soon as it came in, it required no real storage at all.

But the latest wave has been syndicated product in HD. With shows like "Wheel of Fortune" and "Jeopardy,"—which launched their HD programs in September—where the program is fed to the station, recorded, played once and discarded, storage needs are nominal.

Other syndicated packages, like the newly HD re-mastered Star Trek series, are sold on a multi-year license and can tie up hundreds of hours of HD storage at a station during the term of the license. Video server manufacturers are offering an array of solutions to the challenge of how to store this high definition material.

ANOTHER CHICKEN & EGG?

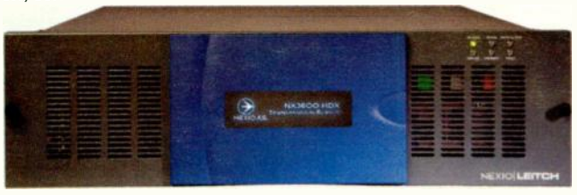
"This situation where you don't see a lot of syndicated hi-def programming, or other local programming, isn't so much a storage issue as an overall infrastructure issue," said Bill Moren, senior product manager, Storage & Networking at Avid Technologies. "It's a chicken and egg problem."

Moren said since there's been little syndicated product available in HD, stations have not spent money to store and air such HD product. And because most stations haven't been ready to store and play HD, syndicators have been reluctant to supply it. "We think it's an evolving thing, and we're going to get over the hump."

Moren said Avid offers "a number of products that support both compressed and uncompressed standard-def and high-definition, ranging up to our flagship shared storage product."

The file-based nature of modern storage products makes handling high-definition programming easier, according to Tim Slate, vice president of product marketing for Nexio servers at Harris Corp.

"In the past, I had a type-C tape machine I recorded material to," he said. Those 1-inch tapes took up a lot of space.



At IBC2006, Harris launched the 2 RU Nexio NX2050NAS, a near-line storage system that serves as a cost-effective option for replicating content on a Nexio storage area network.

Since episodes in a station's syndication library may go months between airplays, one option is to put them on data tape for off-line storage.

"For them to get a fairly inexpensive data tape library system, maybe it's a tape backup system, and it's somebody offloading material onto tape cartridges and putting it on the shelf," Slate said.

Harris has worked with the Pathfire distribution system to develop a system for stations, according to Slate. "They can transfer material from their Pathfire server into our server, and from there they can archive it onto a near-line storage system with anywhere from four to a hundred terabytes, or onto a simple data tape library."

Ed Casaccia, director of product management and marketing, Digital News Production at Thomson Grass Valley, said local stations are at very different stages in their HD infrastructure.

"There's the ability to pass network HD programming during primetime directly to the transmitter, there's the ability to record and play back HD material, and there's the ability to produce in HD and air it. It's three layers of the same onion, but not everybody peels it the same distance."

He said stations are looking at combinations of on-line, near-line and off-line storage, "bringing on storage that is accessible, but not necessarily directly accessible for play-out like a server. You transfer back and forth from the near-line to the on-line domain." The company has combined that with an off-line REV Pro tape system from Iomega.

As to all of the different strategies to accomplish high-definition product storage, Casaccia said: "We don't have a preference for how that is done, other than we support easy ways to do it. Our system is extremely accessible across the LAN from anybody who's in the same security zone as we are."

Tab Butler, director of U.S. Northeast broadcast for SeaChange International in Marlborough, Mass., said the HD infrastructure puzzle is vexing for local stations.

"As one of the stations I met with in the 50-100 marketplace told me, it would be a lot easier and less expensive if all they had to deal with was field acquisition."

One challenge he said stations were finding is the great variety of formats their video material is in. "They're working with programs such as Final Cut Pro, Avid Adrenaline, and they're dealing with a lot of DV25 and DV50 formats, and HDV."

SeaChange's server system handles those formats natively, he said. "So if I have, say, DV25 that I'm using for news, or DV50, back to back with MPEG content, IMX, MXF, doesn't matter, back to back with HD content, I can play all of these common formats back to back on a single timeline.

"And anything that's HD is automatically downconverted to an SD feed, anything SD will automatically be upconverted to HD. And that can be set for either 1080i or 720p."

FUTURE PROOFING

One way for stations to avoid the sudden sticker shock of installing high-definition infrastructure is to look to a scalable system, said Geoff Stedman, vice president of marketing at Omneon Video Networks in Sunnyvale, Calif.

"As the IT industry progresses, disk drives become, over time, higher in capacity and lower in cost, so a reason to kind of grow in small increments over time, is the customer gets the benefit of that IT development curve.

"That's one of the keys to a modular system, and you get the benefit that... you only buy as much as you need. You add on to it as you go, and with our MediaGrid product, adding storage is very simple. There's no need to restripe the data or have to rebuild the file system each time you add storage. It's plug and store to that storage system."

Lan Merrill, director of technology at 360 Systems Broadcast in Westlake Village, Calif., agreed that the lack of a standard for distributing HD is one of the hurdles facing local stations. "There is no common format now for HD distribution," he said, "and there is no cost-effective way to get HD on the air at the local affiliate level."

SYNDICATION, PAGE 22

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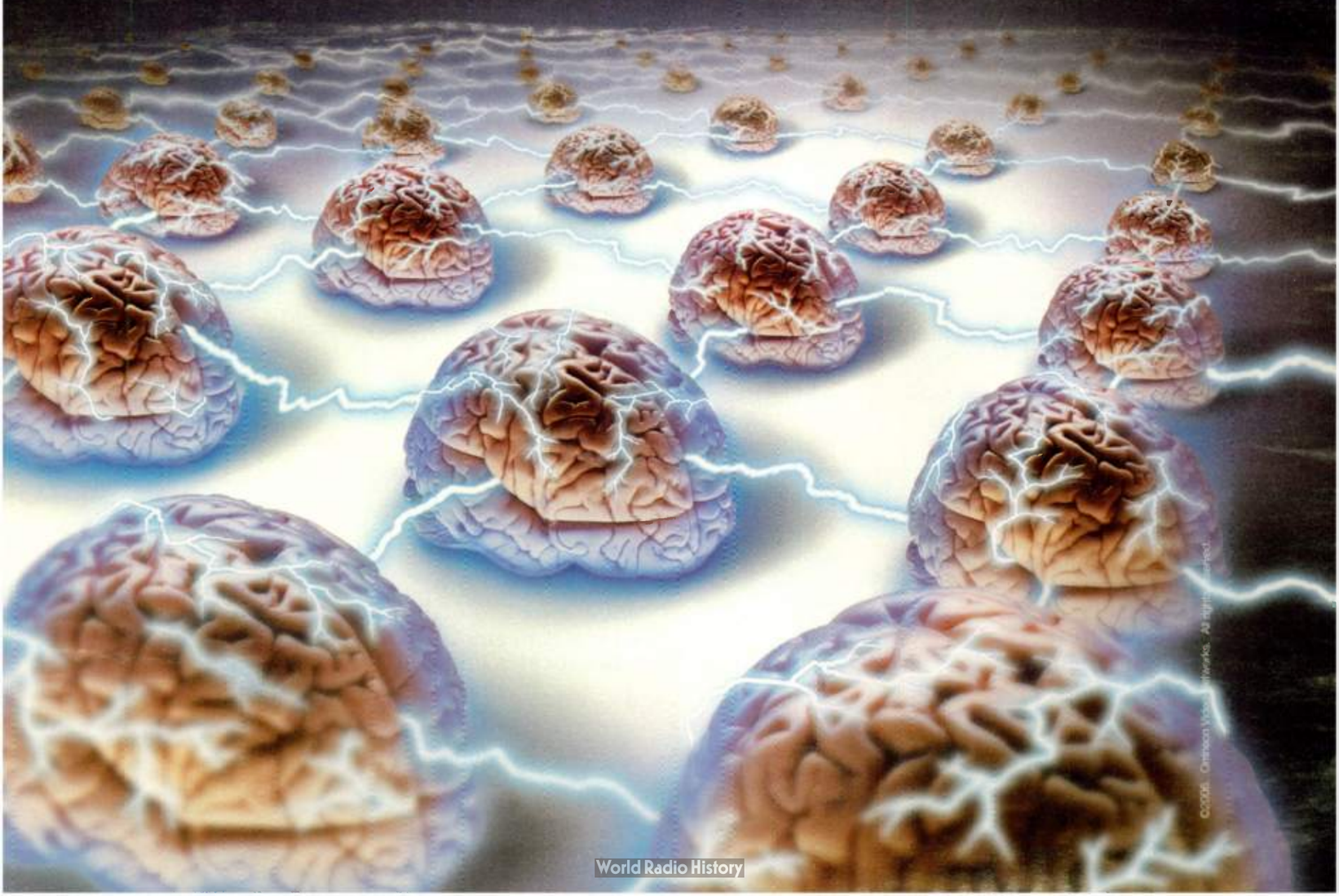

Extremes

CONTINUED FROM PAGE 1

the sidelines, winter sports often require cameramen to put on skis or ride in snowmobiles while capturing shots of the athletes as they careen down dangerous slopes.

"To capture big mountain action, our cameramen have to be as good on skis and snowmobiles as the athletes they're shooting. Our mountain sports photogs are experienced skiers who can ski 'double black diamond avalanche-prone terrain' sometimes at 50 mph or more, while getting very dynamic shots," said John "Sandy" Santucci, president of John Sandy Productions, in Englewood, Colo. JSP produces extreme sports programs, primarily "big mountain" skiing and snowboarding.

One such program features the annual U.S. Extreme Free Skiing Championships, held in Crested Butte, Colo., which airs this month in more than 50 million households on Versus (formerly OLN) as well as Denver-based Altitude Sports and Entertainment network. Seen in more than 2.5 million homes, Altitude features regular coverage of the Colorado Avalanche, Denver Nuggets, Colorado Eagles, as well as a variety of locally produced sports programming.

JSP camera crews use Sony F-900 HD and HDV camcorders, along with Sony PD150 DVCAM cameras, as well as RF wireless camera systems. For helicopter and other aerial applications, JSP crews use the FigRig camera mount by Manfrotto, and PAG camera support systems. Shaped like a steering wheel, the FigRig allows steady control while using the camera in a multiple of ways. When shooting from a helicopter, they attach a gyro device to improve stabilization.

"We also do a lot of FollowCam, where we place a small POV camera right on the skier's helmet or onto his skis," Sandy said. "Today's camera technology is rugged enough to take the snow and cold and still capture beautiful pictures under very harsh circumstances."

Audio equipment is also susceptible to cold, inclement weather conditions. In particular, the batteries in microphones can quickly lose power in very cold temperatures. According to Jim Eady, president of Broadcast Services International, in Burlington, Ontario, measures have to be taken to ensure that microphones will perform properly.

"We often put small suitcase-sized generators down by the side of the mountain, and run those power cables up to the scaffold, which supports all the production equipment. Scaffolds are typically eight to 10 feet high so that cameras will have a good vantage point," said Eady. "It's also routine to have skiers ski around to every microphone and put fresh batteries into them just prior to competition."

BSI produced the World Snowboarding Championships, in Whistler, B.C., Canada in January 2004, as well as the Cross-Country Skiing Championships in 2006, which encompassed a series of events from British Columbia to Calgary. Eady said they often use shotgun microphones from Sennheiser, such as the Sennheiser 416, as well as shotgun mics from Audio-Technica, because both product lines have proven to be rugged even when covered with rain or snow, and performing well even at low temperatures.

"For the World Snowboarding Championships, among other events, BSI acted as the host broadcaster, feeding SD signals to broadcasters in Canada, Europe, and Japan," Eady said. "This is a growing trend because networks are farming out their productions to companies that specialize in offering host broadcast services."

In addition, Eady said that after the Beijing Olympics, the host country will no longer serve as the host broadcaster but rather it will all be managed by a private company or the production arm of the International Olympic Committee.

17 DAYS OF GLORY

During the Winter Olympics in Torino, Italy, Cinematographer Bob Scott used the Panasonic AJ-HDC27 VariCam HD camera, as well as the Panasonic AG-HVX200 DVCPRO HD P2 camera, to shoot video of high-profile sporting events for a documentary called, "Torino Olympics: 17 Days of Glory," which will air on Showtime in February 2007.

Produced by Cappy Productions in New York, the program is the official documentary retrospective for the IOC. Cappy in turn hired Scott who hired the crew to shoot the full-length documentary. Throughout 18 days of production, the cameras experienced extreme temperatures as they were moved between warm locations, such as indoor skating rinks and hotels, and snowy, cold sites like the top of the mountains for Alpine events.

In general, "you have to be careful in these extremes because condensation could build up inside of cameras and that could cause an electronic short or the tape to stick to the heads," said Scott, who is based in Orlando, Fla. "You have to be proactive in how you treat the camera." (Panasonic added that VariCam and P2 solid-state cameras perform comparatively well despite harsh, wintry conditions.)

The crew used snow covers with pockets that could hold small warm-packs or hand-warmers, which when activated kept the equipment warm for about two hours. Scott also kept these warmer-packs in his jacket pocket to warm up spare batteries.

"In these production situations, we have to operate out of backpacks, so to stay trim and mobile, we can't lug around a lot of heavy batteries," Scott said. "So it's an ongoing problem to keep batteries warm and dry. For every 10 degrees that the batteries go lower than room temperature, they drop 10 percent of their performance. So if you're shooting in 30 degree wea-ther, a battery that would normally last six hours might only last an hour and a half."

> "In these production situations, we have to operate out of backpacks, so to stay trim and mobile, we can't lug around a lot of heavy batteries."
> —Bob Scott, cinematographer

The camera's toggle switchers and other controls are also more difficult to access and operate with gloves on. But Scott said his crew can't retreat to the press tent.

"A lot of times with downhill skiing events, it's too dangerous for the skiers to take to the slopes because it's snowing too hard," Scott said. "But when severe weather is part of the story, we have to stay there and capture that."

EQUIPMENT AT 20 BELOW

At the Torino Olympics, temperatures at the mountain venues ranged from –20 to 40 degrees Fahrenheit. According to Chip Adams, director of venue engineering for NBC Olympics, in Stamford, Conn., "In cold mountain conditions, equipment has a tendency to expand, contract, and possibly stiffen up. So you need to take precautions that cable connections stay dry and are properly cared for so they won't come apart or allow moisture to get in and interrupt the signals coming through."

In Torino NBC crews used Sony HDC-1500 portable HDTV cameras, Thomson LDK 6000 World Cameras; a helmet mounted camera that "forerunner" skiers wore to provide a skier's perspective of the course; as well as a high-speed super slo-mo camera system, nicknamed the "Super-Loupe," which was provided by Digital Video Sud, a French company.

"The 'Super-Loupe' camera system was used on the men's and women's Alpine ski races to capture the action at

EXTREMES, PAGE 18

"Sony was the only supplier to step up to the plate."

— Jason Taubman and Paul Bonar, Game Creek Video

HDemanding

Jason Taubman, VP of design for mobile production company Game Creek Video, faced contradictory demands. He tells us, "Some clients required the highest quality in 1080i and others demanded the same in 720p. Some venues only had fiber and some strictly triax. Sony was the only supplier to meet all these requirements in a single camera."

"We committed to the HDC-1500, Sony's 1080/60p camera before it was even a model number," says Paul Bonar, VP of engineering. "And Sony committed to us. Their engineers heard our input on the large lens 'sled,' which works like a charm. We gave them distressed cable to help design the triax adaptor, which is brilliant. And in service and support, Sony has risen to every challenge and met every need. We're now on our fifth consecutive truck with the HDC-1500, the best HD camera we've ever seen."

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Extremes

CONTINUED FROM PAGE 16

frame rates higher than the current SSMO cameras can shoot at," Adams said. "It enables viewers to clearly see the movements of the skier's legs, bindings, and skis as they ski around the gates.

"Due to the high frame rate we were shooting at, [500 fps], you need a lot of light for the best results," said Adams. "Since the Alpine speed races were held during the day, we had plenty of sunlight to make some great pictures. But, the Alpine technical races were held in the late afternoon and under lights, so we were a little more challenged getting good pictures during those events. We even tried shooting at a lower frame rate to help get more light to the imager to help make pictures. We did get some good shots when the racers came through some good pools of light provided by the lighting towers along the course."

LENSES SPEED AHEAD

While condensation can present a problem to cameras, today's lenses handle the extreme temperatures very well. According to Gordon Tubbs, assistant director of Canon USA Inc., in Ridgefield Park, N.J., there's been a world of improvement to lenses over the last two decades.

"When ABC covered the Winter Olympics in Lake Placid in 1980, the lenses they planned to use were first brought into our facility where our technicians changed the lubricants and glues to ones that would fare better in extremely cold temperatures," Tubbs said. "We also offered a heater option for the lenses that today is not necessary. And with our new Internal Focus mechanisms, most of the glass elements are sealed and remain relatively stationary and this helps keep air and moisture out of the lenses."

Tubbs added that in the 1980s, ABC typically used 25x lenses, while today 100x is commonly used for the same shots—such as the Canon XS100X9.3B IE-D known as the Digi Super 100 XS.

Canadian-based Water Productions has been testing Fujinon HD lenses, shooting a variety of sports in extreme weather conditions. They've been using a Fujinon HA18x7.6BERM HD ENG/EFP lens on a Panasonic Varicam without any problems.

Water Productions recently covered "Sledsense," featuring the annual Grand Prix Ski-Doo, in de Valcourt, Canada, for The Outdoor Channel 2 HD.

The crew shot close-up interviews as well as 120 mph snowmobile racing around an oval ice racetrack. During the shoot, there was rain and humidity, followed by a temperature drop to –8 degrees Fahrenheit with 40mph winds.

"We were surprised every day when we turned the camera on and it worked," said Kevin Cullen, Water Productions' owner and host of "Sledsense." When we play the HD video back, it makes us say 'wow' every time." ■

IMAX Goes to the Dogs

LAGUNA BEACH, CALIF.

The Iditarod, that annual race that traverses huge distances of Alaskan terrain, is known to be one of the harshest environments for any sport. During the race, participants face temperatures that can drop from 30-degrees Fahrenheit down to –40 degrees Fahrenheit, with extremely windy and snowy conditions.

Isaac Anderson, an independent filmmaker and founder of Vision Filmworks in Laguna Beach, Calif., is in pre-production for a challenging shoot that will cover the Iditarod dog sled race in Alaska next March 2007. Because the movie is aiming for the IMAX cinema circuit, Anderson is planning to shoot with the Dalsa Origin, a state-of-the art 4K digital camera with four times the resolution of HD.

"The images that we capture with the Dalsa will be sufficient in quality for IMAX projection," he said. "The Dalsa Origin is preferable to a traditional IMAX film recorder. We are planning to do some test shoots with the Dalsa and different brand lenses to see what combination will work best. But since the Dalsa Origin was developed by Dalsa, a Canadian company, it was designed for use in extreme wintry conditions."

The images captured by the Dalsa will likely record directly onto a RAID array of massive Flash drives that, because they are solid state, will be somewhat impervious to the cold. The huge files will then be encoded to the CineForm codec, which allows for more manageable file sizes. These files will then be transferred to a laptop PC for rough editing.

"We're currently structuring a deal with Dalsa where they will be a partner in our project," said Anderson. "Dalsa has expressed an interest in the story we want to tell, and they view this as an ideal opportunity to show how well their cameras perform under these rugged conditions." Anderson expects that a technical supervisor from Dalsa will accompany the crew in Alaska to lend on-site technical support.

Anderson also anticipates using the Dalsa for aerial shots from helicopters and planes flying over the Iditarod. But for riskier shots, where he wouldn't want to put the expensive camera at risk, he plans to use a variety of HDV camcorders and small, compact, lightweight HD cameras. One application would be to affix the HDV camcorders directly onto the sleds to get shots from them while they are moving at high-speed.

"Resolution-wise, we'll take a major hit, but we feel the HDV cameras will help us tell a better story," said Anderson. "In the movie, the lower resolution HD and HDV footage will be letterboxed and windowed, as it visually will not be able to intercut with the Dalsa Origin footage and the giant screen resolution demands."

The movie could be ready by November 2007 but distribution details are still being sorted out.

