



Blinks and Beyond

Inside the Creative Services Group at Clear Channel.

Page 41

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 TOM MILLER
 ASST CHIEF ENGINEER
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Digital on the Table

Aaron Read tries out the Directed HD Tabletop DHHD-1000.

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Radio World

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The Newspaper for Radio Managers and Engineers

April 11, 2007

IBOC Wins FCC Approval

AMs Can Go Digital at Night; Agency Rules Give Regulatory Certainty

WASHINGTON HD Radio supporters see the FCC's final authorization of IBOC as key to the rollout.

Opponents worry about the potential for additional interference on the radio dial.

Reacting to the unanimous commission approval in March, Ibiquity Digital President/CEO Robert Struble stated that the decision reinforces FCC support for the HD Radio system and "provides automakers, broadcasters, receiver manufacturers and retailers with the certainty of formal adoption of critical HD Radio services. We anticipate this action will also prompt a surge of activity from companies."

IBOC remains optional for U.S. broadcasters; the digital conversion is not mandated.

It was unclear immediately after the vote when the rules would take effect. Details were not expected to be released for a few days after the March 22 meeting, and the rules would become effective 30 days after publication in the Federal Register.

Under the change, all AMs would be allowed to go digital at night. Audio Division Chief Peter Doyle told Radio World that AMs already on with IBOC need no further permission to add night service; those not transmitting in HD-R need to submit a notification letter to the FCC within 10 days of their conversion. Such AMs can then transmit in digital at anytime, day or night, he said. A procedure will be established to handle interference issues, should those occur; concerns over the potential for AM interference have been among the debating points about HD Radio for years.

See IBOC, page 2 ▶

NAB 2007
 THE WORLD'S LARGEST ELECTRONIC MEDIA SHOW

New tools, channels and challenges abound for radio managers. Radio and regulatory sessions discuss these questions. How does the consumer's mind work? What does a next-gen Web site look like? How should a manager build an HD station and program it?

In This Issue:

- Radio Management Conference preview
- Broadcast Regulatory and Legislative Conference preview
- The MyNAB Online Assistant
- Jim Withers' ideas to survive and thrive

Show coverage starts on page 16

Your NAB Product Preview Guide is included in this issue.

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NEWSWATCH

Clear Channel Honors Engineers

SAN ANTONIO Clear Channel Radio announced the winners of its annual engineering awards.

In the eastern region, the winners are: Large Market (1-49): Wilson Welch, chief RF engineer, Tampa, Fla; Medium Market (50-99): Mike Fleming, market engineering manager, Richmond, Va.; and Small Market (100 up): Gerry Westerberg, market engineering manager, Lexington, Ky.

In the western region, Large Market: John Rigg, DOE, San Diego; Medium

Market: Mike Irby, DOE, Tucson, Ariz.; and Small Market: Brett Gilbert, DOE, Waco Texas.

In the central region: Large Market: Mike Camarato, assistant market DOE, Cleveland; Medium Market: Greg Gade, chief engineer, Omaha; and Small Market: Rick Chalfant, assistant chief engineer, Des Moines.

Winners receive travel, lodging and admission to the NAB show.

Jeff Littlejohn, executive vice president of distribution development, and Steve Davis, senior vice president of engineering and capital management, announced the list. Last year the company named Charlie Wooten as its National Engineer

of the Year; there was no single national winner named this year.

Revised PSRA/PSSA Power Levels Revoked

WASHINGTON AM daytimers are using April figures to calculate pre-sunrise/post-sunset power levels.

The FCC suspended its new PSRA/PSSA power calculations following a software glitch in the new program.

See NEWSWATCH, page 6 ▶

IBOC

▶ Continued from page 1

IBOC to date has been more of an FM phenomenon. Of approximately 4,700 AM stations, about 200 were airing HD Radio on the day of the vote, according to the Ibiqity Digital Web site, but more than 1,000 FMs were on the air, including some 550 multicasters.

There are about 13,800 total stations in the country, excluding LPFMs and translators.

The decision also approved multicasting; broadcasters no longer need to apply for experimental authority to air HD2 and HD3 channels.

The decision allows FM translators, boosters and LPFMs to go IBOC as well when technically feasible. The agency also voted to authorize dual-antenna operation without the need to apply for an STA.

The vote was 5-0. Democratic commissioners objected to portions of the rule but ultimately voted for it; Michael Copps and Jonathan Adelstein wanted to establish whether additional public interest obligations should apply to digital channels and in particular to multicast channels used for subscription services. The commission is seeking comments on this.

Even though the majority of the IBOC rules are "final," the commission left open the question of whether multicasts might at some point carry additional public interest obligations. The agency also invited public comment on "appropriate limits" to the amount of subscription services stations could offer.

All five commissioners called the digital radio vote historic. Commissioner Robert McDowell said colleagues could have approved the rules last summer.

— Leslie Stimson

THE TOOLS HAVE CHANGED...



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Google Goes on the Offensive

Company Says Audio Ads Product Will Increase Demand for Radio Inventory

MOUNTAIN VIEW, Calif. In response to industry concern that its Audio Ads Web-based purchasing process for radio ads could deflate rates, Google is saying the company's involvement in broadcast eventually will increase demand for radio commercial inventory.

The departures in February of Chad and Ryan Steelberg, founders of dMarc Broadcasting, led some broadcast analysts to speculate the rollout of Audio Ads has slowed. Google purchased the ad-insertion software company in 2006 for \$102 million in cash. Google executives did not comment at the time of the Steelbergs' departure.

Subsequently, though, Drew Hilles, Google's national director sales, audio, and Jim Woods, director of product management, audio, spoke to Radio World freelancer Randy J. Stine about the Audio Ads platform and the future of automated ad placement technology.

Hilles joined dMarc Revenue in 2005 and oversaw dMarc's advertising sales and RevenueSuite program. He previously served as senior VP/market manager for Infinity Broadcasting managing the Philadelphia market. Prior to joining



Google created this radio as a promotional tool only and says this unit is not a prototype.

online tool, which is the online interface for advertisers. We also have a large direct sales channel that is working with our advertisers across all platforms at Google. They are selling all kinds of products and audio is included in that. ...

RW: Are advertisers finding enough available inventory, specifically in larger markets?

Hilles: I think it depends on the client and what their goals are. We are in a growth phase and continue to be able to offer our advertisers more stations in more markets. We are in the building mode. We are in discussions with a lot of broadcast partners to be able to expand that footprint.

RW: Some broadcast analysts say the progress of Audio Ads has been slower than expected.

Woods: We are right on our product plans from a couple of quarters ago. So we are happy with the level of integration we are achieving the pace of integration of the beta cycle. It's a learning process.

RW: Are you looking to add more flighted business and guaranteed inventory rather than relying on radio's remnant inventory?

Hilles: I think that is a misperception people have. Unfortunately, a lot of people

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Infinity, Hilles served as a regional VP for Clear Channel Radio.

Woods spent 22 years in the Harris Broadcast Communications Division, including time as Harris' vice president and general manager of automation and digital asset management solutions. He joined Google in 2006.

RW: How is the Audio Ads beta test progressing?

Woods: We have been evolving the broadcaster-interfacing products so the automation platform and the interface to Google are maturing. It's a little more mature than the advertiser-facing side at this point.

We did a further expansion [in March] of our beta for the advertiser-facing system. We have integrated some changes and new functionality that we have learned and opened up the beta to a lot of new advertisers.

We are in kind of a managed rollout in this beta phase. We are managing it. That means controlling and managing the scaling and make sure we do it in a way that capture feedback to make the product better. We are getting the participation we were hoping to get.

Hilles: In March we increased the number of online advertisers participating in the

Audio Ads beta test and gave them the ability to coordinate radio advertising campaigns online. We have agreements with approximately 900 radio stations to provide us commercial inventory [including some Emmis and Greater Media stations.]

We are getting the participation we were hoping to get.

— Jim Woods

RW: How are test-phase advertisers reacting to Audio Ads?

Woods: As part of the beta process we are working very closely with the advertisers and are actually watching them book a campaign. That is part of the learning process for our advertisers and for us. We can better evaluate what we can do to improve the system.

Hilles: We are in beta so there are areas where we can improve it and we are. We have two sales channels. There's the

have defined what they think we should be. In reality, we have all kinds of inventory available throughout the day.

We secure our inventory in many different ways and our agreements with our partners vary depending on what type of relationship they want. We have lots of inventory in just about any day part. Our goal is to partner with companies that have a broad reach in both large and small markets. ...

RW: Would you be forced to hold up the full launch of Audio Ads if you do not secure guaranteed inventory from a CBS Radio or Clear Channel?

Hilles: We are in dialogue every single day with a number of broadcast partners looking to strike up inventory deals. We have a great business model and will continue to look at launching when we feel the time is right.

Woods: Our business model is not dependent on a single deal with anybody. We have a variety of ways to acquire inventory and build out the network.

RW: Doesn't Google run the risk of having advertisers who may be inexperienced with buying radio time see their campaigns fail because they do not under-

See GOOGLE, page 5 ▶

Maybe the Problem Is You

I've been surprised by the tone of bitterness in some of the letters we've received on the topic of engineers helping others learn the craft.

Here is what one veteran of 25 years, who asked not to be identified, had to say on the matter. Formerly chief of 17 radio stations, working with no assistant, he now considers himself partially retired and has forced himself down to a "mere" nine stations.

His comments shed light on why some engineers react stiffly when they read about how hard it is for newbies to find someone to help train them.

"I have had lots of inquiries from young or interested people wanting to become radio engineers or assistants, but nobody who wants to actually do what is required to become one. Plenty of people want to get paid for unskilled work of their choosing or to watch me work.

"Worse, people with absolutely zero qualifications or experience can't understand why I won't hire them to be the chief engineer from day one. I explain that life experience can be gained by repeated trips around the sun but work experience must be gained hands on. My company won't pay top dollar to train someone. They have to take the initiative.

'Free' labor

"For instance, when I was in high school, I spent my available personal time hanging around broadcast stations begging to do anything they needed," he continued. "Sure, sometimes I was unclogging toilets, washing the owner's car or sweeping rat droppings out of a storage room; but other times, I got to clean the oily gunk out of a transmitter cabinet or align some tape heads. Occasionally, I was asked to assist with an AM DA tune-up, take field measurements, wire something in the studio, tune the transmitter or something else hands-on.

"I made sure to absorb as much of the stimuli as possible and apply it to what I had learned in school. Once in a while I actually got an invite to an engineer meeting or lunch social. Remember,

none of this was paid; I did it willingly and on my time. Why? Because it looks dang good on a résumé when I am trying to convince a station owner or manager that I can keep them on the air. It's the 'been there, done that' strategy.

"Years later, I would learn that word also got around to station owners and managers, which got me some 'real,' paid work easily. Reputations have a longer life span than the people they are attached to.

"I landed my first TV CE gig when I was still going to school. I worked my way through school (no student loans)

An engineer asks colleagues: 'What benefit is there to me or my station letting you kibitz over my latest technology gear? ... Help me with a project, and now it might be worthwhile.'

and quit when I got my bachelor's degree. These days I kick myself for not going further, but I have to remind myself, it wouldn't make any difference now anyway. Still, it would have looked cool to put Ph.D. after my name instead of B.S. Oh well.

"After graduation, I was the chief of an AM/FM combo in a medium market and being asked by other engineers to help with special projects at other stations. Some paid, some not.

Have you invested?

"Fast-forward a few more years and all that 'free' labor started to really pay off when I was being offered jobs at stations I had not even applied to. I landed some major-market gigs without sending a single résumé or sitting through one interview. How? My reputation for hard work and high quality was my calling card."

"Fast-forward again (an analog term).

Here I am back in a medium-large market and in a purposely dug, very 'comfortable rut.' Life is good!

"Even after not seeing people for 10 years or more, I get phone calls asking me to do outside engineering work. I have to turn it down without being able to refer the work to anyone; the pool of available capable engineers simply does not exist. Sadly, the engineers in my area who do have the time for extra work are not people I want in any of my facilities.

"To the other 'engineers,' I ask: Why would I want to waste a day just to take

From the Editor



Paul J. McLane

felt, lifelong need to be a radio engineer. People who will do the minimum required to patch the station up so they can get home and hang out with their buddies. People who separate work and personal life, who don't live, breathe, eat and sleep it. People who ignore burned-out studio indicator bulbs for months but spend countless hours each day playing with their computer.

"Basically, someone who has the work ethic of a cubical jockey watching the clock and making sure they take every last second of their 10-minute breaks. People like the ones with no experience who constantly call my office asking if I am looking to hire an assistant and complain because I can't find anyone who will pay them to learn how to do the job they want. People who don't care about radio like me and many others here in the trenches who do this because this is who we are.

"There is nothing that corporate or private ownership can do to breed people with the burning drive that we 'old-timers' have. Nothing can be done to replace the God-given guts it takes to put yourself out there on your dime to learn how to do something because you want it *that much*.

"The entitlement generation is not the kind of engineer I am looking to hire. I want someone just like me. Where are you?! I have a ton of work for you."

As always in Radio World, I encourage you to comment on this engineer's comments or on any article. Write to us at radioworld@iniaspub.com.

