THE DIGITAL TELEVISION AUTHORITY

TV TECHNOLOGY

Serving the Broadcast, Cable, Production, Post Production, Business and New Media Markets

WHAT'S INSIDE

Small Telcos Take on IPTV
Technology reaches the tipping point

by Deborah D. McAdams

WASHINGTON

Internet Protocol TV deployments aren't just the province of beefy bells. While AT&T and Verizon were still at the drawing board, a telephone co-op in the land of gigantic cabbages was rolling out service.
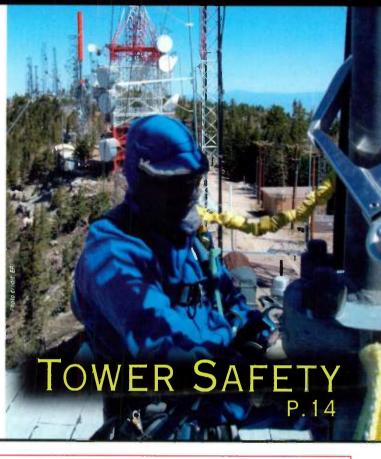
"We launched IPTV in December 2003, on all copper using ADSL2+," said Keith Southard, business manager at Matanuska Telephone in Palmer, Alaska, a city of around 7,000 known for its massive cole crops. "Small independents like us are

moving pretty aggressively."

As phone co-ops go, Matanuska is actually among the larger ones. The 52-year-old indie has around 65,000 landlines in 42,000 homes spread over roughly 10,000 square miles surrounding Palmer.

The average telco in the 560-member National Telecommunications Cooperative Association has 5,344 subscribers. As phone *companies* go, however, Matanuska is wee compared to Verizon, which has 46 million landline subscribers in a 254,000-square-mile area. Yet the same force is driving both companies.

TOWER SAFETY
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2006 IN REVIEW

TV Marries Next-Gen Media
Politics portend pro-active year

by John Merli

WASHINGTON

What tentatively continued in early 2006 as cautious baby steps by broadcasters toward repurposing their valuable programming to non-traditional venues suddenly accelerated rapidly

through the remainder of the year. The past dozen months also witnessed increasing amounts of broadcast content being reproduced for nonbroadcast purposes.

The suddenly ubiquitous presence of network news and TV series on the Internet—made technically feasible by the rapid expansion of broad-

band—began early this year when "NBC Nightly News" went online nightly following its West Coast feed. Anchor Brian Williams soon began drawing more news junkies to their computers each weekday with his informal "Daily Nightly" office chats previewing the evening's tentative story line-up.

To compete, ABC News

began producing a live weekday online-only Webcast, which it streams several hours before airing the traditional "ABC World News" on the network. That same daily Webcast (with commercials) can then be downloaded free for several days from Apple's iTunes Store. (ABC News said the Webcast was

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CONTRIBUTING WRITERS

Inside Audio

Dave Moulton

Last month I described our current broadcast distribution system as somewhat dysfunctional and definitely *not* a high-definition experience. I took a look at the problems that our manufacturers and service providers face in their various quests to provide good products...

Media Server Technology

Karl Paulsen

The path of electronically generated media files throughout a broadcast plant touches many elements, passing through various server platforms and on to viewers through a growing number of distribution channels.

The content life cycle begins...

ATSC Update

Jerry Whitaker

The past few months have been very busy at ATSC, with more than six new documents or revisions of existing documents published. The process for approval of standards and recommended practices typically involves at least two letter ballot stages...

FROM THE EDITOR

Two More Years?

"We feel confident we can implement DTV in seven to 10 years, but whether consumers will be able to see the signal is the question that people keep ignoring in this debate. Consumers will ultimately decide when or if DTV is going to happen."

Those prophetic words were uttered by MSTV Vice President Victor Tawil in this publication more than nine years ago when Congress set the December 2006 deadline to shut off analog signals. How right he was.

Remember December 2006? This was the month that—depending on what side of the debate you were on—was either anticipated with dread or optimism. Over the years, we as an industry debated the probability that the deadline would hold, always knowing in the back of our minds that the 85 percent penetration loophole was our safety hatch.

Even though we speculated about how the transition would go, nobody could really knowæafter all, this is a government-mandated "experiment" to transition an entire industry to a new paradigm, the largest non-military transition in our nation's history, say some.

So where do we stand as we enter the last two years of the transition? DTV penetration is estimated at less than 25 percent, a long way from the hoped-for 85 percent. Efforts to increase that penetration by mandating DTV tuners in sets have been met with mixed success; how well the manufacturers have met the mandated quotas is open to debate (and who's going to enforce the rules anyway?). Consumer confusion over availability of HDTV and just what is HDTV continues to roil the marketplace. And nine years out, broadcasters are still fighting to get carriage of all their signals on cable systems.

Sarcasm alert: Thank goodness the federal government stepped in earlier this year to establish a hard deadline for the analog shutoff. (And you thought this was a do-nothing Congress!) We gave up the 85 percent loophole in exchange for setting the date. What can we expect on Feb. 18, 2009, the day after the analog signals are shut off?

Will "March Madness" take on a new meaning?

Tom Butts
Editor
tbutts@imaspub.com

LETTERS

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

Where in the Baseband?

Dear Charlie Rhodes:

I ran across your article entitled "The Superheterodyne Concept and Reception" on *www.tvtechnology.com*. In the article you said that the direct conversion cannot be used in 8-VSB due to the problem of lower adjacent channel.

How then can it be used in DVB-T while they have the same adjacent channels; is it because 8-VSB is not symmetrical at baseband?

Richard Morrison
San Diego, Calif.

Charlie responds:

You are correct. Our 8-VSB modulation scheme places zero baseband frequency near one channel edge, while all QAM modulation schemes, being double sideband, place zero baseband frequency in the center of their channel.

Now consider an undesired signal two MHz below the 8-VSB modulated channel. Upon demodulation, the undesired signal will appear at 2.31 MHz in the baseband signal, more or less in the center of our baseband which extends to 5.38 MHz. Thus this interference cannot be filtered out.

Now in the case of any QAM modulated signal, and staying in a 6 MHz channel, this undesired signal turns out to be at 5.0 MHz which is well above the baseband bandwidth of any double sideband signal in a 6 MHz channel. Being outside the baseband, it can readily be removed by a low pass filter. You are the first of my readers to raise this question, and you've also correctly answered it.

Stay tuned.

Confusing the Public

Dear Editor:

In response to James O'Neal's editorial in the Nov. 1 issue of **TV Technology** ("Train Wreck"), the difficulty that consumers face in buying both standard analog TVs as well as DVRs that are sold with analog tuners, is that retailers such as Best Buy and Circuit City and others are deliberately confusing the public.

As I understand it there are recourses for such behavior and I would not be surprised if some far-sighted attorney does not instigate a class action lawsuit.

If a consumer has gone into a store lured by seemingly low prices, no one in the store is motivated enough to advise that person that if they buy analog TVs and recorders, that equipment is going to have a very short life.

While I agree the FCC should do something, the simple solution is to put pressure on both the CEA and its members to do a little honest retailing.

The manufacturers are just as much to blame as it would not take much effort to place a sticker on the equipment pointing out the limited life if no converter box is installed after the mandated cut off date, if enforced in February 2009.

We have enough experience with the Surgeon General and cigarettes to witness that putting warning notices on cigarette packs does not seem to deter smokers to ignore the warnings. But making electronic retailers more responsible and honest in dealing with its customers would do more to stamp out the present deceptive practices. If you don't believe me go into any electronic store, especially the Wal-Marts and Targets, where you will be served by "limited knowledge" personnel and see for yourself the response you will get!

Ask yourself, if you were told that the product you were buying had a very short life, would you still buy? I think not!

Nigel Brent
Studio City, Calif.

World Radio History

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FOR THE CHANGING FACE OF TELEVISION

Panasonic Mourns Phil Livingston

SECAUCUS, N.J.

Technical executive and long-time Panasonic Broadcast employee Phil Livingston died from an illness on Nov. 8.

Livingston, 64, held a number of technical positions with Panasonic during his 28 years with the company. Most recently, as vice president for technical liaison, he was responsible for Panasonic Broadcast's strategic business development activities. For the last five years, he directed the company's Technology Partnering Program where he worked with manufacturers to incorporate Panasonic's digital compression technologies into their products and systems.

Livingston began his broadcast career, which spanned over four decades, in radio at WVOS and WVIP in upstate New York. He helped build WOKR-TV in Rochester, N.Y. and developed an Instructional Television system for the city school district there. He also served for 10 years as associate director for Instructional Resources at the State University of New York at New Paltz.

He represented Panasonic on the board of WHD-TV, the Digital Model Station in Washington, D.C., and had been involved in the work of the Advanced Television Systems Committee since 1987. He served on the ATSC board of directors from 2002-06, and as board chairman from 2002-05. Livingston was a member of SMPTE, a SMPTE fellow, and chaired the Committee on Television Production Technology (P-18) for two years. He wrote numerous white papers and articles; and recently received a 2006 SMPTE Award for co-authoring a paper entitled, "A News Solid State Memory-based Television Acquisition System."

"Phil was tremendously respected for his knowledge and contribution in the broadcast industry," said John Baisley, president of Panasonic Broadcast. "Of more significance, Phil was a true gentleman and a gentle man."

Donations in Phil's name can be made to Compassionate Care Hospice, 140 Littleton Road, Parsippany, N.J., 07054

Obituary

Shook Controls Giant LED

SCHERTZ, TEXAS

Shook Mobile Technology, a supplier of mobile production vans to the broadcast industry, has introduced what is believed to be the first PLC-controlled system into the mobile outdoor LED video screen market. A programmable logic controller (PLC) automates deployment and positioning of large screen displays so they can be controlled by one person.

Shook designed and built a 53-foot long trailer for the Mitsubishi Diamond Vision LED screen, which measures 26-feet wide by 14-feet tall for Texas A&M Athletics, which debuted the giant display at its Nov. 4 football game against the University of Oklahoma in College Station, Texas.

The display can be operated in winds up to 40 mph and the screen can be raised 30 feet off the ground and rotated in any direction by Shook's telescoping mast system. The trailer also includes a complete TV broadcast production studio, housed in a 19-foot section on the front of the trailer. In order to fit neatly on the trailer and be legal for over-the-road transport, the giant screen had to split in half.

"This was a very exciting project that put all our capabilities to the test," said Shook CEO John Heaney. "Ease of use and safety were the two main factors driving us to incorporate PLC controls."

Displays

FCC Classifies BPL as 'Information Service'

WASHINGTON

At last month's open commission meeting, the FCC adopted a Memorandum Opinion and Order that will regulate access broadband-over-power line systems (BPL) as an information service, the same way cable modem and DSL Internet access is regulated.

"In reaching these determinations, the commission provides regulatory certainty regarding the classification of this service, thereby encouraging deployment of BPL enabled Internet access to consumers," the commission said.

While it does not appear that this action will change regulations regarding interference from BPL systems it may, as the FCC states, encourage deployment of BPL, thus increasing the potential for interference.

FCC Looking into Bird-Tower Mishaps

The FCC is asking for public comment on the effect of communications towers on migratory birds and whether it needs to take action to prevent collisions.

In issuing its Notice of Proposed Rulemaking last month, the commission summarized studies on bird deaths due to collisions with towers and listed some of the actions it may take to protect migratory birds. At the top of the list is tower lighting—studies showed more than three times as many bird deaths at 380-480 foot towers using red steady lights than at towers at the same heights with other lighting configurations.

"We tentatively conclude that for any newly constructed or modified communications tower that must meet lighting specifications under Part 17 of the commission's rules, medium intensity white strobe lights for nighttime conspicuity is to be considered the preferred system over red obstruction lighting systems to the maximum extent possible without compromising aircraft navigation safety," the commission said.

The FCC asked if it should adopt additional requirements to promote tower collocation. One possible requirement, the NPRM states, would be to require certification that "collocation opportunities are unavailable and/or describe collocation alternatives that the licensee explored."

FCC Reverses Indecency Rulings

The FCC last month released an order reversing an earlier indecency ruling against two shows. One involved a segment on the CBS "Early Show," in which a game show contestant was referred to as a "B.S-er." The other was for episodes of the now defunct ABC crime drama, "NYPD Blue," featuring several uses of a four-letter vulgarity for male genitalia.

F-word users received no such reprieves. The FCC held to its original finding that F-bombs from Cher and Nicole Richie on the 2002 and 2003 "Billboard Music Awards" were indeed indecent and profane.

No fines were levied in any of the four cases because all occurred before the FCC decided to go after Bono for saying "effin' brilliant" on the Golden Globe Awards in early 2002.

The FCC issued an omnibus order in March that confirmed and levied a total of $4.5 million in indecency fines. Broadcasters, including Fox TV stations and CBS, sued the following month, saying the commission didn't give them a chance to respond to the findings. The FCC reconsidered, and in July, asked the court if it could take another crack at the ruling. The motion was granted Sept. 7., opening up a 60-day comment period.

In its reversal, the commission said it found the "Early Show" S-word neither indecent nor profane... "due to the fact that it occurred during news programming." "NYPD Blue" got off the hook because the complaints against stations airing the episodes came from other markets.

Federal Frequency

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CES Celebrates 40 Years of Technology

Annual gadgetfest adds Tech Emmys to schedule

by Gary Arlen
Special to TV Technology

LAS VEGAS

With an estimated 150,000 people cruising more than 2,000 exhibits spread over an area equivalent to 30 football fields, even Karen Chupka admits that the International Consumer Electronics Show can become "cumbersome." As the Consumer Electronics Association's senior vice president of events and conferences, Chupka oversees an extravaganza that has exploded beyond its radio/record-player/TV roots into a gargantuan multiple media phenomenon.

Next month's 40th annual cornucopia of electronic sensations (CES) has even lured an array of "outside" events, such as the Television Academy's Technology & Engineering Emmy Awards ceremony and a cable TV executives' board of directors meetings—adding to the throngs (and taxi lines, too).

The official CES agenda for Jan. 8-11, 2007, in Las Vegas includes more than 140 conference sessions, many of them dealing with the DTV transition and competitive media services such as IPTV and the emerging role of portable media devices to view TV programs. There will be new face-offs in the Blu-ray versus HD-DVD format war, plus dueling pronouncements about the role of expanded videogame platforms. And, "direct from the labs" presentations (at least in secretive hotel suites) are likely for new display technologies and processing chips, although details were not available at presstime.

CEA notoriously adds high-profile presenters at the last moment. Many of the business bigwigs traditionally bring show-biz celebrities to showcase the content that runs on their technology platforms. Among the confirmed featured speakers are CBS President and CEO Les Moonves, Walt Disney Co. President and CEO Robert Iger, Yahoo! cofounder Jerry Yang, Motorola CEO and Chairman Ed Zander and Microsoft Chairman Bill Gates.

An opening-day session on "Pipelines" underscores the convergence of technology and media/telecommunications, featuring top executives from satellite, cable and phone companies. Time Warner Cable CEO Glenn Britt, DirecTV CEO Chase Carey, EchoStar Communications CEO Charlie Ergen and Verizon President Virginia Reusterholz will be asked to discuss their partnership plans and strategies for delivering digital video services.

Despite the avalanche of information and sales strategies that flow from such presentations, Chupka insists that at CES, "The floor is the major attraction."

"More and more people look at the show as an indicator of future trends," she says, citing the growing "migration of the content world" into CES activities.

BIG IN EVERY SENSE

Aside from CES's sheer scale (1.75 million square feet of exhibit space, about 60,000 square feet more than 2006), the trade show's essence remains the size and range of its offerings. CES '07 occupies about 50 percent more floor space than the 2002 show—demonstrating the number of new entrants and the technologies, including components and services that are vying for attention in the consumer electronics business.

Some of the growth—and competitive aggression—is measured in tiny increments. At presstime, it was not known whether the upcoming show will feature a battle of the "inches" as did the 2006 CES, when Samsung, Panasonic and other plasma TV makers literally "one"-upped each other by unveiling 102-inch and 103-inch HD monitors.

Early indications suggest that manufacturers will focus on mainstream DTV equipment to encourage sales as prices fall and the 2009 analog cutoff deadline approaches. For example, the RCA brand will introduce an extensive range of LCD TV sets with dual HDMI and dual component and PC connections. In its Scenium series, RCA will unveil models ranging from 26- to 46-inch screens with advanced picture processing, enhanced dynamic control, dual HDMI and SRS TruSurround XT audio processing.

Westinghouse Digital will show LCD HDTV sets ranging from 19- to 52-inches, including new combination HDTV sets with integrated DVD players. The company will also showcase its 1080p monitors with integrated ATSC/NTSC/QAM tuners. Its high-end models include dynamic contrast of up to 6,000:1 contrast ratio.

Sony, Philips, Toshiba and other global TV manufacturers—including a growing roster of Chinese suppliers—will show comparable products. In addition, several companies, including RCA and LG Electronics, are expected to display prototypes of the set-top box converters that enable current analog TV sets to display DTV broadcasts. Initial pricing information may be available, although manufacturers will make those decisions closer to CES's opening day.

NEXT GEN SERVICES

Mobility, portability and related attributes of the new video environment are expected to play a growing role at this CES. For example, MediaFLO, the Qualcomm venture that will debut in early 2007, will showcase its recently announced alliance with Verizon Wireless to carry mobile TV content.

"We are a little broader than we've been in previous years," Chupka said, singling out the expanded emphasis on "cross-platform" companies. "We're trying to touch on every technology in some way."

She points out that just a few years ago there were "all kinds of ideas about Internet TV and now people are making it." Hence, many exhibits—as well as several conference sessions—focus on various approaches to Internet television.

"Even consumers realize they are not tied to watching a show at a particular time and place," Chupka said.

Underscoring her point, and representative of a new slew of Internet content providers, is MediaZone, a San Francisco-based firm that will unveil "Social TV." Its backers call the online video service "disruptive to the traditional television business" by enabling the global distribution of

"More and more people look at the show as an indicator of future trends."

—Karen Chupka, CEA

new channels via the Internet. MediaZone's initial line-up includes sports, lifestyle and movie channels, although details are not yet available.

Video program developers are descending on CES in part because new devices—notably time-shifting, place-shifting technologies and Internet television—are changing TV consumption patterns. Chupka points to the new "Anytime Anywhere Tech Zone," sponsored by SlingMedia, as an example of the way in which CEA tries to make it easier for the thronged masses to find emerging products.

"We had some components of time-shifting in the past, but we decided to group it together and look at all mobility," Chupka said.

CABLE TV COMES ALONG

As CES blurs the lines across industry sectors, a synergy has developed—encouraging new delegations of visitors, who then attract vendors aiming for their business.

For example, CableLabs, the cable industry's research organization, expects to bring at least two dozen top cable officials to CES again this year, while CTAM (Cable & Telecommunications Association for Marketing) will shepherd about 75 marketing and programming executives through Las Vegas. Seeking to catch the eyes—and wallets—of those potential customers, several traditional cable TV suppliers are escalating their presence at CES.

World Radio History

XDCAM HD.
THIS IS NEWS.

IPTV

Landlines are going away.

Verizon registered a 7.5 percent drop in landline subscribers during July, August and September. Smaller telco exchanges report a decrease of 1 to 2 percent a year.

"It's not hard to imagine that voice services as a business don't have much of a future," Southard said. "We've got a lot of money invested in an infrastructure designed to carry voice... it's not hard to see the potential in the future if you don't do something different."

For small local phone companies—referred to as "ILECs," or incumbent local exchange carriers by the FCC—that something is Internet Protocol TV.

Around 100 ILECs have launched IPTV in the United States today, according to Kevin McGuire, vice president of business and technology for NTCA. It's the "IP" that makes the endeavor notable. Small telcos have been in the video business for years, either with owned analog cable operations or satellite TV franchises. But IP technology allows telcos to offer digital TV, advanced services and more channels. Matanuska, for example, offers 206 channels, video-on-demand, pay per view and soon, high-definition content.

TECHRONICITY

The advent of telco IPTV is a story of technological synchronicity; of codecs, chips, networks and hardware simultaneously reaching the stage of development necessary to do IPTV over copper. Those pieces started coming together about five years ago, said Jeff Houlé, senior director of U.S. telecom sales for Tandberg Television. First, ADSL

(asymmetric digital subscriber line) technology and DSL access multiplexers, or DSLAMs, allowed phone companies to get 8 to 10 Mbps into the home.

"That equated about two televisions and one broadband service," Houlé said. "That's been the case for the last four or five years. Then in the last year, ADSL went to ADSL2+, gave more bandwidth to the home at longer distances."

Matanuska doubled its data rate to the home with ADSL2+, Southard said,

Steve Axt, a Canby Telecom install and repair technician does an installation.

from 8 Mbps over standard ADSL at 6,500 feet, to 16 Mbps.

Houlé also said the completion of MPEG-4 was pivotal for ILEC IPTV. MPEG-4 can do an average hi-def signal in about 8 Mbps, compared to 18 or so with MPEG-2. The beauty of IP is that video signals are delivered to the home individually instead of as a package, so a 16 Mbps pipe will easily do HD, plus broadband and voice. ILECs are itching to use MPEG-4, but the set-top chipsets still need tweaking.

Ron Riggle, vice president of operations at Rochester Telephone in Rochester, Ind., said his company has six to eight HD channels for its IPTV service, but they won't be offered until the bugs are worked out.

"Everyone that has one is having a bit of trouble with the chipset," he said. "They're trying to combine MPEG-4 and MPEG-2 into one set-top, and it's having some problems with freezing."

Riggle and Houlé both anticipated such problems would soon be resolved, especially with AT&T using MPEG-4 for its IPTV initiative, U-Verse.

AT&T's set-top suppliers include Motorola and Scientific-Atlanta, while many ILECs use boxes from Amino in Cambridge, England.. Tatung and Thomson also make IPTV set-tops.

Tandberg Television is a main suppliers of IPTV headend equipment. So are Tut Systems with its Astria line; Optibase with MGW platforms; and Minerva Networks, the VC8000. Each system handles a combination of signal processing and coding operations.

Tandberg Television was already a major player in video compression when it launched headlong into ILEC IPTV with its $80 million acquisition of SkyStream last March. Jim Olson was president and CEO of SkyStream at the time. He's now executive vice president of corporate development for Tandberg Television.

"SkyStream was entirely focused on smaller telcos and a number of very large telcos outside the United States," he said.

The SkyStream line, now sporting the Tandberg Television name, included the MPEG-2/AVC Mediaplex-20 headend and iPlex, an edge headend for adding local channels. Rochester Telephone is using two Mediaplex-20s in its MPEG-2, fiber-to-the-home operation.

RICH IN FIBER

Across the country, an overall snapshot of the local exchange infrastructure would reveal a mix of copper and fiber. Some operations use a fiber core with copper to the home. Others take fiber to the curb or all the way to the home, particularly in new developments. Rochester is going all the way. Riggle said the company serves about 6,000 households in a 240-square-mile area. The entire fiber build-out should be done in three years.

"It will be a nine-year capital investment run of about $9 million," he said.

Rochester decided to go all fiber after doing fiber to the curb at a nearby competitive exchange.

"We realized that just going to the curb doesn't really help you out. You have to go to the home," he said. "We could see the demand for speed was not going to let up. Why not build an infrastructure that would serve us for years to come?"

As for return on investment, "it's gonna take a while, but we're in it for the long term. We've been here 111 years. When you think about what brought us to the industry, the dance isn't always gonna be there... we've got to have diversity. Video is one of those things, ISP is another. We're just trying to make sure we stay here another 111 years."

Rochester now has around 1,700 subscribers on a legacy analog TV service; the 205-channel digital IPTV service is in the process of being launched.

Canby Telecom in Canby, Ore., went up with their IPTV service in October 2005. The company has 900 video subscribers in an 80-square-mile market of 8,500 homes, said Keith Galitz, the general manager.

"The plant is copper to the house, and we're totally rewiring the houses. We've launched fiber-to-the-home in new developments and fiber overlay in certain areas," he said.

"We're adding between 60 and 65 customers a month."

GETTING THE PICTURES

Like Rochester and Matanuska, Canby has its own dish farm to pull in programming. Individually, ILECs would be hard pressed to negotiate deals with hundreds of networks, but in this case, all three are members of the National Cable Television Cooperative. The NCTC negotiates programming deals as a collective representing 9 million subscribers—making it the third largest cable company in the United States.

However, the NCTC put a moratorium on new memberships last year as ILECs got serious about IPTV. Without a negotiating collective, 6,000-line ILECs like Canby have to pitch the likes of Viacom, Disney and Fox. It's doable—Galitz cut deals with six major cable nets for Canby's IPTV offering on top of the NCTC arrangement; but that's still six out of around 200.

McGuire said NTCA (the phone co-op lobby) is putting together a master programming agreement for members. Concurrently, the NTCA along with the National Rural Telecommunications Cooperative is working on a turnkey IPTV system with SES Americom, the Princeton, N.J. satellite operator. The system, IP-Prime, is a program distribution platform similar to Headend in the Sky operated by Comcast. SES Americom aggregates programming at its facility in Vernon Valley, N.J., encodes it for IP, compresses it with MPEG-4 and transmits it via satellite.

With IP-Prime, Brian McGuirk points out that ILECs can get into the digital TV business for the price of a receiver dish and three to five racks of equipment—less than one-tenth of the price of building a full-fledged $4 million headend. McGuirk is president of media sales for SES Americom.

"It's a great flip for the telco, putting capital into programming instead," he said.

There will also be a regular fee based on how many channels an ILEC takes. IP-Prime is in currently in beta at four rural cooperatives, and is expected to become available to ILECs either by the end of this year or early next year.