Claudia Kienzle

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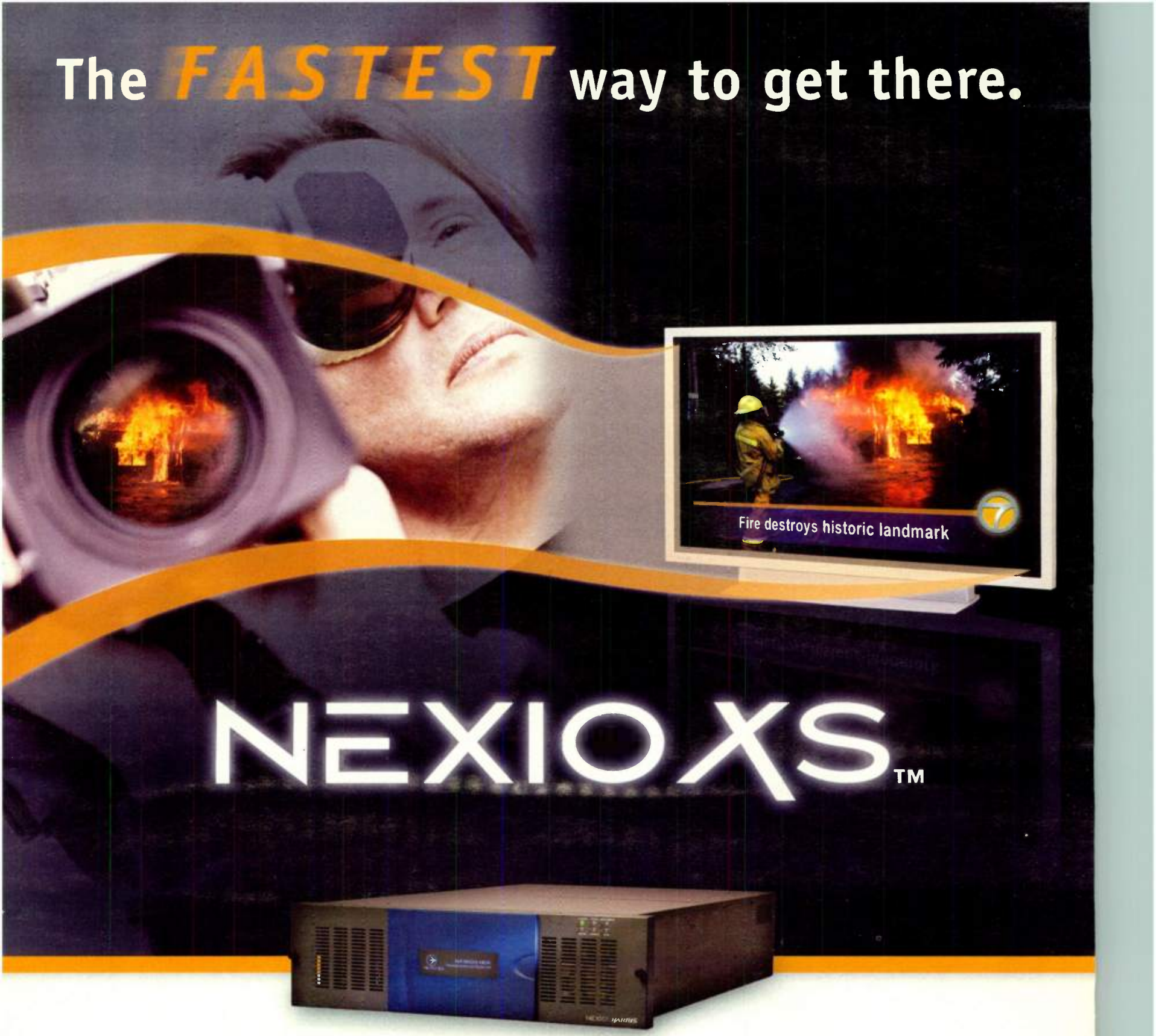

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Tactics

CONTINUED FROM PAGE 1

ago, it pulled its HD channel off cable but left its analog channel alone. The broadcast group of 25 stations was not happy with what Cox was willing to pay for carriage. Consequently, besides KETV, Hearst-Argyle withdrew only the digital channels of several other properties: KOCO (Oklahoma City); WDSU (New Orleans); KMBC (Kansas City); KHBS/KHOG (Little Rock, Ark.); WESH and WKCF (Orlando, Fla.).

"It's not just the HD shows. It's the flexibility that the digital spectrum now allows that needs to be considered," said Tom Campo, Hearst-Argyle's chief spokesman. "HD is only one of the formats. There are established multicast channels out there already, most notably NBC Weather Plus, which Hearst-Argyle co-created with NBC Universal."

Asked if the industry is starting to play hardball with cable because it has come to the conclusion that "multicast must-carry" will never be mandated by the FCC, Campo said, "I don't know. But it's clear the business model is changing for broadcast TV, with far more electronic media outlets for advertisers to now consider—with cable-only channels, mobile, and Internet broadband services all competing with each other."

At least one longtime TV producer agrees. "I'm feeling that maybe I'm totally out of touch," Dick Wolf recently told The Wall Street Journal. The creator of the "Law & Order" franchise on NBC said "...I guarantee you, if anyone tells you what the television business is going to look like a decade out, they are on drugs."

Another key factor still giving broadcasters some leverage over cable is mass audiences.

"Broadcast remains some of the most viewed and enjoyed programming today, even though there's been some fragmentation," said Robert Rini, communications attorney at Rini Coran PC, in Washington, D.C. "It will remain extremely popular, and broadcasters will continue to provide quality eyeballs for advertisers. What I'm seeing [more of] now is like at WISC-TV in Madison, with its CBS programs on analog, its HD channel up, and with content from MyNetwork TV on its SD multicast channel—all running simultaneously."

Rini said some nonbroadcasters are more open to broadcast's content value than others.

WISC-TV in Madison, Wis., offers its CBS programs on analog and an HD channel, as well as content from MyNetwork TV on its SD multicast channel—all running simultaneously.

"What frustrates me is when I deal with Dish and other DBS firms, they recognize the value in those broadcast signals. That's in stark contrast to cable, which refuses to recognize the value."

—Robert Rini, Rini, Coran, PC

ALL OR NOTHING?

Determining exactly what "value" represents can easily wind up in court. When Mediacom Communications recently filed suit in Iowa against Sinclair Broadcast Group, it alleged Sinclair had violated antitrust laws by seeking cash payments in exchange for retransmission consent for some programming the MSO did not wish to carry.

According to Mediacom, Sinclair wanted a "tying" agreement stipulating that its CW and MyNetwork TV affiliates be included in any overall carriage deal. At least 22 Sinclair stations are affected, with more than a third affiliated with one of the new networks. Mediacom said it has little desire to include the two unproven services, in lieu of "higher-value offerings" to its subscribers.

In late October, a federal judge rejected Mediacom's request for a preliminary injunction. This does not mean the cable operator has ultimately lost its case, but it indicates the court currently thinks Sinclair would eventually be found not guilty of having violated anti-trust law. In response, the cable operator asked the FCC to step in, requesting that the commission order that Sinclair stations remain on the company's cable tier. (At deadline, Mediacom was on notice that its carriage rights to all Sinclair stations will be revoked effective Dec. 1, if an agreement is not reached.)

In response to the Mediacom decision, the American Cable Association, an alliance of small independent cable operators called for retrans reform, accusing broadcasters and content owners of holding their signals hostage in exchange for "exorbitant" fees.

Barry Faber, Sinclair vice president and general counsel, wouldn't speculate on the outcome of the Mediacom fight, but said he believes broadcasters also got some leverage against cable when DBS firms first began carrying local signals in the late 1990s.

"That was the biggest change, the end of the monopoly position held by the cable guys as far as local signals. Prior to that, if you said to cable 'don't carry me,' that risk was fairly small because people didn't really have a place to go for local. But when cable argued that subscribers would never pay for a 'free' over-the-air service, [DBS] discovered the vast majority would pay for it."

Some broadcast groups have both broadcast and cable interests to consider. Dallas-based Belo Corp., a media conglomerate which includes 19 TV stations and seven cable news channels, had given Time Warner Cable permission to retransmit programming from its network affiliates in exchange for access to the TWC's 550,000 subscribers for Belo's new Texas News Channel.

That happened only a few years ago. Today, Belo also acknowledges the "television business" is, indeed, changing at warp speed. In a financial report last month, the firm said, "Belo continues to make steady progress in transforming its businesses to compete in an increasingly Internetcentric marketplace. Our operations are evolving to reflect fundamental changes in media usage by consumers and advertisers..." ■

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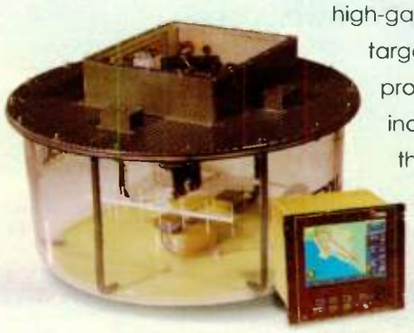

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Switching in a Hybrid World

Broadcasters upgrade to HD but can't leave SD behind

by Claudia Kienzle

HAMILTON, N.J.

As stations upgrade to HD production, they often find themselves operating in a hybrid SD and HD environment. And because most broadcasters can't afford to replace all of their SD equipment at once—especially if a device has not yet reached its end of life—this scenario is likely to become increasingly common.

To make it easier and more cost effective to manage in a hybrid SD/HD environment, manufacturers have designed their latest switchers from the ground up to deal with the intermixing of HD and SD signals, as well as switching between 1080i and 720p operation.

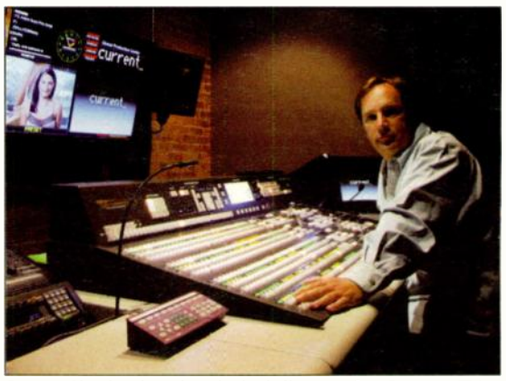
AVOIDING DELAY

When Snell & Wilcox introduced its Kahuna multiformat production switcher almost two years ago, it incorporated "FormatFusion," a capability that allows operators to mix SD and HD sources on the same M/E and within the same production without the need for external upconverters. Kahuna can be configured as a large three or four M/E unit, or as a more affordable, compact one or two M/E system.

"We built our business by breaking down incompatibility barriers between different standards, formats, and distribution platforms," said Joe Zaller, vice president of strategic marketing for Hampshire, England-based Snell & Wilcox. "With Kahuna, we leveraged our conversion expertise into the switcher's design. Because of this, Kahuna eliminates the need for costly external up and down converters which in turn eliminates the operational complexity and delay external converters can present."

Since conversion capability is integrated within the switcher, "The delay through Kahuna is only one frame, even when mixing SD and HD together," Zaller said. "And less delay and complexity mean easier operation and ultimately a better on-air product."

At ABC, the production team at "The View" is using a four M/E Kahuna equipped with 2D DVE and twin channels of Kahuna IMPAKT 3D DVE to cut the daily talker, which went HD in September.



Danny Skarka, head technical director for Current TV, with the Ross Synergy 4 MD-X.

"Like most programs, 'The View' is operating in a hybrid environment, and Kahuna's FormatFusion technology enables the seamless integration of HD signals from cameras, tape machines, and routers, with SD inputs from tape machines, graphics systems, and remote feeds," Zaller said.

Snell & Wilcox recently tripled its investment in service by creating KahunaCare, a round-the-clock technical support service, and the company continues to invest heavily in R&D to further enhance and expand the Kahuna product line.

POWER USERS

While it's common for a network or station to install a production switcher just to switch a particular show, such as "The View," which follows the same setup and format everyday, sports networks tend to push production switchers to the limits in terms of the

SWITCHING, PAGE 24

Syndication

CONTINUED FROM PAGE 14

He said the company's breakthough low-cost standard-definition video server line has given them the roadmap to produce their upcoming HD product.

"With thousands of our servers out serving low-cost, high-performance SD, 24/7, we feel we're in a pretty good position to know what the small and mid-market stations need to get the job done."

Merrill has a simple explanation as to how 360 Systems has been able to keep the price-point low. "We were able to combine technologies so that we have been able to provide exactly the same encode-decode functions as the bigger guys for a much lower cost, because technologies came together or us at a fortuitous time." He said those factors will continue in the HD product, to be introduced within the next year.

Simple math says that the more that HD content can be compressed, the less storage space it will take up. Ramzi Shakra, marketing manager for Doremi Labs in Burbank, Calif., said, "obviously local stations don't want to hold hi-def material in uncompressed form, they want it in compressed form.

"They would be receiving it from the network headquarters pretty compressed, via satellite. We have an MPEG-2 encoder that compresses hi-def further, but of course there's only so much you can compress it, so for HD we try to keep it above 12 Mbps."

He pointed out that the high cost of video storage is a temporary problem. "The way it is, storage prices keep dropping, so what makes sense now, three or four years forward, with storage prices continuing to drop, it might be less of an issue. And where HD now might take four times the storage space of SD, four years from now the cost to store it might be four times less."

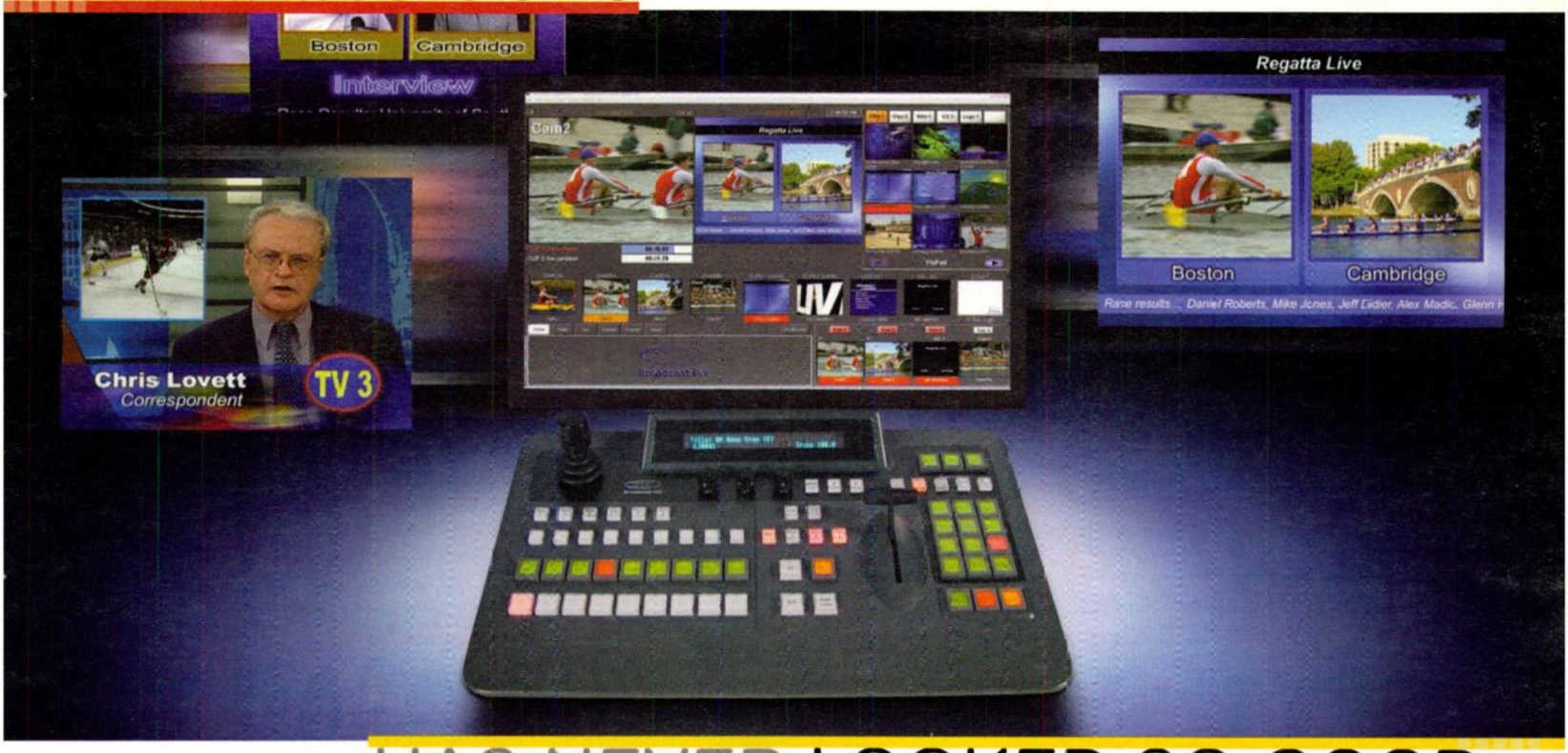
Ken Christensen, product marketing manager at Sioux Falls, S.D.-based Sencore, echoed that thought.

"Fortunately for lovers of HDTV, the data storage industry will be marketing 1 TB disks in the very near future,' he said. "When the storage capacity reaches 10 TB per drive in the 2008 time frame, storage should no longer be an issue."

Christiansen pointed to Seagate's recently announced Heat-Assisted Magnetic Recording (HAMR) technology which includes nanotube-based lubrication to allow the read/write head of a disk to get closer to the surface and store more information. Seagate predicted it should increase disk capacity by a factor of 10.

Sencore's video server products are designed to interface with the array of storage products available to the industry. ■

WORKING SOLO



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Switching

CONTINUED FROM PAGE 22

flexibility required to switch between different shows.

With more than 3,000 live sports events every year, Mobile TV Group, a division of Colorado Studios in Denver, often switches the configuration of its Grass Valley switchers according to the demands of National Hockey League games, Major League Soccer games, NASCAR Grand National auto racing, Dallas Mavericks NBA games, and the other sports for which the company provides mobile units.

According to Philip Garvin, general manager of Mobile TV Group as well as Colorado Studios and HDNet, there are 18 Grass Valley switchers between all three of his companies. Most of these are dedicated to live or live to tape sports programs.

Among its inventory, Mobile TV Group has several Grass Valley Kalypso four M/E HD switchers, which offer a total of six channels of internal Digital Picture Manipulators (iDPMs, otherwise known as DVEs) across all four M/Es. The company has two HD and two SD Grass Valley Kayak 1.5 to 2.5 ME HD switchers, a more affordable model that is housed in a smaller frame but offers four DVEs per M/E. The Kalypso and Kayak switchers, along with several Grass Valley 3000 and 4000 switchers, reside on 20 different mobile units.

"For most of our live sports events, we need to be able to produce two distinctly different live shows—one for the network covering the home team and one for the network covering the away team—and both need to come out of a single mobile unit," said Garvin. Besides having TDs (technical directors) for HDNet's show, HDNet's truck must often accommodate a TD from Fox Sports Net, Altitude, MSG Networks, Rainbow, or other regional sports networks.

"With the 'Dual Feed' capability on Kalypso and Kayak, we can have two or more control panels using the same resources on a single switcher. The inputs to the switcher are available to both TDs, working in two separate rooms on the truck," Garvin said. "During setup before the games, the two TDs agree as to how they will share the M/Es of the switcher. Then once the game starts, they can work independently."

Garvin added that one TD can be producing an HD show, while the other is producing an SD show out of the same truck. Or, the two TDs can be producing shows in different HD formats. However, most sources are generally set up to output video in one format. So the inputs to the switcher are determined by the format the cameras are shooting at that event, and the various output formats are done by conversion gear on the truck.

While Mobile TV Group's arsenal of Grass Valley LDK-6000 and LDK-8000 cameras (equipped with a variety of Canon HD lenses) are all 1080i and 720p switchable, only the format they are shooting for that game can go into the switcher. If, for example, Fox Sports Net would want to deliver a 720p show, the 1080i output would have to be cross-converted as it outputs the truck.

According to Mark Narveson, director of product marketing for the live production solutions group, at Thomson's Grass Valley company in Nevada City, Calif., this Dual Feed capability, which Grass Valley refers to as "Resource Sharing," can be done in two modes: Collaborative, where two users are working on two related versions of a show (like feeding two different shows to monitors in a stadium); and Suites Mode, where two TDs can share the same assets without interrupting each other's work.

COST-EFFECTIVE

Besides switching between SD and HD operation, the Ross Video Synergy 4 MD-X production switcher offers two unique capabilities that company CEO David Ross said can enhance the on-air product and save customers money.

The first feature is Aux Keys, which enables the user to put up to 12 "mini-M/E" on the aux busses plus the program outputs. With this patent pending feature, the Synergy 4 MD-X switcher can feed the program source or alternative sources to many monitors on the set at once.

"This Aux Key capability coordinates the aux bus feeds with the primary live program source," said Ross, whose company Ross Video is based in Iroquois, Ontario, Canada. "So a tape can be rolling behind the talent, then the operator can take that aux feed full-screen, or ping pong between the live program and the aux content."

"Other switchers have to use one of their M/Es. But this really cripples the switcher's ability to produce the show since every plasma screen being fed takes away 25 percent of the switcher's production capabilities," Ross said. "And if they feed the monitors using an aux bus, all they can do is straight cuts, which limits the production values. With our Aux Keys, operators can use layering, keying, effects, and color correction to enhance the displays."

The second unique feature the Synergy 4 MD-X provides is OverDrive, an optional production control system which essentially automates elements of a live production, including the video servers, tape machines, robotic cameras, CGs, and the audio mixers.

"We're seeing that broadcasters are faced with an economic problem when going to HD. They have their SD show, but now you have to turn around and spend millions of dollars putting together a new production control room to do HD," Ross said. "And yet they're not really going to get significant revenues for their HD commercials for some time to come. With OverDrive, broadcasters can produce a tighter show, with more consistently high quality, using fewer people, and that contributes to a faster, better return on investment."

KEEPING CURRENT

Current TV, in San Francisco, Calif., has been using the Ross Synergy 4 MD-X since it launched in August 2005. This national cable and satellite channel, which was created by Al Gore and Joel Hyatt, provides timely programming targeting the 18- to 34-year-old viewer. Current TV is available in 30 million U.S. homes via Comcast, Time Warner Cable, and DirecTV.

"Our Synergy 4 MD-X is used for multistudio productions using both our Los Angeles and San Francisco stages at the same time," said Danny Skarka, Current TV's head technical director. "Current TV is about what's going on in the world, in our viewers' own voices. Roughly one-third of our on-air broadcast is composed of viewer created content... on topics ranging from trends in technology, fashion, music, and videogames, as well as pressing issues such as the environment, relationships, parenting, finance, and politics."

FLEXIBILITY BY DESIGN

To support multicamera productions, Sim Video, a Toronto-based video production rental house recently purchased the Hanabi HVS-1000HS, a one M/E switcher from For-A Corp. that supports 1080i, 720p, 24p, and SD formats.