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GUEST COMMENTARY

XM/Sirius Merger Will Happen

14 Bold Prognostications About the Big Proposal From a Radio/Audio Strategist

by Mark Ramsey

1 Despite protestations to the contrary, the deal will be consummated. The NAB will do its best to block the process because consolidation is only a good thing when it's your own members who want to consolidate.

2 The deal will take months and months with plenty of "near misses." But the argument that "this is bad for consumers" will ultimately fail to pass the sniff test. Such is the mediascape in 2007.

3 In the interim, it will be incredibly difficult for XM or Sirius to persuade consumers to subscribe. Confusion and risk are never good for business. New subscriptions in the short run will tank, causing many to question whether there's even enough room for one satellite company, let alone two.

4 Post-consolidation, monthly subscription rates will increase by at least \$3/month.

5 Price increases will be justified on the basis of consolidated content, and this argument will ring true. Higher price, but greater value.

The end result will be less churn than would otherwise be expected since consumers will be quick to acknowledge that the best of both XM and Sirius is better than either alone.

6 Of course, higher prices mean less motivation to subscribe for non-subscribers. But this will be more than offset by the power that the new XM/Sirius will have with automakers. Look for this to be the primary distribution thrust for the new company from this point forward.

7 In the long run, XM/Sirius will divest itself of many expensive programming deals as their terms expire. They will retain the core premium deals — the ones shown to generate subscription leverage. All the other stuff will be replaced by bargain-rate non-original content or non-stop music programming.

8 Oodles of people from both services will be let go. That's a safe bet for any prognosticator.

9 The new company will cling tenaciously to the notion that its future is dependent on subscriptions, which is wrong, by the way.

10 Now that XM/Sirius needs to sell the category exclusively instead of their particular brand within the category, the marketing challenge will shift from XM vs. Sirius to satellite vs. local — or, as I think it will take shape, "national" vs. local. "National" will be the place for the big talent and the music channels "too good for commercials."

"Local" will be positioned as the place for all of radio's negative baggage. Terrestrial radio will be the enemy, now more than ever.

11 XM/Sirius will be able to exploit new media opportunities that continue to escape many broadcasters because a consolidated company has fewer decision-makers, fewer decisions and more marketplace leverage. Terrestrial radio, ironically, is too unconsolidated by comparison.

12 The distribution for Stern, Oprah, Martha and the rest just doubled. Distribution will potentially stoke interest that will further promote distribution (i.e., subscription).

13 HD Radio will be a harder sell than ever before, even harder than it is already. Which do you want, the new radio with the nationally known premium brands, clearly communicated, and found everywhere? Or the new radio that presumably gets a few new stations?

14 Radio will worry too much about this deal. We may well miss the fact that this deal is even possible because of the nature of a new media landscape that provides many more profit-making opportunities to radio than it takes away. The smart broadcasters will focus on those opportunities as XM/Sirius spends a year or more getting its newly consolidated house in order.

While many will be glued to their rear-view mirrors or hoping against hope that this deal falls apart, I recommend you take a different path: Look forward.

Mark Ramsey is the president of hear2.0, an audio entertainment strategy company, and Mercury Radio Research. Re-printed with permission from www.hear2.com

RW welcomes other points of view. 🌐

Google

► Continued from page 3
stand demos and formats?

Hilles: It is very important to Google and the radio industry that advertisers who are new to the medium have a good experience. As a result, we provide advertisers with full service support, which includes campaign recommendations. In addition, we offer advertisers an Ad Creation Marketplace to connect them with vendors who can work with them to create their ad spots.

RW: What do you tell broadcasters who fear your auction-based model will drive down advertising rates and cause them to lose control of inventory?

Hilles: Look at what AdWords has done in the online space. We have actually been able to drive rates up.

And there is a huge difference between the Internet and radio. In the Internet there is endless supply of inventory, where is radio that is not the case. There is only so much inventory to go around.

The reality is we hope to drive rates much, much faster than in the online space. Our intention is to unlock our hundreds of thousands of AdWords advertisers and bring them to the radio space.

We believe that will have a very significant impact on rates across the board as we bring new customers and demand to radio, therefore increasing rates. Once you start pumping that much demand for ad space into a place with limited inventory like radio ... you'll see rates grow dramatically.

Woods: And with our technology platform, as new advertisers come to the table, we'll do that in a way that will not add additional pressures or stresses on the systems our broadcasters are utilizing already. Traffic, scheduling and billing we handle all of that.

We expect rates to go up and commer-

cial loads to increase with little impact on the operational scale broadcasters currently have. This is a completely paperless automated system.

RW: Do broadcasters have the ability to set minimum bid amounts that they will accept for Audio Ads?

Hilles: We do not discuss any specific partnership agreements. But we are very

The reality is we hope to drive rates much, much faster than in the online space.

— Drew Hilles

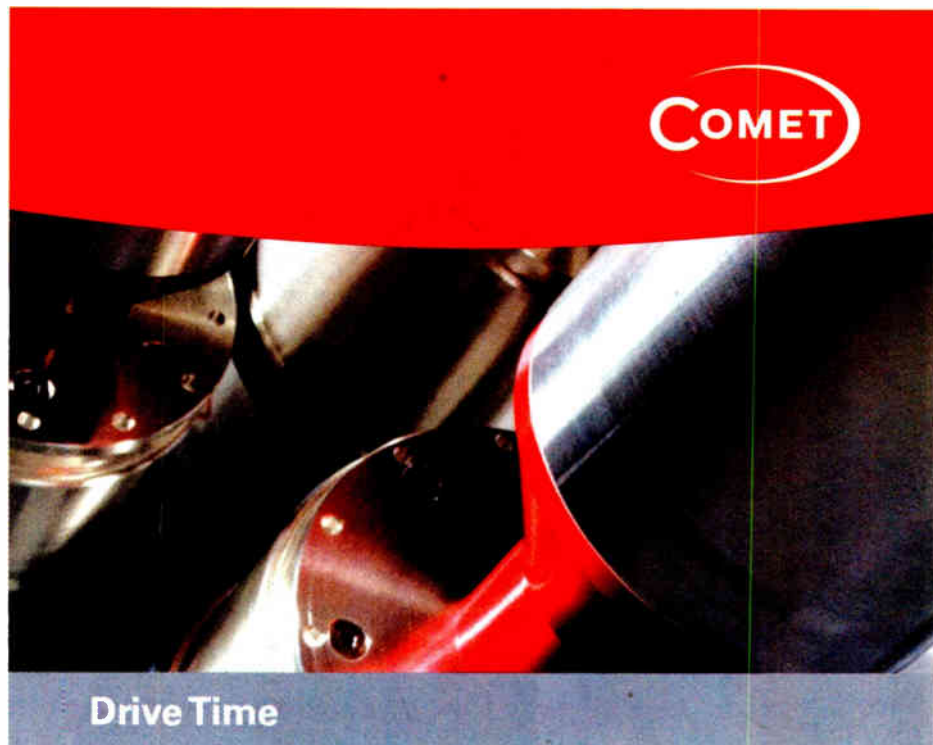
flexible with all of our partners. We customize each agreement. But I will tell you that each broadcaster has full visibility and full control of their agreement and their relationship with Google.

RW: Google handles billing, but do you share 50 percent of the ad revenue with each station? Is that the standard agreement?

Hilles: We offer broadcasters a variety of programs designed to compliment their existing sales and inventory structures. These partnerships include a revenue sharing component and a combination of guaranteed and variable inventory. The specific details of the deals are confidential.

RW: When do you hope to open the beta to general availability?

Woods: We haven't disclosed that yet. Our goal is to continue to evolve the beta product. 🌐



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Newswatch

► Continued from page 2

Some engineering sources told RW the program wasn't excluding stations normally not protected.

Many stations saw power levels knocked down to just a few watts under the suspended calculations. One station owner/engineer told RW the program lowered his PSRA/PSSA down to 1 watt so that a Cuban station could be protected. Another engineer said that according to the new calculations, one of his stations had to protect a station that has been off the air since 1999.

The change coincided with Daylight Saving Time beginning three weeks early this year.

Engineer Proposes Post-Sunset Overhaul

WASHINGTON Professional engineer Ted Schober of Radiotechniques Engineering wants the FCC to remake its pre-sunrise and post-sunset system for AM stations.

He prepared a petition for rulemaking to overhaul FCC Rule 73.99. He wants the commission to amend the 500-watt maximum power limitation for extended hours operation and make all Class B and D stations eligible for extended hours operation provided that they cause no interference.

He's also proposed that the agency establish the intermittent service of Class

A stations as ending at sunrise or 7 a.m. local time at the site of the Class A station, whichever is earlier, and the extent of the Intermittent Service Area as bounded by the location of 0.5 mV/m 50 percent skywave contour, as modified by diurnal curves.

Also he wants the commission to permit extended hours operation using the day, critical hours, night, auxiliary or a single element of any licensed directional antenna; calculate new extended hours operation power using Section 73.182 and the diurnal curves to protect domestic adjacent-channel stations; and establish extended hours applications as minor change applications to cover costs of administration by the FCC.

"Every AM station owner or engineer with a weak or nonexistent night signal needs to pay attention to this issue," Schober said.

NPR: Weekly Audience Levels Up

WASHINGTON NPR said its weekly audience is growing. It cites fall Arbitron numbers that found an audience of 26.5 million per week, and says the total has grown by about 1 million a year since 2000.

"This new figure represents a 4 percent increase vs. spring 2006, the last ratings period, and a 2 percent increase vs. fall 2005," NPR stated. Hourly network newscasts as well as long-form programming are included in the total.

"Additionally, listenership has increased for public radio stations overall around the country." In the fall, 30.9 million weekly listeners tuned into member stations, a 2 percent increase over a year ago earlier.

NPR said the figures are notable in light of general declines in audience for commercial radio, television news and newspapers and that over the past three years, commercial news/talk radio has dropped 7 percent while listening to public radio news-talk stations has risen 3 percent.

Streaming Rates Appealed

WASHINGTON NPR and other entities appealed a decision by the Copyright Royalty Board on fees to stream over the Internet. The network and other groups asked the CRB panel for a rehearing, the first step in the appeal process.

Others who appealed the decision were Royalty Logic, Radio Broadcasters, Digital Media Association, SoundExchange, Intercollegiate Broadcasting System, Small Commercial Webcasters, Collegiate Broadcasters and WHRB(FM), Cambridge, Mass.

Attorney David Oxenford, a partner in the D.C. law firm of Davis Wright Tremaine, stated on his blog that after receiving the appeals, the judges invited additional written comments; those were due April 2.

Before NPR filed its motion for a rehearing, NPR Vice President of Communications Andi Sporkin said in a statement the CRB decision was "stunning" and "damaging for public radio and its commitment to music discovery and education."

"Public radio's agreements on royalties with all such organizations, including the RIAA," she went on to state, "have always taken into account our public service mission and non-profit status." The new rates treat noncoms the same as commercial radio, she said, with rates "at least 20 times" what noncoms have been paying.

Motorola's iRadio Launch Delayed

CHICAGO Citing technology and money woes, Motorola has delayed the launch of iRadio indefinitely. The Chicago Tribune reported that the business model for iRadio is in question.

The device was to allow Internet radio channels to be downloaded and played through a variety of devices, including in-dash radios. For the concept to work in the car, the phone would communicate with the in-dash radio through the Bluetooth short-range wireless technology.

Motorola began testing the technology in 2005 in Los Angeles and Washington.

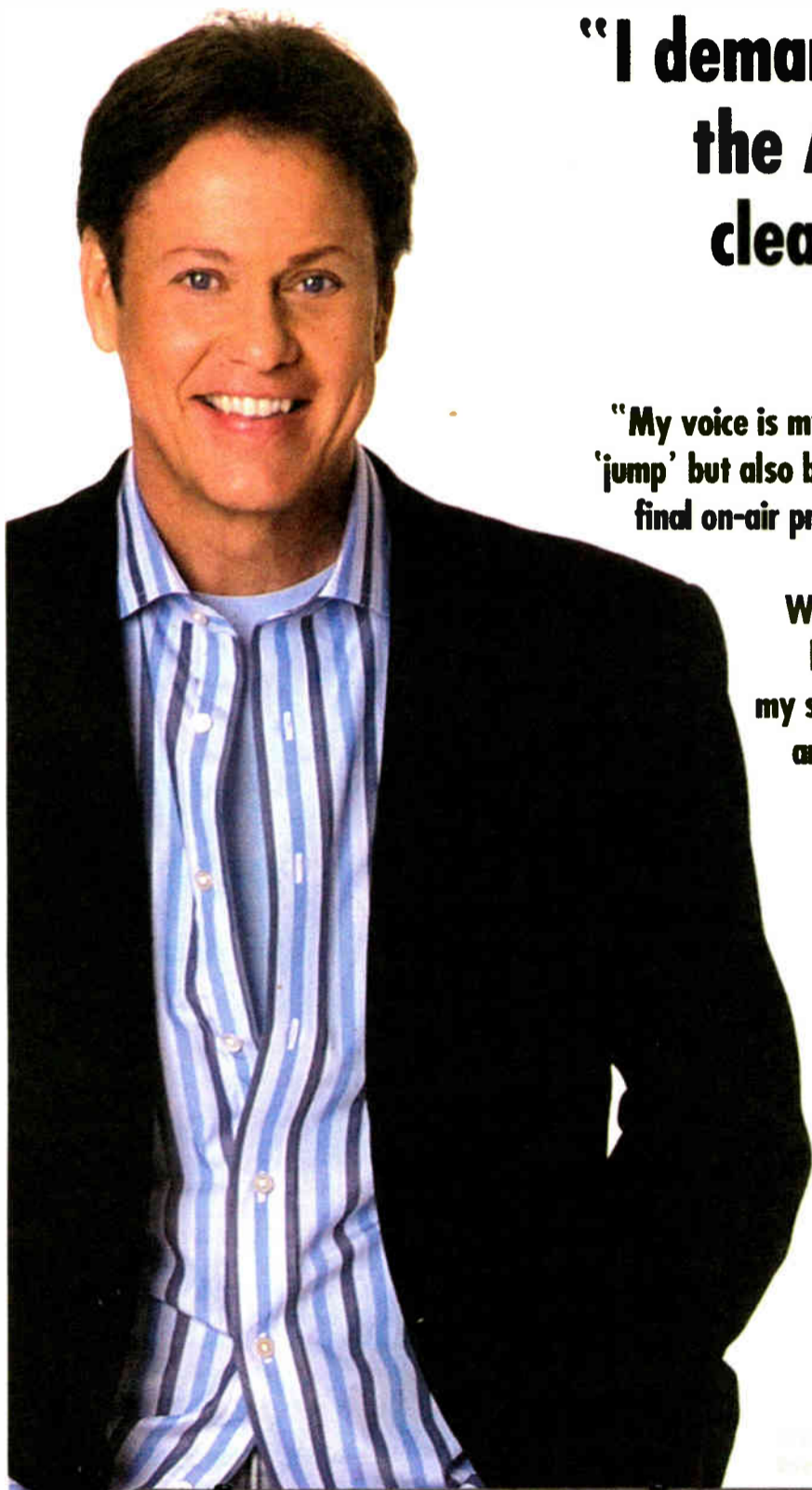
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World Radio History