"Everyone can sort of see the finish line," McGuirk said. ■
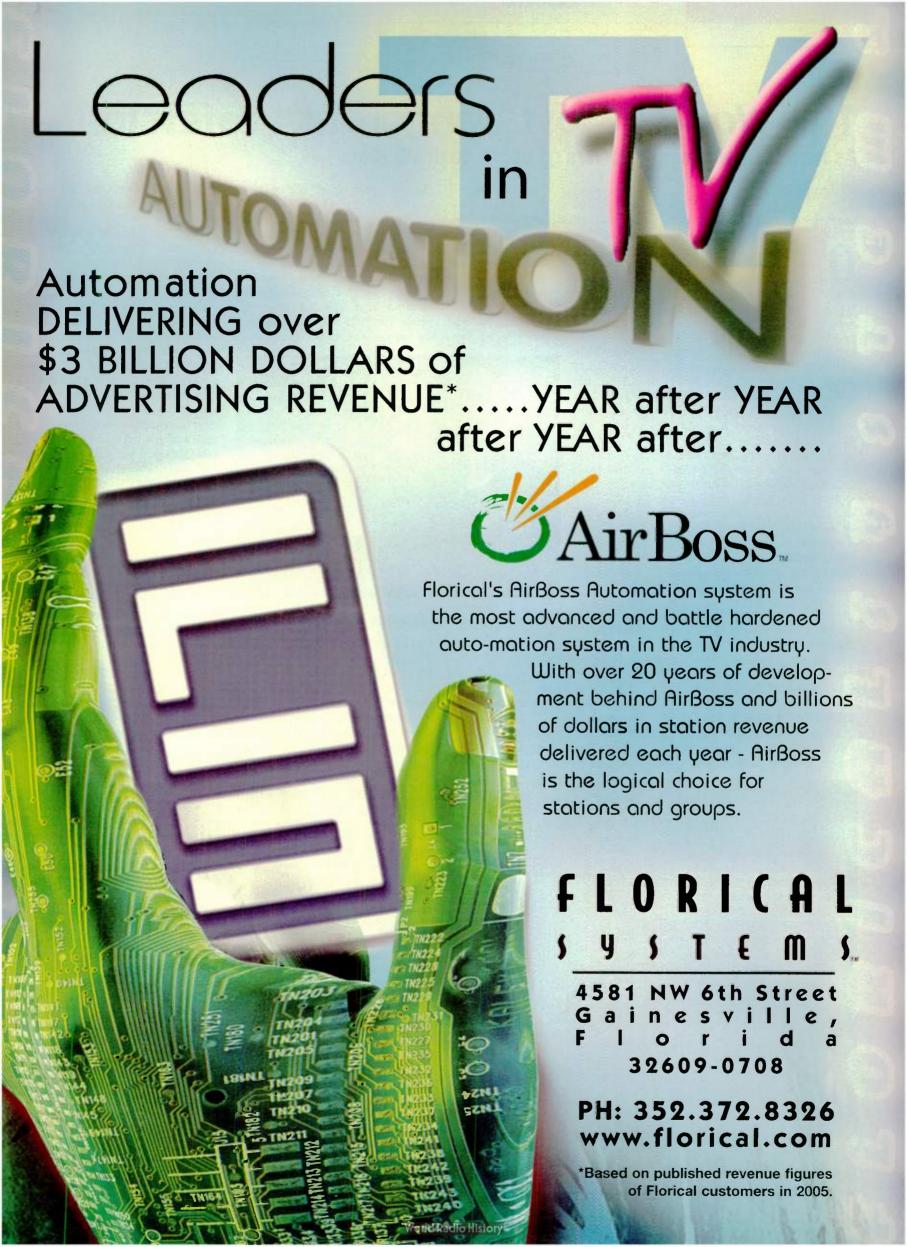
The World's Most Dangerous Profession

As more communication towers go up, so do death rates

by James E. O'Neal

FALLS CHURCH, VA.

Outside of airplane pilots, installation crews and chief engineers, not many people spend much time thinking about television towers. However, these towers are as much a part of the American landscape, and have been since the great postwar television boom began. The coming of DTV has done little to change that, except to increase the "stick" count.

A tall tower never fails to attract attention when it is going up, but hardly anyone gives it a second thought afterwards—unless something goes wrong. And during the past few years, things have gone wrong—and deadly—at several tall tower sites.

Accidents range from workers (or uninvited climbers) falling from towers, to towers themselves falling. And towers can fall for a variety of reasons—airplane and helicopter strikes, mistakes made during structural alterations, changes to loading without proper engineering studies, poor welds, corroded or otherwise damaged fastening hardware or members, abnormal icing and wind conditions and sabotage. A 282-foot Michigan tower felled when a small snowmobile trailer snagged a guy line.

TEN TIMES GREATER

According to the 2004 statistics from the U.S. Labor Department's Bureau of Labor Statistics (BLS), the average number of accidental deaths per 100,000 workers in all U. S. industries was slightly more than four. The BLS does not maintain a separate category for tower workers, but other sources have attempted to enumerate members of this trade.

One of these, *WirelessEstimator.com*, a Web publication catering to communications construction interests, estimates that there are some 8,700 tower workers in this country and has pegged the number of deaths per 100,000 among these individuals during 2004 at 115.2.

According to BLS 2004 information, the next most dangerous professions are logging and aircraft piloting and flight engineering, with both tied at 92.4 deaths per 100,000.

Craig Lekutis, president of *WirelessEstimator.com*, said, "In 2006, sadly, we'll clearly be at number one [for deaths among tower workers]. The fatalities currently are at 18."

(*WirelessEstimator.com* does not break out television or radio tower incidents from water, cell or other tower-related deaths.)

Figures from the federal government's National Institute for Occupational Safety and Health support these numbers. NIOSH data on tower worker deaths occurring between 1992 and 1998 identify 118 fatalities from falls and tower collapses. The 2001 NIOSH report cited the average number of overall industrial deaths at five per 100,000 workers and estimated the number of tower worker deaths at between 49 and 468. According to NIOSH, this spread is due to difficulties in identifying tower workers, as they are sometimes categorized in multiple industry headings.

Regardless, even the lowest end of this statistic shows that the number of fatalities among tower workers is 10 times greater that that of all other occupations. If the high-end figure is believed, then the fatality rate rises to an accidental death rate 93 per cent higher than that found in all other occupations.

Clearly, tower climbing is *the* most dangerous profession.

In examining some of the more visible accidents from the past few years, no real pattern of accidents or disasters emerges, though:

- A 21-year-old maintenance worker fell 940 feet to his death in Missouri in 1998.
- In another Missouri accident, a 38-year-old worker died in late 1999 in a 40 foot fall from a tower he was helping to construct.
- Three tower painters were killed in a Dec. 3, 1999 in a 1,000-foot fall near Charlotte, N.C.
- In an April 22, 2002 mishap, a worker was killed as equipment crashed into him at the 1,000-foot level of a Nebraska tower.
- September 2002 saw the deaths of two more workers in Nebraska when a 1,965 foot tower collapsed.
- Less than a year later, another tower-related death was reported in Nebraska when a 22-year-old worker fell 1,200 feet while performing DTV upgrades to an existing tower.

Fast forward to 2006 and the industry has so far recorded the deaths of an additional six broadcast tower workers. Two of these occurred during the installation of an antenna in Virginia. Three maintenance workers were killed in a 1,500-foot fall from an Iowa television tower and another broadcasting tower-related death was reported in Indiana.

In addition, four Army personnel were killed when the helicopter in which they were riding struck the guy line of WFXL-TV's Doerun, Ga. transmitting tower. (Days later the tower of nearby WALB-TV was inadvertently toppled during demolition of the damaged WFXL tower.)

NIOSH estimated there were 50,000 telecommunications towers in service in the United States in 1996, and said that increasing demand has resulted in the erection of 20,000 to 50,000 new towers during each of the last 10 years.

While the vast majority of these have been built due to growth in the cell phone industry, conversion to digital television is responsible for part of that number.

OLDER TOWERS A PROBLEM?
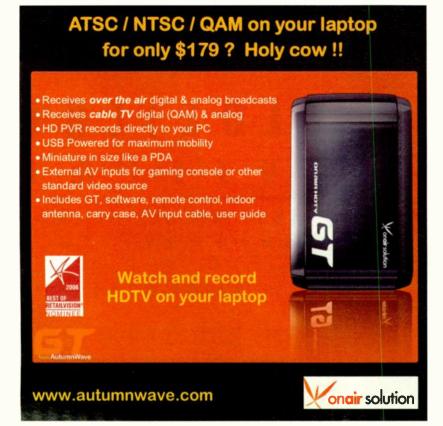
Several television transmitting towers are old—some in excess of 50 years. In the past few years, there's been a lot of controversy about safety issues associated with other *old* items—highway bridges, nuclear reactors and commercial passenger aircraft all come to mind.
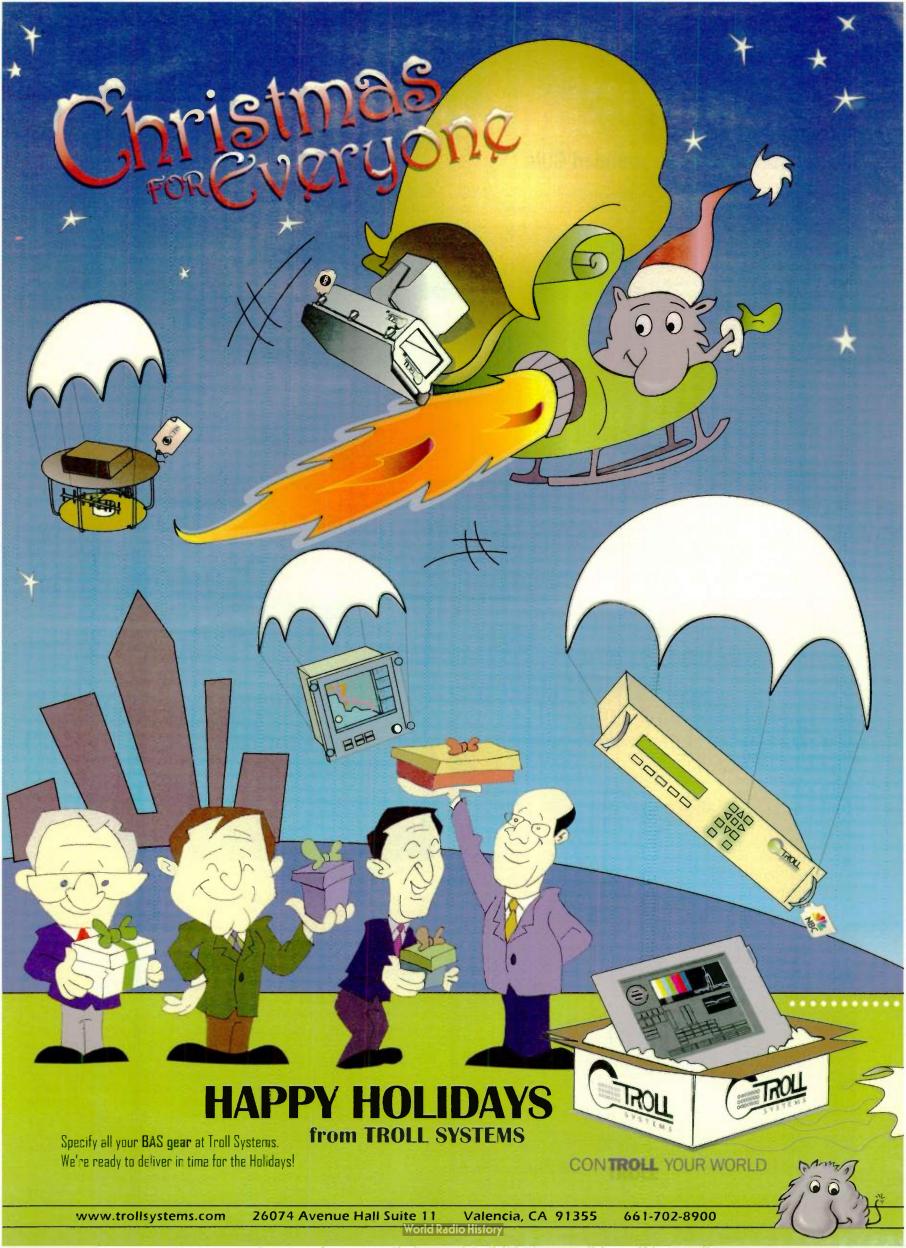
Any accident arising from failure of such entities, either old or new, is almost guaranteed to be spectacular in nature and a high profile news event.

Joe Meleski, director of installations for Electronics Research Inc. (ERI) in Chandler, Ind., is aware of the number of older television tower structures dotting the countryside, and says that about half of the DTV antennas his company has sold have gone up on older towers. He thinks that while there is no mandated inspection program for older structures, there should be no great worries either.

"We've replaced some older structures—the broadcasting industry is driving new (tower) construction and industry code is forcing upgrades,"

Tower workers hoist a 6,000-pound UHF antenna to the top of 600-foot tower at a Virginia job site.

photo credit: United States Tower Service Inc.

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Going Soft
Master control offers expanded GUIs

by Robin Berger

LOS ANGELES

GUI (graphical user interface) was the buzzword for 2006 as broadcast equipment providers acknowledge that specialist hardware like the traditional master control switcher will slowly give way to more software-centric applications.

OmniBus Systems privately demonstrated its iTX transmission system at IBC2005, gave its first public showing at NAB2006, and shipped the first systems last September. Chief Technology Officer Ian Fletcher emphasized that iTX is not a master control unit per se, but rather a "new type of technology solution," combining master control with other switchers, servers and functions. The GUI is part of the package deal.

"[Clients] get a small rack of servers—probably no more than six to seven units—to ingest content in HD and SD, produce playlists with full

master control effects, branding, bugs, DVD moves, close captions... and manage those playlists and run a four or five channel operation from a single user interface," he said. "We normally provide all Hewlett Packard standard

Pro-Bel Masterpiece Soft-Panel for Morpheus

hardware—drop ship finished, racked servers with all the software ready to go—or integrate it into an existing system."

Tim Mendoza, vice president and iTX Unit business manager, priced the software package for one SD channel at and a "fully functioning solution, including hardware, for under $100,000." Microsoft Studios, the software giant's internal studio and production facility recently used an iTX system to replace its routers, digital video effects boxes, master control

units and other equipment. Omnibus is creating a specialized automation package based on iTV for PBS, but Congressional funding delays have stalled the initiative, according to OmniBus.

GUI ADVANTAGES

After launching the MAE-GUI-HW for the new Grass Valley Maestro master control unit at NAB2006. Product Manager Lynn Madsen estimated that about 60-65 channels of Maestro had been shipped worldwide by the end of October; he said about a quarter to a third of these included the GUI in one form or another.

"We ship it as a rack-mountable, industrial grade PC with a 20-inch LCD touchscreen monitor and the GUI software," Madsen said, adding

that this offering also came with mouse and keyboard alternatives.

"There also is an option for customers to order a software license [to] run the GUI on their own hardware." This second option requires a Grass Valley PCI card. An add-in card—the MAE-GUI-VIDEO—makes it possible to dispense with external overhead monitors by putting the program in pre-set video, he said.

Harris demonstrated its new ICONmasterNAV at NAB2006, and began shipping in it October. According to Michael Steel, director of product marketing, the software is generally used to complement the hardware panel, although, he said, some clients access all of the controls and capabilities of the ICONmaster through an automation interface to their scheduling systems.

"Typically, the automation runs under serial 422 control, and the automation system will say, 'I want source one to go to air with this logo now,' which will [prompt] a string of commands," he said. "Our automation interface will accept those plans and act on them."

Pro-Bel introduced its Masterpiece Soft-Panel for its Morpheus Control and Monitoring equipment last summer, after showing prototypes at

Grass Valley Maestro GUI featuring key channel

NAB2006.

"It's de-signed to be used with a touch-screen computer pa-lette—it runs on a Microsoft Windows platform and sits inside a broader suite of software," said Neil May-cock, president of Pro-Bel Americas. It started shipping this fall.

Ironically, two providers who pioneered the GUI interface for MC equipment have not presented a radical upgrade for 2006.

In 2001, Miranda introduced the GUI for PresMaster, which had a large control panel and a small, built-in touch screen displaying a four-color software GUI, according to Product Manager Paul Selly. Three years later, Miranda debuted PresStation, which has a smaller hardware panel and

CES

For example, Motorola (already on hand for its wireless phones and other products) will unveil a new family of host set-top boxes that will give cable operators removable security solutions with functionality similar to current set-tops. The new boxes are designed to operate with multistream CableCARDs, which let consumers watch or record shows from multiple, simultaneous tuners using a single CableCARD.

Scientific-Atlanta, now part of Cisco Systems, will also be on hand again, as will Cisco CEO John Chambers, another keynoter. Cisco recently launched a consumer branding campaign, suggesting that the company's messages in Las Vegas will focus on its ability to integrate wired and wireless services via home networking products. Cisco's growing presence at CES, along with established computer-oriented firms such as Intel, Microsoft and Apple, further exemplifies the merging of electronics and computer technologies in the home.

Home networks and the tools to create them will permeate CES. Nearly a dozen conference sessions touch on some aspect of beaming video and data around the house.

Meanwhile, other urgent TV topics will be in the CES spotlight. A Tuesday afternoon SuperSession, "Get Ready for the End of Analog TV," will focus on public policy and business factors during the next two years as the DTV countdown proceeds. The panel will include Washington officials, retail and media executives who will analyze issues ranging from the set-top converter coupon program to "must-carry" retransmission.

In keeping with the CES theme of "Content, Technology and Everything in Between," another SuperSession will focus on "Content and CE Partnerships: Breaking New Ground." Reflecting CEA's passion for "innovation" and the use of home video equipment for the production of original content, several sessions will focus on social networks and the fast-emerging world of "consumer-generated media."

Many exhibitors will introduce products that fit into that social networks' category. For example, Microsoft Networks will feature its "Soapbox on MSN Video," a user-uploaded video service. Soapbox will be available on MSN Video and will be deeply integrated throughout Microsoft's portfolio of online services.

CEA is also putting a bright spotlight on its "Innovations Plus" show-case, which will feature "the largest concentration of market-specific TechZones." These theme-focused clusters will concentrate on categories such as "Mobile and Personal Broadband," "Studio@Home," IPTV and collaborative groups such as the Digital Living Network Alliance.

NAVIGATING CES

Prompted by the growth of CES (and a few other mega-expositions), the Las Vegas Convention Center several years ago built additional floor space onto that mammoth structure. CES has already outgrown the expansion, so many of the keynote events and showcases will be based at the Sands Expo and Convention Center and conference halls of the adjacent Venetian Hotel.

Even though the venues are connected via nonstop shuttle bus service, Chupka and her CEA team recognize that visitors often can't find products and sessions. Among their solutions is a "SmartBiz CES Tool," an online service available via the CES Web site (*www.cesweb.org/attendees/myces/default.asp*) that lets attendees preplan their agenda, including searches for sessions, exhibits and schedules. This month, CEA is launching podcasts to help attendees search for sessions and products.

Chupka believes that these features help visitors discover what and whom to see before they get to Las Vegas and say, "I need to talk to those people."

Other groups are offering tools to help attendees—as well as people who eschew Las Vegas—to gauge what's hot at CES. For example, Nielsen BuzzMetrics, the word-of-mouth measurement firm, will track blogs and other commentaries about the show to spot the most "talked-about" products. The company notes that at last year's show, the top segments were home theater and video/gaming. Nielsen's study will also monitor buzz about brands, with all reports being sold after the show ends.
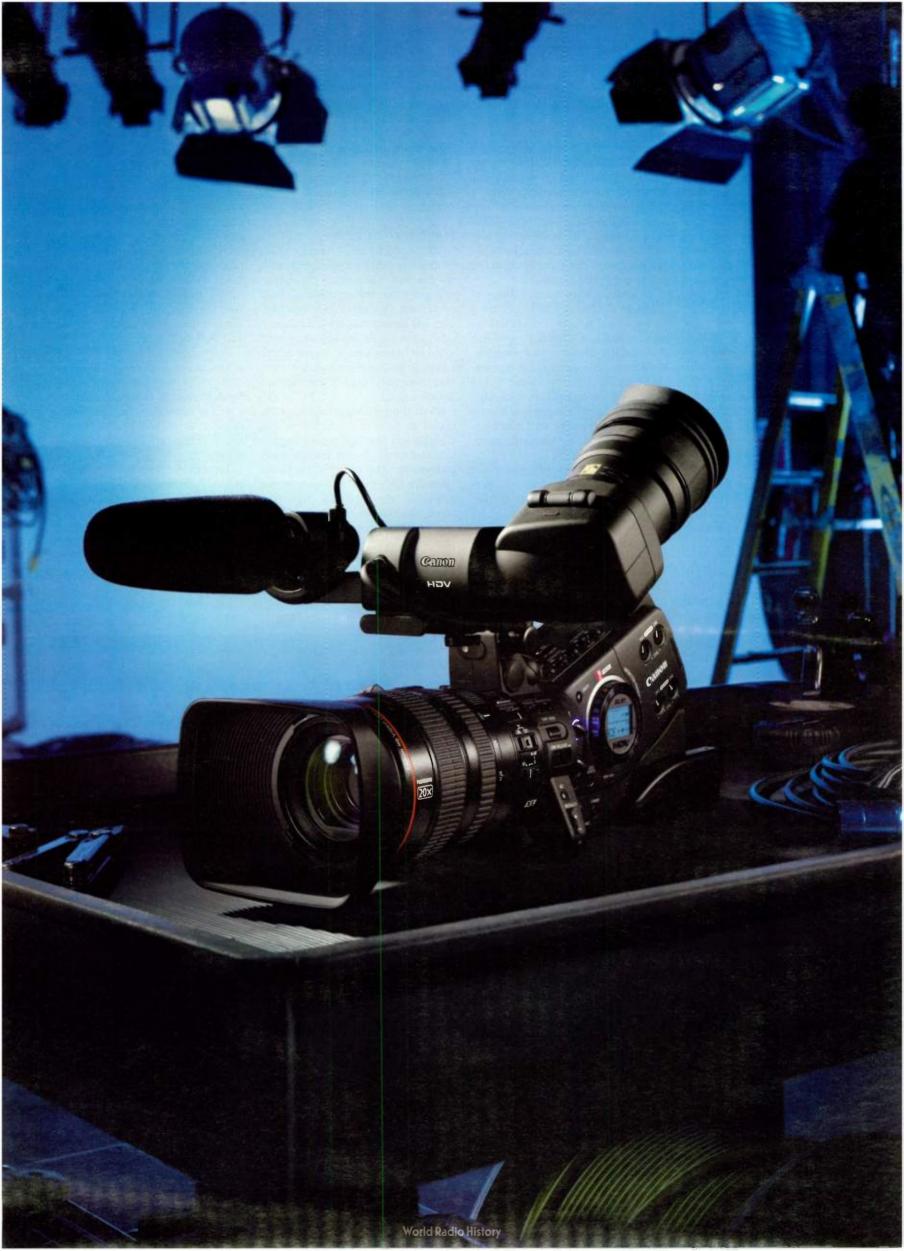
One adjustment for the 2007 CES is the Monday-through-Thursday cycle, a shift away from the Thursday-Sunday schedule of recent years. It is a change dictated by the post-holiday calendar, Chupka said, noting that the next two years will be on the weekday pattern.

Indeed, the post-holiday factor is inevitably built into the spirit of CES. Traditionally, if retailers come off a lively shopping season, the mood in Las Vegas is bubbly.

With HDTV sales expected to be strong this month, CES 2007 could stand for "Celebrating Extraordinary Sales."

To register for CES, visit *www.cesweb.org*. ∎

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TV

prompting about 5 million downloads monthly by early fall.)

And not to be outdone, when Katie Couric took over at CBS News after Labor Day, her evening broadcast tried to do her competitors one better: Her East Coast feeds immediately began streaming and airing live, simultaneously, on the CBS News Web site and on local stations.

GAUGING GOOTUBE

The broadband-accessible universe for news and other video content took on larger possible implications for broadcasters this fall when Google purchased online upstart YouTube for an eye-popping $1.65 billion.

"Online video is exploding," said Josh Bernoff, principal analyst with Forrester Research. "It's not just YouTube. It's video of all kinds, from amateur to niche to shows that look a lot like *television*. It used to be it took a million consumers to make a show successful. In the online world, now, you can make money with far less."

Bernoff believes broadcasters need to understand they are now in the business of "bankrolling and promoting shows even more than broadcasting them, and that extends online." For the most part, he said, the industry has made a very rapid transition to this way of thinking in the last 12 months, which he finds "amazingly fast for such an established and traditional industry."

As for the YouTube deal, not everyone sees it as greatly affecting broadcasters, for now: "Zero impact," said veteran engineer and consultant Mark Schubin, "except insofar as broadcasters having a bigger target to sue for copyright in Google. Note the hundreds of thousands of clips that have been pulled since the [YouTube] sale was announced," he said.

HD CONFUSION LESSENS

Consumer acceptance of HDTV continued to accelerate this year, with prices predictably falling and sales increasing. A third emerging format, 1080p, added another sexy option for early adopters. By the end of the holiday season this month, American HD household penetration will approach

Photo credit: Rob Kim/Landov

25 percent, while research indicates about a quarter of those homes owns two or more HD sets.

"Consider only three consumer products have ever cost more than $1,000 and sold in the millions of units: cars, PCs, and HDTV sets," Bernoff said. "I think Blu-ray versus HD DVD will continue to confuse consumers and create a hiccup in the DVD market for a year or so, but HDTV is still going strong. It's the cable and satellite operators that need to crank up their marketing and edu-

cational efforts for HDTV service, which is still widely misunderstood by consumers," Bernoff said.

REHR EYES POLITICAL SHIFT

When David Rehr took over at NAB this year, his strong Republican contacts were seen as a plus. Following November's elections that swept the GOP out of power on Capitol Hill, Rehr reassured NAB members (via the trade press) not to worry—that NAB is well-positioned to deal again with familiar Democratic leaders in both houses, despite the fact that his hand-picked lobby team skews a bit Republican for

now.

Addressing the National Press Club in Washington this fall, Rehr called on broadcasters to renew their inherent strengths—especially localism. He also echoed some remarks from his first national convention address last spring, again prompting broadcasters to become more pro-active in pursuing industry priorities.

DEADLINE REDUX

In February, Congress officially extended the deadline for an industry-

wide analog cut-off to Feb. 17, 2009. (The original cut-off was this month.) But while Washington may be counting on growing consumer awareness to help lessen the chances for any nightmare caused by the eventual turn-off, some analysts warned this year that the government is not doing nearly enough to alert Americans to the pending overnight switch in 26 months.

In July, the National Telecommunications and Information Administration proposed giving $40 subsidy coupons to purchase converter boxes only to those households that were not subscribed to either cable or satellite service (projected to be 16-18 percent of

> "Online video is exploding. It's not just YouTube. It's video of all kinds, from amateur to niche to shows that look a lot like *television.*"
> —Josh Bernoff, Forrester Research

all U.S. television households). NAB and others view the proposal as too restrictive and potentially calamitous.

Schubin also is among the NTIA's critics: "What plan? When the CEA, the NAB, MSTV, and [Congress] all agree that NTIA's supposed proposal is wrong, I think they will change things."

WHITE SPACES

In October, the FCC took initial steps to allow low-power unlicensed devices to operate in "white spaces," the broadcast spectrum not currently assigned or being used. It will not allow fixed devices to operate in Channel 37 (radio astronomy and medical services); channels 52-69 (public safety and other mobile services); or channels 14-20 (public safety service in several cities).

NAB and MSTV, however, have cited studies demonstrating that unlicensed devices in white spaces could be an interference nightmare. Yet with major telecom legislation tied up in the Senate that includes white spaces, the November elections could make a big difference in how the overall bill fares, among other things.