"Because some of our customers still have not yet made the transition to HD, we wanted a switcher that could work in both serial digital SD and HD," said Rob Sim, president and founder of Sim Video. "We also liked the ease with which you can expand this switcher, especially when it comes to inputs and DVE channels."

The HVS-1000HS comes preinstalled with one DVE card, but an additional card can be installed for increased flexibility. The switcher also comes standard with eight inputs, but it's expandable to up to 16 inputs.

According to , the HVS-1000HS is the company's third generation product.

"We designed it to allow end users to transition easily to HD production," said Andrew Alexander, vice president for For-A Canada.

At NAB2006, For-A added the HVS-500HS, a 1-M/E switcher that accepts HD, SD, HDV, and DV formats in an more economical, compact, self-contained system for live production and broadcast applications. ■

More than just true HD

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Pete Sockett, Chief Engineer, WRAL-TV

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President/General Manager, WPVI-TV

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Shawn Bartelt, General Manager, WFTV-TV

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TUNING IN — Gary Arlen

'GooTube' Raises Video Search Stakes

Few of us give a moment's thought when a local TV news department fetches video clips of the mayor's speech from last year or a decade-old historic storm. Same thing when a reporter quickly inserts footage of a memorable touchdown run from several seasons ago or an arcane civic event pulled up from the archives.

Station asset management tools for such video searches have become embedded into standard editing equipment, including products from Avid, Front Porch Digital and Grass Valley.

Those relatively routine retrievals make use of various metadata capabilities that are now built into the production system. In particular, the labels and titles on clips in the station's video library or the closed-caption text on the report's narration make it simple to find the venerable images.

Now comes Web video with a far larger inventory of content—essentially endless—and far less sophisticated production techniques. A growing number of video search impresarios are promising to help "viewsers" (a neologism to describe interactive media consumers) find the video clips they want.

Suranga Chandratillake, Blinkx founder

"Video should be delivered visually, not as a text-based list of results."

—Suranga Chandratillake, Blinkx

Google's $1.65 billion bet on YouTube (resulting in something known as "GooTube") brought the video search issues into greater focus, with observers expecting big moves based on Google's historic strength as an Internet search engine and its existing, albeit low-key, work on Google Video Search.

Not coincidentally, a slew of other video search initiatives is bubbling up. More than a dozen projects are exploring technologies ranging from pattern- and image-recognition to voice-to-text conversion. Startups such as Blinkx.tv, MetaCafe Inc. and PureVideo Networks are in the race, along with companies such as AOL and Kodak, as part of their re-invention processes.

Although much of today's video search activity is coming from Web-oriented enterprises, there is a simultaneous flurry of effort toward image recognition in the surveillance, defense and intelligence sectors. Eventually, some video search techniques and tactics will spin out from the government's heavy investment in those security technologies, which may be commercialized—although the timetable is not clear.

VIRTUAL TRIGGERS

For example, facial-recognition software, along with the tools to tag specific frames in a clip, powers much of the video search technology that is now being quietly deployed in security applications. It is a short hop from such police and business uses into entertainment and information search.

Here's how it might work: if a viewser likes a particular actor but does not know his name, the face could be used to trigger a search for other movies in which he appears. Although the possibilities for serendipitous errors are mind-boggling, the possibilities are also great for mining video libraries for old gems. On the news and information side, facial recognition opens the way to new kinds of digital reporting and local coverage.

Significantly, during the same week that the GooTube deal was unveiled, another video search pioneer, Blinkx.tv, allied with Microsoft, bringing Blinkx image and contextual search methods to the Microsoft Network and Live.com. That deal coincided with the Blinkx release of several enhancements to its image and contextual search methods.

"Video should be delivered visually, not as a text-based list of results," said Suranga Chandratillake, Blinkx founder and chief technology officer.

NEW MARKETS

Although Eastman Kodak Co. has not formally unveiled video search as part of its current product roster, the company's initiatives in still-picture pattern recognition could migrate into the video realm. Kodak CEO Antonio Perez has cited his firm's new "eFinder" tool as one of the products that Kodak will offer to help customers find photos and scenes from "digital shoeboxes" of old pictures.

eFinder is a pattern recognition technology that can be used with "intelligent archives," as Perez calls the image databases. Similar image recognition technology can be adapted to other still or video libraries. The next step would be picking a scene (let's say World War II battles) and then requesting a search for similar scenes—even if the viewser does not know the title of shows that contain such action. (Yes, genre lists of war movies might accomplish the same result in this case, but video search could deliver a far more focused roster of applicable options.)

This kind of contextual search is taking several forms, including ones that exploit the crossover capacities of the Web and existing software. For example, AOL and others are developing systems that automate the process of translating the audio track of a video program into text, and then using conventional text-searching tools to find a scene or clip.

More sophisticated contextual tools can handle video mapping and other factors to identify the location of scenes—Well over a dozen Web sites claim that they offer some type of video search today, with most of them focusing on Web video sites. They range from Yahoo Video Search, Google Video Search and AltaVista Video, to specialized video-sharing sites, such as The Open Video Project and Open Media Network. C-SPAN and PBS proclaim video search capabilities on their sites, although they seem to be, for now, mainly text searches for tagged presentations (e.g. C-SPAN's chronicles are tagged by the name of the member of Congress or the legislation/topic being debated.)

With the rise of Web video, the demand and capabilities of video search are destined to grow. Many of the tools developed for Web applications may find their way into broadcast asset management—or at least onto Web sites run by TV broadcasters.

Gary Arlen is president of Arlen Communications Inc., a Bethesda, Md., research firm; he can be reached at GArlen@columnist.com.

TV Broadcast and Satellite

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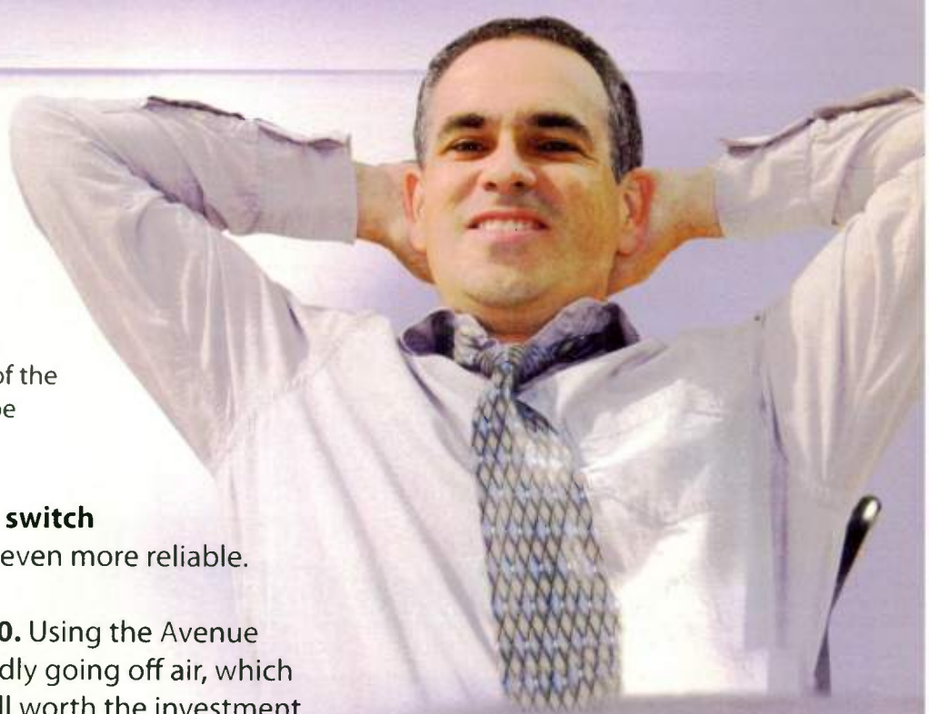

You can use the **sophisticated detection system** to your advantage by adjusting the switch's parameters for *your* facility's needs. For example, the black detection system allows you to set both the threshold and the percentage of non-black pixels. But that's not all, you can also determine the portion of the picture to be considered. This allows a corner bug to be either included or excluded in the detection process.

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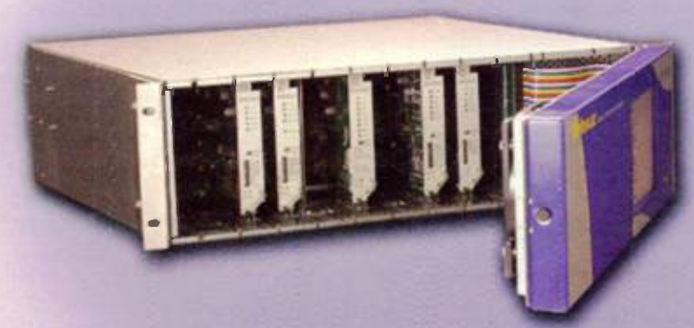

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INSIDE BROADBAND — Will Workman

Broadband Revenue Eases Content Concerns

"What you want, baby I got it." That's the pitch Google fell for last month as it forked over $1.65 billion in stock to acquire YouTube. Google Video had never gained traction vis-à-vis YouTube, and the Google concession marked its urgent need to acquire a dominant interactive broadband media platform, expand its variety of holdings, and complement its core search engine business.

When Rupert Murdoch's News Corp. laid out $580 million last year for social networking site MySpace, it heralded a new level of valuation that many analysts thought was too pricey. But MySpace membership since then has continued its phenomenal growth, rising from 60 million to now more than 100 million subscribers, which recently drew a cool $900 million from Google to integrate its search- and text-based advertising systems onto the site.

YouTube is a different beast, but that doesn't alone explain why Google offered triple the MySpace price for it.

The more revealing answer comes from employing the old investigative journalism tactic: follow the money, or in this case, the ad money.

It's no secret that Google's strength lies in its ability to draw advertisers. As well, Internet ad revenues have been climbing to levels beyond the pre-2001 tech bubble burst.

How dominant is Google in its ad-drawing ability? Try 25 percent of *all* online ad revenue for 2006, a 65 percent increase over last year, according to projections from research firm eMarketer.

Google's ad revenue haul for this year will be $4 billion, and the next closest is Yahoo! at $2.9 billion.

Overall U.S. Internet ad revenue for the first six months of 2006 was up 37 percent over last year, to $7.9 billion, according to the Interactive Advertising Bureau. So what are the deeper implications of the $1.65 billion YouTube price for broadband content, given the tectonic shift in advertising revenue from more traditional platforms?

Ahh... now there's an intriguing question. First, more money means more and better ad-supported content. The growth of broadband in homes and on mobile devices combined with young people embracing interactive platforms heralds a boom for site aggregators.

One brewing brouhaha Google/YouTube faced with content providers was over their desire to stop the hemorrhaging of revenues to piracy. Last April, YouTube imposed a 10-minute limit on uploaded videos, and claims to not be in violation of safe harbor provisions of the Digital Millenium Copyright Act of 1998.

In a September deal with Warner Music, YouTube signaled the solution to this impasse: It will share ad revenues and content control. The trade-off is that Warner has the right to pull any clip it feels is in copyright violation, while YouTube agrees to develop filtering technology to identify clips in copyright violation.

But it's the rise in ad revenue that really makes this model work, because Warner, Sony and others cutting deals can get a slice of the burgeoning ad revenue pie while offering free, rather than fee-based content (originally set at $1.99 per clip, a fee few subscribers would pay).

The lure of these platforms for advertisers is rapidly becoming ever more manifest and manifold. TiVo and other DVR technologies allow for skipping TV commercials, and the growth in DVR usage has caused a shudder to ripple through the ranks of TV ad execs.

Grabbing hip, young Internet users in creative ways, interactive advertisers can also take advantage of the medium's ability to track behavior, generate leads, home in on new communities, go mobile or jump on popular UGC (that's the new slang for "user generated content"), among other bonuses.

Traditional banner and search ads still garner the lion's share of online ad revenues, but new video categories are emerging that can use the aforementioned technologies to tailor very precise messages that might catch users at the right time.

The looming challenge facing content aggregators will be how to boost ad revenue without alienating user communities.

One can see a day when UGC employs increasing product placement, insertion of digital signage, and other ad forms. But the looming challenge facing content aggregators will be how to boost ad revenue without alienating user communities. For example, YouTube until now has had a remarkably clean, ad-free interface—sure to change as the site integrates a range of advertising.

Despite these and other concerns, broadband content producers, whether individual or corporate, as well as the content aggregators, have clearly entered a new phase. Just two years ago, I remember getting sick of whining in this space about when we were actually going to see new forms of true broadband content.

Take a trip to one of these sites, and you'll glimpse those forms, whether it's some cheesy but hypnotic homemade video, a clip from The Daily Show or a shot of an actual Baghdad firefight. How successful these will be, and which ones will become dominant with which user groups, are two areas to watch closely.

So, too, will be the response of traditional TV to the rising broadband video threat. Despite efforts to integrate their content onto broadband media platforms, TV networks have seen their own ad rates stagnate. As advertisers follow the users, and grow more sophisticated in using interactive tools, the money may shift even more radically.

Because, in the end, it's all about what you've really got.

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

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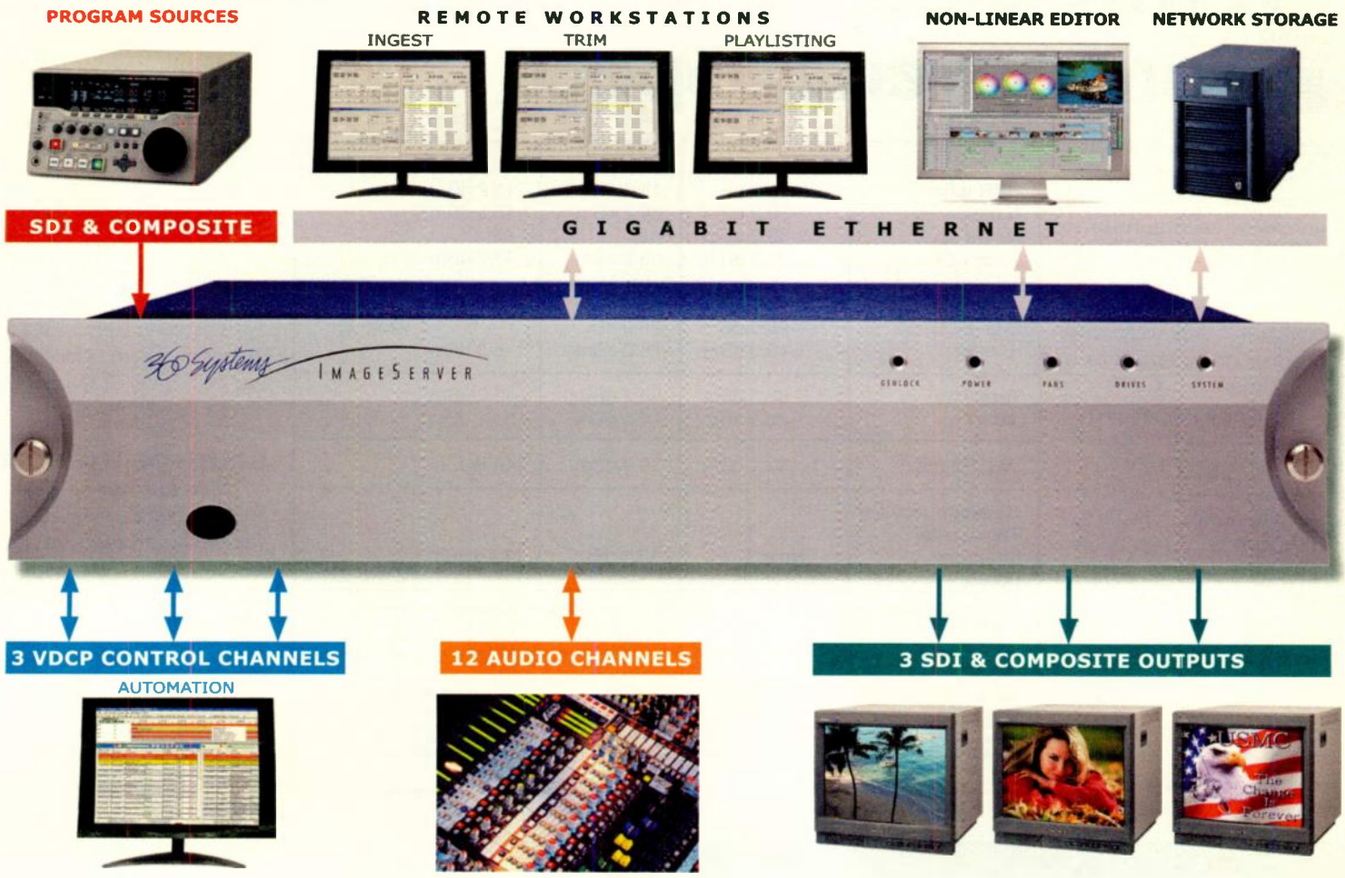

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DIGITAL TV | Charles W. Rhodes

NTIA Gets Suggestions For Converter Specs

Among the comments on the digital-to-analog converter program being managed by the National Telecommunications and Information Administration, electrical power consumption seems to be a hot-button issue. These boxes, like TV receivers, consume some power even when they are off because they can be turned back on via remote control.

Typically, the infrared receiver uses 2 watts. Much more might be needed, perhaps 8 watts to keep the DTV signal processing circuits receiving even when the TV is off. Why would it be in the public interest to keep these circuits receiving signals when no one is watching? A 24/7 emergency alert system.

With suitable software, these D-to-A boxes can monitor for an EAS alarm continuously. Calamities are unscheduled, so if the FCC really wants to have a 24/7 EAS, DTV receiving devices need to monitor a local channel *at all times*.

Several comments mentioned EAS, but no one said anything about how to implement a 24/7 EAS, so I will.

First, the converter should automatically sense when no current is being drawn by the TV. Then, any unneeded circuits in the converter may be switched off automatically, leaving on only the signal processing circuits monitoring the local station. That might take 8 watts, maybe 12. The EAS content of the DTV signal can be monitored for say, for 20 seconds. If there is no EAS alarm header in 20 seconds, power shuts down except for the infrared remote control receiver. Five minutes later, the power could automatically turn on again. This time-sharing scheme would reduce the average power consumed to well below that of an electric clock while providing 24/7 EAS—if the law is based on *average* power measured over an hour.

SNR min **N max** **Noise, Rx** **Total IM3**	D = -68.0 dBm 15.2 dB -83.2 dBm -99.2 dBm -83.3 dBm	-53.0 dBm 15.2 dB -68.2 dBm nil -68.2 dBm	-28.0 dBm 15.2 dB -43.2 dBm nil -43.2 dBm
D/U (FCC) **U max**	D = -68.0 dBm -28.0 dB -40.0 dBm	-53.0 dBm -28.0 dB -25.0 dBm	-28.0 dBm (Note 1) -5.0 dBm
Total IM3 **IM3,Tx**	83.3 dBm -86.5 dBm	-68.2 dBm -71.5 dBm	-43.2 dBm -51.1 dBm (Note 2)
IM3, Rx max	-86.1 dBm	-70.9 dBm	-44.0 dBm
Minimum receiver Third-order Intercept Power	(Note 3)	-13.1 dBm	+14.5 dBm

Note 1: ATSC has shown that the maximum average power received near the transmitter is –5 dBm, so we do not use the FCC D/U in this calculation.

Note 2: To add two powers in log units such as dBm, they must first be converted to real power (milliwatts), added, and then the total converted back to the appropriate logarithmic unit.

Note 3: At D = –68 dBm, U = –42 dBm Assuming the receiver IF selectivity is 58 dB in (n–1) the ACI due to IF selectivity = –100 dBm, comparable to the noise power in the receiver. So total noise = –96 dBm, lowering total IM3 by 3 dB to where Rx IM3 = nil. In other words, at D = –68 dBm, the receiver IF selectivity and noise plus sideband splatter from a real adjacent channel transmitter fully account for the adjacent channel interference. A perfectly linear receiver would still have interference at U = –40 dBm. The Zenith prototype DTV receiver tested by the ATTC(1995) was tested on a "perfectly linear" RF test bed and that receiver failed at U = –42 dBm. That is in the ATTC's final report.

Table I: DTV-DTV Interference, from the lower adjacent channel

SOUTH OF THE BORDER

Near and not so near the U.S.-Mexican border, there are many people who enjoy over-the-air analog broadcasting, some from stations south of the border. These stations will not cease transmitting analog TV on Feb. 17, 2009 and some of these stations operate above Channel 51. Several commentators want these federally subsidized converters to automatically pass-through off-air analog signals because the viewer wants to go south of the border.

Unless these federally subsidized converters are capable of rejecting interference from undesired DTV signals on ACI (adjacent channels) and TCI (taboo channel interference), they are not going to work reliably for all local stations, and the unit will be returned to retailers as defective.

But retailers cannot return the $40, and probably cannot return the coupon either. In my view, most retailers will shun the coupons.

A number of manufacturer comments noted the A/74 minimum performance guideline put out by the ATSC, and noted that the NTIA has proposed A/74 as a minimum performance standard. Are these ATSC guidelines which manufacturers are so supportive of satisfactory to protect the public? Frankly, I don't think so. Let's look at the interference protection ratio the FCC uses (since 1998) to protect against ACI between two DTV signals.

The desired-to-undesired, or D/U, ratio is –28 dB for interference from the lower adjacent channel into the D channel, and –26 dB for interference from the upper adjacent channel.

Table 1 demonstrates that only a receiver whose third-order intercept power (IP_3) is above the highest of the values given can operate with the maximum ACI stated.

Theoretically the IP_3 would be independent of the U power level, but this may not be so with real receivers because the RF AGC circuitry changes RF gain with the D level.