◆ NEWS WATCH ◆

News Roundup

WAYNE HETRICH died. He spent years at NPR designing and building systems, perhaps most notably its first satellite transmission system, colleagues said. Hetrich also had worked at several DC-area stations including WOL(AM) and WPGC(AM/FM). He was a patent holder and a member of AES.

DEL REYNOLDS is the recipient of the Michigan Association of Broadcasters Foundation Carl Lee Broadcast Engineering Excellence Award. He is corporate chief of engineering of Northern Star Broadcasting and serves as a consulting engineer for several other broadcast operations. He formed Reynolds Communications where he owned and ran nine stations, and joined Northern Star after selling his stations to the company in 1998.

FREEDOM TOWER: "The pair of major landlords waging a campaign against the Freedom Tower have been arguing publicly against the project without disclosing that they personally could lose millions of dollars a year if it is built." The New York Sun reported that developers Douglas Durst and Anthony Malkin could personally lose "millions of dollars a year" if the tower is built. A spokesman for the Durst Organization said antenna revenue was not behind its public campaign

against it. He said Durst would like to see the Freedom Tower rebuilt, but redesigned and delayed.

RATINGS: Commenting on the latest Arbitron numbers, JP Morgan analysts John Blackledge and Aaron Chew noted that radio's "average quarter hour persons 25-54" has dropped in 25 of the past 29 books and was up only once in six years. They said in-car ratings in this demographic were flat; and with increasing use of mobile technologies and penetration of satellite radio and MP3 devices, in-car ratings will face greater challenges. But the analysts said Internet radio's unique visitors are up about 22 percent year over year, and terrestrial radio operators represented about 37 percent of unique visitors among key Internet radio operators, up from a 26.3 percent share a year earlier.

INTERNS: The NAB Education Foundation created an internship program for women and people of color interested in careers related to technology and engineering in radio and TV. It is open to college seniors and recent graduates.

HEARING: The FCC will hold its fourth public hearing on media ownership issues; it will be in the Tampa-St. Petersburg, Fla., area in the afternoon and evening on Monday, April 30.

COMMISSIONERS Michael Copps,

Jonathan Adelstein and Deborah Taylor Tate will speak on Tuesday, April 17 at NAB2007. They will participate in the Broadcast Regulatory & Legislative Conference.

'CARNY SHILL': Reporting on the HD Radio rollout, the East Bay Express, a Village Voice Media paper, said HD Radio "looks like ... a high-level corporate scam, a huge carny shill. Do not tune in until

your unit comes standard on that used Honda Civic you buy in 2015." It quoted Future of Music Coalition lobbyist Michael Bracy saying digital radio "potentially is a great thing, but it feels like the government really botched this," referring to licensing and what the newspaper called a closed-source system. The public, Bracy was quoted saying, could ask the FCC to ensure one community channel for every three the current license-holders have.

DIGITAL NEWS

Satcasters Reassure Users, Regulators

XM and Sirius say customers wouldn't lose programming and their radios would still work if the companies combine.

The firms launched an ad campaign guaranteeing that no existing radios will become obsolete. Sirius said customers who sign up will have the subscription rate honored by a merged company.

XM released a "customer promise" reiterating that existing radios would continue to feature XM programming after the merger. The company stated, "XM expects that the existing radios will be able to receive a mix of programming from both services." The companies' Web sites also include discussion of merger questions.



Sirius President/CEO Mel Karmazin at to a congressional hearing. XM Chairman Gary Parsons is behind.

Recipient of NAB 2007 Radio Engineering Achievement Award

- **Inventor**
 - Molybdenum Permalloy Core Pulse Transformer
 - Bistable Multivibrator (Flip Flop) Circuit
- **Electrical Engineering Professor at Clemson College**
- **AM High Power Transmitter Design Engineer at the Radio Corporation of America**



LOUIS A. KING
Founder & Chairman, Kintronic Labs, Inc.

- **Broadcast Consultant with PE in TN & VA**
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World Radio History

DIGITAL NEWS

Analysts Question Savings

Analysts questioned how much satcasters would save and how long it would take to see those savings if Sirius and XM merge. Analyst Tom Eagan of Oppenheimer & Co. told the Washington Post, "Our concern is that a lot of the big programming costs for the high-profile artists aren't going away anytime soon."

Another analyst said that since the potential cost savings probably would not be realized for three to four years, a merger might not be necessary. Mark Wienkes, analyst at Goldman Sachs, told Forbes the companies could instead cooperate in the

short term to save money on common expenses like marketing and promotion.

Rehr: 'Not Good Public Policy'

While satellite is not a direct replacement for local terrestrial radio, the services compete at the national level for advertising, according to NAB President/CEO David Rehr, who opposes the merger.

In a letter to Representative John Conyers, D-Mich., chairman of the House Judiciary Antitrust Task Force, Rehr stated: "Every person who listens to satellite radio is one person not listening to a local radio station, which affects a station's ratings, and, in turn, ad revenues."

Pros & Cons Set Out

At a hearing on the satellite merger by a new antitrust task force of the House Judiciary Committee, Conyers asked, "If we are going to define the market as broadly as the merger supporters advocate, what kind of precedents are we setting?"

Ranking minority member Lamar Smith, R-Texas, said proponents believe efficiencies will allow them to give consumers more choice while opponents say approval would allow Sirius and XM to raise



NAB President/CEO David Rehr testifies before the House Judiciary Committee.

prices without providing new services.

Rehr repeatedly called the proposed alliance a "government-sanctioned monopoly." He testified that the satellite companies have a history of violating their FCC licenses and "cannot be trusted." By their own admission, XM and Sirius are not failing and should not receive a government bailout, he said.

Karmazin, repeatedly stating that the company

would not be a monopoly and that it would be bad for business to raise prices after the merger, said, "We are not making a failing company argument."

Mark Cooper of the Consumer Federation of America rejected the idea of a "benevolent monopoly." Without a stick of competition, innovation will slow, he said.

Gigi Sohn of advocacy organization Public Knowledge called broadcasters hypocrites for opposing the deal "given their own merger tendencies" and laid out conditions for support: prices wouldn't change for three years; tiered or a la carte programming choices would be offered; and 5 percent of the channel capacity would be devoted to noncommercial programming from sources like LPFMs.

Rehr said satellite's history of violating Part 15 rules with overpowered FM modulators and said both licensees have used terrestrial repeaters that were in the wrong locations, overpowered or both. Karmazin said as soon as Sirius found it had 11 repeaters not operating correctly, "We shut them off."

Conyers told Karmazin, "We have a not-too-good record of satellite radio keeping promises. There's no interoperable radios; that was promised."

Karmazin also said he would agree to a condition that the company would not have any local programming, such as traffic or weather.

Roundup

LATIN AMERICA: Saying inquires about IBOC are on the rise in Latin America, Ibiquity Digital Corp. has hired Fernando Monetti as manager of broadcast business development for that region of the world. Monetti joins Ibiquity from Thales Broadcast & Multimedia, now Thomson Broadcast & Multimedia, where he worked in promotion and sales.

NPR & SIRIUS renewed an exclusive agreement for NPR to continue programming two public radio channels featuring shows from NPR, member stations and other public radio producers. Included is a deal to make Sirius the satellite distributor of a new morning news and information program that NPR will launch for various media including HD Radio, online, mobile devices and podcasts.

AWARD: Sirius co-founder Robert Briskman won the American Institute of Aeronautics and Astronautics Aerospace Communications Award for developing satellite radio. Briskman was chief technical officer and executive vice president of engineering for the satcaster.

— Leslie Stimson




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AM Upgrade a Struggle for KRKO

Station in Washington State Begins Power, Antenna Upgrade This Summer

by Randy J. Stine

EVERETT, Wash. A radio station plans to begin construction of its new transmission site this summer to boost its power level from 5,000 watts to 50 kW despite further court appeals from a local group claiming the project could harm the environment.

The case encompasses several obstacles familiar to AM owners who want to increase power levels or upgrade antenna arrays.

S-R Broadcasting Inc., which owns KRKO(AM), says this is simply a "not in my back yard" issue. The broadcaster scaled back the number of towers needed for the project and even decided to use self-supporting structures instead of guyed towers to appease the Seattle Audubon Society.

Opponents of the project have included swan biologists, a fisherman and neighbors of the proposed tower site, including an airfield. Opponents say, in addition to environmental harm, the four-tower array will ruin the aesthetics of the Upper Snohomish River Valley.

However, a King County Superior

Court ruling in January upheld the decision to issue a conditional use permit by Snohomish County; the court also let stand the county's environmental review of the project, which indicated the project would not harm the environment.

Station owners also were issued a special Shoreline Permit since the tower site, which is on farmland south of Snohomish, is in a floodplain.

Construction on the project is scheduled to begin this summer and will include a 329-foot self-supporting tower and three 199-foot self-supporting structures. Original construction plans called for a total of eight antennas, all more than 400 feet tall. KRKO also will add an HD Radio signal to its broadcasts.

The tenfold increase in power will result in a significant improvement to KRKO's signal, Skotdal said, allowing the station to reach parts of Seattle it is unable to reach now, especially at night. The station, called "North Sound 1380AM," will be 50 kW non-directional daytime and 50 kW directional at night.

"We feel that if you have an opportunity to improve an AM station substantially, you better do it now. To do so will only

become more difficult in the future," he added. "Everett is a major metropolitan city and deserves a full-powered radio station. We will actually be increasing our local programming."

S-R Broadcasting estimates KRKO will be have more than 1 million additional potential listeners as a result of the signal upgrade.



A visual simulation provided by S-R Broadcasting.

KRKO is one of several Seattle-area radio stations to recently receive FCC approval to increase to 50 kW; KRJ(AM) began broadcasting at 50 kW in 2000, and KKOL(AM) completed a power upgrade in 2006. KRKO will be the ninth AM radio station in the Seattle area to broadcast at 50,000 watts.

No guys preferred

KRKO made the changes in design in part to comply with voluntary guidelines issued by the U.S. Fish and Wildlife Service issued in 2001 that recommended shorter towers using monopole or lattice construction techniques that do not require guy wires. The guidelines seek to lower the number of bird kills at tower sites.

The conflict is just one of many debates pitting broadcasters, looking to move or build new transmission facilities, and citizens groups who say the projects are obtrusive and asking for visual impact studies and environmental reviews.

KRKO's owners say they are working within local zoning ordinances and followed the permitting process, but yet spent thousands of dollars in legal fees and compiled nearly 2,000 exhibits totaling 14,000 document pages for the official record and sat through more than 34 individual hearings or trial days over four years.

Andrew Skotdal, president of S-R Broadcasting Co., said the cost of permitting would exceed that of construction to build the site, which he declined to disclose.

"The issue, in my mind, is that because so few of these AM sites are built anymore, local jurisdictions no longer have the expertise to handle these types of applications and tend to fall back on their cellular experience and try to make that apply," Skotdal said.

The Citizens to Preserve the Upper Snohomish River Valley, the citizens group challenging the antenna project, feared the new antennas would destroy a large area of open space in the Snohomish County.

However, the radio station has always contended that aesthetics alone cannot be sufficient to deny permits.

"It's settled law in this state that a pro-

ject cannot be denied if aesthetics are the only issue," Skotdal added. "We countered every other environmental claim they could come up with."

Environmental concerns

The citizens group in January appealed a ruling from the State Shoreline Hearings Board, which found in favor of S-R Broadcasting. The group is claiming the county performed an inadequate environmental review and that the project fails to

meet the shoreline code based on height and visibility, Skotdal said.