Sens. Ten Stevens (R-Alaska) and Daniel Inouye (D-Hawaii) serve as co-chairs of the Commerce, Science & Transportation Committee—although Stevens, as the higher of equals—has been pushing the FCC to move faster on white spaces. At the same time, a key cosponsor of the white spaces provision is Sen. George Allen (R-Va.). Allen was defeated last month and will not return to Congress; Stevens will lose his chairmanship to Inouye next month, although a cochair arrangement likely will continue. ■

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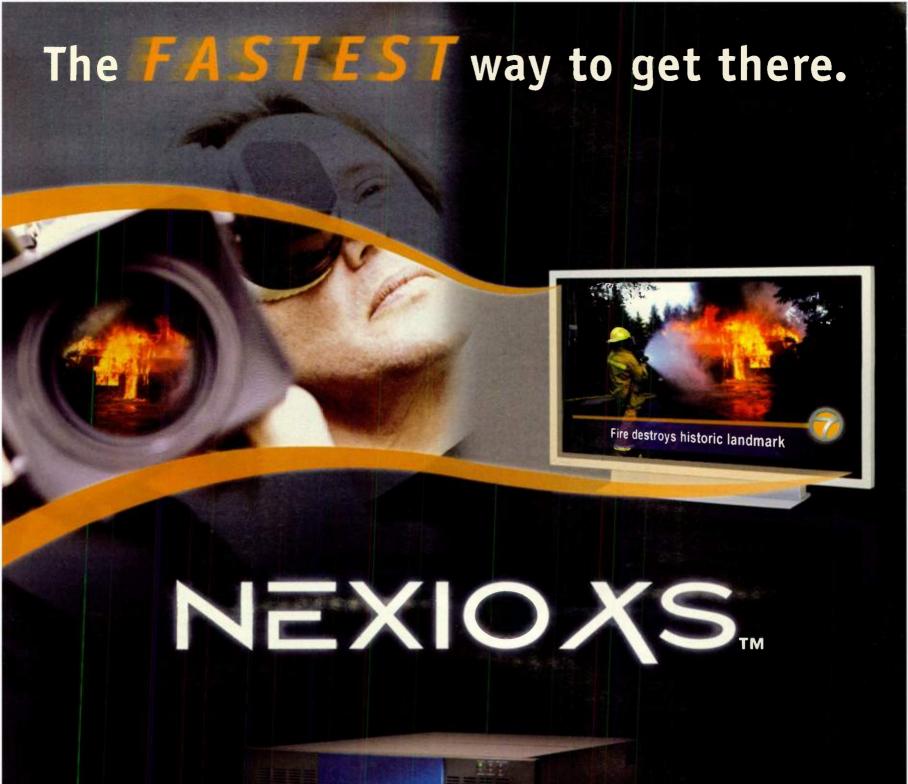
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New Wireless Hi-Def Warriors Emerge

Consumer goods makers promise new spec by spring

by Robin Berger

SUNNYVALE, CALIF.

A self-proclaimed "first application-focused" specification for wireless high-definition technology using the 60 GHz spectrum will be completed by next spring, according to the "WirelessHD" group, a consortium of six consumer electronics products manufacturers and a developer of high-speed wireless communication platforms formed to actively promote the new format.

The group's announcement in late October was intended to build momentum by introducing its intentions and issuing a call for contributions to its goals. Interested companies can visit *www.WirelessHD.org* or e-mail *info@wirelesshd.org*.

Member companies include some of the world's largest manufacturers of consumer electronics, including LG Electronics, Matsushita Electric Industrial Co., (Panasonic), NEC Corp., Samsung Electronics, Sony and Toshiba. John Marshall, vice president of sales and marketing for SiBEAM, Inc., the lone non-consumer electronics member, is chairman of WirelessHD. The group was formed in early 2005 with the express purpose of developing interoperable specs for a wireless HD digital interface for its members' consumer electronics products.

"WirelessHD will provide a high-speed wireless digital interface that will enable customers to simply connect, play, transmit and port their HD content in a secure manner," Marshall said. "The 60 GHz has 7 GHz of available bandwidth, very high power limits set by the FCC," as well as by governing bodies in Japan and Europe, "and has been demonstrated by many research institutions to be manufacturable at CMOS."

John Marshall, chairman of the WirelessHD group

CMOS (complementary metal–oxide–semiconductor) is the class of integrated circuits used in microprocessor chips and digital logic circuits.

SMART ANTENNAS

According to tech guru Mark Schubin, "the good news about going to such high frequencies is that they are freely available for unlicensed use. The bad news is that they tend to be extraordinarily directional."

Unfortunately, WiFi is noted for being non-directional, thus, he explained, "the directionality would seem to be a killer—they'd have to transmit enough beams in enough directions that if many were blocked at least one could still get through."

WirelessHD addressed this issue in its announcement, indicating that smart antenna technology that is readily available today would overcome line-of-sight constraints inherent to the 60 GHz spectrum.

In an interview with **TV Technology**, Marshall alluded to breakthroughs and acceptance of reflective technologies like the Multple Input Multiple Output specs featured in the IEEE 802.11N standard. MIMO outlines one way multiple transmitter and receiver antennas can be used to multiplex and otherwise increase the range of transmission to accommodate greater bandwidth demands.

"We're going to do something different from MIMO in our technical vision; conceptionally, it's not so very different," Marshall said. He indicated that a white paper on the group's vision would be posted on its Web site "as fast as our fingers can write," hopefully by year-end.

THE OTHER WIRELESS OPTION

The announcement was thought by some to be a blow to the efforts of the PC/cellphone community to promote ultrawideband as the fast, low-power wireless network of choice for the digital home. This assessment was shrugged off by the community, which does not seem as committed to an ultimate strategy as some reports suggest.

More than 100 companies advocating the ultrawideband approach formed the UWB Forum in late 2004 to support the IEEE 802.15.3 standard enabling wireless multimedia applications for portable consumer electronic devices with whole home coverage. The IEEE 802.15.3a working group, which endorsed UWB, split over disagreements on signal generation—prompting Intel, Texas Instruments and others to form the rival WiMedia Alliance; it ceased operation last January. A different IEEE working group—802.15.3c—has embraced a 60 GHz initiative.

At press time, the UWB Forum was restructuring, and declined comment until early 2007. However, board member Bruce Watkins agreed to comment on WirelessHD's announcement as the president and chief operating officer of Pulse-Link, a UWB wired and wireless communications technology provider.

"Everybody's looking for an approach to doing it, and this is yet another," Watkins said of Wire-lessHD's announcement. "I'll believe the technology when I see it but, that said, you've got some very strong, innovative companies working on it, and they may very well be successful."

Watkins saw two big obstacles for 60 GHz: Developing a cost-effective antenna technology and multi-element array to resolve line of sight problems as well as security issues.

"Content protection schemes aren't in the RF radio technology at all—the devil in the details is really the Media Access Control (MAC)," he said, noting that 90 percent of HDTV traffic will come into the home through a set-top box controlled by companies that are sensitive to content protection. "The companies that decide what goes inside a set-top box are your cable, satellite and telco providers," he said.

As such, the UWB Forum, said Watkins, has been more proactive to initiatives embraced by service providers than it has to those proposed by consumer electronics manufacturers. WiMedia saw things differently.

"We've had a couple of chats between key representatives to see how we might cooperate in the market," said Stephen Wood, president of the WiMedia Alliance and UWB Technology Strategist for Intel, who conceded that the two groups had some overlap in membership. "You can't guarantee how the market is going react to a technology—you need to play multiple technologies."

Nonetheless, Wood is not convinced that smart antennas are the way to go.

"If you have to use smart antennas, there's some additional cost that's associated with that," said Wood, who noted that UWB advocates don't think smart antennas are needed now for most applications. "There are about a billion ways to address any one of these problems."

He also seemed to be put off by the nature of WirelessHD's spec development.

"We like to see standards-based work—you get peer review: if you've made mistakes, your peers can catch them," said Wood, whose 268-member WiMedia Alliance is now working on specs through the European Computer Manufacturers Association and other standards bodies. "You tend to lose that a little more if there's not this natural competition." ■

HD Gets a Reality Check

Post expenses, lack of interest dog move to hi def

by Jay Ankeney

HOLLYWOOD, CALIF.

Despite all the interest in HD production for primetime comedies, drama and sports presentations, most of what is known as "reality TV" these days has yet to see the benefit of being viewed in high definition. In fact, of the four broadcast networks, only Fox's "American Idol," produced by Fremantle North America, has been shot and broadcast in high definition since its 2005 season (although "Idol" is viewed more as a variety/talent show than a field-produced reality show).

Starting in early January, NBC will bring another "reach-for-the-stars" talent search reality show called "Grease," produced by BBC Worldwide. Based on the hit British production "How Do You Solve a Problem like Maria?", in successive installments, "Grease" will select the actors who will appear as Danny and Sandy in the musical's Broadway revival. But their weekly callbacks will be shot in standard definition, not HD. Linda Giambrone, vice president of production for BBC Worldwide, said this was the network's decision.

"With high definition only being viewed by a small percentage of people in this country, not many people can appreciate the difference between standard definition and HD," Giambrone said. "So we don't see huge benefits from the additional costs of producing the show in high definition."

Although most production budgets estimate only a 20 percent premium for shooting in high definition over standard definition, given the plum-

"American Chopper" on Discovery Channel is one of the few reality shows currently being shown in hi-def.

meting cost of smaller HD format cameras and their associated recording medium, it is in post production where the massive amount of footage required to bring back adventures from out-of-studio locations is hindering the adoption of high definition production for most reality TV shows.

STEPPING UP

The absence of HD in reality TV is not for a lack of trying since many top DPs are eager to step up to the widescreen medium. Anthony B. Sacco has been DP/director on standard-definition shows such as "Project Greenlight," "Runway" and "Treasure Hunters."

"It's all about budget," Sacco said, "and once you have shot thousands and thousands of hours of tape this becomes a major consideration in post. Tape cost is expensive, decks are expensive, and storage is expensive. Every show I go out on I always pitch HD but the major networks don't want to show their programs in 16:9 yet. And, since reality shows have little shelf life in reruns, the producers are not willing to invest the extra expense for HD without the potential of repurposing their shows in high definition."

Hisham Abed, who has served as DP on "Laguna Beach" and "The Hills" said the lack of HD is also sometimes an aesthetic consideration.

"Some of the executives considered using HD on 'Laguna Beach' but they decided against it," Abed said. "We generally try to limit our depth of field to create a sense of intimacy and the lenses and 2/3-inch sensors on our 480p/24 standard-definition cameras help us use selective focus on close ups. We wouldn't have the same control using the 1/3-inch chip sensors in some of the small format HD cameras that are geared for remote production."

PAYING BENEFITS

Shooting HD doesn't necessarily mean delivery in HD. Another new reality show with the working title "The Real Deal," produced by BrainBox Entertainment, will premiere Jan. 23 on The Learning Channel in standard-definition even though it is being shot in HD.

Centered around Charleston, S.C., the show will follow the housing renovation adventures of real estate entrepreneur Richard Davis, who previously became a personality/star on A&E's 60 minute docu-soap, "Flip This House." Tom Kramer, the series producer, said they decided to use the Sony XDCAM PDW-F350L to shoot the production in HD, even though it will be cablecast in SD.

"We shoot 20 hours a day so we want to bring back the highest-quality images possible," Kramer said, "and because the XDCAM system records to disc this made post production much more cost efficient. We think everything will eventually be going HD, so we wanted our production to stay on the cutting edge."

However, one reality TV hit has been proving that high-definition production can pay benefits when the subject warrants it.

The most widely distributed high-definition cable channel, Discovery HD Theater, has been running "American Chopper" produced by Pilgrim Films & Television Inc., in high definition since March 2004.

Starting next spring, "Chopper" will become the cornerstone of a new HD programming block on The Learning Channel. It will be the first TV show to use Panasonic's AJ-HDX900 high definition camcorder shooting DVCPRO HD. Craig Piligian, executive producer and owner of Pilgrim Films, felt the subject called for it.

"We were doing an injustice to the audience in standard definition because in HD you can see the bikes so crisply and the paint is so clear that you can see how beautiful those bikes really are," Piligian said. "Now, the reds and blacks just pop off the screen. We started with Panasonic's AJ-HDC27 VariCam but that was more than we needed. The AJ-HDX900 is more affordable and perfectly suited to our style of remote production, and we will also be using it on another series, 'Hazard Pay,' that will premiere in January." ∎

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Building a High Definition Studio

When prepping for digital, don't forget the aesthetics

by Ian MacSpadden

WASHINGTON

With the final deadline for the digital transition quickly approaching, stations are working around the clock to prepare their studios. They are upgrading acquisition equipment, internal infrastructure, and of course station transmitters. The one low-tech facet in the race to digital that broadcasters often overlook however, is their studio's readiness for a digital debut.

Engineering departments are being asked to migrate analog facilities to fully digital ones. This requires wholesale infrastructure upgrades and in many cases, significantly new workflows. Legacy equipment is either being replaced or connected with digital glue to entirely new routers and production switchers. In many cases stations are taking the opportunity to move away from tape-based workflows to take advantage of a plethora of digital asset management systems now available in the marketplace. All this new technology is critical for a suc-cessful technical migration to digital, but many stations have yet to focus on the aesthetic presentation of their news product on this new medium.

Sportscasters are the pioneers in high-definition broadcasting. They quickly adapted to the widescreen aspect ratio and amazing detail provided by HD to enhance their product.

For a moment consider the impact of

As illustrated by FX Groups' WESH set, the width of a complete HD setup can take up a lot of studio space.

HD on a typical news studio. Does talent want such close inspection of their pores, and what about those clamps, screws and pieces of gaffer's tape hold-ing that old set together? The challenge is how to design and build a news studio for the transition to HD that accommodates HD while providing images worthy of the medium.

WHERE TO START

In October, KTVU-TV, the Cox-owned Fox affiliate in San Francisco, completed its journey to HD.

"It was a six-month project, starting at the end of NAB, and coming to fruition on Oct. 10 with our debut in HD," said Jim Haman, director of broadcast operations at KTVU. "We started with tactical meetings every week that involved every department." They soon realized that "the process raised many questions."

KTVU's challenges ranged from which equipment to purchase to how the end product would look to the viewer. "We began testing our ideas with an old Sony HD ENG camera in our studio, testing set elements and talent in 16:9 high definition."
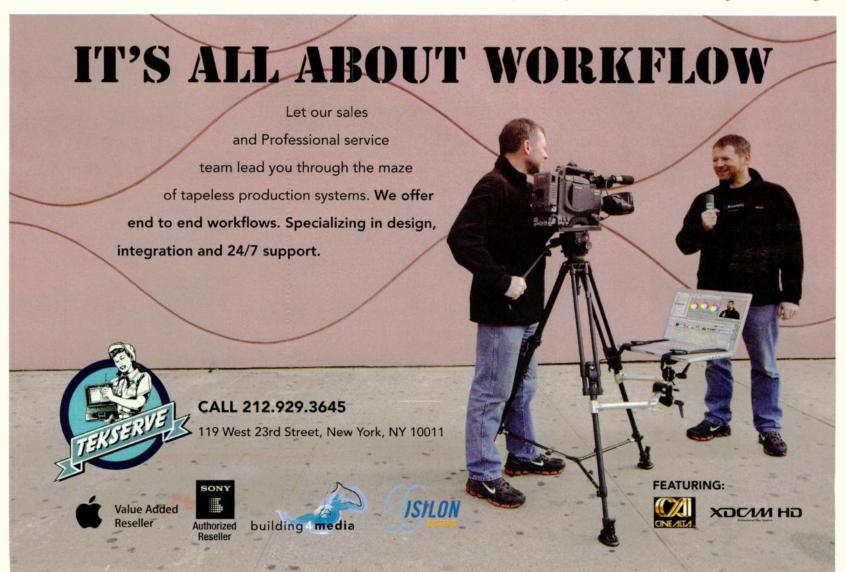
John Demshock chief engineer of WFTV, the Cox ABC affiliate in Orlando, Fla., which launched the state's first HD news broadcasts in July, said they sent their news operations manager around the country to record the newscasts of stations already broadcasting in HD and then analyzed the footage he brought back.

"We noticed sets do matter in a big way," Demshock said. "We had to decide how to mix 16:9 and 4:3 in the least detrimental way to the viewer."

It takes a team effort. The Cox-owned stations shared resources and staged a camera shootout between four manufacturers, before deciding on the Sony 1500 for deployment.

KTVU's test shoots revealed serious issues with its existing set. "We discovered that widescreen and hi-def did not flatter our set," said Haman, adding that to improve the look of their set, they refinished it "with Mahogany panels, added 50-inch plasma monitors and even painted the floor black."

Mack McLaughlin, a set designer

World Radio History

with experience in building and upgrading to HD broadcasts agreed with KTVU's choices and said when creating an HD ready set, "there has to be furniture-quality materials used in construction so the set will show less wear and look better much longer."

McLaughlin, who works as creative director for FX Group, an Ocoee, Fla.-based system integrator which built the HD studio for WESH, Hearst-Argyle's NBC affiliate in Orlando, struck a cautionary note about floor painting. He agreed on the aesthetic benefits, but warned that stations with robotic cameras need to ensure that the color application (such as an epoxy coat) is done properly. "We have seen mistakes made that required the studio floor to be re-leveled and refinished," he said.

TALENT SHOW

One aspect of the HD set that cannot be "refinished" is the talent.

It is was important, Haman said, "to test early with the talent and bring in makeup artists who spent the time necessary to make sure talent felt comfortable with the new look." These artists chose makeup that was much less colored than traditional set makeup. "More attention was spent on application," Haman said, adding that they haven't yet had to use camera settings to soften skin texture.

McLaughlin believes it is not unusual for engineers to set their cameras to show off the technical aspects of the set, but he added that there are many cameras that can also soften skin detail if makeup alone doesn't do the trick.

In the '90s many stations experimented with fluorescent-based lighting systems. Though they provided cost savings in electricity and reduced heat, they created a different set of problems.

"High-definition transmissions tend to flatten talent into backgrounds so special attention needs to be paid to how the lighting and set interact with each other," according to a white paper from the FX Group. McLaughlin recommends that tungsten and newer model fluorescent lights be mixed, along with allowing for greater space between the set and backdrop to improve the perceived set depth on camera.

Cameras, lighting, and set are some of the most important elements in a studio upgrade, but don't forget the infrastructure needed to transmit images from the studio, integrate them with video and graphics, and then broadcast them on air. Most stations and groups employ talented staff to make decisions regarding equipment and the set's desired look, but very few are also able to integrate evolving technology.

Engineering departments have their plates full managing the daily demands of a broadcast plant. This is where a systems integrator can be key to meeting a build-out schedule.

Lee MacPherson, project manager

for SignaSys, a San Jose, Calif.-based system integrator, says the process "takes a lot of time that station staff usually don't have." As the integrator in charge of the KTVU upgrade, SignaSys freed the staff engineers of the labor and time intensive tasks of designing, drawing, cabling, and labeling.

Beginning with a visit from a systems architect, SignaSys will help the station design a concept and decide on which

equipment to purchase. A project manager is later assigned with a senior systems engineer who refines the initial concept. Once the final design is complete and the equipment is chosen, an installation manager and crew of four spend the next two to three weeks installing equipment and cabling the control room and studio.

After completing the KTVU upgrade, MacPherson commented that the sta-

tion's success was due in part to their "positive attitude, even with all the changes in daily workflow."

As for Cox managers Haman and Demshock, they believe team effort and sound coordination between sister stations and within the divisions is what led to their success. ∎

Ian MacSpadden is a Washington, D.C.-based broadcast engineer.

Cable Examines Its Tech Future

Industry leaders discuss new innovations, competition

by Ken Freed

DENVER

How will cable TV remain competitive in the years ahead? Faced with competition from DBS, telephony and Internet video services, is cable ready to offer the technology innovations needed to meet complex business challenges?

Recently panelists gathered at the Cable Center on the University of Denver campus to address these issues. The event was part of the 2006 Key Issues in Technological Change and Network Innovation series, presented in partnership with the Silicon Flatirons Telecommunications Program at the University of Colorado.

OUTSIDE THE SET-TOP BOX

Cable architecture is now dependent on set-top boxes, said Richard Green, CEO of CableLabs,, an industry consortium of cable operators and manufacturers tasked with developing industry compatibility standards. While the highly computerized set-top now is becoming the locus of the home network, the industry is shifting away from that legacy system toward two-way TV sets with built-in cable boxes based on the interoperable OCAP standard, such as Samsung and Digeo are developing.

Under mandates from the 1996 Telecommunications Act and the FCC, Green said cable has been focusing on developing conditional access smart cards that can plug into the set-top or the cable-enabled TV set. In the best scenario, network security upgrades will be downloaded directly into the cards or other components.

Another issue facing cable is whether the industry's 5 GB hybrid fiber-coax infrastructure offers enough bandwidth capacity to support future

(L to R): Ryan McIntyre of Mobius Venture Capital; Jana Henthorn, vice president of the Programming Institute at The Cable Center; Richard Green, CEO of CableLabs; Phil Weiser, a telecom attorney and professor with the University of Colorado in Boulder; and Tom Lookabaugh, CEO of Next Generation Network Architecture.

services, he said. Once cable drops carriage of analog signals, a lot of capacity will be freed up, but will that be enough to stay competitive? Will cable have to go to an all-fiber network one day?

"We've made huge investments in rebuilding the cable plant and in interoperability," Green said. "Within the next few months, we're going to see OCAP and interactive MHP services rolled out in five major U.S. markets, including Denver, and we're seeing a lot more interest in hi-def TV. Not even the all-digital telcos like Verizon will be able to match us. We hope to be first to market with this services, but we certainly will be competitive."

Cable Internet services are much faster than telco DSL services, said Ryan McIntyre, principal of Mobius Venture Capital and co-founder of Excite, a pioneering cable-modem service. "But cable bandwidth is still relatively narrow compared with the infrastructure in Japan, which already offers 20, 30 and even 40 Mbps data services. Here in the U.S., we're still waiting for the new DOCSIS 3.0 cable modem standard to be implemented."

Bandwidth is critical for cable competitiveness, said Tom Lookabaugh, CEO of Next Generation Network Architecture, a CableLabs initiative focused on developing a new IP platform for the digital headend that supports current and emerging technical specifications. One of the reasons Google expects to succeed with YouTube is that Google has quietly been acquiring dark fiber capacity.

YouTube services and video resolution are still limited by DSL, countered McIntyre. "Cable one day could allow you to watch full-motion video from YouTube and other video sharing services on your television," he said

"That's true," agreed Lookabaugh, "but that depends on cable infrastructure shifting to Internet protocols over the next 10 years, and it depends on cable implementing a viable digital rights management solution."

"The cable plant is designed as a broadcast medium," Green said, "but IP is intended for point-to-point communication. Each has advantages and disadvantages. HDTV may not fare so well in an IP environment, for example, but IP is perfect for video-on-demand services like YouTube. I think cable will develop the capacity to do both well, especially as we move into MPEG-4 and beyond."

LEANING FORWARD

The second panel continued this theme by exploring cable content in the digital age.

"Every medium evolves," said Bob Greene, executive vice president of Advanced Services for Starz Entertainment. "People have liked to lean back and passively watch TV, but now viewers want on-demand programming, so they don't have to wait for a program to come on. They might even be willing to lean in for on-demand previews of new content."

Video-on-demand supported by interactivity with the media screen is rapidly moving from futuristic fantasy into everyday reality, said Dom Stasi, chief technical officer for TVN Entertainment Corp., a video-on-demand company in Burbank, Calif. "Whether a video viewer wants to lean forward to watch a PC screen or lean back to watch a TV screen, I think it will all come down to some kind of store-and-forword of VOD solution."

"Right now there are six million homes in the U.S. with DVRs," said Evan Shapiro, executive vice president and general manager of the Independent Film Channel, "and there are about 25 million homes with VOD. We believe these growing audiences increasingly are skipping commercials, so we're shifting to new a model of program sponsorship with on-screen branding that's less subject to the volume button on the remote."

Shapiro added that cable advertising must become more responsive to the changes in viewing habits. "Right now it takes 45 days to change out an

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Soft

larger GUI.

"We continue to update the GUI part of it," Selly said. An easier upgrade, he said, is "one of the advantages of the GUI."

NVision debuted its GUI interface in 2003, and in 2006, introduced two new control panels: the NV5128-MC-CFCP 19-inch by 15.2-inch full function control panel and the NV5128-MC-SCP 3 RU model, according to Jay Kuca, director of marketing for the Grass Valley, Calif.-based company.

The first began shipping in May; shipment of the second is targeted for January 2007.

Other hard panels introduced in 2006 included the Grass Valley MAE-4X2STD-CP and ICONM-RCP-M, and Pro-Bel TX502. Evertz integrated its branding product into the QMC line of master control products sold by Quartz Electronics, which it acquired in 2005. It also upgraded the QMC-CP-FS-FP full-size desktop model with Ethernet connectivity.

THE MARKET

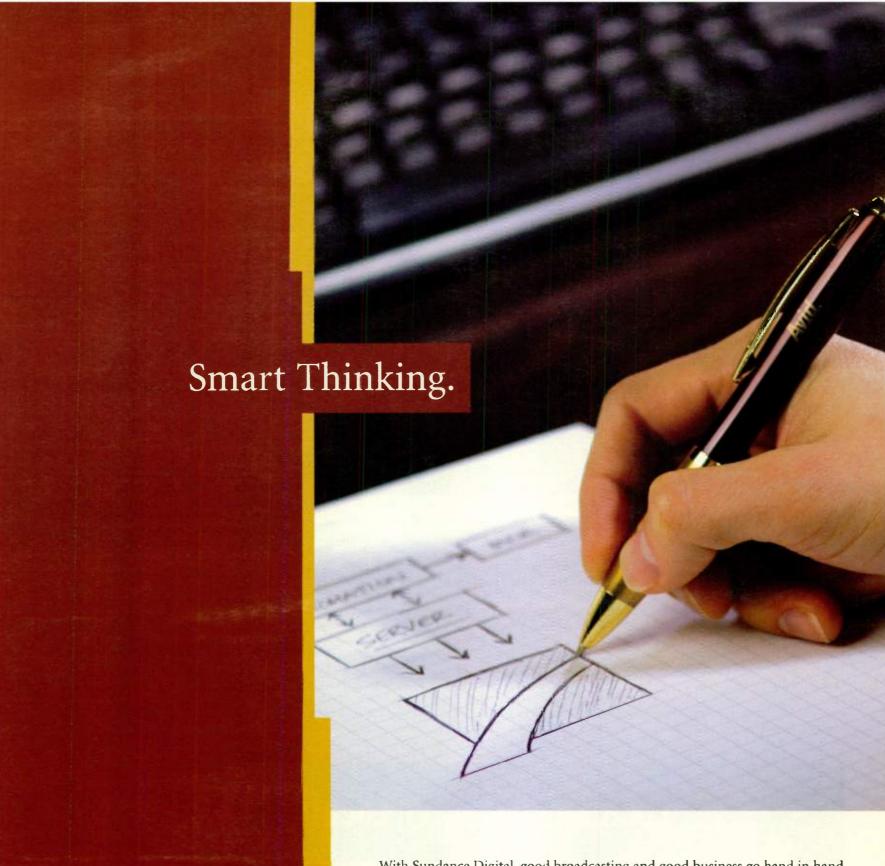Last summer Turner Entertainment installed a new NVision master control with a hardware interface to deliver the National Basketball Association's HD pay-per-view service, according to Bob Peck, senior engineering project manager for Turner Entertainment's Network Operations. "It fits beautifully and works well," he said.

His staff of operators prefer the "tactile field of buttons," believing "computer GUIs have more incidents of accidents" in emergency situations.

Miranda's Selly conceded that most touchscreen technology failed to provide the tactile feedback operators want, though he noted that some screens emit a sound or vibration to confirm contact. Moreover, Miranda accommodated user preference to look ahead while their fingers are on the keys of a control panel, he said.

Jim Klas, director of Media Technology for Wisconsin Public Broadcasting appreciated that gesture and now uses Miranda equipment in the studio his group moved into last February. But Klas, like other colleagues, has his doubts about software as a panacea.