I believe that few receivers have an IP3 of +15 dBm or above. While this is the range suggested by myself and others, many receivers may not meet this criteria. Those receivers are likely to fail when they encounter a U signal power below –5 dBm.

But is a receiver whose IP_3 is at least +15 dBm guaranteed to work in the real world? Table 1 considers only one U signal. In many cases, there are three more consecutive channels in the same band, so we may have both upper and lower adjacent channels contributing interference into the D channel.

One might think that with two equally strong U signals on channels n–1 and n+1, that the interference into channel n would be worsened by 3 dB, but this would only be true if the interference mechanism were first order, or linear, and this is third-order nonlinearity! Furthermore, one may ask what the average power of the U signal has to do with nonlinear distortion.

Third-order nonlinearity is sensitive to the peak envelope power of the interference. For two signals of equal power, the peak envelope power is not 3 dB higher than each signal alone, it is 6 dB higher. Unfortunately, the third-order intermodulation products increase in power with the cube of the interfering signal power. Wow!

Testing where there is a nonlinear interference mechanism requires that the entire useful D signal dynamic range be explored. For our ATSC DTV signal, this is from –81.5 to –5 dBm average power. Why –81.5 dBm? Isn't the minimum usable DTV signal power –84 dBm? The noise-limited minimum is indeed –84 dBm, but at D = –84 dBm there is zero allowable interference. Zero.

A small U signal can be tolerated at –81.5 dBm so that anchors the bottom of the range. The top end is a at least –5 dBm at this time based on ATSC data found in Appendix D of A/74. This is a workable limit.

How many D test levels should be used between –81.5 and –5 dBm? It certainly isn't three. I would test with 5 dB increments in D power from –81.5 to at least –5 dBm.

The ATSC guidelines has only three test levels, well inside the limits I advocate. Why? Those were performance specifications that the manufacturers participating knew or believed they knew could be met by products available at the time. That is why they called them guidelines and not minimum performance requirements.

The ATSC guidelines defined a different set of D/U ratios than the FCC. The guidelines sought to emulate the

NTIA, PAGE 38

PRODUCTION MANAGER Craig Johnston

You Still Have to Communicate Visually

How does that saying go: "I'm not getting better, I'm just getting older?"

I've seen something on television over the past couple of years that bothers me, and I've been trying to figure out if it's really a problem, or if I'm just old school.

There's a morning news show I watch that's targeted at an alternative audience. There must be something attractive about it, because I'm watching it in spite of the fact I'm not part of their target audience. They have a Steadicam or some pole-mounted camera or some-such and they do bumps in and out of commercial breaks with it. Most of the time when they use it bumping in and out of breaks, it's set at a lower frame rate. I'm no expert about this, but it's probably about 8 or 10 fps. It's definitely noticeable.

I have no problem with using that lower frame rate going in and out of breaks. It might not be my choice of shot, but I think it's part of the look and feel of the show, and it works.

But sometimes that same camera, at the same lower frame rate, is intercut with other 30 fps cameras for regular parts of the show. For instance, on an irregular basis, they have animals live on the set, and while the other cameras used for the segment are shooting at 30 fps, about half the time, this camera is shooting at the odd, slower frame rate.

This is jarring. I'm trying to watch a segment on an eel swimming around in an on-set tank, and every time they cut to that camera, it's jarring. To me, it's no different than if they had one camera way out of color balance; it just doesn't belong intercut with the other cameras.

Apparently, when episodic Westerns were shot for TV... they did a bunch of shots of the good guys riding in pursuit of the bad guys, and used those stock scenes for chase sequences in show after show.

THE REST OF THE STORY

In college, I studied how to make films, and one of the textbooks we used was Joseph Mascelli's "Five Cs of Cinematography: Motion Picture Filming Techniques." Making up those five Cs, in addition to camera angles, cutting, close-ups and composition is the subject of continuity.

Before I ever thought about getting involved in the television business, I think I became a fledgling expert on the subject of continuity. Apparently, when episodic Westerns were shot for TV, at least while I was growing up, they did a bunch of shots of the good guys riding in pursuit of the bad guys, and used those stock scenes for chase sequences in show after show. (I've been told for this stock footage to work show after show, the good guys always had white hats, the bad guys, black hats.)

The editors were very careful in the way they intercut a horseback chase scene. If the sequence started out right to left, they kept moving right to left until the good guy bull-dogged or roped the bad guy off his horse. But during those chase sequences, my guess is that because the editors had only so many second-unit shots to choose from, they couldn't always build a perfectly continuous sequence. You would see one shot where the good guy was just a couple of seconds away from catching the bad guy, cut to the next shot they were seven or 10 seconds apart.

This bothered me. Though I know now that the continuity was screwed up, I didn't know back then what the problem was. They were closer, then further away, then closer again, and it took me away from following the show. I think that's the same thing that happens when the production crew on that alternative newscast intercuts the low frame-rate camera with the normal, 30 fps cameras.

That this low frame-rate shooting happens one day and not the next tells me that this whole matter is probably a lot lower on somebody else's give-a-damn scale than it is on mine, and that in general they don't know if they should do it or not. Since to my way of thinking, the low frame-rate shooting does work for bumping in and out of breaks, you don't want to glue the switch into the 30 fps position. I think a manager just wants to make sure there's a rule about when to use it and when not to, and stick to it.

(There's a saying that goes: "What gets watched gets done." If a new rule like the one suggested above is established, and then no one in management pays any attention to it, you'll lose twice. First, you won't accomplish what that rule was put in place to fix, and second, no one will figure you're going to enforce the next rule, either.)

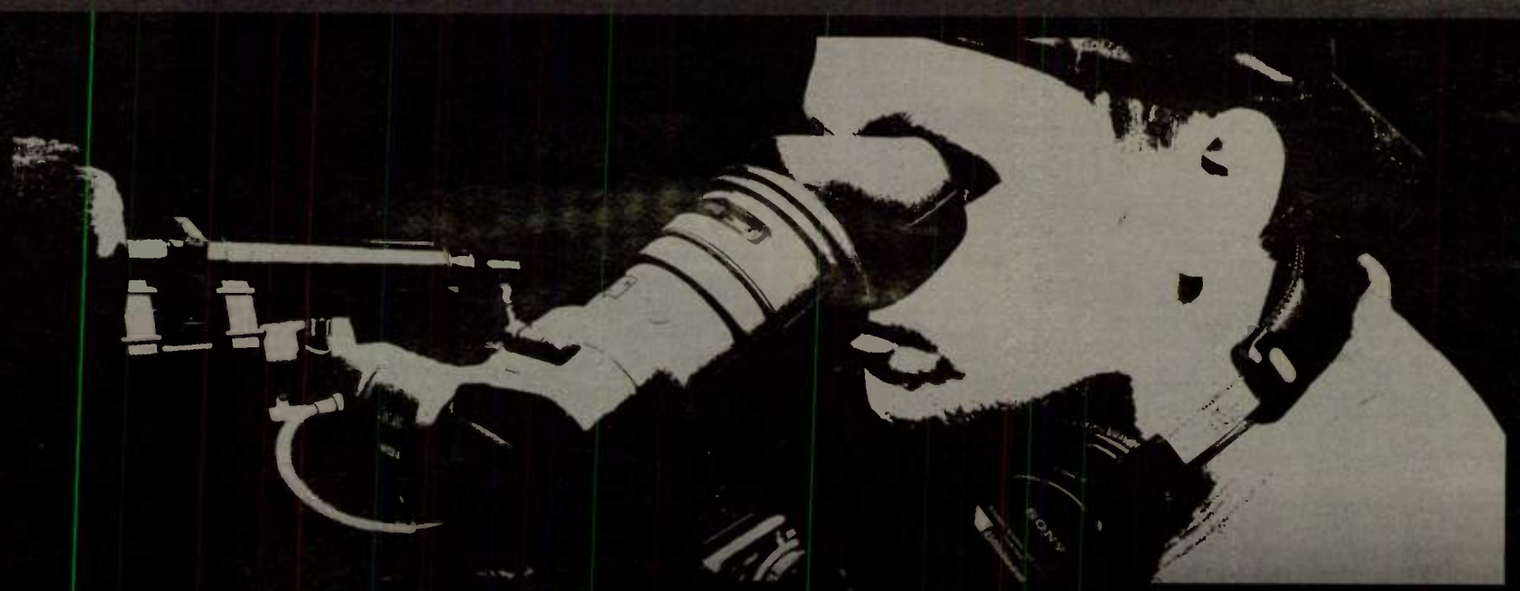
For the past 20 years and more, MTV videos have broken all the rules of continuity, sometimes to great effect. So how do you know what works and what doesn't when it comes to a newscast? The network evening newscasts are very conservatively done, as are most regular affiliate newscasts. But the show I've been talking about is an alternative kind of newscast. What works there?

I've got a model to suggest. Take a look at "Countdown with Keith Olbermann" on MSNBC. They do a lot of camera swinging around on a jib arm or stabilizer, a lot of things you wouldn't see on network newscasts, but it all seems to work.

I think they've put a lot of thought into what works and what doesn't, and they've come up with a rocky-rolly show that appeals to the MTV-engrained audience that still communicates. In general, they go a little crazy in their transitions, but settle down when they're communicating.

There, an older person has gotten something off his chest, and now I think I'll go have another bowl of prunes.

Craig Johnston is a Seattle-based Internet and multimedia producer with an extensive background in broadcast. He can be reached at craig@craigjohnston.com.



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AUDIO BY DESIGN

Mary C. Gruszka

Digital Consoles for Surround Sound

At this year's SBE Chapter 22 Regional Conference in central New York, there were quite a few engineers from mid-market stations on the lookout for on-air audio consoles for surround sound productions.

While they may have to deal with one or two few surround sources this year, that is expected to change, and very quickly.

As Kevin Emmott, marketing coordinator of Calrec put it: "We believe that over the next five years, as more surround production occurs and even more surround sources are used, the size of mixing consoles used in production and live-to-air broadcast will need to significantly increase. At some point, all that is now stereo may be surround."

Calrec Bluefin

So this would be a good time to look at digital audio consoles, especially those designed for surround sound.

CONSIDERING CONSOLES

But first, let's consider this concept of "console." In the analog world, the term "console" is generally used for an audio mixing unit that contains all the inputs and outputs with their associated circuitry, plus faders and knobs for level control, equalization, high- and low-pass filtering, compression and limiting, and switches for function on/off and signal routing. Everything, including all the electronics like input pre-amps and equalizers, is contained in the one unit.

While there are digital consoles that adhere to this architecture, it's much more common these days for digital on-air "consoles" used for TV to have the electronics separated from the control surfaces, not unlike video switching systems.

A separate rack-frame or frames contain the input and output electronics, digital-to-analog and analog-to-digital converters and the digital signal processing. The physical audio I/Os connect to these frames, which no longer have to reside in the audio control room itself. Indeed, they are often placed in central equipment rooms to keep fan noise out of the audio control room, and to make cabling and maintenance easier.

Many systems allow for distributed frames and stageboxes that are interconnected via a data network (typically through Ethernet or fiber cabling), allowing for connections closer to the sources, eliminating many of the long audio cable runs to a central equipment room.

And then there's the control surface itself. It looks like an audio console with its faders and knobs, but there's no actual audio running through it. (Although some digital consoles provide a few physical audio connections on the control surface for monitoring and metering.) The faders, knobs, and selectors on this surface control the electronics, notably the digital signal processor, inside the external frame.

Here's another difference between digital audio mixing systems and analog audio consoles. In typical analog consoles, the physical input corresponds with the fader input. For example, when you plug a mic into input 1, it's already physically wired internally into channel strip 1.

But with digital mixing systems with separate electronics and control surfaces, the physical inputs to the frames (often referred to as ports) typically do not correspond to any particular channel strip. It's during setup where the relationship between physical ports and control channels is programmed

into the system. For example, a line input on physical port 5 can be programmed to be controlled by channel strip 1. And since these programming settings can be stored, each show can have its own setup.

Many digital audio mixing systems allow for different layers on the control surface. In the previous example, physical port 5 was programmed to channel strip 1 and now let's put it on layer 1.

To continue, let's program physical input 12 to be controlled by channel strip 1 on layer 2. The control surfaces typically provide easy switching between the two layers. When the second layer is selected, all controls and functions for channel strip 1 apply to the signal on physical port 12, not port 5. This capability can possibly allow for a smaller control surface, i.e., how many live channels are needed at any given time depending on the production requirements of the station.

Because digital mixing systems use external electronics for digital and analog audio I/Os, the electronics can supplement a plant audio routing switcher, or actually become the central audio routing switcher. In any case, audio mixing systems often have interfaces to the common broadcast routing switchers to access, through the audio control surface, routing switcher sources with their mnemonics.

PROGRAMMING CONTROL

In many systems, more than one control surface can access sources in any of the electronic frames (in systems where more than one frame is used), but only one control surface at a time can actually control the characteristics of a particular signal. These systems can be programmed to allow only a selection of sources to be made available for each control surface. A typical analog system would need audio distribution and wiring from each source to each console.

Digital control allows more options in the design of the control surface. Two common design styles are channel in-line controls and centralized controls.

Control surfaces with in-line controls mimic the layout of analog audio consoles, with individual controls for each channel strip function on each of the channel strips themselves. In other words, each channel strip would have controls for such things as EQ, high- and low-pass filtering, compression and limiting, aux sends, inserts, etc.

Console surfaces with centralized controls have a central panel with these types of controls. To make some adjustments on a particular channel, for example, to change the EQ, the operator selects the channel in some manner and makes the necessary adjustments using the central panel. These parameter settings remain associated with the chosen channel. The operator can then move on, selecting another channel, and using the same central control panel, make adjustments for that channel.

Even with centralized controls, console surfaces often have assignable variable controls for each channel strip for commonly used functions on that strip, like mic input gain, for example. The function of these controls are assigned during setup, and can be different for each strip and changed for each production (or even within a production if someone wanted to do that).

This design approach reduces the amount of knobs and switches on the console for a less cluttered appearance, but it's a different way of working for those used to analog consoles.

Manufacturers of consoles of either type of design strive to make the operator's learning curve short by way the controls are laid out, visual cues, and other ergonomic factors.

Now that we have a general idea of key features of digital audio consoles, we'll get surround specific next time.

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

FOCUS ON EDITING

Jay Ankeney

Holiday Gifts for the Video Editor in Your Life

For this last column of the year, I'd like to herald the holidays with a gift from the recent past and a harbinger of the near future. Thanks to the cycle of DVD/cable releases, a much overlooked editor's gem of a film is just surfacing in home theaters.

It's "The Greatest Game Ever Played," directed by Bill Paxton and edited by Elliot Graham. Judging by its domestic box office of just over $15 million, not a lot of us caught this masterpiece of visual storytelling on the big screen. But this tour de force of post-production techniques successfully overcomes Mark Twain's dictum of golf being "a good walk ruined."

"The Greatest Game" tells of amateur golfer Francis Ouimet, played younger than his actual 20-year age by Shia LaBoeuf, winning the 1903 U. S. Open golf tourney by beating the best in the world, including his idol, British golfer Harry Vardon (Stephen Dillane). Forget the front story about a kid who loves golf, because the three final rounds of the tournament are what make this movie special.

The Jahplayer, a media player capable of handling uncompressed video sequences at resolutions as high as 2K and 4K in real time.

Its editor, Elliot Graham (who has also cut bigger grossers such as "Superman Returns" and "X-Men 2") said this film's eye-teasing impact is the result of director Paxton and visual effects supervisor, Dennis Berardi, providing images that let him depict every hole with a different visual style. More than 32 artists worked on visual effects.

"We decided to use all the techniques we had available, from computer-generated effects to swooping camera moves to make golf a visceral experience even to younger audiences," Elliot said. "Bill Paxton wanted to approach every hole in a new way—from the animated storyboards of pre-viz through the final cut—so when I got the footage, I was given the challenge of what I could do with it in the edit bay."

From the first tee, we can see the evocation of contrasting visual styles used for impact. Young Ouimet slices his first drive, but his diminutive caddy, Eddie Lowery (Josh Flitter, providing comic relief) tells him "You keep your head down and I'll watch the ball."

The next fairway shot cuts in a prodigious close-up of club hitting ball with a "Ka-whoosh" thunderous enough to rock the theater—and the tournament is on!

There are several montages during the game that are an editor's dream. You'll especially relish the extended sequence of fast cuts in the downpour that doused the beginning of Round 3, where the rhythm that Elliot gave to the golfers' overlapping swings beats a tattoo on the screen as compelling as a carronade of cannon.

"In the script it just said, 'heavy rain with golfers battling it out,'" Elliot said. "Paxton shot all day in the rain and I was able to take that avalanche of shots and run with it. In the end, he looked at my montage and told me to simply give him more. It was great."

Later, as the match comes to a close, Elliot cut a collage of contrapuntal cuts of Vardon and Ouimet whacking away at their shots from contrasting sides of the screen until, in a wonderfully poetic editor's conceit, their two putts enter the frame from opposite sides of the screen and drop in the same hole. The game is tied!

But it is the way the visual styles

depicting the essence of each character makes this stand out. For example, young Francis' role model Harry Vardon was known for his great concentration. Yet in the movie, he was haunted by spectral images of four men in black top hats, symbols of oppression from his childhood.

In Round 4, Vardon is able to mentally dissolve the looming fairway crowds out of his field of vision, but those four spectral figures appear as reflections on the head of his golf club. He swings and misses. Later, his concentration again dissolves the crowd, but this time he also makes the four top-hatted specters disintegrate into vapor. And this time he hits a winner!

"Effects supervisor Berardi, director Paxton and I worked like a team on those sequences," Elliot said, "constantly exchanging files over a secure Internet connection with new posts almost every day. That's why this film really came together during post."

You can see this most impressively during the final playoff round. Ouimet has to make his shot. The camera circles over his head, looking down on the ball. Then Elliot cut to a shot from below ground level, looking up past the ball itself at Ouimet's concentration.

The kid swings in slo-mo and, interspersed with reactions from the crowd, an extended tracking shot shows the ball negotiate the rolling topography of the green until it finally plops into the hole. The crowd roars.

Editors will too, as the unexpectedly elaborate images from the playing greens and CGI workstations in "The Greatest Game Ever Played" dance across your home theater screen.

JAHSHAKA

I'd also like to stick awareness of something from the near future into your holiday stocking. It's called "Jahshaka," a name derived from "God's Weapon" by its Jamaican founder, Carsten Becker, a visual artist seeking less expensive content creation tools. Today, Jahshaka is being sponsored by Visual Media and is released under the GNU General Public License. Visual Media's goal is to make Jahshaka a free, cross-platform, open-source video editing, effects and compositing suite that may one day be able to compete with software-only post-production packages from the big guys.

Although available free of charge, developers are able to make a profit from open source software by offering upgrade enhancements, technical support and training/documentation. That's what Visual Media is hoping to achieve with Jahshaka.

Open source software differs from commercial (closed source) offerings in that the product is released long before it is completely functional so potential end users can contribute to its development.

Visual Media displayed Jahshaka Version 2.0 in the Open Source Pavilion at SIGGRAPH 2006 as a 3D compositing/paint/asset management tool with editing capabilities, and invites your input. Jahshaka 2.0 includes Jahplayer 0.1.0, a media player capable of handling uncompressed video sequences at resolutions as high as 2K and 4K in real time. Both are cross-platform compatible for Windows, Mac or Linux.

"The core technology is based on Open Libraries with the Jahshaka skin built upon it," said Visual Media's Scott de Mercado. "Anyone can add what they want to the main application."

Both Jahshaka 2.0 and Jahplayer 1.0 and their source codes are available for free download at *www.jahshaka.org*. Under development since 2000, Jahshaka has had more than 500,000 downloads to date. I'm not personally endorsing the product, but can avow that the people behind it are serious in their methods and intent. And after all, the holidays are a time of hope for a better future for all of us.

See you in 2007!

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 at JayAnkeney@aol.com.

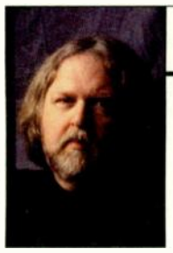

Photo: Steve Jordan

THE BIG PICTURE

Frank Beacham

The New Video Crafts For Multimedia

In the film industry, new technology has traditionally come at a snail's pace. Because of this, filmmakers have had time and tradition for perfecting their craft.

Video people have not been so lucky. Since 1975, when portable video first became a serious pursuit, the technology has evolved so rapidly that the only way to learn to use the tools was to dive in and get hands-on experience. In those early years, with catastrophic equipment breakdowns occurring almost daily, Rube Goldbergesque-mechanical skills were often the most valuable in ensuring the videomaker's economic survival.

Times have changed. Today's professional camcorders are dramatically better, lighter and cost less than the silver cell battery systems we used in the '70s. While a single camera video crew once cost over $100,000 to outfit, today's video entrepreneur can set up shop with the help of a single credit card.

Yet, as we've discussed previously in this column, equipment alone does not make the successful videographer. To take advantage of the enormous new media opportunities now available, one must quickly learn skills that earlier generations had many years to master. And, even that's not enough anymore.

Today's video entrepreneur must also learn to juggle all the new components now available for electronic storytelling. The video business used to be about traditional television. Now, in this multimedia universe, video has broken from the old boundaries. It's in this twilight zone of change that the greatest opportunities for success will be found. It's here that I see some major trends.

To take advantage of the enormous new media opportunities now available, one must quickly learn skills that earlier generations had many years to master.

The first trend is that video is not about traditional television any more. Not only has television merged with the PC, but video is now crossing wide distribution platforms from iPods to theater screens. Now, even a basic Web site can be turned into a 24/7 TV station.