Jennifer Dold, an attorney for the citizens group fighting the antenna project, told the Seattle Post Intelligencer in 2003 before an appeal hearing, "This isn't a popularity contest or a referendum on how KRKO benefits the community. It's a land-use hearing focusing on whether the proposed structures fit in with the rest of the valley."

"These antennas are no small intrusions ... they were designed to be seen by aircraft. They will not just slip right in and be compatible with the tractors that you see on the farms," Dold told the newspaper.

The Web site for the citizens group contained a post that reads: "The proposed antennas will negatively alter the rural character of the area and harm CPUSRV member's use and enjoyment of their properties."


Of the most recent appeal, Skotdal said, "They have regurgitated the same issues they have lost on several times before. We plan to move forward on construction despite the latest appeal."

The latest appeal, the fifth of its kind, will be heard in Thurston County Superior Court on a date yet to be determined, he said.

The Seattle Audubon Society raised concerns about the potential impact on migratory birds and wildlife "views-capes" and called for an Environmental Impact Statement, which was paid for by S-R Broadcasting and completed to the satisfaction of the county and state, Skotdal said.

S-R Broadcasting Co. also reached an agreement with a local airfield that felt as if it might be impacted adversely by the new antenna project, he said.

Skotdal's advice to broadcasters considering a new AM project is for them to dig in and be ready to overwhelm the opposition from the start.

"People who start the process but aren't prepared to stay with it and win are going to do collateral damage to remaining AM stations who want to move or improve their facilities. Any loss to these kinds of groups will continue to be used against other AM broadcasters and harm the broadcast industry," Skotdal said. 

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-Steve Kirsch, President Silver Lake Audio



Rack 'em and stack 'em! The Silver Lake Audio Crew pictured from left to right: Steve Kirsch, Ken Stiver, Kirby Miovac and Jay Shoemaker

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A node for every need • Someday, all broadcast gear will speak Livewire (so says our Magic 8-Ball). Until then, there are Axia Audio Nodes that turn analog and AES sources into routable 48 kHz / 24-bit audio streams.

Automation station • Wouldn't it be cool to have a **self-monitoring air chain with silence-sense** that can fix problems, then e-mail a status report? To be able to switch your program feed from Studio "A" to Studio "B" with one button? Or build custom switching apps and scheduled scene changes based on Boolean logic and stacking events? PathfinderPC software does all these things and more. But unlike HAL 9000, it doesn't talk back to you.

It's not rude to point • Little kids tell mommy what they want by pointing — a pretty intuitive way of doing things. PathfinderPC software gives talent the same convenience. You can **build custom "button panels"** to execute complex operations with just one click. You can map these panels to controller modules on Element consoles or to turret-mounted controls, place mini-applications on studio computer screens, even run them on touchscreen monitors.

Ether Net • Hardly a month goes by without a story concerning someone getting knocked off the air by STL frequency interference or bandwidth reductions. There's also the headache of trying to add HD Radio™ program streams to already maxed out transmission links. Luckily, Axia clients have a way around this particular roadblock: they've been using Ethernet radios from well-known manufacturers like Orthogon, Dragonwave and BE to construct a link between the studios and the transmitter that operates *above* the crowded 950 MHz band. Put an Axia AES/EBU Audio Node on both ends of that link and before you can say "Look! Up in the sky!" you've got an Ethernet STL, with room for multiple channels of program audio plus backhaul. And that's **uncompressed 48 kHz, 24-bit audio** — without nasty compression artifacts that degrade your lovingly tweaked audio chain. Add a couple of Axia GPIO nodes to the mix, and your new STL link can carry remote control commands for transmitter and processing gear, too.

AES yes • You like your audio to stay digital as much as possible, right? We get that. That's why we have AES/EBU Audio Nodes that let you plug AES3 sources right into the network. Studio-grade sample-rate converters are inside; anything from **32 kHz to 96 kHz** will work. Oh, and there's 8 AES ins + 8 AES outs in each node. Digital distribution amp, anyone?

Brains in the box • The typical radio jock cares for studio equipment about the same as a five-year-old cares for a puppy: haphazardly, if at all. That's why we **took the CPU out** of our Element modular console and put it in here, with the power supply and GPIO ports. That means a greatly reduced chance of being taken off the air by a Coke spilled into the board. C'mon, don't you have better things to do than trying to dehumidify circuit boards with a hair dryer?

That's cool • Noisy fans in studio equipment? That's a major *faux pas*. You won't find a fan in any Axia Audio Nodes — they're designed to run **cool and silent** (unlike your morning show talent).

Let it grow • Growing your business computing network is easy: just add more PCs and hook them to the Ethernet switch. But with broadcast routers, adding more capacity usually means buying another frame, installing more I/O cards, pulling more discrete cable through conduit that's already full to the brim... Hope you've got stock in Grecian Formula! But since IP-Audio networks use standard Ethernet, **adding more capacity to an Axia system is as simple as plugging in an Audio Node** wherever you need inputs. And, should you need to move to new digs, you can just unplug your Axia system and take it with you. Try doing *that* with a big iron router.

Orc slayer • Hooking up an Axia Audio Node may be the simplest thing you've ever done. All our I/O is presented on RJ-45 and adheres to the StudioHub+ standard, so connecting audio devices is as simple as plugging in an Ethernet patch cable. All of which gives you more time to play World of Warcraft with those guys from IT.

Level headed • These green, bouncing dots built into every Axia Audio Node are confidence meters. One glance and you know whether an audio source is really active — or just playing possum.

Push to play • Axia Router Selector Nodes are pretty cool. Think of them as **really advanced selector and monitor panels**; put one anyplace you need access to audio streams from the IP-Audio Network. Like newsrooms, where a reporter might need access to a satellite feed or a Zephyr connection. Or dubbing stations, where audio is captured and stored for later use. Or in the station's TOC, so you can monitor any of the hundreds – or thousands – of audio streams on your network at a moment's notice. Use the LCD screen to scroll through a list of available streams, or use the eight Fast Access keys on the front panel to store and recall the streams you use most. And Router Selector nodes have something standard X-Y panels don't: an input, for fast connection of an analog or AES device. Sweet.





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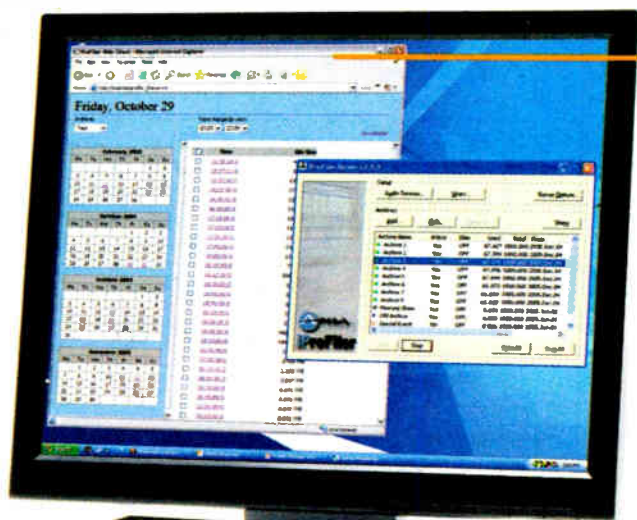
« Is IP reliable enough for 24/7 audio transport? Millions of VOIP business phone users with systems based on Cisco routers certainly think so. Coincidence?

Nothin' but Net • Did you know you can plug a PC directly into an IP-Audio network and use it to send and receive audio? Can't do that with a mainframe router. Well, you *could* add more input cards to the mainframe, and then buy high-end audio cards for your PCs, and then run more wiring all over the place... but with Axia, you just install the **IP-Audio Driver** on any Windows PC to send and receive pure digital audio right through the PC's Ethernet port — no sound card required or additional router inputs needed. You get better, cleaner PC audio that's sharable right to the network. The single-stream version is great for audio workstations; the multi-stream version lets you send and record **16 stereo channels simultaneously** — perfect for digital automation systems.

CYA • Sooner or later, someone's going to ask for a hard copy of a specific broadcast. Whether it's a client looking for proof of play, a Group PD that wants airchecks, or a listener claiming your morning show did something naughty, you're going to need a way to prove what was said. Axia makes it easy to keep archives of your programming with iProFiler networked audio logging software. Just install iProFiler on a Windows PC with a NIC and connect it to your Axia network: tell it what audio streams you want to record and it goes to work, sucking audio out of your network like pimientos from

Martini olives. iProFiler can record **up to 16 channels of stereo audio simultaneously**, storing them as time-stamped MP3 files you can save to a network drive or FTP server for listening or re-broadcast. And since logic always follows audio in an Axia network, you can tell iProFiler to record only when the jock's mic is open (or vice-versa). And of course, you can listen to saved audio from any PC connected to the Axia network.

Put that in your pipe • How many discrete wires can a CAT-6 cable replace? Well, a T-3 data link is pretty speedy with 44.7 Mbps of throughput. But Axia networks use Gigabit Ethernet links, with 1000 Mbps, between studios. That's more than 22 times the capacity of a T-3; enough throughput for 250 stereo channels per link — the equivalent of a **500-pair bundle on one skinny piece of CAT-6**. You can even use media converters and optical fiber for higher signal density if you want. Think that might save a little coin in a multi-studio build-out?



Heavyweight champion • This is an Axia StudioEngine. It works with our Element Modular Consoles (the fastest-growing console brand in the world, by the way) to direct multiple simultaneous inputs and outputs, mix audio, apply EQ, process voice dynamics, and generate multiple mix-minuses and monitor feeds on-the-fly. To make sure it delivers the reliability and ultra-low latency broadcast audio demands, we powered the StudioEngine with a fast, robust version of Linux — so fast that **total input to output latency is just a few hundred microseconds**. How can one little box do so much? There's a blazingly-fast Intel processor inside, with enough CPU muscle to lift a small building. Strong *and* fast: Ali would approve.

Hakuna matata • Axia networks are self monitoring and self healing. Spanning Tree Protocol in the Cisco Ethernet switches we use combines nicely with PathfinderPC's automated program stream monitoring to help ensure that your studio network is **on the air 24/7**. And all Axia gear (like this StudioEngine, that mixes control room audio streams) runs real-time Linux for operation that's as bulletproof as Superman's boxers. Which means "no worries, mate."

You got to have friends • Sure we think IP-Audio is cool. But it's even cooler that so many *other* folks think so too. Delivery system providers like ENCO, Prophet, BSI, BE, iMediaTouch, DAVID Systems and more all have products that **work directly** with Axia networks. So do hard-

ware makers like AudioScience, International Datacasting, Radio Systems, Telos and Omnia. Check out the whole list at AxiaAudio.com/partners/.

Jammin' on the mic • Radio studios and microphones go together like Homer Simpson and donuts. Unfortunately, so do preamps, mic compressors, EQ boxes, de-essers — let's face it: most studios house more flying saucers than Area 51. Axia helps clean up the clutter by including mic preamps with our Microphone Nodes; not bargain-basement units either, but **studio grade preamps** with headroom enough to handle Chaka Kahn. Phantom power, too. And if you choose to use Axia Element consoles in your studios, you'll find world-class mic processing built right in: vocal dynamics (compression and de-essing) from the audio processing gurus at Omnia, plus three-band parametric EQ with SmartQ, available on every mic input. Rap on, Grandmaster.

Very logical, Captain •

Routing logic along with audio used to be almost as hard as performing the Vulcan Mind Meld. But Axia makes it simple, because machine logic can easily be converted to data and paired with Livewire audio streams. So **logic follows audio throughout the facility** on Axia's switched Ethernet backbone. Eight assignable GPI/GPO logic ports, each with five opto-isolated inputs and five opto-isolated outputs, are built into every Element power supply, so you can control on-air lights, monitor mutes, CD players, DAT decks, profanity delays, etc. If you've got more than eight audio devices (and who doesn't), just add a standalone GPIO node like this one wherever you've got gear.



AxiaAudio.com

Manager's Show Preview

Internet and HD Ready for Prime Time

Radio Management Sessions Explore Business Implications of New Technology

by Ken R. Deutsch

Several broadcast groups have added a new job title: director of interactive media. Station Web sites now offer automated weather, school closings, traffic and news. They provide streaming video, contests and many ways for advertisers to reach listeners. And radio Internet sites are making money.

On another front, more than 1,200 stations are broadcasting in HD Radio. BMW is rolling out cars equipped for it. The HD Digital Radio Alliance is airing promotional spots in major markets for the service.

Are the Internet and HD finally beginning to realize their potential? The Radio Management track of NAB2007 addresses these and other topics in the news.

In a Sunday session, "Money-Making

Promotions for Every Size Market: Integrating your NTR Programs and the Internet," Brandeis Hall, vice president of co-op and NTR services for Radio Advertising Bureau, will speak.

"By far, the biggest way to use the Internet to generate non-traditional revenue is to recognize the station Web site as primarily a revenue portal rather than just as an extension of programming," she said.

Mike Mahone, executive vice president of the services division of RAB, added that another way is to develop creative elements that are "valid points of consumer contact for a variety of advertiser departments and budgets."

Monday sessions

"I believe being a good seller comes from the gut," said Patricia Kincaid,

director of new business development for Media Staffing Network. "I look for someone who can not only articulate his/her successes and failures, but also knows what behaviors not to repeat."