"How long is it going to take to re-boot the thing when it goes screwy?" he asked. "You're bringing more variables into the control scheme than we've ever had in the past." ■

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Dangerous

Meleski said. "There's no tower police group. The only thing that will force the issue is the tower owner's insurance group. They can force an inspection before they insure the structure."
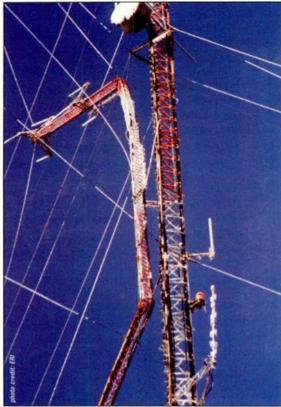
In many cases it has not been feasible or possible to support the additional digital antenna on an existing mast and broadcasters have had to erect new towers for this purpose. ERI is heavily involved in tower work and has installed its share of new and replacement towers. The company has in-house tower crews and also oversees the work of an additional 12 subcontractors.

"A safety plan is a big issue with us," said Meleski. "A rigging plan is even a bigger issue. The tower or rigging service is ultimately responsible for the safety of the crew. The crew must have a safety plan and training program and all be certified to climb. Someone on the crew has to be trained for rescue."

Meleski said that in a catastrophic event, such as a tower collapse, OSHA and the tower's insurer is going to want to review a company's safety and rigging plans. In addition to loss of life and limb, the fall of a tower is a big financial issue too. He cites replacement costs for a tall tower at upwards of $2 million or more.

Meleski is very much aware of industry accidents, but says that ERI has not had any safety-related problems.

"We're fortunate in that we have someone on staff to critique the work of our people and that of our subcon-

Dismantling and removing a badly damaged tower presents many challenges and potential dangers.

tractors," he said.

He thinks that the push to keep the digital television conversion program on schedule could be a factor in accidents, but accidents are happening in FM and cellular radio jobs too.

"Some of the accidents that you're seeing are not associated with the digital transition."

Still, there have been a lot of DTV-related activity in the tower work.

Tim Wells, director of marketing at Dielectric Communications, estimates that some 1,400 transmitting antennas have been sold since the digital revolution started, with his company responsible for more than 1,100 of these.

Wells said that while installations are not the primary focus of Dielectric, the company has an in-house crew of some six riggers and oversees the work of several other contract crews in connection with installation of Dielectric antennas.

"We do some installations, but we have not had any accidents," Wells said.

The National Association of Tower Erectors (NATE) was established 12 years ago to promote the safety and education for tower erection and maintenance personnel, as well as to create a unified voice for that industry.

Patrick Howey, executive director of NATE, was asked if he thought that the number of tower-related accidents was somewhat unusual.

"This year we have noticed an increase and that really concerns us greatly," Howey said. "One of the things we're doing is sending out safety posters that cover areas which might lead to accidents on towers—such as 100 percent tie-off, equipment inspection and the other areas that we can think of to address safety in a way

to get information out in front of the climbers. We stress that it always needs be 'safety first.'"

As part of its safety education program, NATE has published numerous tower safety materials, including a standard that outlines the training every new climber should receive before going up a tower. Other materials address issues from safe hoist operation to RF awareness.

NATE recently signed a national partnership agreement with OSHA and Howey feels that this will prove to be very valuable in improving climber safety.

TOWER WORKERS

According to Quinten Ellis, director of business development for United States Tower Services in Frederick, Md. a job site 1,000 feet or more in the air is not for everyone.

"It's the kind of business that attracts a special kind of person—they're rather rare and hard to find," Ellis, a former climber himself, said. "Though once someone gets involved in communications work, they're in it for the long haul. You get a great feeling of accomplishment in the job."

While their profession may rank as the most dangerous, tower erection and maintenance workers are not necessarily the best or the worst paid rank and file members. Ellis said that wages are similar to those paid ironworkers, perhaps $35 to $40 per hour, depending on the region of the country.

"Someone starting out could be making maybe $35,000 per year and go on up to $75,000," he said. "It's a comfortable living, but you won't get rich. It depends on how much you work—jobs are highly susceptible to bad weather. There's not a lot of work then."
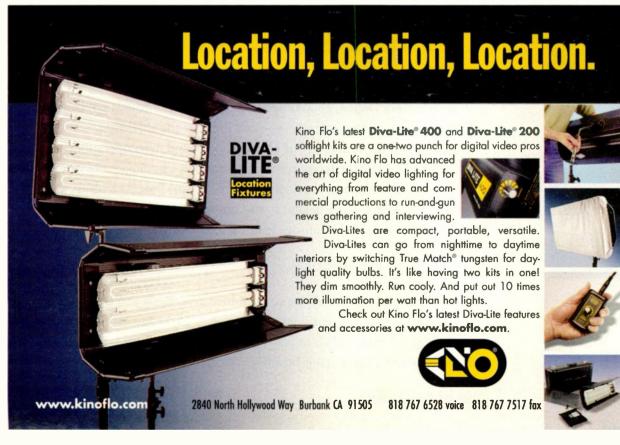
Ellis said that most of the young people who are attracted to the field continue to work into their 50s and sometimes beyond.
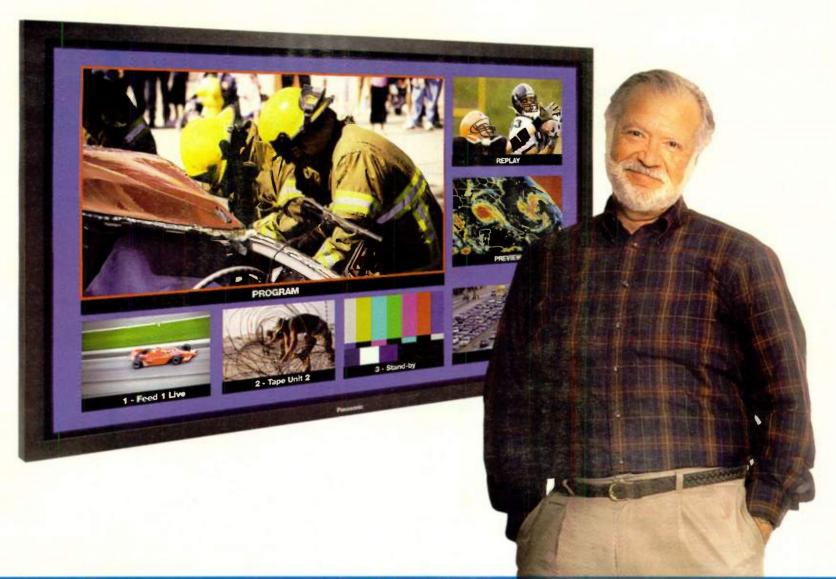
"We have one worker who's 62 and still climbing," he said. "Its kind of unusual, but it still happens."

Ellis said that his company was very much on top of worker safety matters.

"We have what we feel is one of the best safety plans going," Ellis said. "We have employees on industry safety committees and all of our employees have to go through a rigorous safety program and all of our climbers carry appropriate safety cards. We have a one-hour mandatory safety session every week. At the job site, there is an examination of possible safety hazards and a discussion about how to deal with them."

With more than 23,000 AM, FM and television stations on the air in the United States, there's no doubt that towers will be with us forever. The same goes for the men and women who climb them. ∎

Little Capture Devices Get Big Moments

Fox News airs first footage thanks to smartphone

by Robin Berger

NEW YORK

Fox News' use of cell phones to capture otherwise unobtainable video allowed the news channel to be the first to broadcast live footage of the aftermath of Yankee pitcher Cory Lidle's plane crash into a New York high rise apartment on Oct. 12.

"Our initial deployments with live streaming cell phones were [done] internationally," said Ben Ramos, director of field operations for Fox News Channel. "We bought some 3G handsets because the wireless services overseas have so much more bandwidth, so the capability was there. So, we put them in Rome, Paris, London and Jerusalem, and we put a server in London—I think the server in our London bureau was up January 2006."

That's about the same time Fox discovered Comet Video Technologies, a Mayfield, Ohio-based developer of A/V codecs for low- bandwidth communications, which provided the software for the Palm Treo smartphone used to capture the plane crash.

Gene Stratton, chief engineer at Fox News' Los Angeles bureau, saw Comet Video Technologies demonstrate the transmission of cell phone to cell phone video at the 2006 Consumer Electronics Show in Las Vegas. Knowing that Fox News had been looking for new ways to get things to air first, Stratton asked if the company could write software that would take video to air.

"I ended up spending most of an hour there, talking about what we could do," said Stratton. Comet's president, Howard Becker, assured him, "we can make that work for you."

By mid-February, Comet's demo in the L.A. bureau impressed manage-

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

ment there to set up a demo in New York with Ramos. By the end of March, Fox provided Comet with information on how they wanted it to function and what kind of features they would like, said Becker.

EASY FOR ANY SHMO

What they wanted was a complete one-button operation.

In its current form, a blue window button on the front of the cell phone activates a live video stream to the graphics group at the studio for compositing, then live to air. The software also e-mails out an icon-stamped FYI specifying the assignment number of the video now streaming to designated recipients, who can click on the

icon to see this live stream—a plus for any producer who is traveling.

Meanwhile, according to Becker, the video can be recorded on the phone as well as on a server at Fox for backup, in case there's an interruption.

"All of this is done with one push of the button," Becker said.

Scott Wilder, a cameraman with the Fox team that contributed to the development of the smartphone technology, had the Treo in his pocket at the scene of the plane crash. Waiting for the Fox satellite truck to arrive, he used his one button option to transmit pictures back immediately, said Ramos.

"It took us around 10 to 15 minutes to get up, find the bird, transmit, and finally see the pictures," Ramos said of this venture.

Treos were also used to capture footage at the scene of the Amish school shooting incident in October, and to get a closed-circuit feed from a courtroom in Atlanta.

The entirely software-driven Comet solution runs on Windows 5.0.

According to Becker, the codec for the core technology enables it to run on very low bandwidths—less than 70 kbps live, unbuffered. He said it can

stay connected at these low bandwidths by using small packets—frames typically one-fifth the size of MPEG—that don't need to be buffered. Moreover, the higher numbers of these smaller packets that arrive at the viewing, he claims, preclude pixelization.

"We were able to [develop] it completely off platform, independent of Palm and everyone else," i.e., Microsoft, Becker said. "It works on any cellular carrier."

Fox has 26 of these smartphones in the United States. Treo 700W is used on the Verizon network, Treo 700WX for Sprint; Treo 750 will be used for Cingular's awaited service.

"Obviously, [the feeds] are not broadcast quality, just the best effort at that time," Ramos said, adding that three main factors will improve the video: Comet improving its compression technology and adding audio; better processing power from Treo chips; and U.S. wireless services' catching up to Europe's 3G speeds.

He has also been tempted to seek out a WiFi option, but has been reluctant to do so.

"It's not a one-button push," Ramos said, noting the need to log in with passwords to gain access. "The most important thing to getting these pictures on air is just to make it as easy as possible for any shmo that picks up the phone."

Laptops are also being deployed, testing software from Comet, Streambox and QuickLink. And, said Ramos, Fox is "looking at a number of streaming technologies to deploy with some new BGAN satellite phones." ■

Cable

ad on a VOD service. To change an ad on an Internet video service, I just did it, and now I just did it again."

"We have to realize that media convergence is finally happening now," Stasi said. "and we have to ask ourselves how the process will be monetized."

"DRM [digital rights management] has to govern our decision-making," said Greene. "The content owner wants security and interoperability with all DRM systems. We need to move in that direction."

THE LIFEBLOOD OF CABLE

All this led to the third and final panel of the day, discussing strategies for remaining innovative and how to welcome outside innovation.

> ### "DRM [digital rights management] has to govern our decision-making. The content owner wants security and interoperability with all DRM systems. We need to move in that direction."
> ### —Dick Green, CableLabs

"When you look at the entrepreneurs who began the cable industry," said Steve Halstedt, managing director of Centennial Ventures, a Denver-based investment firm, "you realize that innovation is the lifeblood of cable. Digital video and the Internet are transforming the way cable does business, and the industry is transferring its core competencies to meet the challenge. A lot of time and effort is going into this process. We need to be mindful of the consequences of our choices to make sure we deliver value to the marketplace, to make sure we give people what they want."

Cable's needs to assess the scope of innovation necessary to provide both downstream and upstream video and data services, McIntyre said.
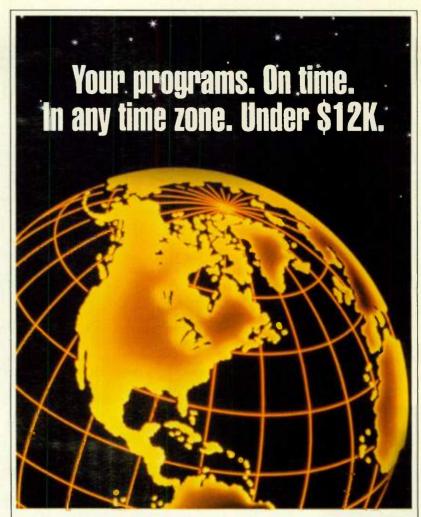
"Cable can't just roll out new services willy nilly," he said. "When MPEG-2 came online, cable responded with realistic business plans based on providing services from satellites in geostationary orbits. In the same way, cable needs to adapt carefully and thoughtfully to the latest innovations."

The consolidation of many system operators into a few multi-system operators (MSOs), breeds caution that delays true innovation in the cable industry, according to Tryg Myhren, president of Myhren Media, a Denver investment firm specializing in media and telecommunications. Myhren is also the former chair of NCTA and former chairman and CEO of American Television & Communications, a Denver-based cable operator purchased by Time Warner in the 1980s.

"The larger a corporation gets, the less innovative it becomes," Myhren said. "Despite the fact it has more money and conceivably can invest more in research and development, human nature and the nature of large organizations means it becomes more arrogant with more size, and so more resistant to outside ideas."

The trend is as old as civilization, he said. "The key to avoiding this tendency in large companies is not to overstaff your internal R&D, because then you have to rely on the outside world to bring you fresh ideas. To break down the natural resistance to doing this, you need strong incentives inside the company to bring in ideas from the outside, and then you have to back those new ideas with venture capital.

"You do not need to invent everything within your own company," Myhren added. "You need to support entrepreneurship outside the organization. At the same time, you must reward the people within the organization who go beyond what's expected of them. Once you've proven the viability of a new direction technologically, of course, you must be willing to implement it within your business. Do not blindly put the idea on hold."

Cable operators rarely will invest money in developing or deploying any innovation that's "formula shattering" or will require costly hardware upgrades, he explained. "Fiscal constraints tend to discourage companies from changing legacy systems until others have looked at the changes or are already doing them. This is true for cable just as much as for phone companies or automobile companies. You have to really see the commercial value before you will implement wholesale change." ■

INSIDE PRODUCTION Walter Schoenknecht

Curse of the Early Adopters

There's something inherently appealing about being the first on your block with an ingenious new gadget. To own a piece of hardware before anyone else has even heard of it—how cool is that? The quest for the newest and (presumably) best technology, however, is a perilous one—stimulating and enticing, but one which can easily waste money and time.

There are a few things you ought to know about your new "bleeding edge" technology purchase: First, you've just opened a local branch of the manufacturer's support department, right there in your building. You are chief beta tester; you will be loading and testing the patches, fixes and mods from the developer. And you aren't getting paid to do it. In fact, you can plan on scribbling "DOWNTIME" and "CLOSED FOR MAINTENANCE" all over your schedule.

The second tidbit is this: Brilliant or not, no one will recognize the product by name, nor insist on booking it based on reputation. By definition, this technology is the most popular, market-leading systems; in our minds, we'd rather buy the good stuff than the popular stuff. Back when nonlinear editing was in its infancy, we eschewed the purple-triangle brand of gear in favor of the other startup brand which, we felt, offered better quality. Since we hadn't really hung out our shingle as an edit facility, we weren't too concerned about using brand names to attract customers—and we were free to choose

Frankenstein's monster, festooned with coils of bus wire, and contained prior versions of most key circuits and processors—not very useful for hardware test purposes.

Fast-forward to 2006: One of the affected Fibre Channel manufacturers told me that the best they could do regarding the MacPro drivers was to order one from a retailer once shipping began—no special accommodations for third parties.

To compound matters, Apple has famously insisted that all the technology its customers will ever need has already been bound up inside that lovely aluminum shell; to insist, foolishly, on adding third-party circuitry (like Fibre Channel adapters

iStockphoto/Dainis Derics

Many may claim to be early adopters, but the proof lies in the technological trash you've gathered unto yourself.

unproved and unknown, so you'd better have a pretty good scheme for making it earn money.

PRICE OF INNOVATION

Many may claim to be early adopters, but the proof lies in the technological trash you've gathered unto yourself. For all our own big talk, we've got a veritable Museum of Ancient Video Production around here, and are known far and wide for squeezing every last spark of life out of a hand-me-down tape deck or camera. Still, we owned an early digital production switcher, the AVS Integra, because it was the cleverest and most complete product we could find; we had an off-brand character generator based on a then-unheard-of RISC processor long before Apple launched its first RISC engine, the PowerMac. In both cases, our purchases earned money for us, without question; but when the end-of-life came, the $135,000 switcher, without a famous brand name to inflate its resale value, sold for $600 on eBay. C'est la vie.

One of the factors which makes early adoption attractive is a facility's notion of "brand independence." With a primary concentration in program production, we've always felt that we weren't required to buy

products and brands which nobody knew.

Our latest foray into unproven technology was actually among the least risky purchases we've made—or so it seemed. Who would have thought that the mainstream, brand-new MacPro, long-awaited as the Intel-powered successor to the Mac G5 family, would be so market-unready? For us, the lack of MacPro-enabled drivers for any of several mainstream Fibre Channel host adapters meant that our new powerhouse edit system couldn't access our shared storage via its Fibre Channel network. In other words, no editing.

To be fair, the competitive pressures of today's computer industry are such that a new design like the MacPro needs to be rushed out to market to ensure an appropriate financial return. But Apple has a checkered past with regard to third party products. At one point, the company was notorious for refusing to share pre-release hardware with developers, who hoped to have drivers re-written and validated in time for release; I had one firm's chief technologist tell me that when a pre-release G4 finally arrived, a mere two weeks before launch, it looked like

and video I/O cards) indicates an attitudinal fault on the part of the customer. Hence, the urgency most folks would like to see applied to third-party driver development may not seem as compelling in Cupertino.

FEATURES AND BENEFITS

Before the Mac faithful once more take torch and pitchfork in hand, let me clearly state that I look forward to using my MacPro to its fullest potential. It's a brilliant design, and a joy to use. In fact, that goes for pretty much any early-adopter hardware we've bought; despite the trials and tribulations, the patches and fixes, we've almost always been right—the technology was every bit as astounding as we thought. We won't stop being early adopters, but after a couple dozen times around the block... we'd better understand what we're in for.

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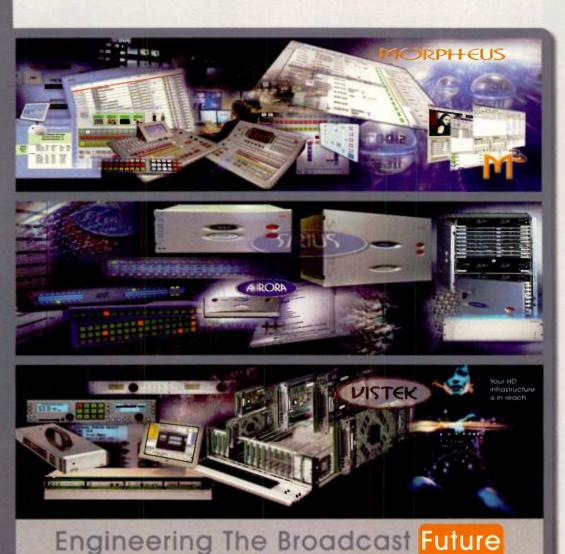
pro·bel

NET SOUP   **Frank Beacham**

Television News: Version 2.0

Photo: Steve Jordan

Within days of NBC Universal's recent announcement that it would eliminate 700 jobs in its broadcast operations, a "Career Fair" for job seekers was held at NAB New York, an expo and series of conferences billed as an East Coast "content creation" show.

If that's confusing, you'd better wake up and smell the future.

Not only is the television industry going through a period of swift, certain and permanent change, but with that change has come a remarkable level of denial by many of those being left behind. In the treacherous quicksand of today's media environment, what's left unsaid is often more important than what's said. Actions, most certainly, speak louder than words.

For fear of rocking someone's boat, most insiders with a vested interest in traditional broadcasting parse their

comments to add a comforting sheen of vagueness. That is until the lid blows off and we get that occasional flicker of candor. During coverage of the budget cut story, a couple of rare gems came from NBC executives. Like when Steve Capus, president of NBC News, told a reporter that alternative digital media has set off a "tsunami—either you drown or you ride the wave."

What wasn't said on the record was reported by The Wall Street Journal, which finally let this aging cat out of the bag: NBC "sees limited growth potential in the news business."

Wow, now that's really news—only perhaps to those who still have jobs and continue to claim all is just fine in the television news business.

Jeff Zucker, NBC's chief executive, tried to assure the anxious that NBC is not leaving the news business by adding another little grain of enlightenment:

"The growth in news is in different places... it's online, it's on wireless."

QUIETLY INTO THE 'NET

So let me get this straight. TV news (at NBC) is not going away, it's just moving from TV to other platforms. And it's not leaving quietly, but being swept away by "a tsunami" requiring a rather large surfboard.

That's not such comforting language to non-surfer terrestrial broadcasters who have spent decades minting money and riding the status quo. At least they had a long, advanced warning.

Within days of the NBC announcement, there is no better place to see where TV news was heading than a stroll through NAB New York.

see the emerging landscape of new media players.

As one who remembers when RCA and Ampex were the major NAB vendors, it's now a brave new world of technology. Companies like Apple and Avid joined with Panasonic and JVC in New York to promote remarkably affordable new HD production and post-production systems.

When I say affordable, forget the bank loans and long-term leasing deals of the past. Located a few feet away on the expo floor were a new breed of sales companies like Tekserve and B&H Photo. They combine professional products with in-house training. At these vendors, both excellent, one can charge an entire studio on a credit card.

Just as important as the accessibility of the production tools themselves are the companies making it easy to bypass traditional television distribution. One, like WhiteBlox, sold a service at the expo that allows anyone to create a private label network for global live broadcasting.

As for jobs, an estimated 300 of the lost ones at NBC were attributed to news—the old "film at eleven" kind, as

Within days of the NBC announcement, there was no better place to see where TV news was heading than a stroll through NAB New York.

If an NAB show were ever "not about broadcasting," that was certainly the case at this event in late October. To the outside observer, it looked as if the venerable broadcast trade organization was hedging its bets on the future by taking a taste of the new media expo business.

Even in a full page ad promoting the upcoming NAB2007 in Las Vegas, NAB never used the word "broadcasting." NAB, the ad said, is now the "world's largest electronic media show" that deals with "digital convergence to podcasting to technologies you've only dreamt about."

Gosh, does broadcasting's chief lobbying organization know something it's not telling its own members?

Reminds me of how Kentucky Fried Chicken evolved into "KFC," so the no longer trendy word "fried" was lost in the branding translation. Sly trick, but it works in a culture where collective memory can be stamped out in a matter of weeks.

Oh well, who knows the real motives of the suits in the executive suites? We judge by the actions, which were visible. All one had to do is walk the exhibit floor of NAB New York to

in Version 1.0. With Version 2.0, the game changes. With new platforms comes new people.

That's why, at NAB New York, certification courses were offered in Apple Final Cut Pro and Avid Xpress Pro video editing software. And that's why there were sessions that included "Generating Revenue from Sports and Convergence," "Thriving in An On-Demand News World," and "Monetizing, Marketing and Selling Your Podcast."

A lot is happening at once, but one clear trend is that a new generation of multimedia-savvy young people are beginning to reshape the news business. It's hard to argue this is not good.

Behind the tsunami, of course, is the Internet, a medium well suited for constantly changing news updates. Now that the Net is video-ready, this new frontier is exploding with creative fervor.

It's the best of times, or the worst of times, depending on which side of the fence you're on. Perhaps Bob Dylan put it best, "That he not busy being born is busy dying."

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

INSIDE AUDIO — Dave Moulton

As The Supine Spud Sprawls, Episode III

Last month I described our current broadcast distribution system as somewhat dysfunctional and definitely *not* a high-definition experience. I took a look at the problems that our manufacturers and service providers face in their various quests to provide good products and services while also managing to stay in business, as well their various (unintended) contributions to our current dysfunction.

This month, I'd like to consider the plights of the broadcasters (that's you, readers) and us end-users (me, f'rinstance), and suggest that there are some uncomfortable and fairly persistent limitations to "the system" that we have cobbled together over the years.

PITY THE BROADCASTER

You TV production folks go to great efforts to get really nice audio 'n video quality in your productions. There's is no doubt at all that you want your productions to look and sound great, even when they are produced under really difficult conditions. You try to monitor carefully, you are reasonably meticulous about levels management, EQ and audio level compression, picture quality, color consistency and so on. It ain't easy, it's expensive, and it is often a thankless task.

And no matter how hard you try, as your effort is dispersed and diffused over the various distribution channels to our great range of end-users, it is also degraded. No matter how hard you try, what you created is *not* going to be what the viewers see.

Even identical parallel feeds look and sound different (a compelling example is a major network feed on two different affiliates available in my area—distinctly different color and brightness, and a 4 dB difference in level!). Or, you can channel-surf while watching any presidential press conference (one camera, one mic?) where each channel carrying it looks and sounds different!

Given that this is so, what it means is that at the present time, you as program producers have only the most rudimentary control over what your viewers will see and hear. Does it look and sound good? You simply have no way of knowing. Is it at least consistent? Not really.

Dolby's metadata system is supposed to help with this. It gives you, the producers, a set of tools with which you can configure the end-user system to play back pretty much what you intended, as well as to match your productions with those of other producers.

But to date we haven't managed to use metadata consistently and effectively, and in any case it only works in the digital tier. So you haven't got much control yet, and to the extent that you do you aren't exercising it very effectively.

And if you can't control what it is that reaches your viewers, how can you assume responsibility for the technical quality of the production? How can you make it look and sound beautiful if you can't even predict and control how it will look and sound in

All analog stereo is willy-nilly upmixed to surround via Dolby Pro Logic, and it is hard to tell, in any given case, what is happening with the Dolby Digital signal.

viewers' homes?

Like I said, it's a puzzler.

Finally, let's consider this from the perspective of our beloved end-user (we'll call her "Spud"). One way or another, he/she ends up paying for all of this; directly and indirectly, s/he is our ultimate client. It is in all of our interests to provide Spud with a really good, really satisfying television experience. Meanwhile, because Spud is picking up the tab, you'd expect that she would have some sort of minimal expectations that we all would try to meet.

But here is where there's been a sort of first-order hornswoggle going on.

We've made a lot of claims that are grand, confusing and vague, which we only intermittently fulfill, to a point where Spud can't reasonably determine whether or not she's getting what we so blithely have promised her (such as "crystal clear high definition digital video and 5.1 surround sound") and for which she has laid down the long green.

TOUGH ENOUGH

Our move into alleged high definition has made this worse. Getting a good HD picture is tough enough. Getting good 5.1 surround sound is probably tougher. Based on my recent experience with my HD upgrade, our fulfillment of this HD promise is quite spotty. Further, we have essentially blocked the idea of convergence.

For instance, although I have an "universal" DVD player that will play DVD-A and SACD in addition to conventional DVDs and CDs AND I have a fully configured 5.1 surround sound playback system, there is physically no way that I can play a surround DVD-A or CD! But I digress...