The important concept is the boundaries of video distribution are rapidly being erased. The role of gatekeeper—once the domain of broadcasters—has shifted to the individual viewer. We are moving toward a day when people watch what they like—anytime, anywhere and on any device. This trend has enormous implications for independent video creators.

Trend No. 2: the video display screen has gotten both bigger and smaller. Your pictures must sizzle on both. When working for the large-screen, high-definition display, get it right. Viewers are going to be painfully aware of mistakes. Poor lighting, bad makeup, poor scenic design are not acceptable.

This also applies to sound. Digital audio in the surround era can no longer be treated as video's stepchild. A competent sonic experience is essential. Millions of home theater owners now know the difference.

Finally, consider how the program made for the big screen will look on the tiny screen of a mobile phone, iPod or PDA. Will the inability to see important details be so frustrating to small screen viewers that your show will lose its emotional impact? How does one "protect" the experience for all viewers? It's not so easy, producers soon find.

Trend No. 3: Video is rapidly moving from a tape-based to a file-based domain. Not only does this dramatically alter the production processes ("workflow" is the new buzzword for it), but it changes the uses and presentation of video elements.

I once saw a demonstration of an electronic version of The New York Times. The front page looked conventional—with a layout of all the usual headlines, text and still images. However, when I tapped a still photo image with a finger, it instantly turned into full-motion video.

In short, this video became an important component in a new way of telling the larger story. And, after all, the value of video is just that—telling a story. Think multimedia. In today's converged electronic information environment, we have the power to combine media—be it video, audio, still images, text, graphics, whatever—to tell powerful stories in a fully interactive way.

To those that master this new story form, the future will be bright—very bright. These trends, combined with the low cost of entry, represent a titanic shift in the creation of electronic media. As we watch the old media business models crumble before our eyes, new opportunities abound for those with the skill, imagination and the willingness to take a risk at something new.

It's an exciting new frontier and, for now at least, it's up for grabs.

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

NTIA

CONTINUED FROM PAGE 31

testing regimen of the ATTC in 1995 when it tested the Grand Alliance system. We made our RF test bed extremely linear; it had no measurable IM_3 (transmitter sideband splatter).

Today, it is a simple matter to introduce a controlled third-order nonlinearity in the DTV test signals to emulate the performance of real-world DTV transmitters. I use a Microcircuits ZFL-500 or -1000 solid-state amplifier, deliberately overloaded to get the IM shoulder level 35 dB below the DTV signal in-channel.

The resulting signal spectrum looks just like the spectrum before the RF mask filter of a DTV transmitter at full rated power. So it is now practical to emulate real-world DTV signals in the laboratory. This wasn't the case when A/74 was drafted.

Finally, looking at Table 1, all you need to do is subject the receiver to the entire range of real-world DTV power levels and determine the U power at which reception becomes slightly erratic. If the measured D/U is always above the FCC values, the receiver should work anywhere. However, you should test with both upper and lower first adjacent channels at the same power. Testing with only one U is almost meaningless. The FCC allows both upper and lower first adjacent channels in the same community, so ACI testing should be done that way.

As for TCI, the FCC has no D/U protection ratios for DTV-DTV interference. I'll have more to say about the testing for TCI next month.

If the NTIA bases its minimum performance standard on the ATSC guidelines, I believe millions of these federally subsidized units will be returned as unsatisfactory.

Stay tuned.

Charlie Rhodes is a consultant in the field of television broadcast technologies and planning. He can be reached via e-mail at cwr@bootit.com.

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Cheetah DRS allows broadcasters to place input frames in equipment racks near satellite ingest from receivers, VTRs, or servers, while placing output frames closer to studio gear for distribution into audio consoles, or master control. This keeps cable runs extremely short, preserves signal quality and reduces cable costs, time of installation and maintenance. Additional inputs or outputs can be added by changing cards or increasing frames in any location. Format flexibility in the Cheetah DRS allows a mix of AES and Analog, Synchronous and Asynchronous audio, with support for Dolby-E.

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THE MASKED ENGINEER | Mario Orazio

'Yes, It's Still Coming,' The Two Firms SED Again

You might not have noticed that not everything that can be imagined always happens. Yes, I'm ranting this month about new display technologies.

I mean, maybe you can imagine that you can eat an entire Thanksgiving turkey at one sitting, but, unless you're a professional trencherman, you roast infant turkeys, or you have an exceptionally durable keister, it probably ain't going to happen. So, too, with the effluent of SID.

SID ain't short for Sidney; it's short for the Society for Information Display. Once upon a time, SID was an organization for display scientists and engineers, but these days even home theater enthusiasts come to SID's exhibits.

Scientists and engineers know that things take time. Rocket scientists know it took a few millennia from Chinese fireworks to "one small step for a man, one giant leap for mankind." Heck, it took more than 37 years before someone attempted to prove the existence of the indefinite article in that quote (see "Electronic Evidence and Physiological Reasoning Identifying the Elusive Vowel 'a' in Neil Armstrong's Statement on First Stepping onto the Lunar Surface," by Peter Shann Ford).

Consumers are something else. They want what they want now, and they ain't in the mood to wait for it. But SID ain't exactly a consumer-electronics fair.

You know about DLP projectors? Ages before Texas Instruments dynamic micromirror devices, RCA gave a paper at an SID event about a CRT with deformable mirror flaps on the faceplate that moved according to the electrostatic charge.

If you think that's weird, you should have seen the one about the Xerox display with microscopic balls all painted black on one side and white on the other. Either an electric or magnetic field—I forget which—was supposed to rotate them, and multiple balls per pixel delivered grayscale. Methinks there was even a version with color achieved by spinning the balls around a different axis.

There have been systems that project live holograms on helmet visors and others that project virtual images right into eyeballs. There have been CRTs that squirt pigments through dyes on faceplates instead of emitting light. If you can imagine it, someone probably presented a paper on it at SID.

So it should come as no surprise that, after more than a decade of playing with it in a lab, Canon showed a 10-inch surface-conduction electron-emitter display at SID in 1998. Heck, before they put their display efforts into DLP, TI showed a small version of something similar at SID, too.

Mayhap an explanation is in order. Plasma panels and LCDs are nice thin displays with just one big problem. They ain't CRTs.

The SED at SID was nice and thin, too, but it kind of was a CRT, except the "C" stands for cathodes instead of cathode (there's one for every pixel), the rays are awfully short (which is how the display gets so thin), and the tube is more like a thin version of sealed dual-pane window glass.

The folks who could really use SED are those of us who have been relying on CRT monitors for color matching and similar functions and are finding that manufacturers no longer want to manufacture them.

On account of there being cathodes, SED can use CRT phosphors for CRT color gamut and near-instantaneous CRT-phosphor excitation and decay. The phosphors in a plasma TV ain't stimulated by an electron beam; they change UV to visible light.

Near as I can tell, each and every person who has seen pix on an SED has wanted one—desperately—and that generally ain't even been folks working in TV technology. Imagine the light weight of a production truck with an SED monitor wall. Imagine eliminating monitor racks. Go ahead; do your own imagining.

It is now about eight-and-a-half years after SID in 1998. In 1999, after JVC pulled out, Canon and Toshiba announced they'd start mass manufacture of SED in 2002. In 2003, EE Times reported SED would go on sale in 2005. Methinks it was at the CEATEC show last month that the latest mass production date was given as 2008.

A bunch has happened since 1998. LCDs, which used to be little, washed-out, low-contrast, limited-angle devices, have grown into pretty large screens with pretty darned good-looking pictures. Yes, they could still use some help in color gamut and speed, but LED backlights might help both of those. Plasma screens, which used to burn in logos, buzz at high altitudes and add contour lines to low-level video have come a long way, too, and it ain't 2008 yet.

Did I mention that the prices of both LCDs and plasma TVs have been plummeting? The two SED companies ain't discussed price recently, but Toshiba does have experience selling stuff for less than it costs to make, like, for instance, HD DVD players.

WHITHER SED?

There might be a cadre of consumers who'll shell out several shekels for purer pictures. But the folks who could really use SED are those of us who have been relying on CRT monitors for color matching and similar functions and are finding that manufacturers no longer want to manufacture them.

I can't say that I blame them. CRTs are big, heavy, power-consumptive beasts that new regulations make more expensive to build and dispose of, thanks to the anti X-ray lead in the glass, other hazardous materials in the phosphors, and the exciting implosion hazard that has kept them at 40 inches or less.

So I'll bet I ain't alone in wanting a replacement for CRTs. But I don't really want a 55-inch screen for video shading, and, even in a big control room, that's mighty large for a director's program monitor. Still, that's the size Canon and Toshiba have settled on for their initial SED products.

Heck, anything could happen. Peace could break out worldwide. MPEG-4 Part 2 could become something people care about again. You could be able to eat that whole Thanksgiving turkey in one sitting.

I recommend not holding your breath until 2008 waiting for the Canon/Toshiba miracle CRT replacement. SED at SID wasn't sad in 1998, but 10 years later, it could be suds on sod.

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

News that Comes to Life.

"The camera's video quality is exceptional, which maintains the station's excellence in quality programming."

– Jeff Nelson
News Director, ABC Affiliate WDAY-TV

ProHD

JVC's GY-HD100U ProHD Camcorder

When Time is Crucial, Direct-to-Edit is Vital.

The ABC affiliate, WDAY-TV in Fargo, North Dakota knows that news happens instantly. When the WDAY-TV news crews are out in the field, they need reliable cameras that record video directly to a hard drive when time is of the essence. That's why WDAY-TV standardized on JVC's GY-HD100U. The GY-HD100U provides the versatility that WDAY-TV needs for studio and ENG shooting and durability to operate in North Dakota's below zero temperatures. This flexible and affordable camera was easily and economically integrated into WDAY-TV's existing Final Cut Pro post production workflow.

WDAY-TV's ProHD cameras are equipped with the optional DR-HD100 HDD recorder, which provides cache memory so you don't miss a shot. It also allows the editors at WDAY-TV to edit immediately from the hard disk without time-consuming transfer to a non-linear editor. Efficient and economic, the JVC GY-HD100U ProHD camera system is the ideal choice for news organizations such as WDAY-TV migrating from SD to HD.

"We chose the GY-HD100U because the camera can record in SD and HD. The affordability of the camera will allow us to upgrade the entire station to HD in the very near future. JVC's ProHD cameras are WDAY-TV's primary cameras for ENG and the hard disk recorder lets us transfer footage directly to our editing systems."

– Jeff Nelson
News Director, ABC Affiliate WDAY-TV

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USER REPORT

Avid Eases Election Day Crunch at WOOD

by John Joy
Operations Technology Director
WOOD-TV

GRAND RAPIDS, MICH.

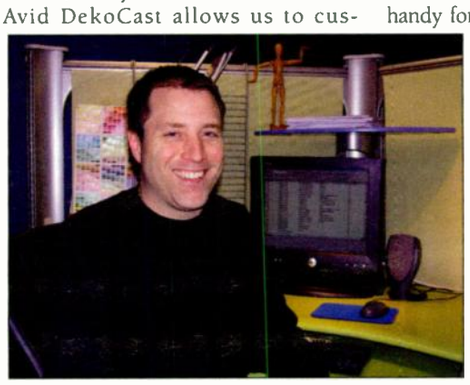
A television newsroom on election day tends to be a rather hectic place. Everyone on staff is moving at a frenzied pace to keep on top of exit polls and ever-changing vote tallies. Live reports often get the most attention, but the ability to display graphical data about candidates and voting results is a key element to keeping viewers informed. Maintaining accurate and timely graphics on air is no small undertaking.

To ease this process here, we've put in place Avid Deko real time graphics and DekoCast channel branding systems, along with the Avid LeaderPlus election management solution. These additions allow election results to be easily integrated into our newsroom workflow, which includes Avid iNEWS newsroom systems, DekoCast and Deko 3000 graphics systems and Thunder live production servers.

CONSISTENT LOOK; FAST UPDATES

On election night, Avid LeaderPlus keeps track of all the elections through its giant database, and we can immediately have the data output to DekoCast scenes for both our on-air broadcast and to our Web site. Data can be pushed through to multiple graphics systems that can instantly populate prebuilt graphic templates.

We operate three local television stations from our building. In addition to WOOD-TV, the NBC affiliate, there's WOTV, the ABC affiliate, and WXSP, a MyTV Network affiliate. Avid DekoCast allows us to customize the graphical look and color scheme to match the individual stations.



John Joy is WOOD-TV's operations technology director.

The three DekoCast units, located in master control, handle downstream graphics and the lower-thirds that cycle through all of the races. A fourth unit is located in the production control room and displays into a lower right corner of the screen to remind viewers of the results being discussed during live shots.

TEMPLATES AND MACROS

Intelligent templates and macros featured in Deko products are especially handy for continually updating graphical data such as election coverage. Advanced composition tools, such as text that fits-to-fill a layer boundary or auto-branding frames can apply station or network-branded looks for every visual element.

This includes typed characters of text, still images, or motion graphics. We try to keep the look of all templates consistent with the graphics we use for pre-election coverage. It's important that viewers are familiar with our look, which means giving them as much information as possible without being cluttered and difficult to read.

Additionally, by incorporating the Avid Thunder, which is connected to our switcher using PBus II, our technical directors can build complex timelines that recall and trigger election-specific animations from any of the four channels on Thunder.

On election night, when all of the information comes together, the speed and efficiency of this broadcast setup become key. A graphics operator will drive the Deko 3000 from iNEWS, but the results will be pulled in from LeaderPlus.

The producer associates each election result template to a news story within iNEWS, so that when the story floats to another place in the on-air rundown, the graphic will move with it. With Deko and DekoCast we're able to keep a consistent look between devices. With this integrated Avid newsroom workflow, we can produce eye-catching, informative and up-to-the-minute election coverage.

John Joy is operations technology director at WOOD-TV in Grand Rapids, Mich. He may be contacted at john.joy@woodtv.com.

For additional information, contact Avid at 800-949-2843 or visit www.avid.com.

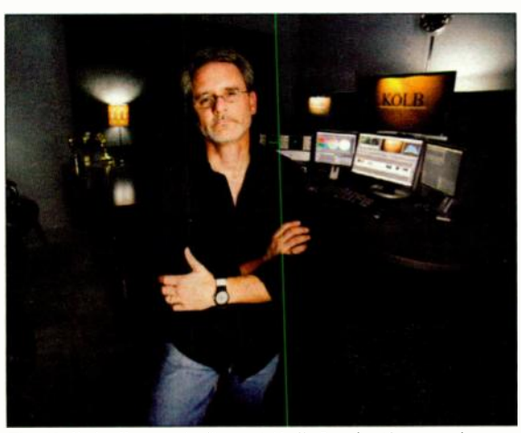
USER REPORT

AJA Xena LH Wins Kolb Kudos

by Tim Kolb
Director/Editor
Kolb Productions

NEENAH, WIS.

As a director and editor in the industry for more than 20 years, I've worked on a variety of projects ranging from TV spots to high-definition music videos, and corporate presentations to animated television programs. For those of us who are presented with new delivery requirements with every new project, it's harder than ever to find a post-production solution that fits the bill—every time.



Tim Kolb is director/editor at Kolb Productions and uses several AJA products in his business.

As high-definition television grows in popularity, many of my clients are shooting or otherwise acquiring their material in HD, and are doing production in HD in order to maintain the highest attainable quality archival master and future-proof their projects as much as possible. As clients become savvier to the DTV changeover, they're demanding more work to be finished in HD, even if the work will be exhibited in standard definition for the short-term.

PROVIDES SD AND HD

The AJA Xena LH provides HD and SD, as well as analog and digital input and output, and offers an all-in-one solution for monitoring and I/O, which is invaluable to my workflow. I use it daily for outputting video in multiple SD and HD formats—many times within the same project.

The Xena LH eliminates the need to render out a separate master clip from an HD timeline to send out to SD master by down-converting on the fly. A hidden benefit to this system is that when I'm working in Adobe Premiere Pro, I can preview my HD timeline video through my SD waveform and vectorscope. This allows me to verify that a change I make to the

AJA, PAGE 58

USER REPORT

Automated Reversioning at ESPN Classic

by Jamie Baker
Director of Production
ESPN Classic

LONDON

ESPN Classic broadcasts four channels: a U.K. channel in English, a European channel in English and French and an Italian language channel. It has a large tape archive of sporting events onto which it must overlay its own branding and graphics.

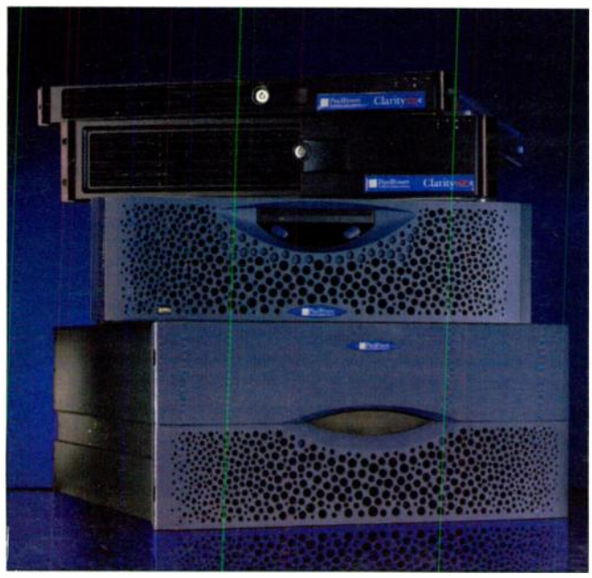
Previously, this required a costly post-production process, which had to be repeated with every update of on-air look. It also meant spending excessive time in post-production to create multiple versions of promos, which feature an end-board—a graphic with the run time and voiceover.

THE RIGHT COMBINATION

Rather than continue burning graphics to a master tape, ESPN Classic needed to increase the flexibility of the in-program graphics with an innovative approach. Applying them live-to-air and automating the versioning of promos would reduce the post-production work required and would save time and money.

To achieve this, Pixel Power provided a combination of its flagship Clarity graphics products including Clarity Prep software-only licenses, Clarity hardware systems, a customized subtitling application and PixelPromo for the required workflow.

PixelPromo automates the entire process of creating and playing out promos by adding end-boards that incorporate the appropriate scheduled run time text and voiceover. It also automates the play-out of in-program graphics, so ESPN can contextualize and brand its library of sports events quickly and simply.



The Pixel Power family of graphics equipment

In Europe, ESPN Classic sources material from around the world that is typically clean of graphics, so it's vital that we add our own mark. Our graphics project allows us to do this faster than has ever been possible and saves us the substantial cost of post-production for graphics.

ESPN Classic uses a Clarity200 system to create a master template set, which includes locator graphics, league tables, scoreboards, lower-thirds (subtitles and names) and copyright information for various sports. Whenever the master template set is updated, it is published to the Clarity Prep workstations and QC Clarity systems, and also sent via FTP or DVD for play-out to Red Bee Media, where there are also Clarity systems for graphics transmission.

ESPN now post-produces templates as a normal operation and sends them as generic promos for play-out. PixelPromo builds the graphics and audio tag just prior to air, and overlays the template with the scheduled run time and program titles. It also searches the schedule up to two weeks ahead to find the correct air time and title according to configurable rules. The information required by PixelPromo to version the promo is built into the schedule.

ESPN uses Clarity200 to create a master promo template set which includes various end-board versions to accommodate different length titles, numbers of lines in a title and combinations of episode, series and program titles.

DO IT ONLY ONCE

ESPN records a set of voiceover tags in the three languages, covering all variants (e.g. "next," "tomorrow," "tonight," "next Monday," etc.) with a time interval of 15 minutes. Although this requires around 700 tags per language, it only has to be done once. The tags are sent via DVD to Red Bee Media for installing on the Clarity systems at play-out.

This innovative software allows ESPN Classic's producers to select a graphic template, fill in the appropriate text information and designate the timecode in and out points for the graphic overlay. It allows the broadcaster to keep production of graphics in-house in order to save the time and money spent on outsourcing the function to a post-production house.

Jamie Baker is director of production at the ESPN Classic network. He has 20 years experience in the broadcast industry. He may be contacted at jbaker@espn-cs.com.

For additional information, contact Pixel Power at 954-943-2026 or visit www.pixelpower.com.

USER REPORT

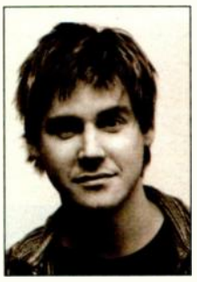
Sony Vegas Bridges Music Into Video

by Chris Brickler
Independent editor, producer and documentary maker

HOLLYWOOD, CALIF.

I started producing music on an Apple IIe in the '80s and continued to use a Mac for years. About four years ago, I switched to a PC platform and have had enjoyed a great relationship with Intel and Sony ever since. I had a lot of interest in merging my music productions with video. The problem was that I didn't know anything about video production—nothing. So I got a Sony DSR-PD150 camera and began the journey of learning digital photography and editing. At the time, I had a friend using Sony Media Software's Vegas and he highly recommended it, given its smooth integration of music and video.

Once I started working with Vegas, I was hooked. The program, to me, is very intuitive. Then one day, I was kicking around some music ideas for this weird electronic, folksy song and decided to test out Vegas and loved it. I had just finished an album called "Reflection Theory" that I did in ProTools, but I felt that the technology overshadowed the emotion and rawness of the music.



Chris Brickler

When I started using Vegas for music, I felt that the technology became more of an enabler rather than the epicenter of the music. I have produced three albums on a home PC, featuring more than 20 artists from all over the world.