Kincaid is part of the session "Finding Your Next Sales Superstars." She believes that many managers take a wrong turn when interviewing a prospective hire.

"Ask a question and be quiet!" she advised.

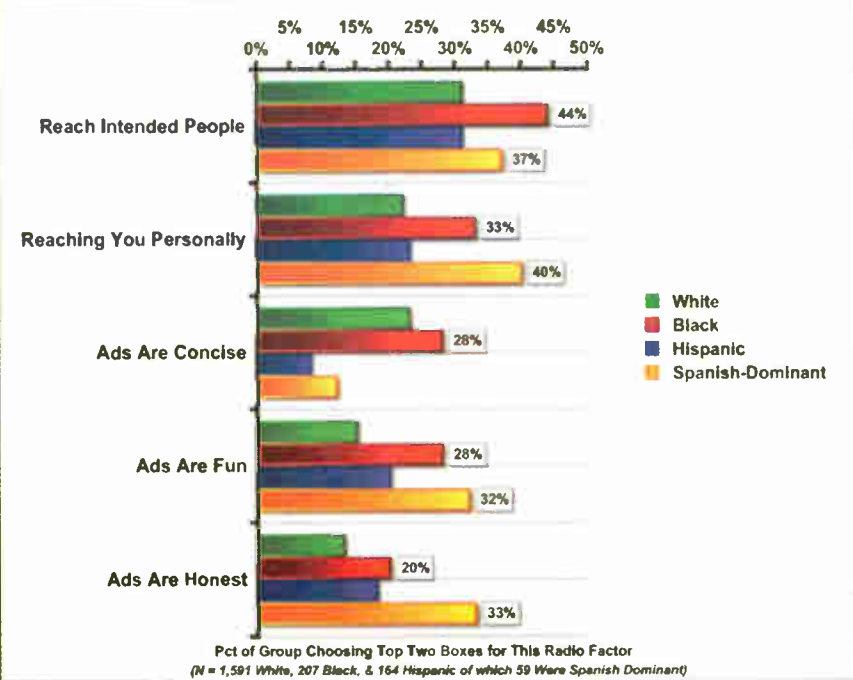
Sharing the dais with Kincaid will be Marv Nyren, regional vice president of Emmis Radio.

"Finding superstars is easier than finding average sales people because superstars stand out in a crowd," he said. "The most important quality I look for is courage, the ability to increase determination when resisted. I also recommend that managers complete the interview process by verifying past employment, checking references and having multiple people interview possible hires."

Consultant Dan O'Day will present See MANAGEMENT, page 17 ▶

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Large Radio Ad Factors With Significant Ethnic Differences



Graphic from 'Personal Relevance Two: Radio's Receptive Ad Environment,' a study by the Radio Ad Effectiveness Lab into how ads affect consumers.

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About This Section

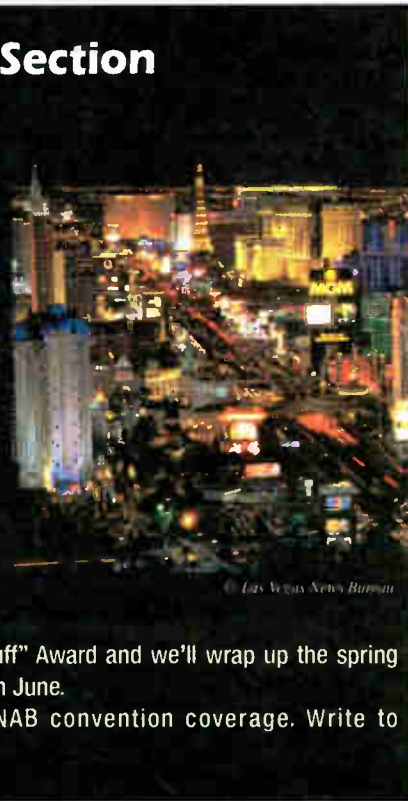
The annual pilgrimage to Las Vegas is approaching. RW has the industry's most comprehensive coverage.

This section previews the Radio Management and Broadcast, Regulatory and Legislative Conferences, and offers tips for weary show-goers.

The March 28 issue included details of the Broadcast Engineering Conference and other convention news. In upcoming issues we'll meet the recipient of the NAB Radio Engineering Achievement Award. Online subscribers also are receiving our weekly NAB Sneak Peeks of new product news.

During the show RW will present breaking and product news online at radioworld.com and in our weekly RW NewsBytes. We'll report the news afterwards in words and pictures, we'll announce the winners of Radio World's "Cool Stuff" Award and we'll wrap up the spring show season with a new products special report in June.

Let us know how we can improve our NAB convention coverage. Write to radioworld@imaspub.com.



Management

► Continued from page 16

"How to Get Past the Gatekeeper: Advanced Strategies."

"Everyone has been taught that they must befriend the gatekeeper," he said. "That's ridiculous. The gatekeeper is the doorway to the room you want to enter. The last time you entered a room, how much time and energy did you expend trying to make friends with the door?"

O'Day advises that sales professionals avoid pitching the gatekeeper.

"Your goal isn't to win her over; it's to have her connect you directly to the person you want to talk to," he said. "Your tone of voice is an important tool, as is your attitude. It's the combination of those that enables you to blow right past the gatekeeper and get your prospect on the phone now."



Brandeis Hall, RAB

One of the afternoon sessions, "Building an HD Station I: From Studio to Antenna to the Bank" will feature Scott Stull, vice president broadcast business development for Ibiquity Digital Corp.

"A lot of smaller broadcasters have gone from a 'why' mentality to a 'when and how' mentality," he said. "This is a session for managers and decision-makers. We'll give them a checklist for getting it done."

Stull said alliance members donated in-kind advertising for the technology worth \$200 million in 2006.

"That will increase to \$250 million in 2007, which should boost HD awareness greatly," he said.

Also participating in this session will be Milford "Smitty" Smith, vice president engineering for Greater Media Inc.

"The majority of stations haven't explored HD or multicasting," he said. "We're going to talk about how these technologies are implemented from equipment to facility modification. Studio-transmitter links are one of the HD 'gotchas.' Because of the eight-second delay, another feed for the announcer is necessary, especially during remotes. You might need to grab an audio processor and repurpose it for the headphones so everything sounds right. You also have to figure out a way to get the un-delayed audio out to the remote location separately from the air signal. That calls for a little planning."

Smith said that consumers lag behind broadcasters in HD awareness.

"Initially there were unrealistic expectations about how soon consumers would embrace HD," he said. "The lure of better quality is good, but I think the 'killer ap'

is multicasting. One thing that will help with awareness is OEM installation and implementation in automobiles, which has been a little slow in coming."

the faint of heart," he said. "Even the most talented engineers need a little help. For FM stations, it's a fairly cookie-cutter job to install an IBOC transmitter.

Everyone has been taught that they must befriend the gatekeeper. That's ridiculous.

— Dan O'Day

David Maxson, managing partner of Broadcast Signal Lab, will join this discussion. He wrote "The IBOC Handbook," a technical resource that will soon be available through NAB.

"Converting an AM to digital is not for

Stations should take advantage of the strengths of their existing plant. Does the transmission system lend itself to high-level, low-level or split-level combining; or is it best to employ some type of antenna combining?"

Converting to digital also affects studio operations, according to Maxson.

"For example, studios must deal with the audio time delays on call-ins and remotes," he said. "Also, the live assist automation system will be putting out title and artist data, and it may take some work to get those databases cleaned up to make a good impression."

The last session of the day, "Radio and the Consumers' Mind: How Radio Works" will be presented under the auspices of the Radio Advertising Bureau. Jim Peacock, president of Laurel, Md.-based Peacock Research, will discuss a recent study by the Radio Ad Effectiveness Lab called "Personal Relevance Two: Radio's Receptive Ad Environment."

"This project took a deep look into how consumers perceive radio advertising. See MANAGEMENT, page 18 ►

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Management

► Continued from page 17 in contrast to ads on TV, the Internet and newspapers," he said. "We learned in this and a previous study that consumers expect radio ads to be relevant to them. Listeners are much more accepting of radio advertising than ads on the other two media, and that held true across all ages and demographics."

These studies also showed that feelings play a part in successful ads.

"We reinforced past knowledge about radio's emotional connections with consumers," he said. "Our new online test conducted with Harris Interactive showed that recall of advertising is dramatically enhanced when a mix of radio and Internet ads is used, compared to Web site ads alone. We concluded that radio and the Internet can be powerful advertising complements."

Tuesday sessions

The second HD session will be "Building an HD Station II: Programming to Marketing and Beyond." Among the speakers will be Matthew Honey, managing director of Unique Interactive, a London-based company.

In what way does converting to HD radio concern programmers?

"In terms of the audio, it doesn't really have any effect," he said. "The big differ-



David Maxson, Broadcast Signal Lab

ence is what can now be associated with the audio via the program-associated data or via a separate channel. For example, in its simplest form the PAD text can provide a completely new media channel upon which additional advertising messages could be viewed."

He added that additional audio channels provide three things: choice, choice and choice.

"This is the compelling reason for a consumer to buy a new radio or device, a fact proven in the U.K. market," he said. "Then you add the frills such as additional text streams, the ability to see what's on in advance and the ability to record,



Sheila Kirby, Interep

subject to RIAA rulings."

Honey predicts that HD will be successful in America.

"No country, media or person can bury its head in the sand and survive the digital tsunami washing over it," he said.

As has become obvious, the Internet is becoming a more powerful force for broadcasters and advertisers. "Radio: Entering the Digital Age! Integrate or Perish" is an afternoon session addressing this topic.

"Companies are spending in excess of 20 percent of their media budgets on non-traditional delivery systems," said Sheila Kirby, president strategic sales at Interep. "The value and revenue proposition of this are clear; however radio must invest in




Milford Smith, Greater Media

resources to capture this growing dollar."

Kirby said some of the keys include repurposing content, robust Web sites that resonate with listeners, mobile marketing, podcasting and streaming.

"Strategic partnerships utilizing unsold inventory are a fast way to get into the digital game," she said. "Every station, not to mention cluster, should have a CIO or Web master on-site who is consistently changing the look and feel to reach consumers via content, micro sites and links to the world outside of a sound bite."

The NAB2007 management session schedule can be found at www.nab.org.

The author is a former broadcaster, former jingle producer, former TV director and current college student. 

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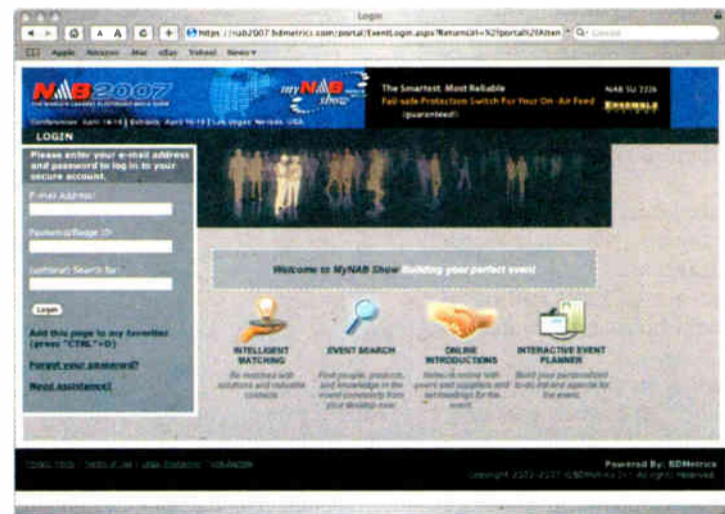
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ences. It builds the show around an attendee's personal specifications. Visit www.nabshow.com/mynab.

"With over 105,000 attendees and 1,500 plus companies exhibiting, there's a lot to see," said Matthew Borkowski, marketing director for NAB.

MyNAB Show sets up an event plan that matches interests entered when you register. That plan can be as simple as devising a map of exhibits, or a search of the entire event "community" to find people, sessions and products that match your objectives. It allows users to connect online, before the show, with people to answer specific questions.

The system continues after the show and can help with follow-up contacts.

There will be stations at the LVCC where users can print their agenda or add to their MyNAB Show profile. For those who need coaching there will be a MyNAB Show lounge next to the registration area. "The staff there will walk you through the system's searching, event planning and follow-up capability," Borkowski said.

MyNAB Show uses a demographics search engine to locate and suggest matches. It is provided by BDMetrics.