All analog stereo is willy-nilly upmixed to surround via Dolby Pro Logic, and it is hard to tell, in any given case, what is happening with the Dolby Digital signal. Was it stereo to begin with, or was it surround? How was it downmixed? Or was it? What happens if we don't have a center channel hooked up?

The point is, Spud has no reasonable way (A) to determine the nature of the signals that she is receiving and (B) to select the playback options she would prefer. She would need to have information available (A) about how her system is configured at any given moment and (B) about the original format and resolution of the both the video and audio of the current signal, on an ongoing real-time basis.

Further, she should have viable control capability to select the playback modality she desires, on a temporary, automatic and/or default basis. Spud *should* be able to play back *any* playback format she desires, suitably up or downmixed or else left alone, according to her wishes. Given that she's paying the bills, you'd think she should have some rights in the matter.

Folks, we aren't doing very well by Spud right now.

IF DAVE WERE KING

If I were king (ho, ho, ho), I'd establish an industry-funded proof-of-performance service which would, upon complaint, go out to Spud's place, test and measure the system and *make it work correctly*, from set-top box an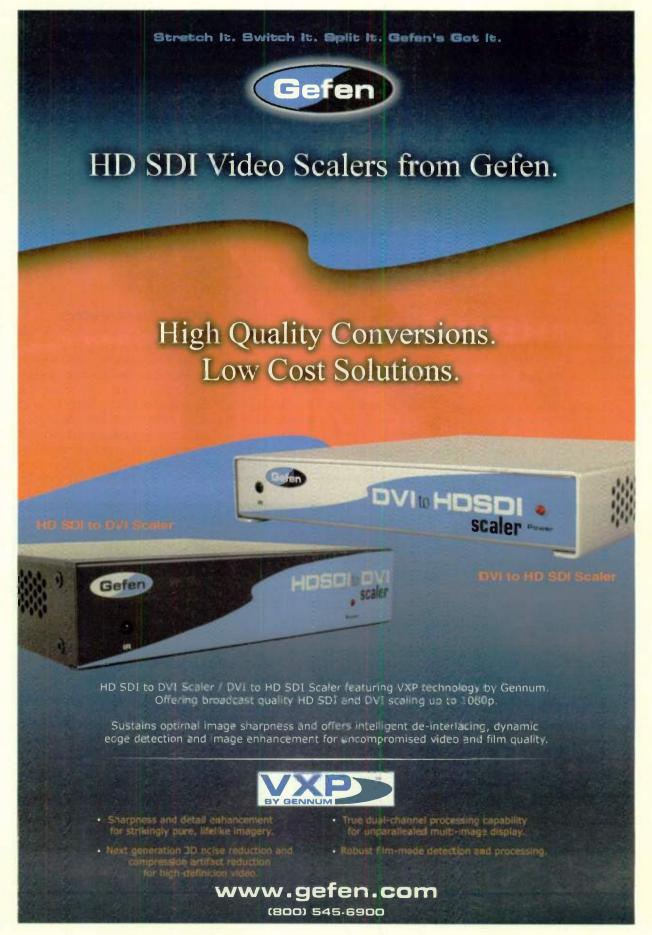d remote control all the way to the stinkin' subwoofer, using whatever it takes. The bill for the resulting blessed state of media grace would be shared out between all of us: the broadcasters, the manufacturers, the service providers and of course, indirectly, Spud, once again (only she has prepaid). The difference would be that Spud could see and hear what she's paid for. What a concept!

Next month, we'll talk about the CEDIA Expo I just attended. Most interesting, but not funny, as that weird Artie-guy used to say on Laugh-In.

Thanks for listening.

Dave Moulton is hard at work on yet another revolutionary ground-breaking product that will once again change the world as we know it. You can complain to him about anything at his Web site, www.moultonlabs.com.

Passions Aside, It's About the Lighting

My proclivity for hanging about on Internet lighting discussion forums is not something that I'm ashamed of. You hardly ever come away from the experience without having learned something of interest—and sometimes it's even of value. The near-anonymity of the discussions tends to encourage the participants to expose their fanaticism on all kinds of issues, in ways that just wouldn't be tolerated in the cafeteria or the coffee shop. Whether it's Mac versus PC, grandMA versus Whole Hog, Martin versus Vari-lite, or Lee versus Rosco, the result is always the same: a hard core of True Believers opening up a jihad against all who dare to question their faith in a product or ideology.

What's really worrying about these technology and product flame wars is that the participants may be completely overlooking the whole purpose of lighting. While it's great to play with the latest tools, and I'm certainly not too proud to say that I find playing with new toys to be a lot fun, there are some fundamental elements of the lighting process that cannot be overlooked.

No matter what else we're trying to achieve, unless we're making radio, we really can't avoid the requirement to give the camera enough light to actually make a useful picture. Although it's quite likely that we may not wish to reveal every element of the frame in every shot, we still need to provide enough light, in the right places, to cap-

ture an image. That may sound like a statement of the blindingly obvious, but if your first move when taking on a lighting project is to think about whether a WholeHog 3, a grandMA or a Vista is the coolest console to use, you may just be overlooking the point.

Lighting an image is largely independent of the technology used to produce and control the light... those are merely implementation details. Lighting an image is all about where light should and shouldn't be, where the light is coming from, and what kind of shadows the light creates. Whether the light comes from a bonfire, a Coleman lamp,

> **Lighting an image is largely independent of the technology used to produce and control the light.**

a metal halide discharge source, a piece of white hot tungsten wire, or the fusion reactions in the sun, is really only of interest to the crew (if any) and the producer who is paying for the equipment rental (if any).

FADS AND FASHIONS

The television industry is well known for its fads and fashions when it comes to equipment. A visit to the warehouse of any production rental company will reveal racks of equipment that was in demand by every DP or LD in the industry two years ago, but now just sits gathering dust and depreciating in value. On the other hand, those of us with limited production budgets keep on using our Molefays and Blondies,

long after industry fashion would have us use low-voltage European spotlights or lightweight full-spectrum fluorescents to do the same jobs.

There's no doubt that a daylight scene is more easily lit with a couple of powerful HMI daylights, but the same look can be achieved with a bunch of molefays fitted with daylight lamps or a lot of CT Blue filters.

An experienced eye may notice the absence of the slight magenta cast introduced by HMI sources, but a good LD or colorist should have cleaned that up anyway. Similarly, a large florescent soft-light produces a very natural-looking soft source with little effort and little power, but a large bounce sheet of poly-styrene produces light just as soft and natural, even if it may take more effort to setup and strike.

Controlling light levels can be achieved with anything from a piece of wire mesh or neutral density filter, to a computer-controlled optical or electronic dimmer. If the right balance of levels is achieved, the pictures will look great, and nobody viewing will know (or care) if the dimmer was a 1965 Skirpan or 2007 Genlyte, and whether it was controlled by a box with a round knob on it, or a 8,192-channel Maxxyz.

Our industry's fascination with increasingly capable moving lights and the sophisticated consoles that drive them has diverted much of the attention of the present generation of technicians away from the more "boring" luminaires that actually do 90 percent of the lighting work in television.

Certainly moving luminaires have given us a whole new range of tools to amuse our audiences in games shows and music presentations, but the inability of the operators to keep these hyperactive luminaires in the same place or the same color for more than 10 frames, has kept this potentially useful technology away from the majority of other productions. These fixtures could add immense flexibility to a general purpose studio rig, but you just *know* that someone will start to wave them around on air during a sports hosting or the reality program.

Being obsessed with the latest available technologies and experimenting with all of their capabilities is an admirable pastime for a smart young person with a love of technology and an interest in lighting.

Looking beyond the glitter, whir and flash of the technology and into the heart of the picture is the next step in the creative lighting process. It is the responsibility of us old lighting curmudgeons to help the next generation of LDs and DPs to transcend their fixation on the technology and truly see the light.

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

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TECHNOLOGY CORNER Randy Hoffner

Remembering TV Stereo Pioneer Ron Estes

I was shocked and saddened to learn of the recent passing of a good friend and a pioneer of television stereo, Ron Estes. Ron was for a number of years the sound mixer for "The Tonight Show Starring Johnny Carson," one of the all-time classics of U.S. television.

A program such as the Carson show demands perfection, and Ron was, to say the least, a top-notch sound mixer.

As also might be expected, the show established routine procedures that were perfected and repeated night after night. Working on the crew of the Carson show was, in many respects, the most routine of routines: band, monolog, panel talk, etc. But many nights also brought musical performers onto the stage, and accommodating these performers and making them sound their best was anything but routine. Ron was up to those challenges.

Nor could it be said that Johnny or his producers were on the technological cutting edge. A running joke had it that no one was sure that Johnny knew his show was in color. A clue to how this worked may be seen in the fact that for the duration of the Carson show's run in Burbank, the bright, multicolored stage curtain never changed.

Ron was on the technological cutting edge, however, and in the early 1980s, he convinced the show's producers to permit him to produce the show, recorded on one-inch videotape at the time, in stereo.

In order to assuage their apprehensions about what might happen if only a single stereo channel was broadcast (in mono, of course), Ron had to record the sum of the left and right channels on audio track 1 of the show tape, and the difference between the left and right channels on audio track 2, aptly called sum-and-difference recording. This way, the tape could safely be played back with track 1 feeding air, as had always been done.

When the time came in the summer of 1984, (a year before the network began regular stereo telecasting) to broadcast a test program in stereo, "The

In 2004, the late Ron Estes received a Technical Emmy for his work in developing TV stereo.

Tonight Show" was the perfect candidate, as it was already being recorded in stereo, and at that point Ron's hard work and pioneering spirit paid off.

On that exciting night, without previous announcement or publicity, those in the New York area with prototype stereo TV receivers at home who were waiting to see Johnny heard Sue Simmons announce at the end of her newscast that "The Tonight Show" would be broadcast in stereo. Following this, they saw the stereo light illuminate on their TV sets, and Doc Severinson, holding his trumpet, make a brief announcement to the same effect, and the stereo TV era was born.

TV stereo is now a daily routine, but this broadcast was anything but. The switching central facilities in Burbank and New York were mono plants, so two switching central channels had to be used at both. The first channel carried video and one audio track; the other carried just the second audio track. Ron's sum-and-difference audio tracks were played back and uplinked in Burbank, and since the network's fledgling satellite backhaul and distribution system did not yet have a permanent New York earth station, the signals were downlinked by a truck in Brooklyn, then transported to Manhattan on telco facilities. After the signals passed through New York switching central, they were put onto

the microwave STL link system to the World Trade Center (which fortunately had two audio subcarriers), where they were routed to the transmitter.

Since the audio signals were still in the sum-and-difference domain, they had to be de-matrixed into left and right channel form before being fed into the homemade TV stereo encoder that fed the transmitter. There was absolutely no stereo monitoring equipment on the premises save an audio test set and an oscilloscope. This meant that the sum-and-difference channel levels, absolutely critical to maximizing separation, had to be balanced precisely using tone.

There was no way to further check

Ron was, for a number of years, the sound mixer for "The Tonight Show Starring Johnny Carson," one of the all-time classics of U.S. television.
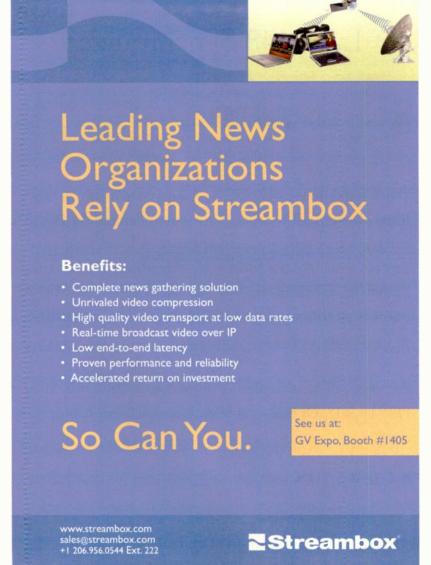
stereo separation. Neither was there a stereo TV receiver at the World Trade Center. There was a stereo receiver at the studio, and once the broadcast was underway, the first indication to those at the World Trade Center that stereo sound was being successfully broadcast was the gleeful exclamations heard over the phone from those watching at the studio.

The homemade stereo encoding equipment that was used for that broadcast was subsequently reduced to rubble with the rest of the contents of the transmitter facility at the World Trade Center.

Ron Estes was a key player in the transition of television to stereo sound. His foresight and willingness to take a risk led him to convince those he worked for to permit him to record the show in stereo: not a mean feat in the risk-averse world of television broadcasting, particularly on a show that was a national institution. Fortunately, when his network won a NATAS Technical Emmy for pioneering work in TV stereo, Ron got to go to New York and share in the festivities.

It was more than saddening to hear of Ron's passing. He was a true pioneer of television stereo. Ron Estes, 1940-2006. We will miss you, Ron.

Randy Hoffner is a veteran TV engineer who recently relocated to sunny California from New York. He can be reached through **TV Technology.**

World Radio History

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RF TECHNOLOGY — Doug Lung

FCC Post-Transition DTV Allocations

I n late October, the FCC released the Seventh Notice of Proposed Rulemaking regarding the DTV transition. Appendix B contains the proposed U.S. DTV channel allocation table for use after analog TV is shut off. Although the FCC left open the possibility it might select channels other than those stations received in the channel election process, except for a few cases, stations received the channels they elected (or allowed the FCC to elect for them). See my Oct. 26 RF Report article for information on those cases at www.tvtechnology. com/dlrf/issue.php?w=2006-10-26

In addition to the channel number, Appendix B lists each station's effective radiated power, antenna pattern; height above average terrain, coverage area, and population served and predicted interference. I'll discuss coverage and interference numbers later, but first let's look at the channels.

CHANNELS

Fig. 1 shows the number of stations, post transition, on each DTV channel in the FCC 7th NPRM Table of Allotments compared with the number of stations that had certified a channel after the first round of channel elections. Refer to the April 6, 2005 RF Technology column at www.tvtechnology.com/features/On-RF/F_Lung-04.06.05.shtml for an analysis of the first round election channel choices. In that column Fig. 2 showed elected channels for 1,694 stations. Fig. 1 here shows the proposed channel allotments for 1,806 stations—112 more.

Low VHF: The 7th NPRM Table shows 40 stations on channels 2 through 6 with an average ERP of 7.76 kW and a minimum ERP of 400 watts. The maximum power possible on these channels under current FCC rules is 45 kW, although in Zone 1 it is only 10 kW. Channel 5 has the most number of stations, 13, among the low-VHF channels. Channel 4 has the fewest stations with only four.

High VHF: As you can see in Fig. 1, there are many more stations per channel on channels 7 through 13 than on any low-VHF or UHF channel. The total number of stations in the high-VHF band is 445. Almost 25 percent of all stations occupy 14 percent of the channels.

The most crowded channel is 13, with 74 stations. The average ERP for all high-VHF DTV allotments is 20.76 kW. The minimum ERP allotted in this band is only 200 watts. The FCC allows up to 160 kW ERP in the high-VHF band, although in Zone 1, which includes the Northeast and Midwest, ERP is limited to 30 kW.

UHF: Channels 14 through 51, excluding 37, will be occupied by 1,321 stations. Channel 19 has the most stations—48. The least occupied channels are 14 and 50, with 26 stations each. Although one station, Channel 20 in Ithaca, has an allotted power of only 20 watts, the average ERP of all UHF allotments is

486.2 kW, 48.6 percent of the 1,000 kW maximum allowed by the FCC.

The 7th NPRM Table includes an entry showing percentage of interference received. The text of the NPRM states: "The percent interference received value is the percentage of the station's otherwise noise-limited service area that is affected by predicted interference from other DTV stations."

However,

looking at the population counts from stations with similar facilities, the column appears to show the percentage of the population in the "otherwise noise-limited service area" that is affected by interference. Coverage and interference were calculated using the technical standards and methods in FCC Rules Section 73.622(e) and 73.623(c), respectively, and 2000 census data.

For all 1,806 stations in the 7th NPRM Table, 20 percent of the sta-

Channel	Total # of stations	Popularity	Percent 2%	Percent 5%	Percent 10%
7	66	1	20%	6%	0%
8	63	2	35%	16%	5%
9	61	3	26%	10%	3%
10	67	4	21%	9%	4%
11	58	5	28%	10%	3%
12	56	6	32%	16%	7%
13	74	7	34%	15%	5%
19	48	8	21%	10%	2%
36	44	9	23%	11%	2%
22	42	10	12%	5%	2%
24	42	10 (tie)	12%	7%	5%
34	42	10 (tie)	24%	7%	2%
All channels	1806		20%	9%	3%

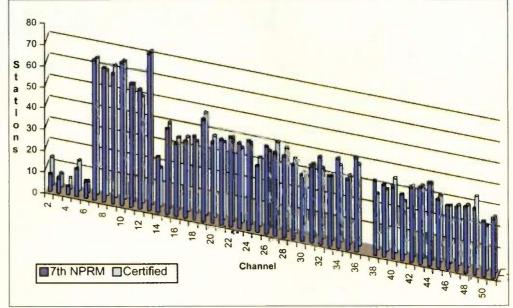Table 1: Interference on the 10 most used channels (Channels above average are shaded yellow, below average are green)

Fig. 1: 7th NPRM-Proposed DTV Table of Allotments

tions had interference levels above 2 percent; 9 percent had interference over 5 percent and only 3 percent had interference over 10 percent. Fifteen stations—four on high-VHF and 11 on UHF channels—had interference over 25 percent. Two allotments had interference above 50 percent—Channel 10 in Colorado Springs and Channel 8 in Pueblo.

As noted earlier, the high-VHF channels are the most heavily occupied, by a wide margin. The 7th NPRM Table allows us to examine what interference penalty, if any, stations incurred in picking a high-VHF channel.

Table 1 shows the percentage of stations on the 13 most occupied channels receiving interference above 2, 5 and 10 percent. The shading of each cell compares this number with the average for all stations. With the exception of Channel 7, high-band VHF channels had an above-average number of stations receiving interference above 2 percent. No stations on Channel 7 received more than 10 percent interference, although channels 9 and 11 matched the average (3 percent) at this level when rounded to the nearest whole percentage point. Even though there were fewer DTV stations on Channel 12 than any other high-VHF channel, it had the most stations in the band (7 percent) with over 10 percent interference. In the band, Channel 8 had the highest percentage of stations with over 2 percent interference—35 percent.

The most occupied UHF channels in the 7th NPRM Table are channels 19, 36 and, tied for 10th place overall, channels 22, 24 and 34. Of these UHF channels, 22 and 24 had fewer than average stations with interference over 2 percent, although 5 percent of the stations on Channel 24 had predicted interference over 10 percent. Of these five UHF channels, 34 had the greatest percentage of stations with over 2 percent interference—24 percent.

Remember that the FCC method for calculating interference treats cells returning Longley-Rice error code 3 as receiving service and not receiving or causing interference. In areas where the terrain changes abruptly, actual interference could be substantially greater and actual coverage substantially lower. I discussed this in my NAB paper "RF Delusions," available on the Web at *www.xmtr.com/rfdelusions.*

OBSERVATIONS

In my travels around the country, monitoring DTV signals in several markets using a variety of USB DTV tuners and a simple telescoping monopole antenna attached to the back of my laptop screen, I've found it is more difficult to receive VHF DTV channels than UHF DTV channels at indoor locations, including airports, hotel rooms and offices. Certainly

antenna performance is a major contributor to this.
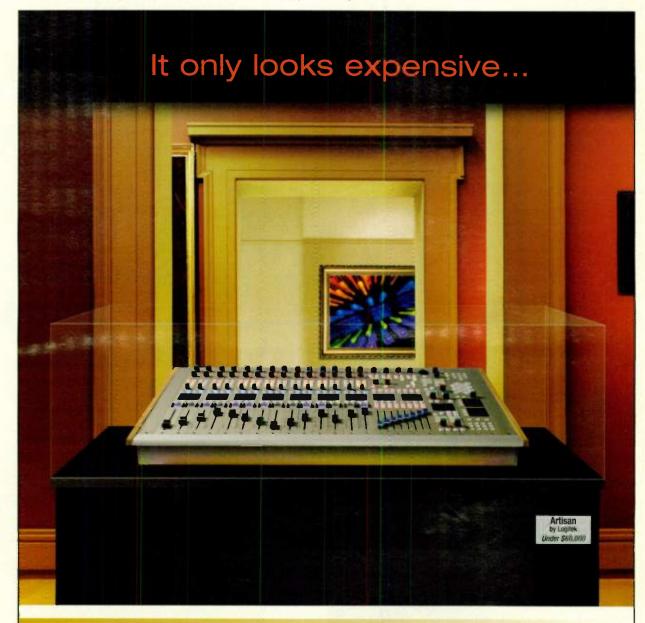
With 27 percent of stations on VHF channels post transition, will manufacturers be inclined to improve the VHF performance of their portable TV antennas? I've found one that works—the Archer Amplified VHF/UHF/FM Portable Antenna, which runs on two AA batteries and has two telescoping elements. In Miami, it was only antenna that could pick up the local

VHF DTV stations, even though my hotel wasn't that far from the main tower site. Unfortunately, Radio Shack no longer sells this antenna and I haven't found anything comparable to it in portability.

Increased VHF power levels might improve portable reception—almost 30 percent of the high-band VHF DTV stations have proposed allotment ERP under 10 kW—but in congested areas, this may not be possible with-

out causing interference to other stations. When designing future VHF DTV transmitting antennas, consider increasing total RF radiated through the use of circular polarization and, if the FCC allows it, increase electrical beam-tilt to allow more ERP closer to the tower site.
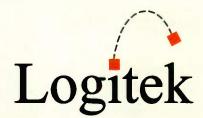
Comments and questions are always welcome! E-mail me at dlung@ transmitter.com.

MEDIA SERVER TECHNOLOGY Karl Paulsen

Content Life Cycle II: Addressing A Real Need

The path of electronically generated media files throughout a broadcast plant touches many elements, passing through various server platforms and on to viewers through a growing number of distribution channels.

The content life cycle begins at the point of capture, moves through ingest and storage, continuing on to the editorial process, back to storage and preparation for release, and finally to transmission and emission. This flow finds media server technologies falling into many sectors of the moving media industry; and in turn, yields to new developments in transport and compression technologies, authoring and distributing, digital media asset management and more.

With each new enabling technology comes an ongoing need for the harmonization of media files types, their interchange, translation and transcoding. More than ever, manufacturers are recognizing the importance of establishing file infrastructure harmonization. No longer will fixed proprietary systems be acceptable.

The industry now expects excellence in compressed image quality, regardless of capture or release format. For broadcasters, the future of the digital media business will be how well they transform and repurpose assets for a wider set of displays, uses and audiences.

Ranging from the higher resolutions of digital cinema and HD to the comparative microresolutions of mobile handheld, cellular and portable media devices; never has there been more demand for a unification that allows for the interchanges necessary in repurposing and redistribution of content; made possible by the modern digital media server.

MORE THAN STORAGE

Servers are no longer just the storage depot; they are the conduit through which all media files traverse. Servers are used as buffers, as transcoders, as gateways to other systems, and as editing and play-out devices. For much programming, broadcasters now depend on servers in the same way they used to depend on videotape.

With broadcast content delivered mostly via satellite services, whether via full analog transponders, real-time MPEG, or IP-encapsulated trickle streams; the first stop in the broadcast content lifecycle becomes a catch server. Known also as a "media distribution platform," this cache reassembles all the bits, temporarily storing these files until signaled for migration to the next segment of their lifecycle.
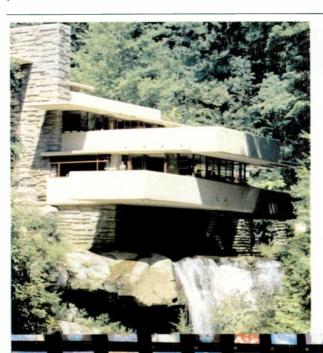
Catch servers are remotely controlled, with content placed and managed principally under control of the service provider. The native formats for these files are governed by an encoding scheme and transport method that the broadcaster has little control over—and they all vary from provider to provider.

Files or program streams may be MPEG-2 or MPEG-4, with the scheme for each given service provider's system tailored to make the system perform best for their business purpose. Yet each variation in the service provider's scheme comes with a price. Files cached to these catch servers must nearly always be transcoded to a file structure compatible with the ingest server or the local play-out server's native file format. This can be

Content Life Cycle: Media, Metadata and Control

> The computing horsepower necessary to get all the bits to align properly without noticeable aberrations or reductions in image quality is enormous.

as simple as rewrapping the file or far more complex, as in an MPEG-to-DV conversion.

Migration to another serving platform is a less-than-straightforward process, generally necessitating yet another set of third-party devices made of server hardware, interchange constraints, and licensing or software updates that, again, are out of the domain or control of the end user.

When a decision is made to receive program X via media delivery service Y; the requirements for that hardware platform and its software interface becomes fairly straightforward. Systems can be installed and placed into service much like placing a traditional satellite IRD into service—except that these servers now offer both baseband and file transfer capabilities.

The issues come when you need to move a wrapped file from catch server to ingest or play-out server, or when you wish to edit that content without decoding to baseband video on an NLE.

This routinely requires another file translation, i.e., possibly another server or another license, that rewraps the file to the next platform's native format, plus another metadata interchange—before editing can commence. When the edit is completed, it is not unusual to require another transcode as the file is transferred back to a play-out server and another metadata interchange to another database that now must be understood by automation, archive and/or traffic manager subsystems.

TRACKING TRANSLATIONS

Fortunately, file transcoding and rewrapping platforms are well established for the more common applications and file formats. Still, complications occur when a file must serve double duty, or when a frame-accurate proxy must be created for preview and timing purposes, and when the metadata for the databases that track all these material translations and versions must work seamlessly and reliably.

Tuning up a full system to a level where human validation becomes unnecessary for each successive process is a daunting task. The computing horsepower necessary to get all the bits to align properly without noticeable aberrations or reductions in image quality is enormous. File transcoding must respond to each translation in a specific way, but be flexible enough to recognize the type and structure of the file without question. Users must have confidence that once the systems are tuned up that another software revision in one element of the chain won't render someone else's decoder to do the unexpected.
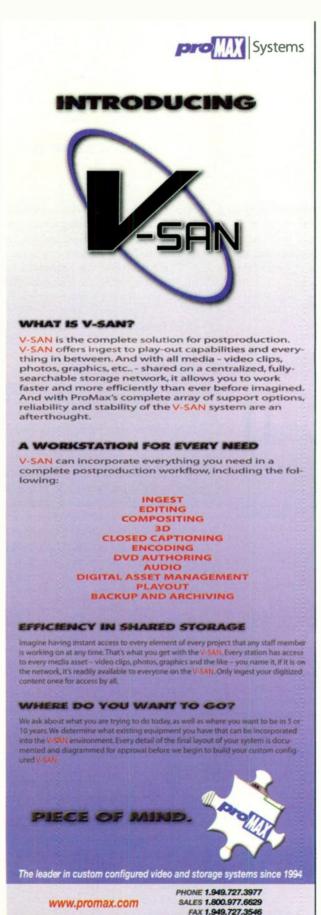
Today, users generally have no idea

something went wrong in the file translation until played out at a QC-station or directly to air. Improperly configured systems can result in dropped closed captioning, loss of video, offsets in audio to video, or nothing at all. Given that most translations take roughly a one-for-one time period, a two-hour movie wrongly translated is four hours of lost work.
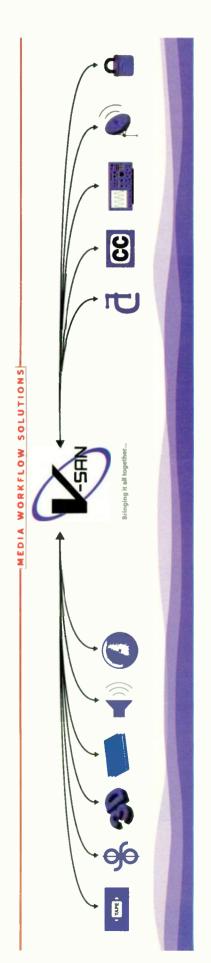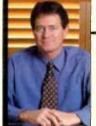
To support the hands-off management and quality assurance segments of the content life cycle, new emerging technologies that work at the file level are developing, with some solutions already in the marketplace and others on the horizon. The next installment of this column will look further into how these technologies will fit into the workflow and how they might be integrated into a media

server platform.