About two years ago, I broke ground on my most ambitious project to date—producing a feature-length documentary film on my home PC called "Love Chemicals and Frequency." I interviewed my grandparents with the PD150 camera about their 65-year marriage. They are wonderful and very insightful people. Given the inability of my generation to hold a relationship together for more than 65 days, this documentary examines many of the social, biological, and spiritual issues with long-term commitment, love and relationships. Since then, we have gone on to shoot people and top experts on the topic of love and relationships from all over the world.

150 HOURS LATER

Now, with over 150 hours of footage on my hard drive and more than 30 songs created on Vegas, I am sure you can imagine the editing puzzle that I have gone through to create a story that makes sense. However, I do feel fortunate in growing up with Vegas, because the software has enabled me to produce this film on a zero budget. We didn't spend one dime on any outside film editing, color correction, graphics, music score, voice-overs and the like. "Love Chemicals and Frequency" will hopefully be released sometime in 2007.

On the multimedia front, I produce video for all sorts of applications including film, TV broadcast, and Internet video. The new HD rendering suite, along with all the other formats such as .wmv, .mov, .avi and others, gives me a lot of flexibility on the output side of things. When I am working on audio in Vegas, I really like the fact that I can quickly set up a grid based on measures and BPM to create loops. That has been very helpful. I also think that the surround-sound mixing function in Vegas is particularly easy to use.

Chris Brickler is an editor, producer and documentary maker. He may be contacted at chris@xlanticmedia.com.

For additional information, contact Sony Media Software at 800-577-6642 or visit www.sonymediasoftware.com.

USER REPORT

Orad, Telemetrics Solve Space Issues

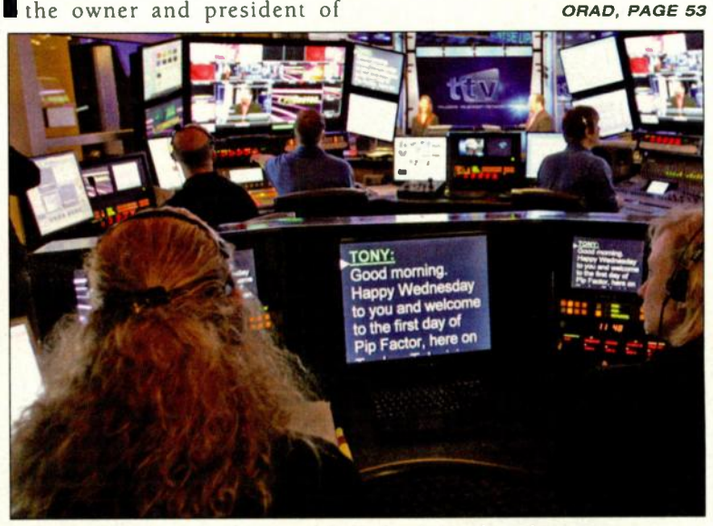
by Rodney Murray
Vice President of Engineering & Technology
Splash Media, LP

ADDISON, TEXAS

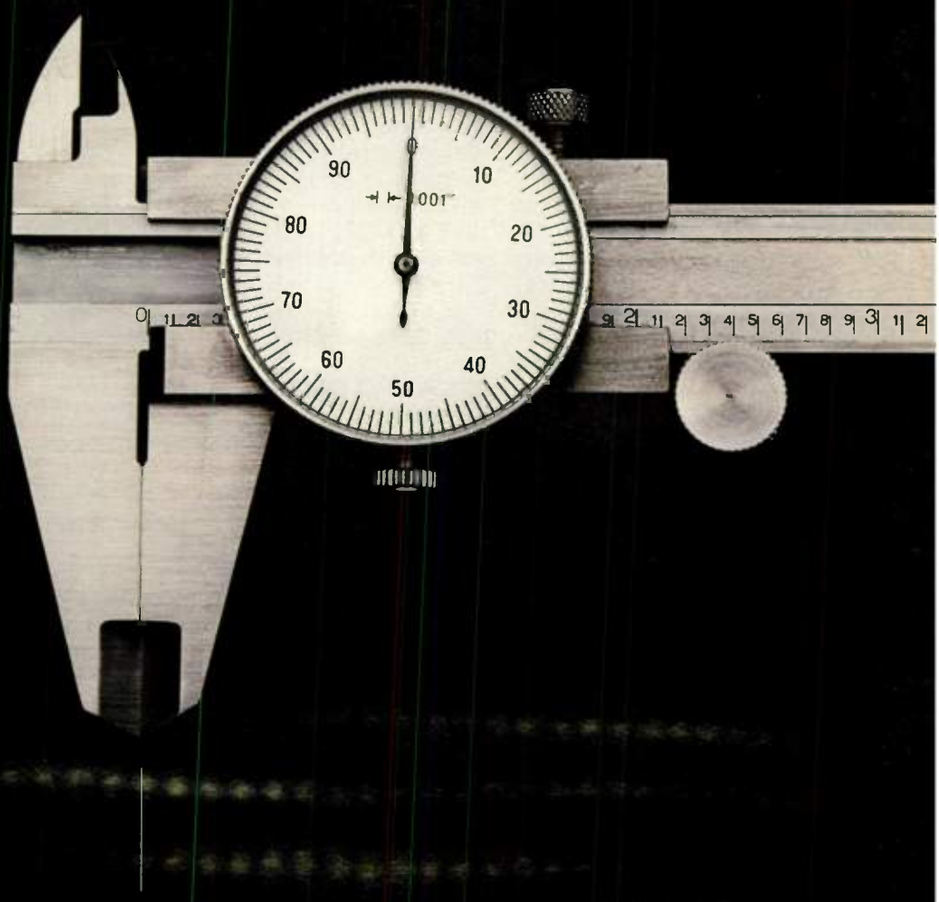
I love a good challenge, and that's exactly what was presented when the owner and president of SplashMedia asked me to design and install a network studio in a space the size of a two-car garage. But that was only the beginning.

The facility, located in this Dallas suburb, was on the ground floor of a five-story commercial/residential building and was flanked on either side by restaurants. The existing

ORAD, PAGE 53



The Splash Media control room with the Orad virtual studio system.



THE DIFFERENCE BETWEEN TOLERANCE AND ZERO TOLERANCE

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USER REPORT

Apple Puts Football Graphics in Motion

by Ryan Leimbach
Freelance Editor

HAGERSTOWN, MD.

Live sports editing is my specialty and Apple's Motion has become my program of choice for creating motion graphics for NBC Sunday Night Football. In my field, speed is key and flash brings cash. My primary application is creating animated elements involving video, photos and statistics in a graphic layout that is keyed over live camera during the game. Motion allows me to design on the fly and create motion graphics with great detail quickly in high definition.

Originally, Motion started as a support tool to create titles for video highlights that were edited in Final Cut Pro. Now the program has become my primary workspace. I love the ability to lay out designs containing text, graphic elements, photos and video, and to quickly animate the elements.

Working in HD presented a host of problems when creating motion graphics with video. Limited bandwidth from the media drives and lack of memory available for other applications would add up to long rendering times on multilayer composites.

Understanding the design of Motion, I configured my Mac to match the program's design: more RAM, more real-time video; more processor power, more particle generation; better graphics card, better performance. I load a small amount of HD video combined with the tools in the program to create complex animations, then I load graphic stills and use Particle Generator to add lighting effects.

CREATING BACKGROUNDS

I follow that by drawing shapes and using Replicator to create motion backgrounds and then let Motion do the work. I create quite a few photo cutouts of players using Motion's excellent tools for drawing shapes and creating masks. It is extremely easy to load a photo or video frame, then grab the shapes tool and cut out the player. I also use the player cutouts in Replicator and Particle Generator. This allows me to add extra graphic elements using only a few files.

Motion's ability to create and stylize text while playing a video clip is extremely helpful. I find myself scrolling down the list of font styles while playing the video, as the typeface will immediately update on the screen. This allows me to pick the right font to fit the design.

The style tab has four different text elements: fill, outline, glow and dropshadow. I frequently mix those text elements to create fonts with the look of realworld lighting effects.

Editor Ryan Limbach uses Apple Motion to build graphics for NBC Sunday Night football.

Understanding behaviors is the key to animating elements quickly and is extremely important in creating a series of elements that use the same animation. A behavior can be added to almost any changeable property. I like the fact that, unlike keyframes, behaviors are modifiers to the property and not definite values. This allows the effect to be moved along the timeline easily.

I rely on Motion for the majority of my graphics work, along with Final Cut Pro and Soundtrack Pro. Final Cut Studio creates a tightly integrated package that expedites my workflow. That is extremely important when faced with constant deadlines.

Ryan has worked as a freelance editor for the past 10 years for NBC, ABC, ESPN and CBS. He may be contacted at ryan@leimbach.org.

For additional information, contact Apple Computer Inc. at 800-692-7753 or visit www.apple.com.

USER REPORT

WOAI-TV Likes Baron Toolset

by Jennifer Broome
Chief Meteorologist
WOAI-TV

SAN ANTONIO, TEXAS

News 4, WOAI-TV, was the first station in the country to go 'all Baron.' When we were looking at the Baron Services VIPIR (Volumetric Imaging and Processing of Integrated Radar) system several years ago, we were presented with a system that not only had phenomenal storm tracking capabilities, but was also debuting forecast modeling data that could be used on air.

We were facing budget constraints that would make it difficult to have two separate weather systems—a graphical one for forecasts and a second one for radar/storm tracking. Our priority is covering breaking severe weather and having the necessary tools to do that.

FIRST ON THE BLOCK

After much discussion, it was decided that we would give it a go and be the first station to use all of the cutting edge technology that Baron offers. We added the Baron StormWarn severe weather alert system shortly after installing VIPIR.

Jennifer Broome, Chief Meteorologist, WOAI-TV

At WOAI, we were the first in the country to share the latest weather technology with our viewers, including the use the BAMS (Baron Advanced Meteorological Systems) pollution modeling. In an area where air quality is affected by everything from winds transporting pollution from southeast Texas and the Tennessee and Ohio Valleys, to agricultural fires in Mexico, air quality forecasts are crucial. BAMS gives us the chance to provide a true lifestyle weathercast.

We are consistently getting upgrades to VIPIR to ultimately better our on air product. We use all of the features including the Baron Button, MicroTrac and Hurricane Hunter.

One of the best features is being able to build a seamless show in less than 10 minutes, including radar with storm tracking features, satellite information, current data from live and virtual sensors and forecast graphics including animation, flipbooks and forecast pages.

EXCEPTIONAL TECH SUPPORT

As with any computer system, there are occasional issues, but technical support from Baron Services is outstanding. The tech staff goes the extra mile to ensure that clients have well running systems at all times. With remote dial-in, the technical support staff even provides training as new features debut with upgrades. During the past three years, their technical support people have even gone into hurricane zone areas to support clients. This is truly beyond the call of duty for a weather equipment and software vendor.

For me, it has been a wonderful experience to be a part of the feedback and developmental processes for bettering the system for on-air use. It's nice to be part of a team and not just a product user. When I offer feedback on model performance with a weather event like an upper level low, that feedback is taken and shared with PhDs who are constantly working on the modeling data for better performance. Being able to interact with some of the top meteorologists in the world is something I've found unique to Baron Services.

We constantly ask what's next, and look forward to continually sharing cutting edge technology with our viewers.

Jennifer Broome is Chief Meteorologist for News 4 WOAI-TV. She also provides forecasts for the San Antonio radio group of Clear Channel Communications, including WOAI-AM, which can be heard nights from Canada to Mexico. She may be contacted at jenniferbroome@woai.com.

For additional information, contact Baron Services Inc. at 256-881-8811 or visit www.baronservices.com.

BUYERS BRIEFS

Production Studio Premium from **Adobe Systems Inc.** is a complete package of post-production software designed to fill the needs of those involved in video, DVD, film and Web content production. The bundled software includes Adobe After Effects 7.0, Adobe Premiere Pro 2.0, Adobe Photoshop CS2, Adobe Audition 2.0, Adobe Encore DVD 2.0 and Adobe Illustrator CS2.

The company is also including for a limited time a free training DVD. Special upgrade pricing for the software bundle is available to current Adobe customers.

For additional information, contact Adobe Systems Inc. at 800-833-6687 or visit www.adobe.com.

Boris Blue from **Boris FX** is a standalone software motion graphics and 3D compositing system for Windows XP. It uses the latest generation NVIDIA GPU-based graphics cards to deliver real-time processing of 2D and 3D effects and gives both television and film users the ability to produce real-time 3D motion graphics.

The software can produce true 3D warping of 3D objects, provide extruded text shapes, and has A Motion Path filter for creating complex 3D animations. Boris Blue users can create 3D effects without complex learning curves and without rendering times normally associated with such effects.

For additional information, contact Boris FX at 888-772-6747 or visit www.borisfx.com.

The 3DBOXX 8300 series workstation from **BOXX Technologies Inc.** is powered by eight Intel dual-core processors and the new Intel 5000X chipset. The workstation features a 1333 MHz front side bus and enhanced I/O capability.

The new workstation is designed to replace the company's 3DBOXX 8200 series. The new line provides users with a high-performance computing platform designed to improve workflow in VFX applications.

The workstation is tailored for digital content creation applications including animation, special effects, 3D, digital film, game development and broadcast applications. *For additional information, contact BOXX Technologies Inc. at 512-835-0400 or visit* www.boxxtech.com.

FireStore FS-4 DTE (direct-to-edit) portable recorders from **Focus Enhancements** are designed to work with a variety of DV camcorder products and provide users with the ability to record both to tape and disk. The standard FS-4 recorder comes with a 40 GB hard drive that can provide up to three hours of recording time. The unit can also be equipped with an 80 GB hard drive to provide additional recording time. The FS-4 machines provide support for a variety of DV nonlinear editing systems, and can record files as raw DV, AVI type 1, AVI type 2, VI type 2, 24p, Matrox AVI, Canopus AVI, QuickTime or QuickTime 24p. The FS-4 line of recorders connect to editing systems via FireWire, and the editor treats the Fire Store device as a FireWire hard disk drive.

For additional information, contact Focus Enhancements at 800-338-3348 or visit www.focusinfo.com.

USER REPORT

Autodesk Smoke is a Natural at BBC

by Steve Olive
Online Editor
BBC

BRISTOL, ENGLAND

As the online editor for the BBC, I work with Autodesk's Smoke in finishing a variety of full-length programs. Many of the BBC-produced projects that I'm involved with fall into the natural history genre, such as the recently completed "Planet Earth" 11-part series in HD.

Smoke is ideally suited to my workflow, which involves compositing, stabilization, clean-up, inserting titles, graphics and credits and effects for shows that are shot on everything from 35mm and 16mm film to HDCAM, DVCPRO and digital still photography, in the case of time-lapse sequences.

MOTION MADE EASY

I have been an editor since 1987 and have been working in broadcasting for more than 20 years. If I had to design an editing tool from the ground up, it wouldn't be far from Autodesk's Smoke: The editing and finishing software makes it easy to move elements around, the media management is outstanding and there are excellent import and export tools. The system is very stable, reliable and flexible.

Most importantly, Smoke is ideally suited to a mixed-format workflow, and there is nothing else that performs as quickly for full-length HD programming. Smoke can import media from just about any format and turn it into HD, and the interface is very well developed.

A lot of the effects that I do are unknown to the audience. That's the way it is with natural history. I'll often spend time removing unsightly features such as fences or crew vehicles, repairing burnt out skylines or smoothing out a jittery shot. This is a lot of repair work that often poses unique challenges.

For time-lapse shots, we'll bring in stills captured on a digital camera at 350,000 pixels and resize them to 1,920 x 1,080 in Smoke, then add subtle effects such as pans or zooms to highlight areas of focus.

Often with these time-lapse clips, something will appear in only one or two frames, and must be painted out to maintain consistency.

Steve Olive uses Autodesk Smoke in his work as a BBC editor.

Smoke's paint tools do an excellent job of this. One of the most rewarding parts of my job is to tap into Smoke's digital toolbox and save a shot that might seem totally unusable due to damage, dirt, flickering or camera shakiness and turn it into something breathtaking.

A complexity of working in HD is that material can't be played out to tape and then brought back into a system without compromising some of the quality. With Smoke, nothing needs to go onto tape—you can achieve a completely tapeless workflow.

Our network is supported by a Sledgehammer NAS with eight terabytes of storage. This comes in handy as an average 50-minute HD program with rendered color grading amounts to around 1,200 gigabytes.

Once I complete the online editorial of a program, files are moved over the network onto Autodesk Lustre for digital color grading.

I am currently working on a three-part series about the Galapagos Islands, also in HD, as well as two HD episodes of the popular "Antiques Roadshow," and a "Natural World" special on the moose in Anchorage, Alaska.

Steve Olive has worked as an editor at the BBC in Bristol, England since 1987. He has provided effects and online work to many major natural history series and is currently involved in the move to HD post-production. The opinions expressed are those of the author alone. He may be contacted at steve.olive@bbc.co.uk.

For additional information, contact Autodesk at 800-440-4198 or visit usa.autodesk.com.

USER REPORT

Chyron Out In Front at WLEX-TV

by Sean Franklin
Operations Manager
WLEX-TV

LEXINGTON, KY.

WLEX-TV is a single-channel NBC affiliate that transmits to Lexington, Ky., and the east-central Kentucky region. It's owned by Evening Post Publishing/Cordillera Communications, and we broadcast network programs and local news 24/7. As part of a scheduled station upgrade, we made the decision earlier this year to replace our eight-year-old Pinnacle Deko character generators with new systems that could improve the look of our graphics output while streamlining workflow.

We spent some time comparing the latest Pinnacle Deko and Chyron HyperX graphics systems. Before we made our final decision, there were several criteria that the Chyron systems had to meet to fulfill our requirements.

These included overall improvement of graphics, the ability to meet the pressures of demanding live news broadcasts, more complex animations, 3D play-out and simple import of AVI files from Adobe Creative Suite. Chyron has an excellent pedigree and service record, and the company was able to meet our requirements, as well as provide additional features such as real-time 2D/3D animations, which run directly from the HyperX, rather than from our server, as had previously been required with the Deko. As a result, in September 2006, we took delivery of two HyperX systems with Lyric Pro software and a MicroX.

Sean Franklin, operations manager at WLEX-TV in Lexington, Ky. with the station's new Chryon graphics system.

MOS INTERFACE

Another important consideration when we selected the HyperX, was its Chyron Camio interface to MOS newsroom computer systems, a feature that we plan to use in the near future. The networked Camio interface will allow our reporters to browse and find graphics, insert and update text fields and add them to the script as the story is breaking.

Following installation, we now have one two-channel HyperX running Lyric Pro in the studio control room which provides live on-air graphics for our newscasts. The high-speed capabilities of the HyperX allow our operators to add multi-layer effects and transitions to stories as they break.

The second HyperX, also running Lyric Pro, is shared between our art department and control room, and is mainly used for over-the-shoulder graphics. The MicroX is based in the master control room and plays a major role in branding, news bugs, weather bugs, crawls and headline crawls, all of which can be created on or offline, and either locally or remotely.

Since the systems have been on-air, we have been very pleased with the graphics capabilities of both the HyperX and MicroX. Considering that some of our operators have only used the Dekos, the transition has been extremely smooth.

Following our comparisons with the latest Pinnacle Deko and Chyron's HyperX graphics system, we were impressed by the power that the HyperX provided and also the fact that all of Chyron's systems—including the entry-level MicroX—can be configured as HD-only, SD-only, or a combination HD and SD.

This flexibility provides our station with a solid investment value and a scalable migration path when we make the move to begin HD origination.

Sean Franklin is operations manager at WLEX-TV18 in Lexington, Ky. He has 15 years experience in television production and operations. He may be contacted at sfranklin@wlextv.com.

For additional information, contact Chyron at 631-845-2000 or visit www.chyron.com.

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AEROMAX-TV™

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USER REPORT

Edius Calms Hurricane Editing Job

by Jim Edds
Managing Director
Extreme Storms

BIG PINE KEY, FLA.

Extreme Storms creates professional stock footage and still images of extreme weather. Its footage of lightning, hurricanes and tornadoes regularly earns a place on TV news and documentaries and is also popular with the public on DVDs.

My job involves getting to the heart of storms as they occur and then transforming raw footage into professional, usable content for broadcast. Particularly for news broadcasters, rapid turnaround is essential, so I must be able to create what they need in the format they use as quickly as possible—before someone else does.

The major 2005 season storm, Hurricane Katrina, was the costliest and third strongest land-falling U.S. hurricane on record. With one of the highest death tolls of any hurricane, it devastated much of the north-central Gulf Coast and wrought catastrophe in New Orleans and coastal Mississippi.

Jim Edds follows and records major storm events for his business, Extreme Storms.

Capturing the breathtaking natural phenomena and human consequences was critical for communicating with news audiences across a wide region. A quick turnaround on editing was essential.

I shot all footage in SD and, using the DV capture utility and Edius NLE from Grass Valley, I could ingest three streams of video simultaneously and edit them in real time. This also meant that I could add audio in real time directly to the timeline, without having to wait to import audio files separately.

I had recorded a great deal of footage, including the actual storm itself and the human reactions, such as store looting and rescue efforts, so I had a lot of content to organize. Shots included the storm-surge coming up over a highway, four feet of water outside a glass door, as well as looters gathering quarters from a devastated casino. I stayed in the Biloxi Coliseum for the duration of the shoot and from where I slept, I almost could film cars floating past.

A huge benefit with Edius is its ability to output any format directly from the timeline so I could distribute information in any format from my hard drive. This eliminated the need to render, which saved even more time. When it came to creating the DVDs for broadcast and consumer sales, I could also generate the format I needed within Edius.