— Paul Kaminski

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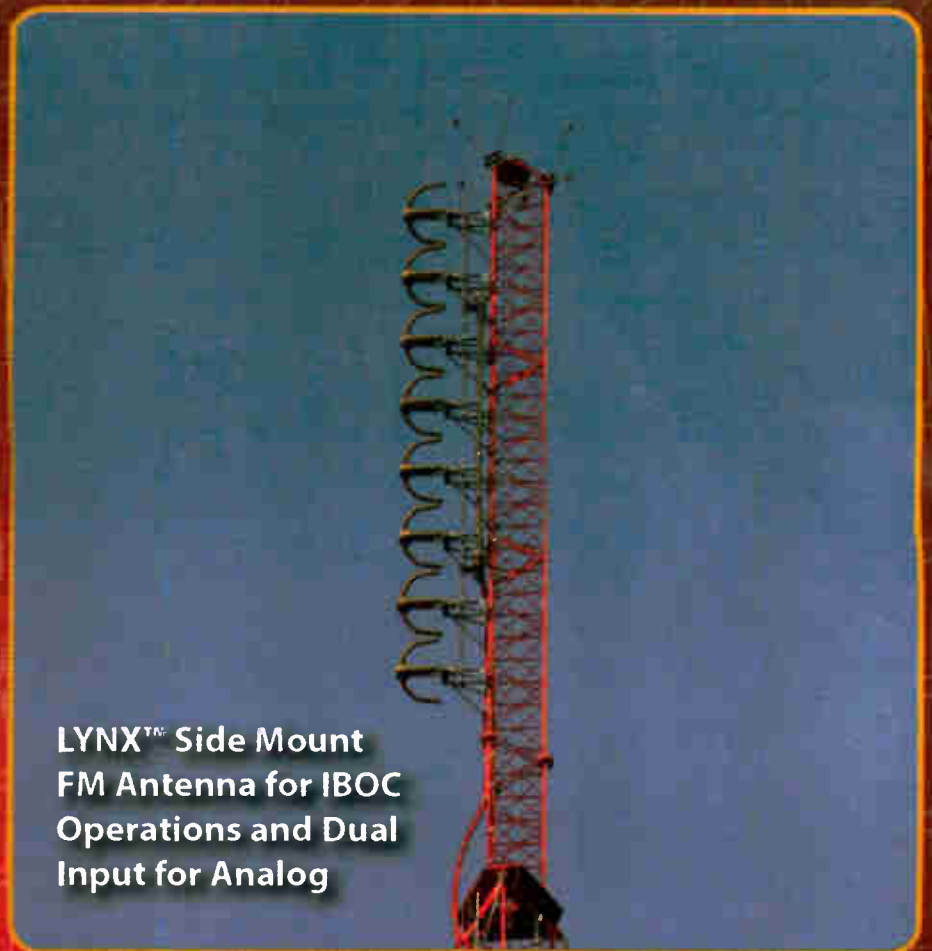
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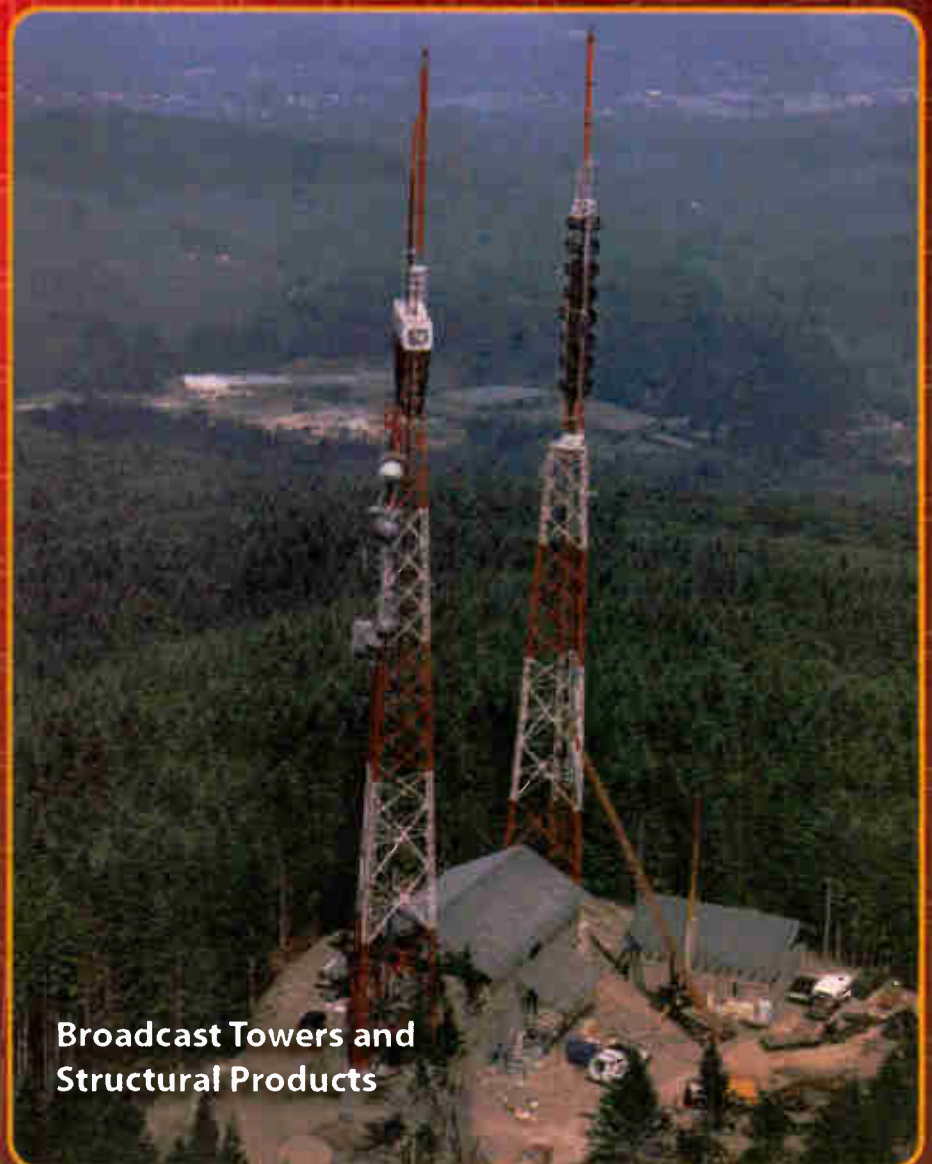
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Tips From a Veteran Showgoer

by James Withers

The first time I attended the NAB show in Las Vegas was 1973. There were almost as many attendees as there were people living in the town.

This year marks my 34th NAB; over the years, I have accumulated a few tips for making it more successful and less painful (which, I suppose, amounts to the same thing).

And here they are.

Go late, stay late

This applies not only to your daily schedule, but also to the show in general.

I was at the doors of the Central Hall last year at 9 a.m. Monday and as always, it was like the running of the bulls in Spain. The only difference was the danger, with the NAB crowd being the far more dangerous of the two — 20,000 rushing engineers, half of whom are loaded up with a steaming Starbucks cup held right at crotch level.

The Bulls/Engineers also run on Tuesday morning, but by Wednesday, things are much more civilized. Serious business is being conducted and the booths are for the most part calm enough so that you can actually get a good look at everything without a long-distance lens. Thursday's are even better.

So if you can arrange it, do the off-floor meeting thing on Monday and Tuesday, and hit the ground running on Wednesday morning.

Speaking of morning, if you do need to be on the floor all four days (it is a few million square feet, after all), take in the breakfast buffet at the hotel and mosey on over to Paradise Road around 10:30 or 11. No Starbucks stampede at the starting gate and it's a lot easier to get a cab; plus, most booths remain staffed past closing time. If you are in the hall, you can usually continue right on past the closing bell (except on Thursday, when you will get run over by a fork lift, or fleeing sales engineers, if you are anywhere near the floor at 4:01 p.m.).

It's a candy store, and you're on a diet

I have spent hours and hours getting the details on really, really neat stuff, like computerized 35 mm film editing gear. "George Lucas Uses This!!" "As Seen on American Idol!!!" And so on, and so on.

Of course, I need to churn out a couple of dozen local car dealer spots every week, and the cap-ex budget won't buy much



Imagine 20,000 rushing engineers, half of whom are loaded up with a steaming Starbucks cup held right at crotch level.

more than four tickets to George's latest blockbuster, so what am I doing test driving his favorite editing toy?

The convention is a broadcaster's candy store, but you'll save a lot of time and wear on the soles if you remember that you're on a budgetary diet. I have always tried to make a list of things I want to see, and then use Radio World and other trade periodicals to scope out new and exciting offerings that I might actually need.

Still, it's easy to miss something, so there is value to just wandering around and window shopping. Just don't get so carried away with it that you miss the one thing you absolutely had to check out.

Swapping stories

After years of fumbling around for a reasonable way to justify the after-hours bar bill, I came up with one that works with my Accounting Nazi (and has the advantage of being true).

I have numerous engineering acquaintances who are fanatics about seeing the latest techno-craze at the show. I have no idea how they search out the little 10x10 booth at the back of the center hall near the fire department call box, but they do it, year after year. I have cultivated these folks, as you would an extremely rare orchid. I have shamelessly plied them with drink (thus the bar bill), and food, and gotten them to spill their guts. "You gotta go see X!"

Then the next morning (after the buffet, don't forget), I stroll over to X's booth near the call box and get the lowdown. This is

not as crummy of me as it seems, because every now and then, I come to the party with a tidbit of my own, and share the story with them (and make them pick up the bar bill, of course).

Every booth has the ExpoCard reader. Swipe the card. Because at the airport, the last thing you want to do is carry on.

This trick also works in reverse. "Don't waste your time" is as valuable a comment from someone whose input you trust, as is a rousing endorsement.

Carry on

Every year, I am amazed at the number of people (including me, I confess) who pick up one of those shopping bag things with the nylon cord handles. And, of course, once you have the damn thing, every sales guy you talk to immediately zeros in on it and starts slamming brochures into it like an NBA player.

And who can resist allowing the Booth Babe (to me, they all look like they just walked off the set of "Sex in the City") to drop her blurb in there. Before you know it, you're walking crooked, weighed down by a 25-pound sack of stuff, all the while, balancing the (VERY hot) cup of Starbucks in the other hand.

Dumb.

All of this stuff is on the Internet now, and most booths have the ExpoCard reader. Swipe the card, make sure your booth guy marks down what you are looking for and carry on. Because at the airport, the last thing you want to do is carry on.

There are, of course, countless other tips for navigating successfully a show that has gotten so big that it is impossible to see every booth (or even every third booth). Presumably, we all know to wear comfortable shoes, work our way from the North Hall to the South or the other way around; make a list and plot your course through the maze, etc., etc. PDAs have made this

Crystal Finalists

NAB named 50 finalists for its 2007 Crystal Radio Awards.

The awards recognize radio stations for outstanding year-round commitment to community service; the program was launched 20 years ago. Finalists were chosen by judges representing broadcasting, community service organizations and public relations firms.

Winners announced at the Radio Luncheon, Tuesday, April 17, which also features a keynote address by Brian Cooley, editor for CNET.com. Rick Dees will be inducted into the NAB Broadcasting Hall of Fame as well.

The finalists:

KBAY(FM) San Jose, CA
 WGHT(AM) Pompton Lakes, NJ
 KBHP(FM) Bemidji, MN
 WGOH(AM) Grayson, KY
 KCSR(AM) Chadron, NE
 WGY(AM) Latham, NY
 KCVM(FM) Cedar Falls, IA
 WHHH(FM) Indianapolis, IN
 KFOR(AM) Lincoln, NE
 WIBC(AM) Indianapolis, IN
 KHHT(FM) Los Angeles, CA
 WISR(AM) Butler, PA
 KKPL(FM) Windsor, CO
 WIVK(FM) Knoxville, TN
 KLGR(AM) Redwood Falls, MO
 WJBC(AM) Bloomington, IL
 KLOS(FM) Los Angeles, CA
 WJYY(FM) Brainerd, MN
 KMTX(AM) Helena, MT
 WLEN(FM) Adrian, MI
 KOA(AM) Denver, CO
 WPAP(FM) Panama City, FL
 KOIT(FM) San Francisco, CA
 WQNZ(FM) Natchez, MS
 KPRS(FM) Kansas City, MO
 WSYR(AM) Syracuse, NY
 KRSP(FM) Salt Lake City, UT
 WTAM(AM) Cleveland, OH
 KSFI(FM) Salt Lake City, UT
 WTLC(AM) Indianapolis, IN
 KSTP(FM) St. Paul, MN
 WTMX(FM) Chicago, IL
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 WTOP(FM) Washington, DC
 KTCK(AM) Dallas, TX
 WTRV(FM) Grand Rapids, MI
 KUGR(AM) Green River, WY
 WUMB(FM) Boston, MA
 KYKX(FM) Longview, TX
 WUSL(FM) Philadelphia, PA
 WBUT(AM) Butler, PA
 WVAQ(FM) Morgantown, WV
 WCMT(AM) Martin, TN
 WVKL(FM) Virginia Beach, VA
 WDBR(FM) Springfield, IL
 WXMA(FM) Louisville, KY
 WDRV(FM) Chicago, IL
 WYCT(FM) Pensacola, FL
 WFYR(FM) Peoria, IL
 WZPL(FM) Indianapolis, IN

more efficient, and again, Radio World and the others publish comprehensive floor coverage and exhibitor lists.

So, that's it, a short, but I think valuable, list of tricks culled from over 30 years of trudging around the Las Vegas Convention Center. If you're going to the show this year, look for me ... I'll be sauntering into the North Hall with a full belly around 11 a.m. on Wednesday.

Jim Withers owns and operates KSIX(AM) in Corpus Christi, Texas. Reach him at (314) 345-1030 or by e-mail to jim@koplpar.com.

New: A Radio & Audio Stage

The North Hall of the LVCC will feature a series of free HD technology and management presentations.

The new Radio & Audio Stage is being presented by NAB, and the project is in cooperation with IMAS Publishing, parent of Radio World, Pro Audio Review and TV Technology.

Attendees will have a chance to learn about innovations in HD Radio and HD audio.