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

ATSC Publishes New Standards and Practices

The past few months have been very busy at ATSC, with more than six new documents or revisions of existing documents published. The process for approval of standards and recommended practices typically involves at least two letter ballot stages, where member organizations review and comment on the documents. These documents can be generally defined as follows:
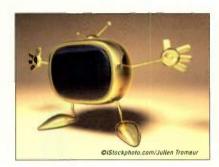
An ATSC standard is a document that states basic specifications or criteria necessary for effective implementation and interoperability of Advanced Television Systems.

An ATSC recommended practice is a document that states specifications or criteria within Advanced Television Systems that are not strictly necessary for effective implementation and interoperability, but that are considered advisable and may improve the effi-

ciency of implementation or reduce the probability of implementation errors. An ATSC recommended prac-

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tice may specify preferred methodology for implementation and operation, and may recommend a choice among alternatives. Among the new ATSC standards of particular interest are the following:

"ACAP Service Signaling and Announcement"—This standard aug-

ments the MPEG-2 transport signaling defined in the ATSC Advanced Common Application Platform Standard—Document A/101—by defining the required signaling for current services and the mechanism for announcing future services.

These functions are important for implementing ACAP, the comprehensive specification for interactive television. As noted in a previous column, ("ATSC Does Interactive TV Demonstration Project, May 5, 2006), a field trial of the ACAP system is being organized by the ATSC Planning Committee.

"ATSC Digital Television Standard" makes certain changes to Annex A, which specifies video coding for the DTV system. The amendment brings the Annex into alignment with the Active Format Description and bar data work undertaken concurrently by the Society of Motion Picture and Television Engineers, which focuses on production issues, and the Consumer Electronics Association, which focuses on receiver issues. The Annex A changes are limited to semantics. One new constraint is added; specifically that only one pair of bar data may be sent.

"Programming Metadata Communication Protocol Standard, Revision A" defines a method for communicating metadata related to the ATSC Program and System Information Protocol, defined in ATSC Standard A/65. The Programming Metadata Communication Protocol, better known as PMCP, also manages duplicate data that must be entered in various locations in the transport stream.

The new revision adds support for the ACAP interactive TV service, and changes the architecture to a modular design. It also adds optional support for multiple languages in the PSIP Rating Region Table.

In addition, one new recommended practice has been published: "ATSC Recommended Practice: Transport Stream Verification."

This recommended practice provides

a common methodology for describing transport stream conformance criteria. The document explicitly describes the elements and parameters of A/53 and A/65 that should be verified in an ATSC transport stream for it to be considered a proper emission. It does not cover RF, captioning or elementary streams.

This document should be of considerable value to station engineering and operations personnel because it will facilitate the development of products that can provide a clear indication of

These functions are important for implementation of ACAP, the comprehensive specification for interactive television.

whether any problems exist in the emitted transport stream, and if so, whether they require immediate attention.

DRL SYSTEM UPDATE

Previously in this column, work within ATSC relating to DRL (data return link) channels was reported. Since then, the work has moved forward with the publication of a DRL Candidate Standard.

A candidate standard has received significant review within a specialist group. Advancement of a document to candidate standard is an explicit call to those outside of the group for implementation and technical feedback.

At this phase, the specialist group is responsible for formally acquiring that experience or at least defining the expectations of implementation. Available on the ATSC Web site, details on the DRL document are given below:

"Candidate Standard: ATSC Automatic Transmitter Power Control Data Return Link Standard" provides the necessary specifications to construct a DRL system for automatic transmitter control applications. This document further specifies the mechanisms necessary for basic identification and power control of TV broadcast auxiliary service transmitters, in either an automatic or manual mode.

In addition to ATPC functions, the specification allows for carriage of specialized private data, such as camera control information and operator communications that may be needed for remote field production.

All ATSC standards, recommended practices, and informational documents are available for download at no charge from the ATSC Web site, www.atsc.org.

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

WBTV Restructures News With Crispin

by Don Shaw
Director of Operations
and Engineering
WBTV

CHARLOTTE, N.C.

WBTV is the CBS affiliate here and is owned by the Philadelphia-based Lincoln Financial Group, which also owns WWBT, the NBC affiliate in Richmond, Va. and WCSC-TV, the CBS affiliate in Charleston, S.C.

Lincoln Financial Group purchased the station in April of 2006 through its acquisition of Jefferson-Pilot Corp. As part of the purchase, Lincoln Financial retained the Jefferson-Pilot broadcasting division, which is now called Lincoln Financial Media.

NEWSCAT BETA SITE

As our group moved to nonlinear editors and video servers, we recognized a need to reduce the time-con-

Don Shaw is shown using the Crispin NewsCat to preview low-resolution video at WBTV.

suming process of dubbing news stories to videotape. Looking to complete the tapeless workflow, Richmond's WWBT became a beta site for NewsCat in October 2005.

NewsCat provided a return on investment almost immediately. The operation was able to save money by eliminating tapes from the equation, by

elimination of VTRs in their edit rooms and by a reduction in the amount of real estate needed for their tape library—news tapes spanning 35 years. To date, WWBT has archived more than 14,000 clips.

My station, WBTV, was the second of three Lincoln facilities to standardize on NewsCat. We produce five-and-one-half hours of daily news broadcasts, and one-and-a-half hours of news every Saturday and Sunday. Overall, we produce 58 hours of news each week, with much of this content slated for archiving. To date, we've archived more than 12,000 clips.

The entire NewsCat archive system only occupies eight rack units. This includes the database/Web server,

low-resolution encoder and 5.6 TB of RAID storage.

The Crispin NewsCat makes an archive copy of each clip after it airs, based on the rundown. Most importantly, NewsCat provides easy location of material at a later date. Archived video clips are linked to a database containing all script information from our QNews newsroom computer system.

The database functionality includes an extensive search function—producers and editors can search for a story using traditional parameters such as date, slug, script information, CG text, or keywords.

Low-resolution proxies are created for each archived clip, enabling journalists to preview material on their desktop before going to the edit room. We can also create a library of generic file video by annotating news footage with keywords and descriptions.

Best of all, NewsCat is a browser-enabled system. Any of our producers can simultaneously access archived video clips using a standard Web browser from anywhere on the network. This browser-based system eliminates the need for dedicated software terminals. This not only enhances workflow, it also makes it easier to maintain the system.

We designed our video storage solution to enable us to retrieve about 12 months of the most recent news video almost instantly using nearline storage. Older material is permanently stored as digital files on removable media, which is tracked by the NewsCat database.

NewsCat has given us a great return on our investment. By using relevant, archived news footage more frequently, we are able to improve our on-air presentation and craft a more competitive newscast. NewsCat was also the final piece of our tapeless workflow (acquisition to editing to play-out to archive). This has led to increased operational and staffing efficiencies.

Don Shaw is director of operations and engineering at Charlotte's WBTV. He may be contacted at don.shaw @lfg.com.

For additional information, contact Crispin Corp. at 919-845-7744 or visit www.crispincorp.com.

Leightronix Automates Wheaton College's WETN-TV

by John Rorvik
Broadcast Manager
Wheaton College

WHEATON, ILL.

In July 1996, the city of Wheaton granted Wheaton College full-time use of one of its cable access channels. The school created WETN-TV and immediately began offering live broadcasts of events at Wheaton College to the campus and local community.

Two years later, we began streaming this same video over our Web site, wetn.org. Over the years, as we pulled fiber to more and more campus venues, we've been able to offer live video of a growing number of events. Today, we broadcast scores of Wheaton College concerts, debates, academic lectures, and sporting

events each year.

We wanted to offer as much video programming as possible, and found there was great interest in offering rebroadcasts of these events. To accomplish that task, we turned to Leightronix. Our first purchase was in 1996 and consisted of a PRO-8 controller for operating a rack of S-VHS players.

After a few years, we needed more inputs, so we switched to a PRO-

John Rorvik with Leightronix equipment installed at Wheaton College

16 controller and used it to control multiple DVD players. The Leightronix controllers have allowed us to leverage our limited staff resources. Rather than paying employees to perform simple playback duties,

we could instead send our staff to provide live coverage of events or post programs for rebroadcast.

Over time, our program demands outgrew our PRO-16 and playback

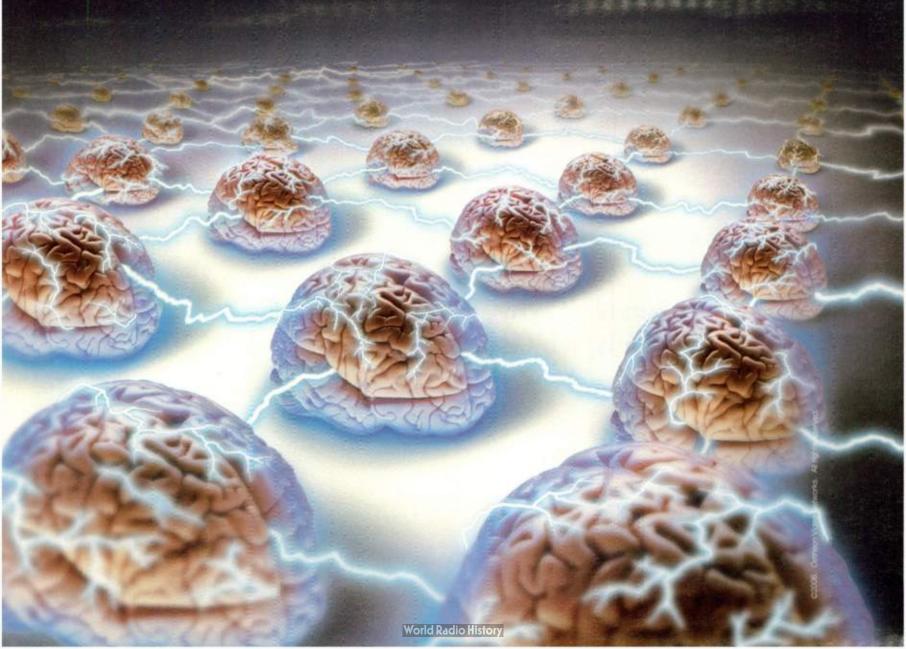# Imagine the productive power of the world's most advanced storage solution.

Engineered after nature's own ultimate active storage system, the Omneon MediaGrid™ content library truly does think for itself. Self-monitoring, self-healing and media-aware, MediaGrid may be more than you ever thought possible from a storage system. With intelligence that helps you access content more quickly, create and work with multiple formats simultaneously and even adapt system bandwidth automatically for high-demand content, MediaGrid delivers breakthrough workflow productivity.

With the introduction of MediaGrid, Omneon unveils the world's first "active storage." Now your content, the processing power to act on it, the network bandwidth needed to access it and the broadcast applications doing the work can all coexist in the same platform. And thanks to an ingenious modular design, future expansion is easy and virtually unlimited. If you've been imagining the world's most advanced storage and processing platform, we'd say great minds think alike.

Talk to one of our system experts today.
Call +1 866.861.5690 or visit www.omneon.com.

OMNEON

USER REPORT

TPT Channel Count Demands Sundance

by Bruce Jacobs
Chief Technologist
Twin Cities Public Television

ST. PAUL, MINN.

As chief technologist for Twin Cities Public Television, one of the nation's most watched PBS stations, it is my job to make sure our services are delivered to more than 2 million households. So when we went from two analog channels to an SD/HD mix of seven distinct program streams with five locally programmed channels, I knew we needed a powerful infrastructure, serious automation, a robust server and a traffic upgrade.

The station is part of a duopoly—an unusual distinction for an educational television network, but one that offers us the opportunity to serve the greater Saint Paul and Minneapolis region with full-time HD programming and a rich mix of analog and multicast programming, including more than 100 locally produced programs each year.

HIGH CHANNEL COUNT

Our unusually high local channel count demands a master control center built around a multifaceted, expandable automation system with enough power and flexibility to drive the wide assortment of equipment and systems associated with a five-channel operation. In April of 2005, we went on the air with our Sundance Digital Titan automation system driving this uniquely engineered configuration.

TPT's automation system controls two Omneon servers, tape machines, the EAS, switchers, branding equipment, character generators and audio cart machines for all five channels. The system also includes integration between Myers ProTrac traffic software, Sundance Archive Manager and Masstech MassStore archive application connected to a Spectralogic cassette archive. Our Titan configuration also includes three Media Prep workstations for content being ingested and reviewed, TitanSync to provide autofailover redundancy and Sundance Digital Intelli-Sat Broadcast Manager to schedule and automatically record satellite feeds.

Titan automation serves many masters at TPT. Besides driving playout devices, Titan provides heightened functionality with the ProTrac traffic software, with integration going far beyond the traditional record list, playlist and as-run communications.

ProTrac also transmits metadata to Titan, describing interstitial promos, billboards and IDs to be created each week. Rather than editing to tape and ingesting into the broadcast server, editors simply export each batch of clips to the Telestream FlipFactory for transcoding into the Omneon MPEG-2 file format. Titan matches each clip to its metadata and alerts the operator to perform a quick quality check. The confirmed time for all ingested clips is instantaneously relayed back to ProTrac, ensuring that the logged

Dave Jorgenson, an operator at Twin Cities Public Television, checks program events stored in the Sundance automation system.

duration of each element is correct.

REDUNDANCY CONCERNS

With so many channels dependent on local content, we set system redundancy as a top priority—not just to protect against component failure, but also to accommodate routine system upgrades while staying on-air 24/7. A completely redundant Omneon server makes this possible. The backup server remains synced to the primary Titan automation playlists and can be taken to air at any time under automation or operator command.

To facilitate media asset management, FlipFactory creates a scrubable MPEG-4 proxy of each video clip going into the server. Rather than running tapes around the building, our staff simply clicks "play" within their workflow database for a desktop view of any clip stored within the server.

The combination of automation, tapeless content creation, redundant systems and comprehensive media asset/metadata management supporting four SD and one locally programmed HD channel makes the TPT operation unique in our industry.

Bruce Jacobs is chief technologist with Twin Cities Public Television and directs engineering and information technology. He is a member of the PBS Enterprise Technology Advisory Committee. He may be contacted at abjacobs@mac.com.

For additional information, contact Sundance Digital at 972-444-8442 or visit www.sundancedigital.com.

World Radio History

Leightronix

devices and we found it difficult to present rebroadcasts around the clock, and thus often had to resort to an electronic bulletin board on weekends, holidays, and overnight. We needed a better way to offer video around the clock without straining limited staff resources.

AROUND-THE-CLOCK OPS

Leightronix again offered the best solution within our budget. The Nexus digital video server allows us to stay on the air around the clock. We took the hundreds of videos and DVDs we had produced over the years and loaded them onto two external 500 GB hard drives. Now, it takes just minutes to drag and drop these programs from our Nexus media resource library and create a full 24 hours of programming. This scheduling interface includes resource management and error checking, and our playback has never run more smoothly.

The MPEG decoder playback channels on the Nexus are two of the inputs on our new 16 x 8 video switcher. While the Nexus is equipped with an internal video/audio routing switcher, we decided to take advantage of the external routing switcher control feature. This allowed us to automate several more DVD players and live video feeds from the Wheaton campus.

Video from these venues can be recorded directly into the Nexus, but typically we record content directly into a central campus server. Video from there can be pulled into any one of a number of our post-production work stations. We create titles and ins/outs and then send completed programs directly into the Nexus as MPEG-2 for playback. Keeping the programs completely in the digital realm has speeded up presentation time for rebroadcasts of Wheaton College events to our cable and online viewers.

When we have questions or need training on a product, we have always received excellent phone and online support from the Leightronix technical support team. As we've developed our ability to present live and rebroadcast video, the Leightronix product line has matured with us, and the result is better service to our cable and online constituencies.

John Rorvik has been broadcast manager of Wheaton College since 1996. He oversees FM radio, local cable and video and audio Webcasting there. He also serves as an adjunct instructor in the college's Communication Department. He may be contacted at john.rorvik@wheaton.edu.

For additional information, contact Leightronix at 800-243-5589 or visit www.leightronix.com.

BUYERS BRIEF

ENPS from the **Associated Press** is a broadcast production system geared to newsroom environments. It is structured to to allow its technology to run in a background mode.

ENPS can seamlessly connect multiple stations within a single enterprise and has a scalable architecture that can be tightly integrated with products from other venders.

It provides complete remote and offline access and has a briefing function that allows journalists to retrieve content from all areas of the system with a single search.

ENPS supports more than 60 languages and allows the use of multiple languages within a single system.

For more information, contact the AP at 202-736-1120 or visit www.enps.com.

Ross OverDrive Revamps KGPE News Ops

by Lee Williams
Chief Engineer
KGPE Television

FRESNO, CALIF.

K GPE provides this television market with daily news and entertainment programming. We strive to deliver quality news programming by taking advantage of technologies that will give more efficient production abilities.

My first experience with the Ross Video OverDrive Production Control System began the day I became chief engineer at KGPE earlier this year. A typical day here involves lots of television production, including breaking and live news.

CREDIBILITY NEEDED

The station originally implemented an automation plan using another vendor's system. Newscasts were increasingly being lost to the dreaded blue screen of death, and once the system froze up, there was no place to go. To regain credibility, the station needed a new automation system. The station invested in the Ross OverDrive Production Control System to regain efficiencies and reliability of clean newscasts.

OverDrive's basic structure allows increased efficiencies to the point that production staff can concentrate on breaking news, rather than fighting to get a program to air. Shows can be blocked as late as 15 minutes before air, and with experienced directors, blocked while the show is on air.

Although I was not personally part of the commissioning of the new system, the engineering staff agrees that it was a painless process.

Mary Blancas, technical director at KGPE television, operates from a control room equipped with Ross Video equipment.

In fact, 90 percent of the installation was prebuilt and the complete integrated racks were installed, wired, and operational during a weekend.

Ross Video training and support teams were extremely helpful from day one. The learning curve of the previous system was steep and the abilities of the system were limited. This in turn limited the abilities of our production department. OverDrive provides more flexibility and options.

STAFF EXPERTISE

Originally, KGPE did not have in-house experts on automation systems. That has changed and today, the engineering team has real-world expertise in live production control and often assist other broadcasters that are implementing OverDrive in their facilities.

OverDrive performs five or more hours of production per day, including four hours of live on-air news production. The flexibility of the system allows last minute changes to be taken to air cleanly, providing viewers with the most up-to-date information available.

As an example of how OverDrive has made a difference in our productions, about four minutes into a recent newscast, a generator failed at a live location only 20 seconds before the shot was to air. The producer floated the story, five seconds later OverDrive shuffled the server outputs and tags and we went to the next story without the slightest glitch. Three minutes later, the generator was started and the story was dragged and dropped in ENPS. It aired as if nothing had happened. This scenario would not have been possible with the previous automation system.

In short, the OverDrive production control system improves the quality of our productions and has made KGPE more efficient. Having seen multiple types of automation systems, I was pleasantly impressed by OverDrive's responsiveness and ease of operation and maintenance. It automates in the areas that make sense for us to automate and still allows manual control in areas where a changing news environment dictates the need for maximum flexibility.

Ross Video has impressed me with its customer support and interest in keeping products up to date and reliable. I really have to say that they have made my job easier and everybody using OverDrive is thankful for its implementation in the plant.

Lee Williams is chief engineer for Clear Channel's KGPE Channel 47 in Fresno and has worked in the broadcast industry for more than 18 years. He may contacted at leewilliams@ clearchannel.com.

For additional information, contact Ross Video Ltd. at 613-652-4886, or visit www.rossvideo.com.

BUYERS BRIEF

The adVantage system from **Adtec Digital** is an ad insertion system designed to provide users with automatic and seamless integration of ads in both analog and digital program streams.
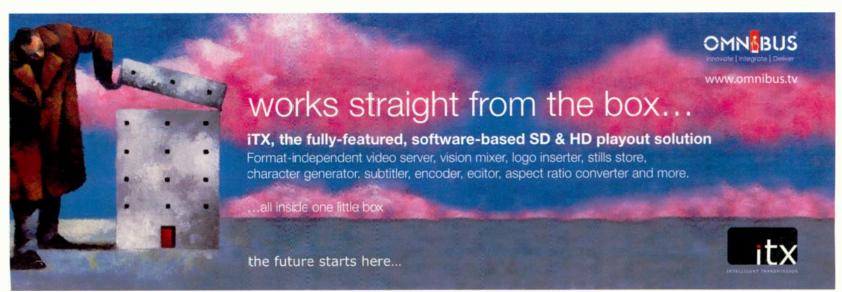
The system provides scalable architecture and complete integration with popular traffic and billing packages.

The adVantage system is built around Adtec Digital Duet and Duet-SDI MPEG-2 commercial inserters to achieve turnkey content management, alarm monitoring, schedule importation and as-run log verifications.

The commercial insertion system is designed for both broadcast and cable applications.

For more information, contact Adtec Digital at 615-256-6619 or visit www.adtecinc.com.

World Radio History

Focus Enhancements Aids Education

by Miguel Ramlatchan
Director of Operations and Engineering
Office of Distance Learning
Old Dominion University

NORFOLK, VA.

At Old Dominion University, distance learning comprises 25 to 30 percent of our overall student population, with 28,000 long-distance class enrollments yearly. We leverage various technologies and delivery methods—a six-channel digital MPEG-2 /VoIP satellite system, videoconferencing, Internet video streaming, asynchronous online classes and DVDs—to reach students through a network of nearly 200 community colleges and military institutions nationwide.

Hampered by a labor-intensive, tape-based process, we looked to automate our play-out workflow. We initially targeted a satellite channel (MPEG-2 over satellite) dedicated to professional skills development. This channel broadcasts programs that help our students improve their leadership, interviewing and other professional skills.

We were using DVCAM and Betacam tapes and manually sending the output to the satellite encoder. This meant that someone needed to be at the control facility to play the programs and background filler material.

MANPOWER SAVINGS

Later, we selected the ProxSys Media Asset Management solution from Focus Enhancements to store, schedule and automate content play-out and distribution. With ProxSys, we're saving 80 to 85 percent in people hours compared with the tape-based system. We've been able to condense the entire workflow down to a few simple steps.

First, we feed the ProxSys Capture Station with a new tape, give the file a name and hit record. The system uses rich metadata to make it easy to find and retrieve items. As the ProxSys Playout Station supports time-based scheduling, our staff develops playlists that contain class and filler, defines which program plays when, and then lets the system handle the rest. By automating play-out, we've eliminated the need to have a staff member phys-ically press the start/stop button.

Beyond workflow automation, we plan on utilizing ProxSys storage and distribution capabilities to develop enhanced offerings. Our philosophy is matching technology with student needs. We visualize encoding all classes onto the system—enabling us to offer video-on-demand to distance learning students.

For example, when students now miss a satellite or videoconferencing class, they need to order a DVD or VHS cassette to catch up on the material. Our new media asset management system can provide a more efficient and convenient option for students and administrators alike. With the browser-based media server, a student can simply log on to an instructor's Web site, pick the missed day, and view the stream online, giving them real-time access to material instead of waiting for a tape.

Video-on-demand will allow us to broaden our current student base. Our distance learning classes typically are held at "satellite campuses," a network of 200 community colleges, higher edu-
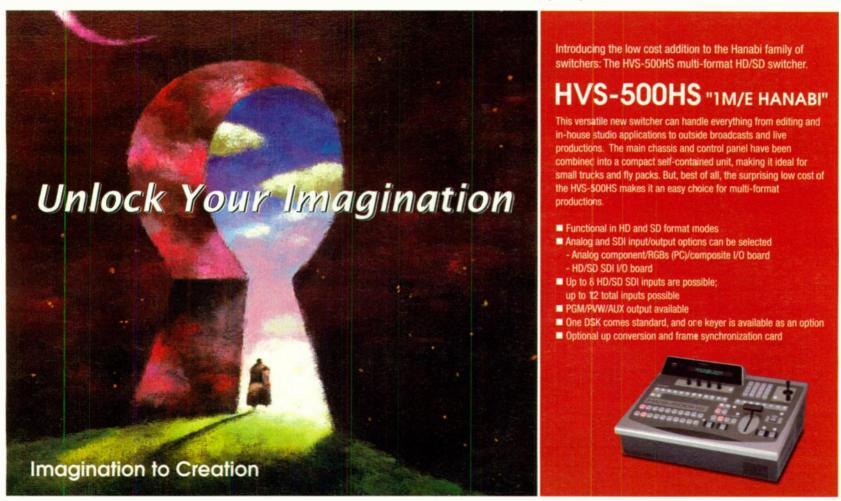
A portion of the distance learning operation at Old Dominion University

cation centers, corporate locations and military institutions. If a potential student cannot be at one of these locations at the scheduled time for a class, alternative options are limited. Video-on-demand opens up new possibilities and gives us the flexibility to reach students with time conflicts anywhere, anytime.

Miguel Ramlatchan is director of operations and engineering at the Old Dominion University Office of Distance Learning. He may be contacted at mramlatc@odu.edu.

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

USER REPORT

Pro-Bel Moves KBTC-TV Into Automation

by Darin Gerchak
Director of Engineering
KBTC-TV

TACOMA, WASH.

KBTC-TV is a PBS member and serves western Washington state. I've been with the station for eight years and have been instrumental in the its move from a fully manual and tape-based operation to a highly automated station.

When we moved into a new facility approximately fours years ago, we installed an automation system and a small server for interstitials, but it was still a largely manual setup.

LATEST TECHNOLOGIES

We began this major project with the goal of increasing our level and range of service by taking advantage of the latest technologies. PBS stations operate in a competitive environment

The Pro-Bel Morpheus user interface

and we needed to be able to compete better. We wanted to create a highly automated operation with remote access and control.

We looked at the way the whole plant operated—not only in terms of the automation system that we could use—but also in the relationship between automation and master control, as well as in the areas of traffic and server integration. We received grant assistance from the Corp. for Public Broadcasting and had a responsibility to invest wisely. With the assistance of systems integrator SignaSys, we designed and built a system that allows us to operate a highly efficient PBS station. The project covered four SD channels and one HD feed.

In terms of master control operation, KBTC-TV is now unattended, with a high level of monitoring. We believe this is unique among PBS stations. It is clear that the relationship between master control and automation is now much more blurred than it used to be, and when we were exploring the options, we examined running all master control functionality from an automation system, as most of our transitions are cuts. The shows that PBS delivers have a fade-to-black and fade-up from black, and we could tailor our local content appropriately.