DEMAND FOR FOOTAGE

As a result of the quick editing turnaround, my footage from the DVD appeared on The Weather Channel, "Good Morning America," The History Channel, "Inside Edition," CBS, the Discovery Channel and German TV.

Ultimately, any investment in post-production technology must demonstrate its value, and Edius paid for itself sixfold within three months. To me, it's more than just an NLE—it's the heart and soul of my business and helps to keep me organized. It ensures that I can keep this unique and innovative trade alive.

Jim Edds has been recording weather for the past seven years and started up Extreme Storms in 2003. He may be contacted at jimedds@bellsouth.net.

For additional information, contact Grass Valley at 408-954-4500 or visit www.thomsongrassvalley.com.

USER REPORT

Producers Grows With Quantel

by David Hudson
Senior Editor
Producers Video

BALTIMORE

Producers Video opened its doors 23 years ago with a single edit room and small production studio. Today we provide film and HD video production and post-production services for a variety of clients. Spots make up more than 80 percent of our workload. Our facility houses a production studio, two offline/online suites (an Avid Media Composer and Avid Symphony), a digital linear room and finishing suite that is home to the Quantel eQ.

In addition, we maintain three graphics rooms running the Quantel Hal, After Effects workstations and Cinema 4D. On the audio front we have a Pro Tools suite and two Fairlight Fame audio rooms.

Along with my duties as editor, I supervise the other editors in house, especially when we work on multiple-spot packages. I also help our editorial staff work smoothly with the other departments throughout the facility.

QUANTEL STYLE EDITING

Having worked around the Quantel systems for more than 10 years, progressing to the company's eQ was not only a logical next step for me, but also one I was excited to make.

When I came to Producers in 1996 there was an established relationship with Quantel, so when we were looking for another high-end finishing suite we purchased the Editbox. While there was a learning curve on the box, once we got over the hump we were creating much more of the graphics and composites ourselves. We could suddenly make our own mattes and we were making our own keys and graphics and adding them to our spots without having to bring in another artist.

David Houston is senior editor at Baltimore's Producers Video production and post-production facility.

Moving on, in 2004 we took delivery of the eQ with QColor (in-context color corrector) and Eiger software. We were looking for a system that would give us the power and flexibility to surpass the Editbox. We were also starting to have clients ask about the possibility of editing in HD. We wanted a system in place, should we have HD material walk through the door. Quantel's eQ filled the bill in every way.

The eQ allows me to easily conform an edit from an offline, go into the graphics mode and compositing mode and easily replace a layer with an updated graphic. All I do is drag the new graphic over the old layer and bam! It remembers all of the properties I had set up and just applies it to my new revised graphic.

What I like the most is the interface and the tactile nature of QColor, the screen layout and the division of space. It's a great system, very easy to navigate, and it allows me to get to the tools I need with ease. I don't feel as if I'm going through multiple menus to find what I want. Everything is there at my fingertips and everything I have attempted to do, I have been able to do. I've never been stumped.

For us, the eQ has also opened up a revenue stream of HD finishing that we did not have before.

David Hudson is senior editor for Baltimore-based Producers Video. He has been with the company since 1996 and may be contacted at dhudson@producersvideo.com.

For additional information, contact Quantel at 703-448-3888 or visit www.quantel.com.

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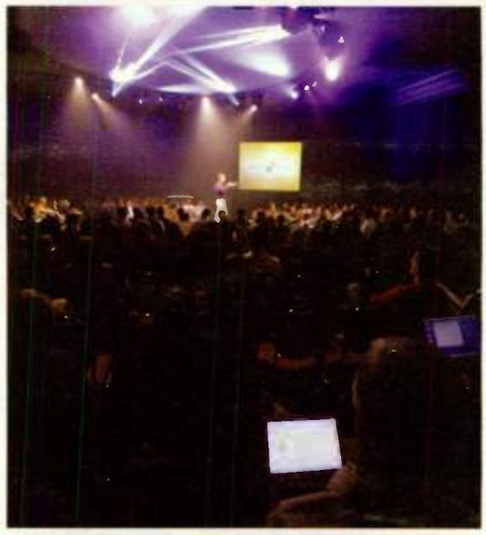

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USER REPORT

Editware Provides Edge for Living Word

by Dustin Dancisak
Senior Editor
Living Word Media

BROOKLYN PARK, MINN.

At Living Word, in common with most production companies, we have unique production needs. We are a church that not only has an in-house production unit, weekly half-hour show, satellite church uplinks, but we've recently launched a one-hour live show entitled, "Living Word Live."

About four years ago, we had to make a choice on how to most effectively complete the task of editing a half-hour show that goes into several versions. One of the reasons that we selected the Editware Fastrack was due to its control and integration capabilities with equipment we were using, as well as some that we planned to acquire.

Fastrack was the only system I found that contained the heritage of linear editing, but, and more importantly, had the insight to keep up with the latest peripheral gear and the associated device communication.

I use the Fastrack for our weekly half-hour show that pulls in material from a combination of VTRs and server channels. Along with these playback and record devices, I use the production switcher, audio mixer and CG to assemble a final product.

Dustin Dancisak (R), Living Word Media senior editor, is pictured with Nate Olson, another editor at the facility.

Use of the Fastrack literally has cut hours and sometimes days from the post process. This allows my producer to spend less time in the edit suite.

Using the Fastrack has proven to be more efficient than using a nonlinear system. I can actually prep and edit a show faster in the hybrid suite than in a nonlinear suite. This helps, as our servers are used for more repetitive tasks due to space restrictions, and I use VTRs for mastering and most B-roll footage.

The live show I referred to is actually a one-hour tape delay, and that is where the Editware Fastrack comes into play in yet another way. I use the editor to control server channels for play-out to air. On the rare occasions that I need to fix anything prior to or during playback, I have the ability to edit while still recording.

I have a line cut, as well as an iso at my disposal on one server, and the spots and show elements on the other server. Fastrack not only controls the servers and VTRs, but also controls our three-ME production switcher. This allows me to edit with one ME bus, while, while production is still using the other two MEs.

RAPID TURNAROUND

The "edit-to-air" function of the Fastrack allows me to play back my timeline to air, while still editing the tail end of the show. This is a very helpful feature, as we have to turn the show around in 90 seconds for broadcast.

Using Fastrack has been a good experience from the installation and integration, and the excellent service provided by the Editware staff.

Dustin Dancisak is senior editor for Living Word Christian Center. He has been with the production/post-productoin facility for more than 12 years. He may be contacted at ddancisak@gmail.com.

For additional information, contact Editware at 530-477-4300 or visit www.editware.com.

USER REPORT

DeckLink Captures Animators

by Damon P. Yoches
Editor
Comedy Central's 'Drawn Together'

STUDIO CITY, CALIF.

I had been working for Rough Draft Studios (RDS) for several years on a variety of projects including "Futurama" and "Baby Blues." At the end of "Futurama," we decided it was time to get rid of our antiquated editing system because it simply did not meet our needs. We wanted the ability to work tapeless at 24 fps all the way until our final output.

DECKLINK EXTREME

After returning from NAB and speaking with many other editors, I found that the Blackmagic Design DeckLink Extreme card, with its ability to facilitate 3:2 pulldown, had what we were looking for. After doing some testing, we decided that a combination of Final Cut Pro and a Blackmagic DeckLink card was the way to go, not only for our tapeless workflow, but also for many other different projects.

Shortly after "Drawn Together" went into production and the first show was handed over to Comedy Central, "Drawn Together" decided to make a change in editors and approached me about handling the final editing for the season. I quickly accepted, though I was faced with two challenges—the first was that I still had to do the RDS director's cut, and the second was that I had to work with a system other than Final Cut, as Comedy Central was already set up with a newly leased system.

Damon P. Yoches is editor for Comedy Central's 'Drawn Together' series.

Over that first season, my duties were split between RDS and Comedy Central. I would edit with the director to get the show the way the episodes were envisioned to go together. Then, after the screening, I would go back into editing and work on adding the aesthetics and "feel" that the creators had envisioned.

ANIMATICS

However, after the first season, the overlapping schedule between doing the animatics (a series of still images edited together and displayed in sequence) and final editing was too intense. The animatics and director's cuts now are handled by another editor, who sends me the project file that he's been working on, along with the source tapes. I bring it back online here at Comedy Central and continue working in full resolution from his final timeline.

The show's second season also brought another change. Comedy Central consulted with the DR Group, which clearly understood our needs and determined that a different way of doing things would be helpful. They put together a new and more efficient system at a very competitive price, which Comedy Central purchased. This new package is basically a dual processor PowerMac G5 with a DRaid SATA drive array, a Sony DVW-A500 Digital Betacam VTR and a Blackmagic Design DeckLink Extreme video capture card.

As an animation editor, I need a system that can handle both 24 and 30 fps workflows. Working on a Final Cut Pro system with the Blackmagic DeckLink Extreme at its core has provided me with the freedom to work on both the animation edit and the final picture. It's really a great step forward and one that makes my job easier.

Damon P. Yoches has been an animation editor for his entire career and has worked on more than 300 animated episodes for film and television. He may be contacted at dpyoches@yahoo.com.

For additional information, contact Blackmagic Design at 877-602-5225 or visit www.blackmagic-design.com.

Orad

CONTINUED FROM PAGE 44

space had to be gutted before new construction could begin, and there were just six months to have everything ready for the scheduled airdate.

Most people said it couldn't be done, but I accepted the challenge of building the studio that became the base of operations for two television networks—Traders Television Network and The Success Training Network.

SCALING DOWN

My previous experience in building a studio from the ground up was with Primedia Digital Video, where we constructed an 182,000-square-foot facility. By comparison, this new facility was small, and we leveraged technology to build a state-of-the-art studio and broadcast center in the small space.

The first of the networks was launched on schedule on June 1, 2005, and is producing 11 one-hour live programs daily. These are broadcast Monday through Friday on the Dish Network and streamed to the Web on a proprietary desktop application. The second network launched exactly one year later, and is also transmitted on Dish and the Web.

To accomplish this seemingly insurmountable task, I looked for companies with innovative products and technologies. I consulted with Orad for the virtual studio system and with Telemetrics for a camera robotics system to fit in a space-challenged environment.

The entire facility is about 4,000 square feet and contains one control room and three studios, plus a network operations center. Due to the size limitations, the only viable solution was a 100 percent 3D multicamera virtual studio from Orad using robotic cameras.

A WORK OF ART

The 440-square-foot Studio A is very cutting edge—a unique work of art. The virtual set is achieved with a 180-degree chroma-key wall and technology from Orad, which allows set changes at the push of a button.

Finding a tracking system that would interface with the Orad system and have both horizontal and vertical capability in limited space proved to be one of the biggest challenges.

I was familiar with the Telemetrics camera trolley systems, but what we really needed was an H-shaped configuration that would allow the camera to simultaneously move back and forth and up and down.

Due to the extreme space limitations, I asked Orad and Telemetrics to come up with a reliable and fully integrated system to replace the available tracking systems. We requested a seamless interface between the two systems for real-time tracking to allow the virtual set to follow camera movement.

BIG FEEL, SMALL SPACE

Our goals were to achieve the capabilities of a big studio without the requisite space and associated expense, and we achieved just that with the help of Orad and Telemetrics. The design of this studio pushes the envelope for efficiency, and there's lower cost of ownership and operation too. In a traditional studio, our current programming level would require approximately 133 personnel hours per day. It's only half of that in our virtual studio. With partners like Orad and Telemetrics we are able to change the way we do television.

Rodney Murray is Splash Media's vice president of engineering and technology. He has years of hands-on experience as a broadcast engineer and in broadband fields. He may be contacted at rmurray@splashmedia.com.

For additional information, contact Orad at 212-931-6723, or visit www.orad.tv.

PRODUCTS & SERVICES SHOWCASE

PRODUCTS & SERVICES SHOWCASE

BUYERS BRIEFS

The Newschief Display Suite from **CGS Infographics Automation** is a complete SD/HD character generator system with DVE functionality. The system operates at 525- or 625-line in standard definition, or 720p and 1080i in high definition and accepts composite, SDI or tri-level genlock reference signals.

The system provides analog composite monitoring, as well as VGA HD monitoring. The Newschief offers full-featured DVE functionality and also passes embedded AES audio and closed captioning data. It can automate the presentation of headlines, EAS and Amber Alerts, financial news, traffic reports, weather information, as well as sports scores, election reporting and channel branding.

For additional information, contact CGS Infographics Automation at 859-299-4081 or visit www.cgsautomation.com.

Knoll Light Factory Version 2.5 from **Red Giant Software** is a motion graphics tool that simulates light effects called 'flares.' The software provides users with 70 different flare effects and contains a custom lens editor to enable users to create and save unique effects.

Light Factory can simulate a bright spotlight behind logos or other text, can create moods by emulating a sunset and can add glows and sparkle to any 2D or 3D object.

The program has an auto obscuration feature, which automatically hides and reveals a light effect as the light source moves behind another object.

The company offers an upgrade path available for existing users of Knoll Light Factory.

For additional information, contact Red Giant Software at 260-918-4505 or visit www.readgiantsoftware. com.

VertigoXG from **Miranda** is a hardware/software graphics system that features multiple layers and individually keyed elements.

VertigoXG provides users with a keyframe animation editor and timeline for real-time animation playback, as well as customizable control panels.

It can accommodate up to two input channels and can be ordered with either two or four output channels. AES audio support is provided, with up to eight discrete stereo channels or 16 embedded channels. The VxScaler option provides cross conversion of standard definition and high definition video, allowing video branding in either SD or HD.

For additional information, contact Miranda at 973-683-0800 or visit www.vertigoxmedia.com.

The Viz|Trio character generator from **Vizrt** is a template-based graphics system designed to provide genuine 3D animations rendered in real time, linkage to databases and live data feeds.

The system can run as a single video channel or as multiple CG channels. It can also provide for multiple operator client terminals to be attached to the same output channel. Viz|Trio allows users to create template pages with variable elements "exposed," while at the same time protecting house-style elements.

The system offers a "transition logic" feature that has the ability to automatically arrange graphical components in elegant and attractive ways, thus eliminating the requirement to delete existing graphics before bringing in new graphic elements.

For additional information, contact Vizrt at 212-560-0708 or visit www.vizrt.com.

MARKETPLACE

Highlighting the latest products available to professionals in the video industry.

FFV NDT-200 Recorder

The NDT-200 portable recorder from Fast Forward Video is a new drop-in replacement for tape-based recording devices.

The unit has the same footprint as a Video Walkman and uses a 2.5-inch removable hard drive for recording. It features a touch-pad user interface and large push buttons for simple and easy operation. All functions are controlled by the touch-pad, soft buttons and LCD panel, or via an external PC or controller. The NDT-200 provides selectable compression ratios from 4:1 up to 30:1, dual channel audio support, jog scan and scrub, as well as 4:2:2 color space.

Video clips are recorded in QuickTime format for playback on a PC or Mac, or as FFV secure video files. Files can be downloaded can be accomplished via the unit's onboard USB 2.0 port, or the hard drive can be removed and inserted into a suitably equipped computer.

For more information, contact Fast Forward Video at 800-775-8463 or visit *www.ffv.com*.

Studer Dolby E Coding Card

A new Dolby E coding card option for Studer USA is now available for use in the company's D21m audio console I/O system. The card accepts any AES/EBU stream containing signals encoded with Dolby E or Dolby Digital and decodes the stream at the console input stage, providing up to two sets of eight channels to the audio console.

One Studer D21m I/O frame can accommodate up to 12 of the Dolby E cards, providing decoding of up to 24 Dolby E streams. The decoded outputs may either be directly connected or patched via the console's internal software patch window.

The card features an automatic switching system for connecting to a secondary AES/EBU input in the event that no Dolby E or Dolby Digital signal is detected on the primary input port.

For more information, contact Studer USA at 818-920-3212 or visit *www.studer.ch*.

Holophone H4 SuperMini 5.1 Microphone

The H4 SuperMini from Holophone is the latest in the company's 5.1-channel surround sound microphone technology. The device is equipped with an integrated multichannel pre-amp, monitor and encoder, and is designed to mount on camcorders, turning any stereo camera unit into a 5.1-channel surround sound recording device.

The SuperMini features an audio zoom control for increasing the forward bias of the pick-up pattern, as well as a center channel XLR mic input for adding an external shotgun or wireless lavalier mic.

Six microphone elements are incorporated into the SuperMini, and provide a frequency response of 20 Hz to 20 KHz. The device provides six line-level analog outputs and also supports virtual surround headphone monitoring with a 3.5mm stereo jack and dedicated gain control.

For more information, contact Holophone at 416-362-7790 or visit *www.holophone.com*.

AJA

CONTINUED FROM PAGE 42

image is "safe" while I'm making that adjustment.

Once you expand that real-time video output capability to After Effects and Photoshop, you end up with a solution that saves a significant amount of time in moving back and forth between applications to verify the animation, composite, or still graphic is within specifications.

I also use the KL-Box breakout box in my suite. The fan cable that comes standard with the card works just fine, but I have a rack with a patch section and having the KL-Box simply brings all the digital and analog video and audio connections to the face of that rack. If a client brings in something wacky that needs to be patched in (yes, I know that never happens), having access directly to the jacks allows me to connect whatever it is without having to crawl behind racks during a session.

I am also a CineForm Prospect HD user, and CineForm also has drivers for AJA's cards. When I'm editing compressed HD using CineForm, the power of the LH card is an extension of those capabilities as well.

Having used other AJA products (I also have another Xena series card and the extremely useful HDP model SDI to DVI converter), I expected a solid piece of equipment. I wasn't disappointed.

If you have one foot in HD and one set securely on familiar SD ground, don't make a move without checking out the Xena series of cards.

Tim Kolb is a Telly, Hugo and Emmy Award winning director and editor and is also an HD post workflow consultant. He may be contacted at tim@kolbproductions.com.

For additional information, contact AJA at 530-274-2048 or visit www.aja.com.

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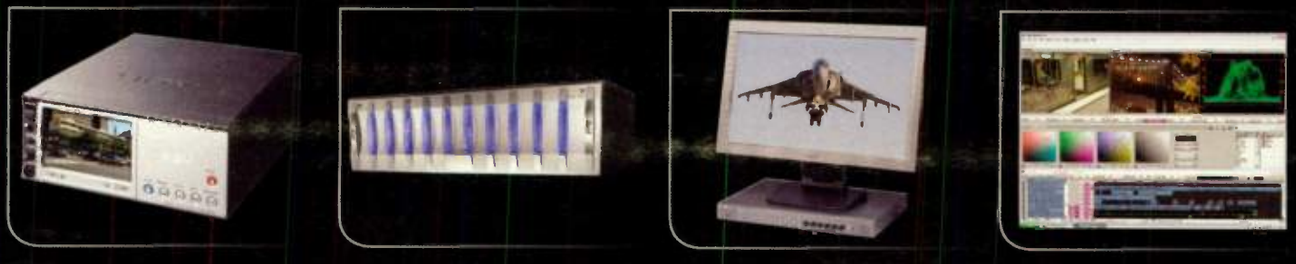

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USER REPORT

WWLP-TV Switches to Harris Inscriber

by Sonja M. Ashe
Art Director/Webmaster
WWLP-TV

CHICOPEE, MASS.

WWLP began broadcasting on Channel 61 in 1953 and has the distinction of being one of the first UHF television stations in the United States, as well as being the oldest Massachusetts station outside the Boston market. During that time, this NBC affiliate has provided exceptional service to the Springfield viewing area.

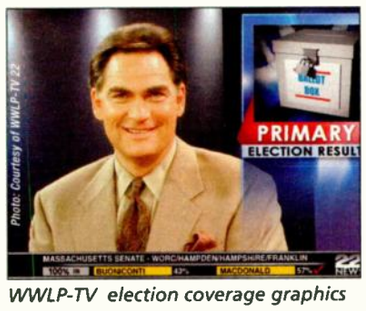
Our goal at the station is to provide viewers with the topical stories of the day, both quickly and reliably. Of course, nothing is typical in news. Breaking news happens when you least expect it, and we have to be ready to deliver that information to our viewers in a very concise and accurate manner.

FAILURE OF OLD SYSTEM

In my department, one of our major objectives is to ensure WWLP can deliver breaking news with exceptional real-time graphics and effects. So when our existing system failed at a very inopportune time—two weeks before a major primary election in 2004—we had an immediate and critical need for a replacement.

So, we turned to the folks at the Harris Inscriber product line to help us deploy a system to automatically send graphics to air seamlessly and efficiently. We currently run a Harris Inscriber Studio character generator graphics solution and Inscriber AutoCG networked graphics system. The networked products provide us with a real-time, multilayer environment for broadcast graphics, and allow us to efficiently achieve our production goals. We have complete control over the look and feel of our news production and have all the CG tools directly on the desktop.

We have everything we need with this system. Inscriber Studio provides the functionality of a CG, real-time 2D effects and 3D animations, page sequencing/navigator, a still/clipstore browser, multilayered paint supporting direct import of Photoshop layers and integrated Quartz application to independently control multiple logos, clocks bugs and crawls. The Inscriber AutoCG allows us to animate graphic layouts, and we can also spin, twist and fly data-filled templates onto the screen.



WWLP-TV election coverage graphics generated by the Harris Inscriber

The Inscriber system supports products from many other vendors, and we were able to easily integrate our existing Avid iNews system with the AutoCG to take our new graphics (supers, maps, fullscreens and the like) to air. Coupled with Avid iNews, the Inscriber system allows our producers to have full control over all on-air graphics for their newscasts.