"Presenting radio companies will discuss everything from applications for emerging revenue opportunities to managing your HD assets along with great new product demonstrations," the organizers stated. "Many audio companies are pushing the aural envelope with ultra-high bit rates and latest digital audio formats for recording, storage and surround sound."

The Radio & Audio Stage will be open for morning and afternoon segments Monday through Wednesday, with a morning-only segment on Thursday. Presentations are free.

The schedule is Monday-Wednesday, 9:30 a.m. to 4:30 p.m., and Thursday 9:30 to 11:30 a.m.



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Broadcast Regulatory & Legislative Conference Looks at Indecency, Payola and Other Hot Topics

by Patrick Murck

Content is king — where have we heard that before? — at NAB2007's Broadcast Regulatory & Legislative Conference.

According to Kris Benson of NAB, radio and TV managers have a strong interest in how content is regulated in Washington because "broadcast provides the highest-rated content of all delivery platforms." Of interest to many attendees will be discussion of the FCC's quadrennial ownership review.

Benson said a big topic for radio is the

XM-Sirius merger, which NAB says would be a "government-sanctioned monopoly" if approved. Also of interest to radio are discussions of the proposed use of FM translators to boost AM signals, a proposal supported by NAB, and progress in bringing HD Radio to the marketplace.

Enforcement, regulation

On Sunday, the American Bar Association, NAB and Federal Communications Bar Association hold a Communications Law Forum that requires separate registration.

Monday starts with a "Washington Policy & Politics Breakfast"; then the day's sessions are dominated by enforcement and regulation of programming, with three of the six panels slated to cover enforcement, regulation of advertising and regulation of indecent content.

The first of the day, "Stay Out of Trouble With the FCC: What Recent Enforcement Actions Mean to You," features experts speaking with moderator Frank Jazzo of Fletcher Heald and Hildreth. Panelists include Jack Goodman of Wilmer Cutler Pickering Hale and Dorr; Coe Ramsey of Brooks Pierce McLendon Humphrey & Leonard; and David Solomon of Wilkinson Barker Knauer, an

RW contributor.

Likely highlights will be the Univision consent decree for violating the FCC's children's television requirements and the proposed payola settlement involving Clear Channel, CBS, Entercom and Citadel. Additionally, the panel will try to touch on indecency proceedings in the Second Circuit Court of Appeals and enforcement of tower and EAS requirements.

Monday discussions also will include "Legally Speaking: All Things Radio," which will focus on legal issues in the radio industry and feature Peter Doyle, head of the FCC's Audio Division; and "How to Advocate on Behalf of Your Station," a discussion on how broadcasters can manage some of the regulatory burdens unique to the industry.

Not about radio, but probably of interest to anyone with a TV set, is "Digital Television: The Countdown Continues," an overview of the regulatory issues remaining before the switch to digital broadcasts. NTIA will be heavily represented on the panel to address the digital converter box assistance program.

And an afternoon panel of interest to both radio and television has the telling title: "Indecency & Other Controversial Content: What the ...?"

Content

Tuesday's sessions are weighted toward exploring content licensing and copyright issues, with three of the six panels addressing broadcast, satellite and cyberspace matters.

The FCC breakfast is an annual conference highlight. It takes place Tuesday morning. "The Regulatory Face Off" will be held Tuesday afternoon at 3 p.m. and feature a panel of FCC commissioners.

Tuesday's sessions
are weighted toward
exploring content
licensing and
copyright issues,
with three of the
six addressing
broadcast, satellite
and cyberspace
matters.

Other sessions on Tuesday include "Broadcast Ownership: Déjà vu All Over Again," a panel that will include a former legal advisor to Chairman Powell and current chief of the FCC's Consumer and Governmental Affairs Bureau; and "Legal Advice for Small-Market and Independent Stations," which will provide an overview of basic broadcast regulatory requirements. There will also be one panel on Wednesday morning, "Tower Siting in a Newly-Regulated World." The panel will give an overview of regulatory hurdles that must be overcome when building a broadcast tower.

At press time, Commissioners Michael Copps, Jonathan Adelstein and Deborah Taylor Tate had confirmed plans to attend the NAB show.

The list of Broadcast Regulatory & Legislative Conference sessions is at www.nab.org/nabshow/conferences/brlc.asp.



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Use it as a phone-line hybrid, calling into your studio talk show hybrid. Use it as a front end mixer for your POTS, ISDN or IP codec. Or use it with your laptop codec. No matter how you use it, you'll find that it's an incredibly versatile mixer.

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XLR output is pre-limiter (full range), meaning you have a feed for every need. Bass boost adds a bit of low end before sending the signal down the phone line to provide that "how'd you get it to sound THAT good over POTS lines" nudge. There are convenient 3.5 mm send and receive jacks for recording the show or mixing in your MP3 player.

We think we've done our homework with RemoteMix 4. And we're going to have it out in plenty of time for the fall sports season.

See it at NAB in booth N9426.

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HD Radio Is on News Agenda Too

Here are selected sessions of interest to radio readers on the agenda of RTNDA@NAB, offered by the Radio and Television News Directors Association. They include a look at how HD Radio will affect the radio newsroom and a session on current technology for radio reporters.

Events are at the Las Vegas Hilton. Registration opens Sunday, April 15 at 11 a.m.; the Opening Session begins at 4 p.m. followed by an Opening Reception sponsored by Disney Parks Public Relations.

For show information and registration visit www.rtnda.org and click on "Convention."

SUNDAY

9 a.m.–3 p.m.

"Jumpstart your Journalism" — Interactive and practical program is designed for college students and TV journalists new to the profession. Write clearer and stronger stories, find memorable sound bites, learn how to find focus for stories and develop skills for making ethics calls on deadline. Preregistration is required; \$25 additional fee.

4–5:30 p.m.

Opening Session: "News 2.0: Leading and Succeeding in the New Journalism World" — What happens when consumers take command of their news options.

MONDAY

9–10 a.m.

"Broadcast Management Convention Fellows Program" — Professional development for new or mid-level news managers of color. Advance sign-up required.

10:30–11:45 a.m.

"People Meter: Ratings by the Second and How to Prosper" — What's happening with Arbitron's move into the Personal People Meter era.

2:30–3:45 p.m.

"RTNDA & NAB Joint Super Session: Upload, Download and Overload: 2008 Election Media Strategy" — Digital media experts, politicians, bloggers and broadcast journalists discuss the impact of new media on the integrity of coverage, candidates, voters and traditional media. Hosted by Chris Matthews of MSNBC/NBC News.

4–5:15 p.m.

"HD Radio: Are You Ready?" — How does it impact a newsroom? Moderator: Andrew Lindenauer, VP of operations, CBS Radio Digital Media Group. Panelists: John Hinnen, VP/GM 680News/Rogers Radio News Programming, Toronto; Buzz Knight, vice president, program development, Greater Media, Boston; E. Glynn Walden, senior VP, engineering, CBS Radio.

5:30–7 p.m.

Paul White Award Ceremony & Reception — RTNDA honors CNN's chief international correspondent Christiane Amanpour. Also speaking: Barbara Cochran, president, RTNDA, Washington.

TUESDAY

10:45 a.m.–Noon

"50 Writing Tools in 50 Minutes"



Chris Matthews hosts a session on 2008 election strategies.

2–3:15 p.m.

"Your New Job in the Digital World"

— Learn how to set staffing requirements for new media ventures.

WEDNESDAY


9:30–10:45 a.m.

"Go Ahead. You Can Touch It"

The latest in radio technology in a hands-on session. "Have a mobile newsroom on a tight budget by learning what is being used now in the field by radio news reporters — Flash recorders, MiniDiscs, world telephones and more." Moderator: Randy Bell, news director, WMSI(FM), Jackson, Miss. Panelists: Bill Drummond, professor, UC Berkley

Graduate School of Journalism: Tyler Moody, senior producer, CNN Radio; Alex Stone, correspondent, ABC News Radio, Los Angeles.

11 a.m. — 12:15 pm.

"Report Global, Think Local: Giving Your Audience the World in Their Own Backyard" — "Terrorism, Iraq, Iran, North Korea, nuclear threats, chemical weapons, biological attacks and the bird flu; American audiences have a lot to think about," organizers say. "Local news on school boards, taxes and garbage pickups touch the lives of listeners and always will. But, in today's world, issues, from Osama to insurgencies, are also local and interest your audience." A session on reporting globally while thinking and selling locally. 

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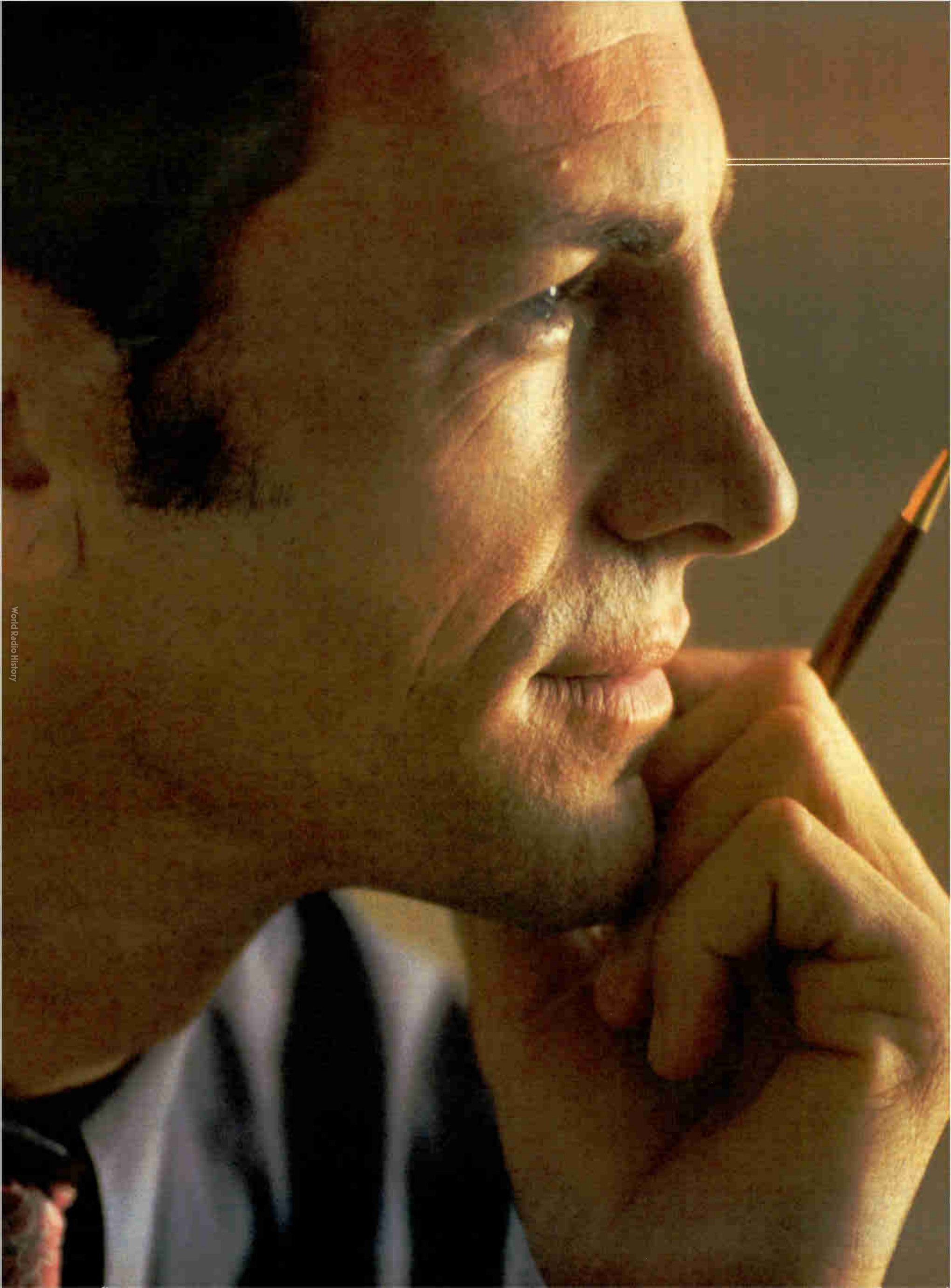
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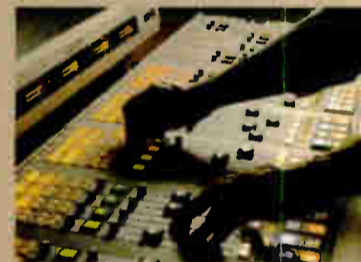
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Hunka Hunka Burning Lug

by John Bisset

How many times have you reached for a tube of caulk, RTV or glue only to discover that the previous user did not seal and store it properly? Now the material has the consistency of concrete.

An affordable solution is as near as your jar of large "wire nuts." Simply install one of these oversized "Hummers" on the end of the tube and you are good to go for at least another six months.

The internal screw threads of the wire nut securely fasten and seal the nut to the caulking tube tip, yet it can be unscrewed easily for use. This works better than nails, screws or even plastic wrap to seal the tube, and is inexpensive.

Washington radio veteran Bob Hughes passes this tip along to the readers of *Workbench*. Bob can be reached at robertkhughes@cox.net.

We'll title this tip "strange uses for parts."

Neil Swanson worked in the broadcast industry for many years, most recently in Minneapolis/St. Paul. He then made the leap to cellular — you know, no remotes, regular hours, weekends off, no pager.