However, we wanted to have minimal operations staff on site, and considered that if there was a problem with the automation system, we wanted to be able to access the master control switchers remotely for temporary control. Therefore, we needed tight integration between the master control and the automation, which is what Pro-Bel has provided.

Along with Morpheus automation, our package includes Pro-Bel routers, four TX500 series SD master control switchers and one Masterpiece HD switcher. The arrangement is not simply a case of the automation throwing commands at the master control, but also a reporting back to automation by master control, informing it about what has done. If manual intervention is needed, the automation system will pause the current event and then start back in the same place. It can also skip the event and move to the next one or shift back to the previous event. The tight integration between the two is vital. This is not the case with products from all automation suppliers.

The Pro-Bel monitoring capabilities provide a good deal of comfort, and I can access everything I need from home. I'm very happy with what the company has provided and I know that we are barely scratching the surface of what their technology can achieve. There is a lot more to come in terms of the services we can provide.

Darin Gerchak is director of engineering at KBTC-TV. He is a graduate of Bates Technical College. He may be contacted at dgerchak@bates.ctc.edu.

For additional information, contact Pro-Bel at 888-847-7623 or visit www.pro-bel.com.

BUYERS BRIEFS

Reality from **Lanterna Magica** is a real-time logging and access system for managing video content.

It is designed for directors who need to manage hours of content and turn it into 30- or 60-minute television programs.

Reality users enter descriptions of action as it is being captured and these descriptions are automatically linked to video scenes and time code information.

The tool allows instant access to content shot minutes or days ago and provides instant playback of that content. It supports multiple camera shoots and users can start assembling shots at any time during production.

Reality is available to users on a rental basis and is delivered as a complete turnkey system, with no software or hardware to install.

For more information contact *Lanterna Magica at 514-807-5296 or visit* www.lanternamagica.com.

IBIS Channel Management from **IBIS Inc.** is a channel and rights management system that provides users tools for administering program, media, and interstitial libraries; contracts; and three levels of scheduling.

IBIS Channel Management can be integrated with the IBIS Transmission Automation system, or used in a stand-alone configuration.

The system allows users to create new contracts, programs, promotions, libraries and commercials, along with other functions. It also provides status reports for users, including schedules and promotion kill lists.

For more information contact IBIS Inc. at 877-541-4247 or visit www.ibis.tv.

USER REPORT

EWTN Eases Into Automation With Florical

by Patrick Campbell
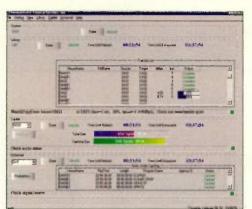Director of On-Air Operations
EWTN

IRONDALE, ALA.

EWTN, with its seven satellite television networks, is available in more than 118 million television households in 127 countries and territories.

A worldwide shortwave radio station, direct broadcast satellite service, a satellite AM/FM radio network, an Internet Web site and publishing arm are also available to distribute content, making EWTN the largest religious media network in the world.

EWTN's search for digital content management and station automation led us to Florical's key instruments for ensuring a TV station's growth and success in all directions.

Florical's MediaMaster and DiscoTrans are essential in the day-to-day operation of EWTN's networks. They are also instrumental in the management of our digital content,

The Florical MediaMaster user interface

and we rely on them to transfer the video files between our main and backup online storage systems and our digital tape nearline/archive storage system.

SIGNIFICANT UPGRADES

When we chose Florical as our automation solution, our play-out facility was already highly integrated. However, we were looking at doing some significant upgrades to the automation system for expansion and redundancy purposes. MediaMaster was chosen to help with this task. It is an asset management system that systematically moves program and commercial material between media servers, libraries and archives, based on presentation schedules. When material is no longer needed, it's either purged from the system or stored in a library for future use. MediaMaster provides a most effective way to manage your assets for television automation of single channel as well as multichannel and ShareCasting systems.
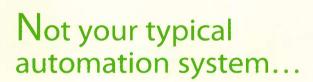
In addition to ingesting the live and recorded material for daily use, MediaMaster and MediaFiler digitizes and manages 25 years worth of analog content. The redundancy of the system and the use of a main backup for play-out ensure flexibility when newer versions of the Florical products become available. This helps

from a productivity standpoint, as we have little or no downtime. Also, when that rare hardware glitch does occur, the backup content is completely in sync and available instantaneously.

Our on-air look has improved after installing Florical automation products. The "join-in-progress" feature makes getting back on time after a longer than expected live event both smooth and flawless. Also, the "quick reaction" control panel allows us to easily transition in and out of live event segments on multiple playlists with just one operator. We shopped around with all the major automation vendors and found Florical products to have features no other company offered.

Patrick Campbell is the director of on-air operations for EWTN Global Catholic Network, the largest religious media network in the world. He may be contacted at pcampbell@ewtn.com.

For additional information, contact Florical at 352-372-8326 or visit www.florical.com.

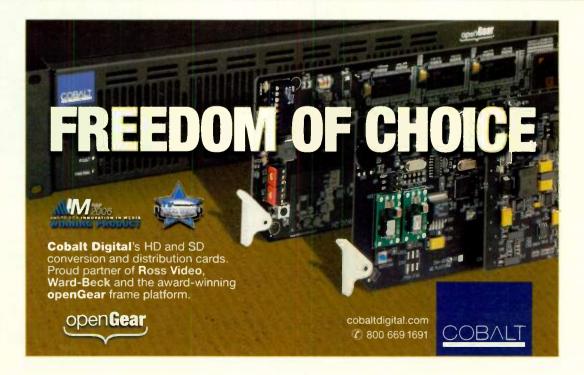# PRODUCTS & SERVICES SHOWCASE

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.

NEWSROOM AUTOMATION/TRAFFIC & BILLING

MANUFACTURER	MODEL	CAPACITY	PLATFORM	TYPE OF NETWORK	MACHINE CONTROL	SPECIAL FEATURES	PRICE
Associated Press 202-736-1100 www.enps.com	ENPS 5.0	Visit Web site for specifications	Win	LAN/WAN, dial-up	Third-party and custom	Object-based workflow, multiple vendor support	Call for pricing
Autocue 704-377-1496 www.autocue.com	QSeries	Scalable	Win	Fibre Channel, Gigabit Ethernet, LAN/WAN, dial-up	Fully integrated automation software	All Unicode-compliant languages supported, modular, scalable, custom layouts for each client	Call for pricing
Avid Technology 978-640-6789 www.avid.com	Avid iNEWS Family	Scalable	Win, Linux	Ethernet	Avid AirSpeed, Deko and Thunder	MOS compatibility, fully redundant configurations, automation assist for multidevice playback	Call for pricing
Comprompter 608-785-7766 www.comprompter.com	NewsKing Electronic Newsroom	Fully scalable server	Win	Fibre Channel, Ethernet, LAN/WAN, IP, dial-up	Fully integrated automation software	Supports multiple devices and vendors	Call for pricing
Dalet 212-825-3322 www.dalet.com	DaletPlus News Suite	Depends on video server	Win	LAN/WAN, Ethernet, Gigabit Ethernet	Omneon, VDSCP, RS-422, AMP	Bidirectional communication with Dalet Newswire, fully integrated asset management	Call for pricing
Harris 816-434-4008 www.broadcast.harris.com	OSi Sales, Traffic and Research Suite	Scalable	Win	Ethernet, Internet	N/A	Centralized architecture, multistation/ multichannel environment, seamless integration between traffic and sales systems	Call for pricing
OmniBus 303-237-4868 www.omnibus.tv	Headline News Suite	Depends on video server	Win	LAN/WAN, Ethernet, Gigabit Ethernet, Internet	Fully integrated news, ingest transmission SW	End-to-end solution, fully configurable user interface, completely automated ingest, scheduled recording	Call for pricing
Quantel 703-448-3199 www.quantel.com	sQ, Newsbox, Picturebox sQ	Scalable	Win	Gigabit Ethernet and Fibre Channel	CORBA, RS-422 and MOS control	Fast ingest/edit/playout, no copying or consolidation required	Less than $199k for News to Go
Video Technics 404-327-8300 www.videotechnics.com	Apella Media Family	Scalable	Win, Mac	Ethernet, Fibre Channel	VDCP, Apella VPI, MOS compliant	Supports multiple NLEs; and ENPS, iNEWS and other newsroom systems	Less than $50k

PRODUCTS & SERVICES SHOWCASE

VCI Automates Operations at WXOW-TV

by Jarrett Liddicoat
Director of Engineering
WXOW-TV

LA CROSSE, WISC.

WXOW-TV, a subsidiary of Quincy Newspapers Inc., was the last of 11 QNI stations to migrate to VCI automation. A corporate decision was made a couple of years ago to utilize VCI automation, (formerly DTG) to create consistency across all QNI stations. Additionally, we wanted more automation, control and flexibility, so we elected to go tapeless and have all commercials play from the server.

WXOW-TV had been using another automation system and Tektronix Profile servers since 2001 for all of our commercials. All in all, the system ran pretty well. The biggest drawback was that we used the same syndicated programming for both WXOW-TV and WQOW-TV, our satellite station in Eau Claire, Wisc. This meant we had one tape for two automation systems.

We would segment a program for one station, but the second station couldn't control or see that tape. The operators re-entered the timings man-

Jarrett Liddicoat is pleased with the conversion to VCI automation at his station.

ually for the second station, but soon concluded it was easier to skip the segmenting process (which took 15 to 20 minutes) and just enter the times at each automation prep station.

THE BIG SWITCH

In August 2006, VCI automation was set to run four separate broadcast streams: WXOW, WQOW, and the two new digital subchannels for the CW Network (formerly WB) in La Crosse and Eau Claire. The system would control Leitch Nexio NX4000 servers, a Leitch Integrator Gold house router,

Leitch Panacea 16x2 Clean & Quiet strip switchers for each stream, VTRs for ingest, and all of the various keyers.

Transitioning from the existing automation system and servers to the VCI autoXe system took six days and went in without a single hiccup. With the help of John Buszinski of VCI Automation, Brendan Ford, operations manager of our sister station in Rochester, Minn., KTTC, and Roscor integration personnel, it was a smooth changeover considering all that was involved!

Analog master control was converted to a completely new SDI control room, which was just 15 feet away!

The learning curve was a concern. We knew the operators would have to learn new nomenclature, techniques and processes due to the differences and advancements between the two systems. John and Brendan's support went a long way toward stabilizing what was quite an unstable control

room for a few days.

Computer savvy operators caught on within a week, while others required a little more hand-holding. This was to be expected since automation is very much a leap of faith—especially for those that have been used to pushing buttons manually for 20 to 30 years! The VCI support team quickly solved the few issues we did have.

Now that we've been operational for a couple months, we've noticed a very smooth, stable and responsive system. Operations have streamlined to allow for more unattended broadcasts. Our 24-hour operation began in September. I'm very happy with VCI Solutions and how their system has helped us to become much more efficient. It will be a great system for us for years to come.

Jarrett Liddicoat is director of engineering and operations for WXOW-TV. He is a graduate of the University of Wisconsin and has been with WXOW-TV since 1995. He may be contacted at jliddicoat@wxow.com.

For additional information, contact VCI Solutions Automation Division at 512-837-3737 or visit www.vcisolutions.com.

WOUB Multicasts With Microfirst

by David J. Wiseman
Associate Director for Technology &
Operations
WOUB Center for Public Media
Ohio University

ATHENS, OHIO

With the advent of digital television, accelerated by the FCC mandate in 1996, our planning assumptions directed us to program four discrete SD streams and one discrete HD stream for each of two transmitters. This is a total of 10 different streams, and is done all without using any prepackaged, pass-through programming.

As these are state university-owned PBS affiliate stations and receive federal grant funds, competitive bidding was required for the automation system. We sought bids for a 12-channel system to address the myriad programming demands of

ingest, play-out and encoder control.

Our system specifications called for full bidirectional communications with the ProTrac traffic system, full redundancy, minimum-to-zero single points of failure and multiple fully functional workstations in a robust and cost-effective system. MicroFirst automation systems met these requirements and many more.

In the system size that we had specified, cost soon became a significant factor, as did the number of CPUs required in many other systems for full functionality and redundancy. MicroFirst was chosen for the foregoing reasons and more. Their product uses a proprietary operating system platform for the main system applications, and this makes it impervious to viruses and other problems, which can plague Windows-based systems.

There are absolutely no single points of failure in the MicroFirst system. During reviews of several systems

David J. Wiseman (L) and Steve Skidmore at the dedication of a new master control room at Ohio University

before and during the bidding process, we were impressed with a demonstration of the MicroFirst system. Any cable could be disconnected, or any unit removed from service, without a failure of the system. Workstations can reside on any Windows-based office computer, with the number of simultaneous user ports based on what is licensed,

rather than the number of computers with software residing on them. This was a benefit to a large station such as ours, with several offices distributed throughout a seven-floor building.

User references were impressive with reports of never needing reboots and continuous operation throughout the more than two years since the installation. Last, but not least, MicroFirst delivery, implementation and support has been expedient and exemplary.

David Wiseman is an associate director for technology & operations for the Ohio University WOUB Center for Public Media (a unit of the Scripps College of Communication) in Athens, Ohio. He has been employed by the Center for more than 28 years, and has worked in broadcasting and communications for 45 years. He may be contacted at wiseman@ohio.edu.

For more information, contact MicroFirst MicroFirst at 201-651-9300 or visit www.microfirst.com.

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NRB 2007
CONVENTION & EXPOSITION
The Premier Event in Christian Communications

This international event networks thousands of Christian communicators, from program producers to authors, pastors to engineers, directors to vendors. NRB's professionals emphasize strategy and innovation to tap the power of new media ministry models.

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NRB BROADCAST Essentials — core principles for operating a broadcast ministry

Reach ENGAGING OUR CULTURE THROUGH MEDIA — an innovative media channel seeking effective ways to engage our culture

NRB Leadership & Management COURSE — equipping leaders with tactical approaches to optimize results

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If you're looking for a smarter way of doing media ministry, you'll find it at NRB! See you in Orlando!

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Orange County Convention Center &
Rosen Centre Hotel, Orlando, Florida
www.nrbconvention.org

OmniBus Transitions Scripps Into IT/IP

by John Ajamie
Senior Vice President
Media Logistics
Scripps Networks

KNOXVILLE, TENN.

At Scripps Networks, our move to HD was just one part of a larger project. We weren't just launching two new HD networks, HGTV HD and Food Network HD, we were changing the foundation of our broadcast infrastructure to an IT/IP-based model that would enable us to create and share digital content throughout our operations.

Our broadcast operations department is being transformed into a new media logistics division. This is intended to maximize the overall value of Scripps Networks content by providing systematic content and data search, retrieval, technological delivery and storage strategies to our business.

Broadcast operations tend to operate as islands within the greater body of a network. Our goal was to integrate technology that would break down barriers and enable much deeper distribution of assets so that they could be

Scott Atchley, network operations supervisor (foreground) and Don Samples, network operations technician (background), monitor operations at the new Scripps Networks IT/IP-based origination facility.

repackaged for VOD/broadband and other emerging services. To this end, we upgraded our infrastructure with IT/IP-based systems. This will enable sharing of content beyond the media logistics division.

To support sharing and movement of media, we turned to OmniBus Systems Colossus automation. We decided that OmniBus Systems architecture was significantly more scaleable than other products. Also, the system has an open interface capable of tying into our own digital asset management system.

Today, we operate a 1080i HD plant to ensure high-quality delivery of Food Network HD and HGTV HD. These networks provide the stunning detail viewers expect.
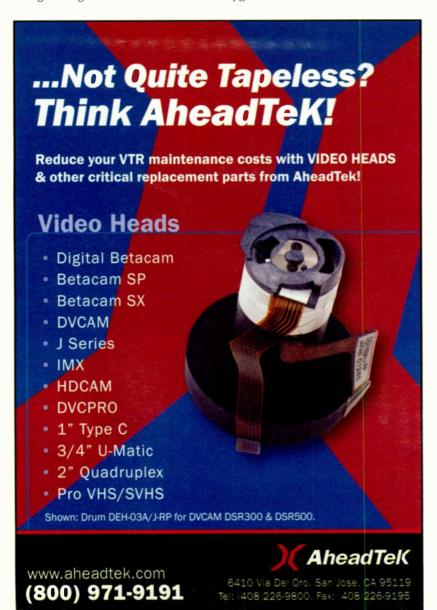
We know that viewers want content of a consistent size and quality, and they want continuous Dolby 5.1 surround sound. OmniBus automation plays a key role in that delivery.

Under OmniBus Colossus control, 16:9 HD content for both the Food Network HD and HGTV HD is ingested into a 24 TB Omneon Spectrum server system via Snell & Wilcox Memphis encoders. Interstitial content originated in SD is automatically upconverted via a Teranex Volare FlexView.

The OmniBus system automatically recognizes and triggers upconversion of stereo audio to 5.1 surround sound audio through a Linear Acoustic Octimax 5.1 processor. These two processes eliminate significant post-production work, reducing the amount of time and equipment needed to get HD content to air.

OmniBus automation manages archiving of content from the Omneon servers and also controls two Omneon Spectrum systems for actual SD/HD play-out.

Burk Controls CBS Boston Transmitters

by Robert Yankowitz
RF Systems Manager
CBS Boston

BOSTON
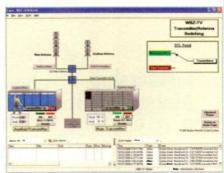
The combination of Burk Technology GSC3000 hardware and Lynx 5.1 software has produced a flexible and reliable transmitter remote control system for the CBS Boston group of television stations.

The GSC3000 hardware is a modular system of components, allowing us to add capacity in groups of 16 channels (command, telemetry and status).

Each group consists of one I/O, two relay and two wiring-interface units, which occupy a total of five rack units. Up to 16 of these groups can be assembled for a total of 256 channels per transmitter site. Our system consists of three sites, with seven units at one (112 channels) and three at the other two (48 channels each).

We maintain a redundant system, with two complete sets of GSC3000 units, communication lines and computers at the studio. Communication to the sites can be

Burk Technology Lynx 5.1 software provides users with customized views of transmitter systems being controlled.

achieved via dedicated or dial-up telco lines, or using the optional Web interface unit, via IP on the Internet.

The Lynx software is graphically oriented and gives our master control operators access to three geo-

---

Burk

graphically separate transmitter sites in Massachusetts. While it can provide simple out-of-the-box monitoring of the GSC3000 units, Lynx's real power lies in user-created custom views. Burk provides many standard graphic images to allow these views to be assembled via an easy drag-and-drop editor.

It provides bar graphs for metering, pushbuttons for control, LEDs (round and square) for status and more. Burk graphics can be combined with custom images using nothing more sophisticated than the Windows Paint program.

Operating Lynx is very similar to using an Internet browser. As Lynx allows an unlimited number of custom page views, a system can be created as simple or complex as desired. We use the home page to show the overall state of our six main and two auxiliary transmitters.

From here the operators can work their way to other pages in what Burk calls a "drill-down" method, to see additional details. A page can link to any other, just as in a Web site, so the flexibility of the system is only limited by your imagination when setting it up.

While the Lynx software runs on a personal computer, the remote control system is not dependent on it or its connection to the remote site. Each GSC3000 unit contains its own processor and memory, allowing it to run autonomously.

Meter and status logging and alarm conditions are maintained in the I/O unit at the transmitter site, so a loss of communication will not result in a loss of data. Using a cut-down form of the BASIC programming language we can create macros to take automatic action based on current conditions or time.

EXCELLENT SUPPORT

Finally, a system as large as ours needs support, and our experience with Burk Technology has been excellent. Hardware needing repair has been typically shipped back within a day of receipt, and software problems, if not solved immediately over the phone, are always followed up.

Robert Yankowitz is RF systems manager for CBS Boston, and is responsible for one radio and three television station transmitter sites (WBZ-TV/DT, WSBK-TV/DT, WLWC-TV/DT, and WBZ-AM) in Massachusetts.

The opinions expressed are solely those of the author. He may be contacted at rbyankowitz@cbs.com.

For additional information, contact Burk Technology at 800-255-8090 or visit www.burk.com.

BUYERS BRIEF
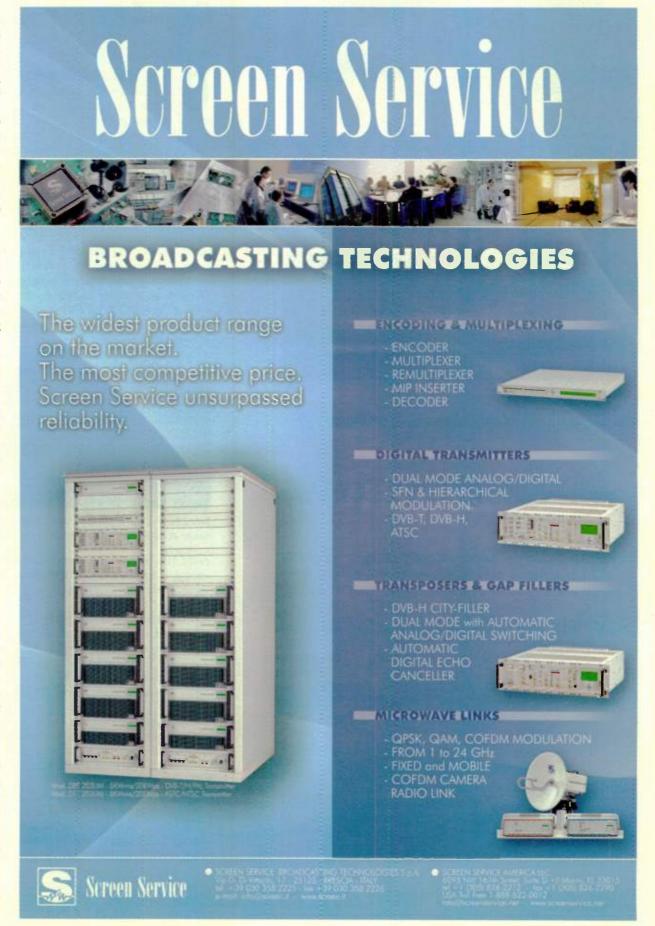
NewsPlan from **ScheduALL** is a newsroom tool for managing production of rapidly evolving news in real time. It provides a complete set of resource management tools to handle all aspects of the television news production process, including assignments, air scheduling and even cost tracking and performance reports.

NewsPlan is designed to integrate with systems such as iNEWS and ENPS, as well as office accounting systems.

The system can track and schedule equipment maintenance and even provide alerts for overtime and penalty situations among personnel.

For more information contact ScheduALL at 800-334-5083 or visit www.scheduall.com.
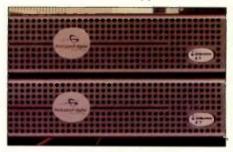
Front Porch Helps Launch VOOM HD

by Steven J. Pontillo
Senior Vice President of Broadcasting and Technology
Rainbow Media

BETHPAGE, N.Y.

Our goal in launching the VOOM HD channels was to build on Rainbow Media's history of providing original programming and to meet the growing demand for high-quality HD programming. It wasn't long before we expanded this concept into 15 channels, five of which feature fully scheduled broadcasts incorporating as many as 12 HD movies per day.

VOOM HD Networks' channels today include movies, sports, music, travel, fashion, the arts, cartoons and news. This programming represents the largest and most diverse offering of HD content available anywhere, and each of these HD video files is about three times the size of an equivalent SD program file. The MAN (media area network) that had supported our

Front Porch Digital's DIVArchive makes life easier at Rainbow Media's VOOM HD.

early HD operations wasn't large enough to handle the growth in assets we were offering.

28,000 HOURS OF HD

We had to implement an archive system capable of supporting this growth. Rainbow Network Communications engineers had previously worked with Front Porch Digital, using the company's DIVArchive digital storage system to support our SD channels. We again turned to Front Porch for help in creating an HD-only archive system.

The Front Porch team, in conjunction with RNC, proposed an archive capable of storing up to 28,000 hours of HD programming on digital data tapes. Our engineers worked extensively with Front Porch; with our systems integrator, Communications Engineering; and other vendors, to plan the installation of the archives at RNC's Technology Center in Bethpage.

The goals were an effective storage platform for our HD programming and to be able to expand our HD schedule further without storage issues. Naturally, we also wanted a cost-effective solution. The design team suggested a hybrid archive with data tape storage, along with managed disk storage, or nearline storage—significantly less expensive than disk-based storage.

FAST TRANSFER NEEDED

From our perspective, easy transfer of content in and out of nearline storage at many times faster than real time is the most critical capability. We built a two-tier storage layer into the design and put that layer under the management and control of DIVArchive.

The first tier consists of 20 TB of NexSan ATA-Beast F/C disk storage. The second tier uses an ADIC Scalar 10K library with seven LTO2 tape drives. The DIVArchive Storage Plan Manager controls all content throughout its lifecycle. More importantly, it helps us meet our efficiency and cost-saving goals by storing content on the most appropriate storage device, depending on performance and cost factors.

Our HD archives maintains any new content on the disk system for 30 days, the life of a movie among our current offerings. After that, media is transferred to data tape and stored in a scalable library. With this configuration, content most in demand can be accessed quickly by our Harris automation system and Thomson Profile MAN video servers for playout. As content ages, it is stored in a more cost-effective, long-term archive.

With this system, we've been able to create rapid access to our most popular content, while archiving the rest of our significant HD library in a lower-cost, yet highly scalable, data-tape library. As we continue to refine our use of the DIVArchive system for HD archiving, we'll be exploring additional possibilities, such as disaster recovery capability.

Steven J. Pontillo is senior vice president of broadcasting and technology at Rainbow Media. He may be contacted at sjpontillo@rainbow-media.com.

For additional information, contact Front Porch Digital at 936-520-6042 or visit www.fpdigital.com.

OmniBus

Installation of our OmniBus automation was a lengthy process, as we migrated our SD channels over to the new system one by one. OmniBus engineers spent much time here, assisting with the integration, and pro-

viding extensive training for our operators and engineering staff. Our people managed well the difficult task of maintaining traditional on-air operations, while becoming familiar with a new system.

With the move of SD channels onto the Colossus system and the launch of HD operations on the same system, we are seeing a streamlining of opera-

tions, workflow and technical flow. We're also realizing new economies in management of content and broadcasts.

The OmniBus system gives us the flexibility and scalability to introduce new channels or services. Now, with digital media managed in an IT/IP-based infrastructure, we're prepared to deliver content wherever it's

needed within the company.

John Ajamie is senior vice president of Media Logistics for Scripps Networks. He began his career in 1987 and joined Scripps in 1994. He may be contacted at jajamie@scrippsnetworks.com.

For additional information, contact OmniBus at 516-692-8280 or visit www.omnbus.tv.

BUYERS BRIEFS

The artbox from **Proximity Corp.** is a media asset management software package designed to maximize creative time and to minimize administrative overhead.

It gives users the ability to catalog, search, make rough cuts from anywhere and to integrate elements with editing programs such as Final Cut Pro.

The software allows five users to work simultaneously on PC, Mac or Linux platforms and provides connectivity to a central storage system.

For more information contact Proximity Corp. at 646-452-5820 or visit www.proximitygroup.com.

MasterPlay from **Rushworks** is an automation software package designed for broadcast and cable television operations. It supports time-of-day and event-driven scheduling and play-out functions.