The Inscriber AutoCG system helps us create and broadcast fresh news content instantly and automatically. In essence, we increased our existing workflow with the same staff. We can now drive more customized full screens, shoulder graphics and banners live-to-air. One thing we would like to see added is a video squeezeback function, which would help simplify the process of displaying our cancellations using Inscriber AutoCG.

Today, the Inscriber Studio/Inscriber AutoCG system forms a critical component of our operations. Inscriber service and support are top notch, and installation went off without a hitch. The training was smooth, and these folks are truly seasoned professionals. This was our first experience with Harris Inscriber products, and we would definitely work with them again.

I'm happy with the stability of the equipment. It has performed to our standards, it's easy to operate and with the help of tech support, was incorporated into our operations quite seamlessly. We've saved time and money, and we wouldn't have been able to automate our election results without it!

Sonja M. Ashe is art director and webmaster at WWLP-TV. She has been with the station for the past 13 years. She may be contacted at sashe@wwlp.com

For additional information, contact Harris at 888-843-7004 or visit www.broadcast.harris.com/inscriber.

USER REPORT

Matrox Axio Powers Georgiew

by Nikolaj Georgiew
Founder
Georgiew Film

HANNOVER, GERMANY

I started my career as a photographer in 1989, but in 1998 switched from still to moving images. I began to create music videos, commercials and image campaigns, and Georgiew Film was born. Post production here has always centered around Matrox video editing systems, as we always strive to be at the leading edge of technology.

We were the first music video production company in Germany to shoot on MiniDV with a Pansonic NV-DX1, then edit with Matrox DigiSuite. Viewers thought the projects were shot on film and edited in the traditional manner. We also became an early adopter of the Matrox Axio system, which has significantly streamlined our workflow.

We now have more than 300 video and film projects to our credit. For each project we assemble the most creative persons from each field—camera operators, 3D-animators, SFX specialists, innovative editors, make up artists and stylists. Our goal is always to come up with unusual, remarkable ideas and spectacular images that capture the imagination of the audience.

Georgiew Film's Nikolaj Georgiew (center) and crew during production of the "Ganze Welt" music video.

Since we started using the Matrox Axio system, I've been able to expand the business. The feature I most appreciate is real-time color correction. In the past, we color corrected with a program that took too long. With Axio, it's instantaneous. We also save time with the shine and 3D effects on Axio.

Much of our work has been commissioned by top recording artists and music labels such as Sony BMG, Warner Music, and Universal. One recent project cut on Matrox Axio was the video for Melanie C's "First Day of My Life." The song was included on a rerelease of her "Beautiful Intentions" album in Germany, Switzerland and Austria, where it is the theme song for the soap opera "Julia." "First Day Of My Life" was a No. 1 hit here and went platinum, selling over 400,000 units. The video was shot on a Panasonic Varicam, captured and cut on Matrox Axio in HD, then downconverted to PAL for output to DigiBeta in real time.

The new video from U96, "Vorbei," is also one of ours. It was produced by Hamburg-based Alex Christensen, the mastermind behind techno project U96. This project was shot on the Panasonic HVX200 and Panasonic NV-DX1 cameras with MovieTube. It was a challenge to seamlessly combine clips from the oldest Panasonic progressive camera with footage from the newest progressive HD camera. Again, Matrox Axio's real-time features were instrumental in getting the project delivered on time and on budget.

Our latest music video for Lukas Hilbert and Tryna's "Ganze Welt" has just been completed for release in November. I'm eagerly awaiting future developments on the Matrox Axio platform. The upcoming software release will enable us to fully exploit the capabilities of the Panasonic HVX200 camera with P2 support and the new 720/25p DVCPRO HD codec. We're looking forward to moving to a tapeless workflow.

Nikolaj Georgiew is the founder of Georgiew Film, based in Hannover, Germany. He may be reached at studio@georgiew.de.

For additional information, contact Matrox at 1-800-361-4903 or visit www.matrox.com/video.

EQUIPMENT EXCHANGE

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AUDIO PRODUCTION

Want to Sell

Bittree & ADC Audio and Video Patch Panels from $250; 45RU racks from $400; Graham-Patten D/ESAM 230 audio mixer, $5900; Yamaha 01V 16-input digital mixer, call; Mackie 1604 VLZ used, $550; Mackie 24-4, make offer; Tascam M-2600 MK II 16-Channel Mixer, $1,500; Digidesign 888, $650; Sony PCM7040 DAT, $3,990; Panasonic SV-3800 DAT, $300; Wohler Amp 1-A, $325; Wohler AMP-1A-VTR, $550; Wohler AMP-1AP, $325; Wohler Amp-1APF, $325; Wohler MSH-8AL Audio Level Meter, $600; AKG C 414 B ULS Microphone, $950. 818-246-7100 or 212-564-9933 or www.tvprogear.com.

RTS 820 intercom , $1100; RTS MRT327 intercom, $215. 818-551-5858 or 212-268-8800 or www.broadcaststore.com.

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PVW 637 Beta SP camera w/PV3 deck, Kata case & filters, $3500. 208-735-1970 or 208-420-9779.

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Tektronix PDR-204D TV automation turnkey system, $5500; Barco 8100-DATA video projector, $1900; 5D Masher visual video effects, $1900. 818-551-5858 or 212-268-8800 or www.broadcaststore.com.

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MOVIE PRODUCTION EQUIPMENT

Want to Sell

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

Leitch FR-6804-1 frame & access, $2600; Ross DVB-8020 misc digital DAs; GVG 9550A sync gen, $900; GVG SCB-200N sync gen, $1290; Tektronix TPG20 sync gen, $2000; Leitch AVS-2400 TBC, $900; Sony BVR-50 TBC, $400; Zaxcom HUB1000 TBC, $1060. 818-551-5858 or 212-268-8800 or www.broadcaststore.com.

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

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Leader LVS-5850 vectorscope, $466; Tektronix 1720 vectorscope, $900; Leader 5860C waveform monitor, $750; Leader LBO-5860H waveform monitor, $770; Magni WFM-560 waveform monitor, $750; Tektronix 1730 waveform monitor, $900; Tektronix 1710B waveform monitor, $790; Tektronix WFM-601E, $5000; Tketonix WFM-601i, $3750; Tektronix 1740 WF/vector, $1500; Tektronix 1750 waveform/vector, $2500; Tektronix 1740A waveform/vector, $2750; Tektronix 1750A waveform/vector, $3500. 818-551-5858 or 212-268-8800 or www.broadcaststore.com.

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Brief Description: _____
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CEO- Andrew Maisner

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TRANSMITTERS/EXCITERS Cont.

Miteq DN-14-12 satellite xmtrs, $7110; Miteq U-9448 satellite xmtrs, $8500; Miteq U-96-14.25S satellite xmtrs, $5460. 818-551-5858 or 212-268-8800 or www.broadcaststore.com.

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(3) Panasonic 1980s SVHS machines, $425/ea; Sony PVM 411 4-screen monitor, $325; Leightronix Pro-8 automatic switcher w/2 Leightronix Pro-Bus interfaces, manuals & software incl, $825; if all items bought in one lot, $1950. 316-838-6460 or United Christian Bdctg, 3201 N St Clair, Wichita, KS 67204.

JVC GY-HD100U HDV camcorder pkg, $3400; Sony HVR-A1U HDV camcorder pkg, BO; JVC BR-HD50U HDV VCR, $2110; JVC S-VHS accessories, $320. 818-551-5858 or 212-268-8800 or www.broadcaststore.com.

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Communications Engineering, Inc.

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Installation Manager
This position will be working in a multi-project, multi-team environment and will be responsible for labor and installation material budgets, time line development and project installation management.

Senior Systems Design Engineer and Systems Design Engineer
If you have a background in the analysis, design and management of media communications systems as well as knowledge of equipment, current trends and technical developments in the industry, contact CEI. The positions are responsible for the design and functional checkout of advanced audio, video and software systems.

Senior Systems Installation Technicians and Installation Technicians
Duties include pre-wiring and preparing racked systems and furniture consoles for broadcast technical facilities. Must have experience in cable fabrication and termination, mechanical assembly, rack and cabinet wiring and harnessing. Must have ability to understand and use wire lists, schematics and technical documentation.

For more information on these positions, visit our Web site at **www.commeng.com**.

Please send your resume and communications to.
Fax: (703) 50-5180 Attn. Shay Martello, shay.martello@commeng.com; mail inquiries to: Shay Martello, Communications Engineering, Inc.,
8500 Cinder Bed Road Suite 100, Newington, Virginia 22122

Bexel, a nationwide leader in the audio/video production support service industry, is hiring a Sales & Market Development Executive to cover the Northeast region (NY-based). The candidate will be a top sales performer and preferably have sales experience in the broadcast and production industry. Four years minimum outside sales experience with focus on tri-state area is required. Must be a closer! Knowledge of video equipment and its functions/applications is a plus. We offer a competitive compensation package, commen-surate with experience, and excellent benefits. Please send a resume with salary history to hrmanager@bexel.com. Resumes received without salary history information will not be accepted.

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ReelzChannel seeks Director, Technical Engineering in Los Angeles. Television engineering supervisor, responsible for the day to day maintenance and support of production, post production and studio systems. 5+ years experience and BA or equivalent experience. M-F, 9–6, on call 24/7. Experience in the following areas: Studio cameras (robotic camera systems experience is a plus); Apple Final Cut Pro Editing system (other NLE experience will be considered); Chyron and Apple graphic systems; Routing switchers and production switchers; Telestream flip-factory or other automated file conversion technologies; Set up of VTR, Video and Audio servers; Audio production systems; Pro-Tools audio post production; Digital Asset Management systems; Complex analysis, problem solving, and troubleshooting skills; High-pressure live TV environment; send resume to Careers@reelzchannel.com.

REFERENCE GUIDE

The Reference Guide is a selected sampling of current products. Specifications and prices are supplied by the manufacturer and are subject to change without notice.

VIRTUAL SETS

MANUFACTURER	MODEL	TRACKING METHODOLOGY	COMPUTERS (OTS OR PROPRIETARY)	CAMERA/LENS MODIFICATIONS	SPECIAL KEYER RECOMMENDED?	AMOUNT OF VIDEO LATENCY	FEATURES	PRICE
Adobe 916-985-8000 *www.seriousmagic.com*	Ultra 2	Tracking is simulated, footage shot with static camera is tracked into scene automatically	Windows	N/A	Keying compositing included	N/A	High-quality keying, compositing, color-correction and drag-and-drop virtual sets	$495 for Ultra 2 Set libraries are $395
Darim Vision 925-251-0178 *www.darim.tv*	VS2000	Trackless	PC-based	None required	Chroma keyer is built into the system and the user interface	Three frames	Complete turnkey system; Only one operator needed; Special cameras not required	$25,000 to $75,000
For-A 714-894-3311 *www.for-a.com*	digiWARP-EX2 digiStorm	Capable of inter-facing to all types of tracker	Windows XP	None required	For-A VRP-70HS or Hanabi series mixers	Three to four frames	Available in 2D or 3D versions for any HD or SD	From $45,000
Hybrid MC 0033146730066 *www.hybrid-mc.com*	Hellium Krypton	Mechanical, IR, ultrasonic, trackless	PC-based on Linux, Windows	None required	Any	Zero	2D, 3D, SD/HD, external control, graphics on-air, text generator	From $32,000
Orad 212-931-6723 *www.orad.tv*	ProSet	Xync Infrared	HDVG	Yes	Internal keyer for HD and external key	Three frames	Free camera movement including dolly, handheld crane; SD/HD-compatible; Up to six HD inputs, up to 12 SD inputs	From $200,000
Vizrt 212-560-0708 *www.vizrt.com*	Viz Virtual Studio, others	Mechanical or any third-party system	OTS	N/A	No, off the shelf	Two frames	Real-time processing in SD or HD	From $49,000

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15	Omneon Video Networks	www.omneon.com
43	Orad Inc.	www.orad.tv
2	Panasonic Broadcast & TV Systems	www.panasonic.com/broadcast
39	PESA Switching Systems, Inc.	www.pesa.com
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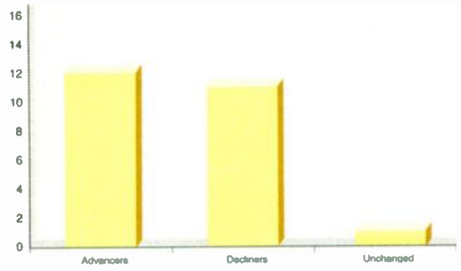

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Acme	+11.97%
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(Oct. 20 - Nov. 3)

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Entravision	-2.58%

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TOP DECLINERS TV TECH STOCKS
(Oct. 20 - Nov. 3)

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Belden	-10.71%

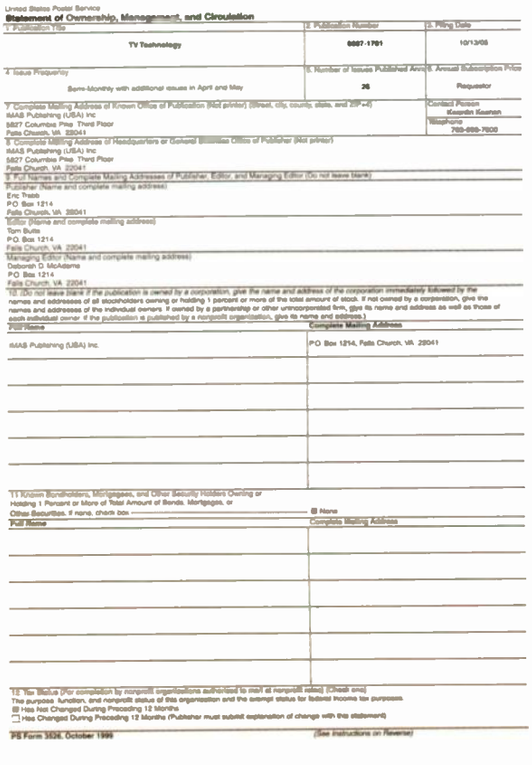
To have your company listed, contact Melissa Sullivan at msullivan@imaspub.com.

TV Tech STOCKS as of November 3

Company Name	52-Week Range	Oct. 20	Nov. 3	% Change
Avid	32.05 - 59.10	39.59	36.48	-7.86%
Belden	20.08 - 41.70	39.77	35.51	-10.71%
Ciprico	3.68 - 6.84	5.52	4.80	-13.04%
Harmonic	3.79 - 8.62	7.66	8.30	8.36%
Harris	37.69 - 49.78	43.39	40.40	-6.89%
LSI Logic	7.41 - 11.81	8.44	9.61	13.86%
Scopus	3.05 - 8.35	3.64	3.62	-0.55%
SeaChange	5.81 - 9.89	8.62	8.49	-1.51%
Tektronix	23.22 - 36.89	30.87	29.53	-4.34%

Broadcast STOCKS as of November 3

Company Name	52-Week Range	Oct 20	Nov. 3	% Change
Acme	3.50 - 5.99	5.18	5.80	11.97%
Belo	14.93 - 23.35	16.65	17.29	3.84%
Entravision	6.59 - 9.18	7.36	7.17	-2.58%
Fisher	38.89 - 49.89	42.94	40.52	-5.64%
Gray	5.15 - 10.36	6.33	6.36	0.47%
Hearst Argyle	19.97 - 25.74	23.54	25.54	8.50%
Nexstar	3.50 - 6.20	3.69	3.92	6.23%
Lin TV	6.12 - 13.38	8.08	8.49	5.07%
Ion Media	0.38 - 1.15	0.78	0.78	0.00%
Sinclair	7.18 - 10.07	8.27	9.20	11.25%
Univision	28.24 - 36.67	35.00	34.98	-0.06%
Young	1.70 - 3.91	2.33	2.35	0.86%
Tribune	27.09 - 34.28	32.31	32.27	-0.12%
Meredith	45.04 - 56.83	52.22	52.65	0.82%
EW Scripps	40.86 - 51.09	48.95	49.30	0.72%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1. Publication Title	2. Publication Number	3. Filing Date
TV Technology	0887-1701	10/13/06
4. Issue Frequency	5. Number of Issues Published Annually	6. Annual Subscription Price
Semi-Monthly with additional issues in April and May	26	Requestor

7. Complete Mailing Address of Known Office of Publication (Not printer) (Street, city, county, state, and ZIP+4)
NAB Publishing (UBA) Inc
5827 Columbia Pike Third Floor
Falls Church, VA 22041
Contact Person: Kwandra Keenan
Telephone: 703-998-7600

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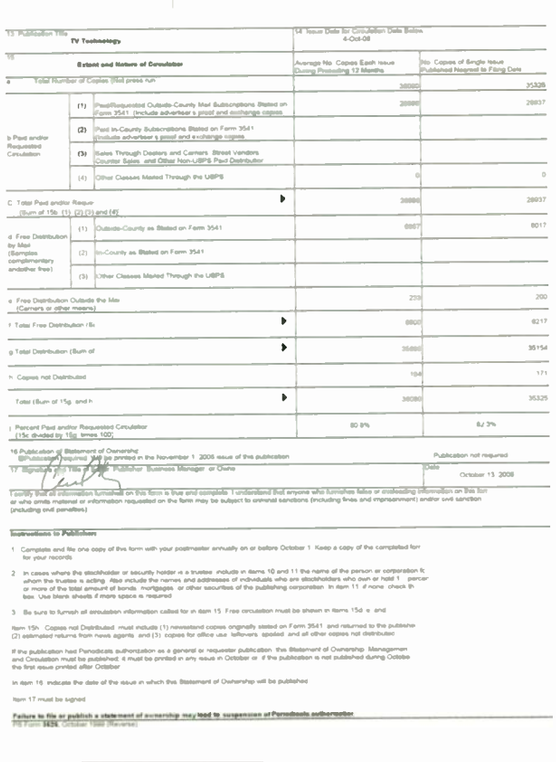

13. Publication Title: TV Technology	14. Issue Date for Circulation Data Below: 4-Oct-06	
15. Extent and Nature of Circulation	Average No. Copies Each Issue During Preceding 12 Months	No. Copies of Single Issue Published Nearest to Filing Date
a. Total Number of Copies (Net press run)	36860	35328
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h. Copies not Distributed	164	171
Total (Sum of 15g. and h.)	36080	35325
i. Percent Paid and/or Requested Circulation (15c. divided by 15g. times 100)	80.8%	82.3%

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17. Signature and Title of Editor, Publisher, Business Manager, or Owner — Date: October 13, 2006

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PS Form 3526, October 1999 (Reverse)

Avid Revenues Rise 13 Percent

TEWKSBURY, MASS.

Avid Technology Inc. reported Q3 revenues of $231.2 million for the period ending Sept. 30, up 13 percent from $204.4 million last year.

"Our professional video business had a solid quarter, with record broadcast bookings driving a 23 percent sequential increase in that segment's backlog, and healthy demand for our HD-enabled, post-production solutions yielding growth in our post business," said David Krall, Avid president and CEO.

Avid's net earnings for the quarter totaled $3.6 million, or 8 cents a share, compared to a net loss of $17.8 million, or 46 cents a share for the same period last year. Net income in Q3 included $14.3 million in noncash charges for amortization, research and development, stock compensation, restructuring and tax adjustments; comparable noncash items last year totaled $42 million.

The gross profit margin for the company was down 48.4 percent compared to 52.3 percent in Q3 '05. Video gross margins were "stable," Avid said, while audio and consumer gross margins declined from Q2. Video bookings are up, but weren't reflected in the Q3 results due to recognition timing. The company said in a conference call that deals are increasing in size and those currently in the pipeline might even extend beyond 2007.

"As previously announced, we had a slowdown in demand at quarter-end for Digidesign's Pro Tools|HD systems. Now that many of the best-selling third-party Pro Tools plug-ins have been ported to the Intel-based Mac platform, we expect Pro Tools|HD demand to improve in Q4," Krall said. "We've also addressed the stability issue with Pinnacle Studio 10, and are now focusing our development efforts on an upcoming release of Pinnacle Studio for the new Windows Vista operating system."

Harris Q1 Revenue, Profit Up

MELBOURNE, FLA.

Harris Corp. said revenues rose 25 percent in its first fiscal quarter to $946.8 million from $759.7 million booked in the same quarter a year ago.

The company's profit for the first quarter was up 67 percent to $83.9 million, or 60 cents per share, from $50.3 million, or 36 cents per share, in the prior year. Growth for the quarter was seen in higher orders across all four of the company's business segments, which include radio frequency, government communications systems, microwave and broadcast communications.

The company said revenue in its Broadcast Communications segment was $139.8 million in the quarter, up 59 percent compared to $87.7 million in the same period last year, primarily as a result of the addition of Leitch Technology, Optimal Solutions Inc. and Aastra Digital Video.

Scopus Revenue Down 2 Percent

TEL AVIV, ISREAL

Scopus Video Networks has reported revenue for Q3 at $11.4 million, down 2 percent, compared to $11.6 million for the same period in 2005.

Gross profit in the third quarter was $5.2 million, down 17 percent, compared to $6.3 million in the same quarter last year. Gross profit margin was 46 percent, compared with 54 percent for the corresponding quarter in 2005. Net loss for the third quarter was $1.4 million, or 11 cents per basic share.

"In line with the company's strategic focus, product mix grew towards decoders and IVG, and our U.S. sales grew 25 percent in the first nine months of this year, compared with last year. During Q3 '06 we gained two new U.S. cable customers," said David Mahlab, CEO of Scopus. "Internationally, India continues to be a significant territory for us. India has seen new governmental regulation for providing scrambled digital video delivery. This has motivated operators to upgrade to digital video systems and enabled us to secure significant orders in the third quarter."

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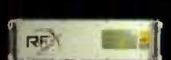

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