MasterWorks provides users with on-screen display capabilities that replace many master control switcher functions, including bug insertion.

The software controls routers and air switchers, as well as VTRs and other equipment. MasterWorks has I/O GPI triggering and a Segment Editor for opening MPEG-2 files and performing virtual edits.

For more information contact Rushworks at 888-894-7874 or visit www.rushworksmedia.com.

The Precis news production system from **BitCentral** provides digital asset management of all user assets from acquisition to air.

It features a file-based workflow that improves video quality and operational efficiency while decreasing operating costs.

Précis is browser-based, making it scalable and allowing access by as many individuals as necessary. It requires no changes to a television station's infrastructure and is designed to be upgraded for HD operations.

For more information contact BitCentral Inc. at 800-214-2828 or visit www.bitcentral.com.

USER REPORT

Lifetime Networks Deliver With Harris

by Donald Jarvis
Vice President of Engineering
Lifetime Networks

NEW YORK

The proliferation of facilities supporting multichannel television networks in recent years owes a great deal to the maturation of automation technologies. The very best of these systems are able to handle the most intricate technical complexities of the modern broadcast facility.

Lifetime Networks opened the doors to a new technical facility here in April 2006. The system currently delivers four channels of network programming to cable and satellite outlets using a Harris ADC-100 automation platform. The system is sized to allow the launch of any future Lifetime services.

FROM TAPE TO SERVER

I was on board for Lifetime's initial foray into system automation in 1998, when the network group selected the Harris ADC-100 during the transition from analog tape playback to server-based automated playback.

The new system is the core of our master control facility, providing manpower efficiencies and a consis-

Daniel Brokowski, director of on-air operations at Lifetime Networks, uses Harris Air Client and Air Monitor at the supervisor's console.

tent on-air product. It controls all primary on-air devices, including routing system, MC switcher, video servers, archive system and closed-captioning inserters.

Lifetime's automation platform is built for redundancy, with each of the four networks running two synchronized playlists (Equal to eight full-time playback channels, with two additional channels for utility work.)

We also take advantage of the "air

and protect" feature. Redundant streams eliminate single points of failure. We use the product's cloning feature, which provides automatic failover between on-air device servers. This provides a very fault-tolerant platform

In a unique design for Lifetime, we divided the two continuously running pairs of ADC-100 systems into "Plus Three" and "Plus Zero" feeds. The Plus Three feed plays out content three hours in advance of air time. This content is stored for three hours. If the stream played out correctly, it goes to air.

The Plus Zero feed is synchronized with the output of three-hour delay. This allows switching to the Plus Zero feed if the main feed requires any changes.

Workflow begins with program acquisition and log creation in the traf-

fic department. An operator then ingests programming into the automation play-out system using either videotape via the Harris MediaClient platform, or electronically from our post facility using a Harris H-Class Media Ingest module.

Harris translators and wizards arrange a second traffic-generated log in the Harris playlist format. Secondary events for on-air graphics, ad cue tones and SAP programming triggers are also prepared. The playlist is then moved to Harris Air Client stations for delivery to the appropriate Lifetime network. All programming is queried to ensure no content is missing. Content is also replicated to our disaster recovery system.

Harris provided us with the first module releases in the H-Class Media Ingest Solution. This module incorporates file-based electronic delivery of commercials into the ADC-100. This was previously a standalone function.

The Harris ADC-100 and excellent customer support have served Lifetime Networks very well.

Donald Jarvis has been with Lifetime Networks since 1997. He may be contacted at Jarvis@lifetimetv.com.

For additional information, contact Harris Corp. at 800-622-0022 or visit www.harris.com.

BUYERS BRIEFS

Designed for automated and live-assist play-out of video, text and captions, **Dalet** OnAir can be integrated with a variety of devices including teleprompter systems, VTRs, video servers, still stores and other equipment.

OnAir is playlist-driven and allows for easy switching from automated play-out to live A/B pre-roll operation. The system accommodates last minute reordering of on-air rundown and offers immediate failover transfer to backup platforms.

For more information contact Dalet at 212-825-3322 or visit www.dalet.com.

NewsFlow from **Video Technics Inc.** is a tapeless newsroom system that utilizes IT technology to provide an end-to-end workflow for small and large news operations.

The system is fully MOS- and VDCP-compliant and provides low-resolution, frame-accurate proxy editing of material.

It features automatic ingest of satellite feeds and faster that real time

digitizing of content.

NewsFlow offers instant access and asset management for hundreds of hours of DV and MPEG networked storage.

For more information contact Video Technics Inc. at 404-327-8300 or visit www.videotechnics.com.

The Observer from **Volicon Inc.** is a desktop video monitoring system that can provide professional audio/video control room capabilities to ordinary desktop computers.

The system provides multiple channels of content on demand to any computer. The Observer allows viewing of live or archived content, and users have full search and retrieval functionality. Material viewed can be analyzed, annotated and shared from the desktop.

The system allows viewing of multiple channels, has an electronic program guide and a closed-captioning search engine.

The Observer has a 90-day archive that is expandable and allows bidirec-

tional play-out of material at any speed.

For more information contact Volicon Inc. at 781-221-7400 or visit www.volicon.com.

FORK Software Suite from **building4media** is a high-end software automation playout system designed to provide users with full functionalities ranging from playlist editing to control of broadcast equipment, and takes care of ingest, content management, scheduling archiving and other operations.

The system is structured in a modular fashion, allowing it to be tailored to the needs of individual users. It can be configured around a single computer to serve the needs of smaller broadcasters, and it is expandable to accommodate large broadcasters with multiple stations and program streams with full redundancy.

FORK does not rely upon any dedicated or specialized hard-

ware—only high quality standard computer cards.

For more information, contact building4media at 818-292-1489 or visit www.b4m.com.

MassStore from the **Masstech Group** is a system for nearline and archival storage and asset management. It interfaces with existing station automation systems and provides an asset management core for single and multichannel environments.

The MassStore system provides constant tracking of all material within a facility's servers, RAID array caches, data libraries or on media storage shelves. MassStore is built around an Oracle asset management core and interfaces directly to servers, data libraries, disk storage and automation equipment.

Industry standard interface protocols are provided by the MassStore system.
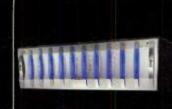
For more information, contact the Masstech Group at 651-688-3653 or visit www.masstechgroup.com.

USER REPORT

Miranda Powers MusiquePlus Graphics

by Mario Cusson
Head of Play-Out Operations
MusiquePlus

MONTREAL

MusiquePlus is the world's first French-language 24-hour music television station, with primary channels MusiquePlus and Musimax available to 2.3 million cable households across Canada.

MusiquePlus is broadcast live eight hours per day and is targeted at 12-to-25-year-olds. The service encourages constant interaction with its audience, striving to reflect the preferences of the young and stylish viewers.

Music in general has become one of the most competitive segments of television today. We attribute this to the fact that our youthful viewers are both technically and media aware, with a wider range of music options than ever before. This makes it all the more difficult to retain their attention.

NEEDED TO RETHINK GRAPHICS

We felt it essential to take a closer look at our channel branding and revitalize it somewhat, although we were very conscious of balancing the costs of implementing a new graphics system into our existing operations.

It was important that we selected a manufacturer that could integrate with

The Miranda Xmedia Suite user display

our station's existing traffic system, as well as with our Florical automation.

We also needed to keep it in line with our plans to offer interactive services via cell phone by 2007. What's more, we needed a system that wouldn't take new skill sets to operate, but would provide MusiquePlus and Musimax with a consistent and easily identifiable look.

We reviewed a number of systems—some were too complex, others too expensive. Most didn't support HD and SD in the same box or possess the level of integration and simplicity that Miranda's Vertigo XG and Xmedia package would give our operators.

The Vertigo XG can play out 2D and 3D graphics and animations, mul-

tiple DVEs on video clips and it also supports both HD and SD resolutions.

We also use Miranda's MOS compliant Xmedia Server—a centralized asset management server that allows our operators access to any content from any of our three worksta-

tions as well as automating file conversions.

XMEDIA TO THE RESCUE

With music being the main content to air, there is a requirement to play different tracks every few minutes, and to frequently update our on-air graphics such as song titles and album information. This is typically done at the beginning and ending of music video clips. This used to be a major task when those graphics had to be uploaded manually. Fortunately, Miranda's template-based approach to such changes has made things much more manageable.

Xmedia Suite's automated creation tools allow rapid preparation of cus-

tomized smart templates with built-in links to our music library. This allows the graphics to be automatically updated, based on the playlist and inserted on-air with a minimum amount of human intervention, giving our operators less to think about and no chance of mixing up song titles or making spelling mistakes.

With the new Miranda system, we have a wide range of new capabilities in rich graphics creation, rendering, and playback—from multiple crawls and tickers to full-screen graphics with 3D transitions. The on-air graphics can be easily controlled from user-definable soft control panels, which provide a friendly and highly responsive control surface. Automatic squeezebacks at the end of a show allow us to display program credits and contribute to manpower savings. This high level of graphics automation hasn't meant sacrificing flexibility. It's very easy to make last minute changes with user-definable soft control panels too.

Mario Cusson has been at MusiquePlus for one and a half years, and is responsible for production, on-air operations and engineering. Previously, he worked in engineering at Group TVA. He may be contacted at mcusson@musiqueplus.com.

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

BUYERS BRIEFS

The MA-4110 from **Matco** is a storage server device designed for large volumes of material. It can be configured to store up to 520 hours and can be equipped with Gigabit Ethernet or Fibre Channel interfaces. The basic system is supplied in a single three RU chassis, with either five or eight media drives. Additional units may be added to increase storage capacity.

The unit is powered by RAID controller technology and allows the failure of one drive without affecting normal operations. Rebuilding of the failed drive is transparent. Reliability is further enhanced with redundant power supplies and cooling fans.

For more information contact Matco at 800-348-1843 or visit www.matcovideo.com.

Nodal Master from **Netia Inc.** is a software system for control of processing and routing equipment within a nodal suite. The system

provides users with a single interface for controlling all equipment within a given area and allows them to make switches from any source to any target device.

It allows users to trigger switching via computer mouse control and provides adjustment and control of both audio and video equipment.

For more information contact Netia Inc. at 888-207-2480 or visit www.netia.net.

Compass from **Newpoint Technologies Inc.** is a complete software package for management of all types of broadcast and other networks. It supports up to 100,000 devices.

The system allows users to tailor alarms and event management via filtering, suppression, correlation, historical logging, trending and other tools. It comes with a library of device drivers and also lets users create custom drivers. Optional fea-

tures can be added, including a spectrum analyzer interface.

For more information contact Newpoint Technologies Inc. at 603-898-1110 or visit www.newpointtech.com.

The playKast from **On-Air Systems** is a complete and fully functional television play-out system for both single and multichannel operations. It provides continuous 24/7 play-out and has a multiformat play-out server. The system supports MPEG-2, DV, DVCPRO and DVCPRO 50 files and can control external VTRs. GPI triggers are available for local ad insertion. It can support up to eight mono audio channels. It's designed for broadcast and nonbroadcast applications, including information kiosks at transportation terminals, point of sale video displays, corporate training and in-house information channels.

For more information contact On-Air Systems at 44-845-0942-612, or visit www.on-air-systems.com.

iCR from **Snell & Wilcox** is an automated content mastering and repurposing workstation that allows users to produce high-quality digital masters and then to repurpose the content on multiple platforms.

The iCR workstation delivers superior image quality and greatly reduces time required to repurpose content for different media platforms. It eliminates separate encoding and transcoding. Multiple transcodings start as soon as the master encoding process begins. It also provides automated quality control, alerting operators to errors and offering an educated opinion as to whether segments being processed meets quality standards.

For more information, contact Snell & Wilcox at 818-556-2616 or visit www.snellwilcox.com.

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 O1V 16-input digital mixer, call; Mackie 1604 VLZ used, $550; Mackie 24-4, make offer; Tascam M-2600 MK II 16-Channel Mixer, $1,500; 818-246-7100 or 212-564-9933 or www.tvprogear.com.

ANTENNAS/ TOWERS/CABLES

Want to Sell

PSI 16-bay 2kW antenna for chnl 27, omnidirectional pattern w/14.61 dB gain, horizontal polarization, xlnt cond, $1500. 340-713-9927 or vic@wcvi.tv.

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

CAMERAS

Want to Sell

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

JVC GY-X2BU S-VHS pro 3-chip camcorder w/Canon 14:1 lens & time code card, approx 300 hrs, xlnt cond, $1000/BO. 607-754-6767.

DIGITAL EFFECTS

Want to Sell

Abekas A-53D digital video effects, $1900. 818-551-5858 or 212-268-8800 or www.broadcaststore.com.

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 O1V 16-input digital mixer, call; Mackie 1604 VLZ used, $550; Mackie 24-4, make offer; Tascam M-2600 MK II 16-Channel Mixer, $1,500; Digidesign 888, $650; Sony PCM7040 DAT, $3,990; Panasonic SV-3800 DAT, $300; Wohler Amp 1-A, $325; Wohler AMP-1A-VTR, $550; Wohler AMP-1AP, $325; Wohler Amp-1APF, $325; Wohler MSH-8AL Audio Level Meter, $600; AKG C 414 B ULS Microphone, $950. 818-246-7100 or 212-564-9933 or www.tvprogear.com.

CERTIFICATION

Sony DXC-637 BetaSP w/PVV-3 deck, 648 drum hrs, comes w/camera bag, extra filters & Anton Bauer batt mount, $3200. 208-735-1970 or 208-420-9779.

CONDOS FOR RENT

NAB Convention lodging, April 14-21, 2007 in Las Vegas, NV. Luxury 1 bedroom condo on the strip. Contact jamesadams969@msn.com for info.

BATTERIES

CAMERA ACCESSORIES

EDITING EQUIPMENT

Want to Sell

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

Avid SYMPHONY non-linear system, $6600. 818-551-5858 or 212-268-8800 or www.broadcaststore.com.

JVC RM-G 860U edit cntrl unit w/cables & manuals, gd cond, works well, $300 + shpg. J Spivack, 360-460-5801.

LENS REPAIRS

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

MICROPHONES

Want to Sell

Samson UHF Series One wireless mic, $350; Sennheiser wireless production pkg EW122G2-B wireless mic, $5895; Sony WRR810A/WRT822B/ECM77 wireless mic, $1100. 818-551-5858 or 212-268-8800 or www.broadcaststore.com.

TV TECHNOLOGY .COM

MISCELLANEOUS

Want to Sell

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.

MONITORS

Want to Sell

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

MOVIE PRODUCTION EQUIPMENT

Want to Sell

Rank Cintel URSA telecine, $36000; Rank Cintel URSA-GOLD telecine, $48000; Magna-Tech 835-B-6600 telecine accessories & parts, BO; RIM Digi-sync telecine access & parts, $875. 818-551-5858 or 212-268-8800 or www.broadcaststore.com.

SIGNAL PROCESSING

Want to Sell

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.

SWITCHERS

Want to Sell

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

GVG M-2100 master cntrl switcher, $17500; GVG 100CV prod switcher, $5100; GVG 250N prod switcher, $16000; GVG IPS-110 prod switcher, $7390; GVG 7000 routing switcher, $80000; GVG TEN-XL CV routing switcher, $1060; GVG TEN-XTM routing switcher, $600; Leitch HD16x16D-422 routing switcher, $1850; Leitch VSM4041MB Mix Box, $250; Leitch XPLUS, $1500; Lighthouse K Series routing swithcer, $10000; Sierra Video 1616VAA Tahoe routing swithcer, $3500. 818-551-5858 or 212-268-8800 or www.broadcaststore.com.

TAX DEDUCTIBLE EQUIPMENT

Non-profit emergency physician research foundation seeks wrkg cameras, mics & edit equip in gd wrkg cond for resident education & community outreach. Scott S, 973-251-1075.

TELEPROMPTERS

TEST EQUIPMENT

Want to Sell

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

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.

Tektronix 528A waveform monitor, works well, gd cond, $200 + shpg. J Spivack, 360-460-5801.

TRANSMITTERS/ EXCITERS

Want to Sell

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

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.

World Radio History

EMPLOYMENT

HELP WANTED

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

Director of Engineering and Operations: Headquartered in Madison, WI, the capitol city, home of the UW-Madison, and consistently rated as one of the best places to live. The State of WI Educational Communications Board (ECB) has an immediate opening for a Director of Engineering and Operations. ECB is licensee of 5 Wisconsin Public Television and 16 Wisconsin Public Radio stations, operates 26 All-Hazards/NOAA transmitters statewide, holds 35 EBS/ITFS licenses, and is the statewide backbone for EAS and Amber Alert system. ECB is a partner with the University of Wisconsin Regents in Wisconsin Public Television and Wisconsin Public Radio. This working manager is responsible for the planning, development, and management of statewide delivery engineering for Wisconsin Public Broadcasting. A successful candidate will have 3+ years of recent experience in, and be thoroughly familiar with, complex organizations, project management, contemporary broadcast and multimedia technology (including, but not limited to: master control through antenna systems for analog and digital radio and television, internet-based applications, and other innovative uses of technology), supervision of staff, and partnership development. Must possess superior oral and written communications, negotiations, and team-building skills. Salary up to the mid 90's commensurate with qualifications and experience. Excellent benefit package. Send detailed resume, salary history and 3 references in confidence to: Personnel, Mr. Larry Dokken - Director of Engineering Search, The Wisconsin Public Broadcasting Center, 3319 West Beltline Highway, Madison, WI 53713. Phone: 608.264.9669. Include a letter describing how your experience will contribute to the Wisconsin Public Broadcasting. Initial screening of application materials begins January 10, 2006, with preference given to applications filed by that date. Position remains open until filled. Website: http://www.ecb.org. AN EQUAL OPPORTUNITY EMPLOYER.

Maintenance Technician: WJHL Newschannel 11 in the beautiful mountains of East Tennessee is seeking a Transmitter/Studio Maintenance Technician. Applicant will perform the repair, replacement, modification, installation, removal, adjustment and integration of all technical equipment, related to the operation of WJHL Newschannel 11's Transmitter and Studio. This individual must have a working knowledge and the ability to test, repair and operate UHF/VHF transmitters, as well as microwave STL/TSL links and facilities. The position will perform required FCC monitoring and documentation, installation, testing, evaluation, repair, calibration and properly operate and safely maintain UHF and VHF transmitters, as well as various ENG receive sites. The candidate must have at least 5 years experience as a Broadcast Maintenance Technician. Good communication, writing, and computer skills are a must. Must be a team player and be available to work nights and weekends. Excellent benefits package. Send resume to Human Resources, P.O Box 1130, Johnson City, TN 37605 or hr@wjhl.com. Newschannel 11 is an EEO Employer M/F, pre-employment drug testing and background screen required.

Mobile/Video Production Engineers: Clark Media, an established mobile & production company serving clients in the Mid-Atlantic area, is looking for full-time video production engineers. Entry level and senior positions are available to work with our fly-packs, hi-def systems and our mobile truck. Position provides opportunity to work as part of a team in a fast paced environment. Send resume and salary requirements to: Gary C. Snyder, President/Engineer, Clark Media, Phone: 610-694-9800; Fax: 610-694-9700; or e-mail: GaryS@ClarkMedia.com.

Engineer/Satellite Truck Engineer: KSBI TV, OKC DMA, Seeking experienced Satellite Truck Engineer and Maintenance Engineer. 3+ years experience in audio, video and satellite uplink required. Must be capable of performing technical maintenance and repairs on broadcast equipment, have good understanding of satellite operations and work well with deadlines. Valid driver's license required. Qualified candidates may send resume to info@ksbitv.com or fax to 405 631-7367.

TELEVISION CHIEF ENGINEER: At least four years as assistant chief or chief; FCC General Class license and/or SBE certification desired; At least two years basic electronics theory schooling or equivalent; Manufacturer's trade schools a plus; Good record of project and personnel management skills a plus; Should have good Microsoft Windows skills and be functional in MS Word, MS Excel, Visio, MS PowerPoint, MS Project; AutoCad/VidCad a plus; Network basics a plus; Can prepare and work with expense and capital budgets; Should be knowledgeable in most broadcast studio equipment as well as high power RF transmitters and microwave; This is a "hands on" position. Must be willing to "get dirty" be able to lift 50 lbs., and work odd hours when needed. Send resume with salary requirements to Montecito Broadcast Group, LLC, 315 High Point Crossing, Huffman TX 77336 or e mail walt@sjlbroadcast.com. No phone calls please. EOE.

Video Systems Integration Project Engineer Learn, grow and be a part of the future in the communications industry with a world leader in systems installation and integration. ROSCOR Corporatopm experienced, highly motivated, and goal-oriented communications systems engineers. The position includes system design, checkout and commissioning of media based integrated solutions, including broadcast and corporate communication customers. Solid background intelevision systems, transmissions systems and satellite communications system design preferred. Apply immediately for this challenging and exciting career opportunity within a growing company. Excellent compensation and benefits package. Send resume by email to opportunities@roscor.com or by fax to (847) 803-8089 or by mail to 1061 Feehanville D-rive, Mount Prospect, IL 60056.

WIN-LOSE RATIO

TOP ADVANCERS BROADCAST STOCKS
(Nov. 3 - Nov. 17)

Fisher	+10.14%
Lin TV	+7.18%

TOP DECLINERS BROADCAST STOCKS
(Nov. 3 - Nov. 17)

Acme	-11.21%
Gray	-4.09%

TOP ADVANCERS TV TECH STOCKS
(Nov. 3 - Nov. 17)

LSI Logic	+13.84%
Scopus	+13.26%

TV Tech STOCKS as of Nov. 17

Company Name	52-Week Range	Nov. 3	Nov. 17	% Change
Avid	32.05 - 59.10	36.48	38.93	6.72%
Belden	21.90 - 41.70	35.51	38.83	9.35%
Ciprico	3.68 - 6.84	4.80	4.99	3.96%
Harmonic	3.79 - 8.67	8.30	8.35	0.60%
Harris	37.69 - 49.78	40.40	42.58	5.40%
LSI Logic	7.41 - 11.81	9.61	10.94	13.84%
Scopus	3.05 - 8.35	3.62	4.10	13.26%
SeaChange	6.00 - 9.89	8.49	9.00	6.01%
Tektronix	25.22 - 36.89	29.53	31.21	5.69%

Broadcast STOCKS as of Nov. 17

Company Name	52-Week Range	Nov. 3	Nov. 17	% Change
Acme	3.50 - 5.99	5.80	5.15	-11.21%
Belo	14.93 - 23.00	17.29	18.51	7.06%
Entravision	6.59 - 9.18	7.17	7.40	3.21%
Fisher	38.89 - 47.29	40.52	44.63	10.14%
Gray	5.15 - 10.36	6.36	6.10	-4.09%
Hearst Argyle	19.97 - 25.94	25.54	25.49	-0.20%
Nexstar	3.50 - 6.20	3.92	4.18	6.63%
Lin TV	6.12 - 13.38	8.49	9.10	7.18%
Ion Media	0.70 - 1.15	0.78	0.77	-1.28%
Sinclair	7.18 - 10.07	9.20	9.52	3.48%
Univision	28.30 - 36.67	34.98	35.44	1.32%
Young	1.70 - 3.91	2.35	2.27	-3.40%
Tribune	27.09 - 34.28	32.27	32.25	-0.06%
Meredith	45.04 - 56.83	52.65	53.35	1.33%
EW Scripps	40.86 - 51.09	49.30	49.50	0.41%

NexGen Telecom Acquires USDTV

SALT LAKE CITY

NexGen Telecom LLC has purchased U.S. Digital Television LLC from bankruptcy court for $1 million cash and named USDTV's former CEO, Steve Lindsley, CEO of NexGen Telecom.

NexGen is a Denver-based investment firm focused on the telecommunications industry and one of the original "angel" investors in USDTV.

"Acquiring the USDTV assets and hiring Steve Lindsley as our chief executive were critical steps needed to boldly move our company forward as we enter the competitive digital services marketplace," said Charles S. McNeil, chairman of NexGen Telecom.

Formed in 2003, the subscription TV service uses broadcasters' digital TV signals to provide local and national broadcast channels, along with many cable networks including ESPN, Discovery and The Disney Channel. Customers receive USDTV with a standard VHF/UHF antenna and a propriety digital TV converter box. The service is about $20 a month. The company filed for bankruptcy protection in July.

NexGen also added The MountainWest Sports Network to the USDTV service in November. USDTV subscribers can now watch coverage of athletic events in the Mountain West Conference along with local high school sports, Olympic sports, and education and lifestyle content.

"The new USDTV will put even greater emphasis on family-friendly content, one of the founding principles of the company," Lindsley said. "Adding The Mountain demonstrates that commitment."

The USDTV service is sold through select Wal-Mart stores in Salt Lake City, Dallas/Fort Worth, Albuquerque and Las Vegas.

Clear Channel Selling TV Group

SAN ANTONIO, TEXAS

Clear Channel Communications has accepted a buyout offer from a group led by Thomas Lee Partners and Bain Capital Partners in a deal reportedly valued at about $26.7 billion.

The value of the sale includes the assumption or repayment of about $8 billion in net debt.

The company will also sell its entire 42-station television group, as well 448 of its 1,150 radio stations. The television stations are located in 24 small and mid-sized markets throughout the country. Collectively, the company said, these properties contributed less than 10 percent of the company's revenues last year.

Under the terms of the agreement, Clear Channel shareholders will receive $37.60 in cash for each share of Clear Channel common stock they hold.

Mark Mays will remain as CEO and Randall Mays as chief financial officer.

The Clear Channel board approved the deal. The merger is subject to the approval of Clear Channel's shareholders and regulatory approval.

Mark R. Fratrik, vice president of BIA Financial Network said the deal is a "significant milestone" in the industry.

"Moving from being a public media company to a private one has become a serious option, as competitive conditions change," he said.

After the Telecommunications Act of 1996 passed, the advantages of having public stock to acquire additional properties was quite important, Fratrick noted.

"That is no longer the case as the public marketplace has registered its lack of confidence in the growth prospects of traditional media," he said.

Under the merger agreement, Clear Channel may solicit competing bids from third parties through Dec. 7, and may negotiate with parties that submit competing proposals by that time until Jan. 5, 2007.

Chyron Revenue Down

MELVILLE, N.Y.

Chyron Corp. has reported revenue of $6.45 million for its third quarter results ending Sept. 30, down 2 percent compared to $6.56 million in the same quarter last year.

The company said Q3 revenues included about $0.3 million in sales from the company's ChyTV product line.

"When viewed in the context of our 2006 business plan Chyron's third quarter performance is acceptable. After the strong revenue and earnings rebound we experienced in the second quarter, our third quarter performance reflects order slippage and revenue deferral pending customer acceptance," said Michael Wellesley-Wesley, Chyron president and CEO.

Chyron's net income for the quarter totaled $157,000, or zero cents a share.

Gross profit in the third quarter was $4.52 million, up 15 percent, compared to $3.94 million in the same period in 2005. Gross margins for the third quarter were up 70 percent compared to 60 percent in last year's comparable quarter.

The company said gross margin increases resulted from lower material costs driven by greater interchangeability of components across product lines and, as a result, the ability to purchase in greater quantities at larger discounts.
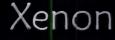
3 Gb/s Routing

HD/SD Multi-Format Routers - from 32x32 up to 576x576