As we all know, broadcast engineering never leaves your blood. Neil's still a ham and reads every issue of RW.

After seeing our horror stories involving Belden 8451 audio wire used to run AC voltage, he shared an interesting encounter from early in his broadcast engineering career.

Younger readers may not realize there

was a time when all stations were required by the FCC to perform and pass annual audio "proof of performance" measurements. Neil's first proof failed. The audio system could not pass the noise spec. The chief engineer, Neil's boss, installed an audio transformer between the composite output of a Moseley 303 STL and the composite input of the RCA FM exciter! As a fledgling engineer, Neil just watched.

The transformer took care of isolating the noise, and that measurement specification was achieved; but now, for some reason, the station could not pass the stereo proof! Let's see if beginner engineers reading this column can figure out why. Read on.

Tampa Bay SBE member and Harris executive Hal Kneller passes along the following tip from the SBE Chapter 39 list. It comes from Bob Hardie, chief of MyTV Tampa Bay. It's a horror story with a happy ending.

Bob's 85 kVA UPS "power distribution panel" acted up recently. Investigation found that one of the three output phases of 120 VAC was gone.

It turned out that one of the 2/0 wires from the utility transformer to the main breakers feeding the 120 V breakers was loose. The bolt/nut evidently was not tightened properly at installation.

Six years later it loosened to the point that it was literally burning. The 1/2-inch bolt head glowed a deep red. Embers ringed the bolt like a campfire. A laser temperature probe read 758 degrees!

See VISUAL VOICEMAIL, page 28 ▶



Fig. 1: An inexpensive solution to the problem of improperly stored caulk.

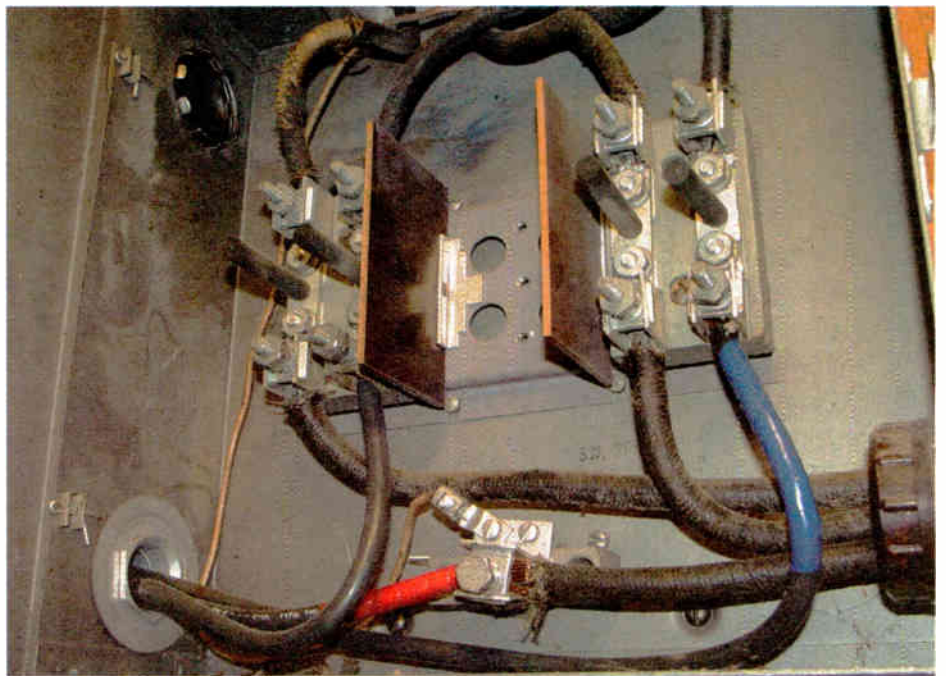


Fig. 2: Periodically tighten call breaker connections and feeder bolts — with the power off.

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World Radio History

Turning Partners Into Competitors

Directions Being Contemplated in the Digital Music Industry Could Be Detrimental to Radio

Stick with me around the turns here. First, recall that there has been plenty of posturing lately on Digital Rights Management (the "other DRM" to those in the radio technology business), much of it generated by an open letter by Steve Jobs a few months back in which he called for the music companies to drop their demands that digital music downloads be protected by such technologies.

Jobs was responding to increasing pressure, mostly from Europe, to open up the market-dominating iTunes content protection format called "Fairplay" so that songs purchased from Apple's service would be playable on clients and devices other than Apple's own iPods and iTunes players on PCs and Macs.

Jobs suggested that the best solution would be to do away with the content protection provided by Fairplay, but that Apple could not do this unilaterally. It needed record companies' approval to do so, and he called for those companies to make such a move in his open letter.

This attempt to shift blame to record companies was a nice feint, but it avoided the real point. The core of the argument from Europe was not about the use



of DRM to protect content but its leveraging to lock customers in to the Apple brand. Remember that Apple is a *hardware* company, and it makes the bulk of its money in the digital music business from selling iPods and their accessories, not from selling songs on iTunes. So opening the iTunes marketplace to other devices would be understandably counterproductive to its business strategy.

Nevertheless, it got a lot of people thinking about just how important DRM

was to the digital music business. After all, as Jobs pointed out, record companies still distribute far more music on CD than via downloads, and CDs have no inherent content protection.

Double-barreled

Taking this a step further, all DRM systems used for music downloads today can be worked around by simply burning protected content to CD, thus removing the content protection (and most other metadata) without the audio ever leaving the digital domain. This is akin to locking the doors on a convertible while leaving the top down. So why bother?

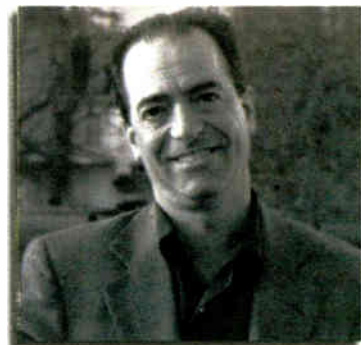
Visual Voicemail

► Continued from page 26

Using a fiberglass rod, Bob and his team wedged some metal in the connection, and the bolt head returned to normal color, while the temperature dropped significantly. This allowed continued operation, at least for a few hours while the repairs were organized.

Repairs were made after midnight, when all the power could be turned off. The damage was much more involved

The Big Picture



by Skip Pizzi

Thus began a semi-serious discussion among record labels of using a popular unprotected format such as MP3 for the sale of music downloads.

See PARTNERS, page 29 ►

especially with experiences we can all relate to. Bob Hardie can be reached at bhardie@wtta.sbgnet.com.

★★★

In addition to writing equipment reviews and other stories for Radio World, Ty Ford provides audio production and voiceover services (see www.tyford.com).

Ty is always on the lookout for unique products and services to help him operate more efficiently. He writes with a link for Mac users who have too much voicemail.

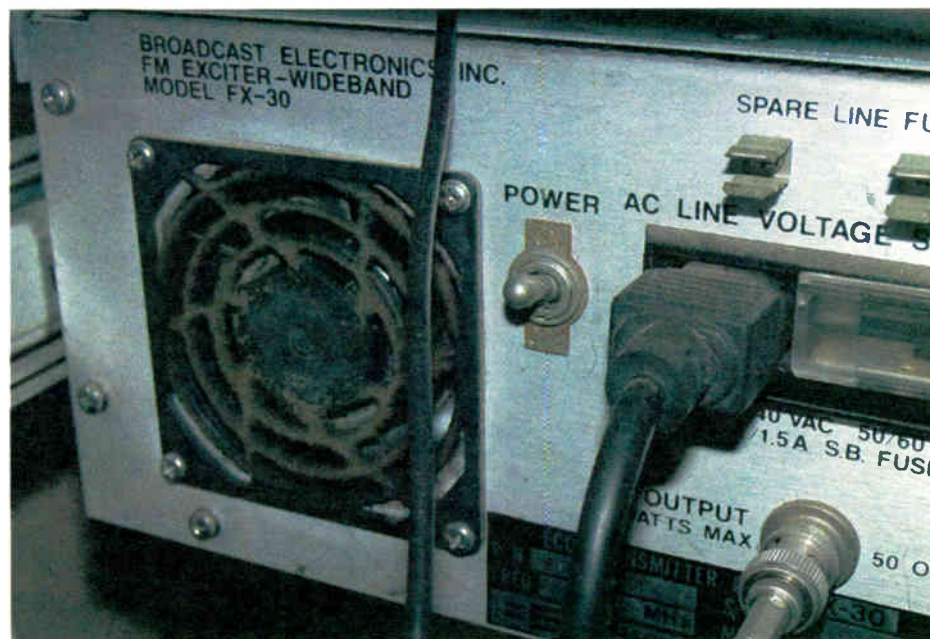


Fig. 3: Clean those exciter fans.

than had been imagined. Repair was not as simple as removing the old bolt, replacing the wires and tightening it back up. High heat melts things.

Bob writes they now use the Fluke infrared laser probes at both studio and transmitter locations. In addition to measuring electrical boxes and circuit breakers, they check cooling water pumps and even cooling fan motors. The diligence has paid off as many small problems have been detected before they could grow.

Consider Bob's experience a big wake-up call. Warmer weather is here, which will only make this kind of heating problem worse. Electricians and some insurance companies offer an infrared camera scan. If you contract for this service and you're an AM station, include the phasor and coupling unit components. Loose coil clips, rollers or component tubing connections will also heat and drastically change operating parameters as the problem gets more severe, not to mention destroying components.

Always good to hear from the TV folks,

The site details an interesting piece of free software. Go to www.apple.com and enter CallWave Visual Voicemail in the search field.

★★★

Regarding Neil Swanson's story:

At one time or another in our careers, we've all probably wished for a transformer with specs from DC to light; it still hasn't been invented.

Although inserting an audio transformer in the composite line took care of isolating noise and hum, the frequencies of the composite signal are higher than an audio transformer can pass.

John Bisset has worked as a chief engineer and contract engineer for 38 years. He is the northeast regional sales manager for Broadcast Electronics. Reach him at (571) 217-9386, or jbisset@bdcast.com. Faxed submissions can be sent to (603) 472-4944. Submissions for this column are encouraged, and qualify for SBE recertification credit. 🌐

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Partners

► Continued from page 28

Initial distribution would be paid for by the consumer, but subsequent redistribution by that consumer would be uncontrolled — just like a ripped CD. This would allow universal playback of the downloaded content on any media player client and device, since MP3 is the *lingua franca* of the digital music world. Yes, each paid download could spawn an endless sequence of free copies, but this would be no worse than every CD purchase. (In fact, some smaller digital music stores already operate this way, albeit with limited content selections today.)

As the discussion continued, the idea of advertiser-supported digital music download sites came up, with the ad revenue counterbalancing the potential lost revenue to record companies, and the ads being tolerated by consumers in return for the lack of DRM on such sites' content. Soon one could envision a viable new paradigm for digital music distribution, which might compete strongly with radio for both listeners and advertisers.

Here was a way to turn the quasi-partnership that record companies and radio stations begrudge to each other today into a full-fledged competition between them. A popular music download site could therefore draw listeners and advertisers away from local radio stations, and provide music discovery plus purchase options at a single location. The user is fairly captive while waiting for a song to download, so this provides an excellent opportunity to play an ad with reasonable expectations for its viewing and retention.

Moreover, these sites could include radio streams — also with advertising, perhaps — to further expose listeners to new music that they might ultimately purchase. Interestingly, because these sites could be operated by the record labels themselves, they might be immune to the increased music licensing

fees that regular Internet radio services may soon be subject to.

Speaking of music Webcasting royalties, it should also be noted that these increased fees would only apply to U.S. online radio services, not to those originating offshore. Yet U.S. Internet users could access those offshore streams as easily as domestically originated ones. Here again the music industry (in this case, via its proxy, the U.S. Copyright Office) may indirectly generate greater competition to U.S. radio stations by providing an advantage to foreign Webcasters.

Odd couple

So the combined effect of advertiser-supported music distribution sites and increased Webcast royalties could conspire to turn listeners and advertisers

away from U.S. radio operations — both on-air and online.

Neither of these processes is set in stone, however. As I write, there is considerable protest and the threat of litigation over the proposed Webcast royalties, so they may not stand. Meanwhile, major record companies that have flirted with the concept of MP3 distribution have not confirmed their plans, and some seem to have already decided against going in that direction. (Of course, advertiser-supported music download sites could still come to pass, even with DRM-protected content, but these are less likely to succeed against currently established players in that space.)

Radio stations could also fight fire with fire by developing (or by working with third parties to establish) their own online music sales portals. A good

example of this already in operation is the WMMR Digital Music Store (and similar stores at other stations' Web sites), operated by Tunegenie.

In any case, through a series of strange circumstances, the music industry has recently become uniquely empowered to affect the future of U.S. radio. Just how the record and radio industries — and perhaps more important, their customers — react will be pivotal to the outcome of this unusual arrangement, but it is nearly certain that many longstanding business relationships will be forever changed in the process.

Skip Pizzi is contributing editor of Radio World.

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NEWS MAKER

Foti: Quality Is Next Frontier

by Paul McLane

Omnia Audio turns 10 this year.

The company is actually older. Audio processor manufacturer Cutting Edge Technologies began 19 years ago, founded by Frank Foti, who was then chief engineer of WHTZ(FM) in New York. In 1992 it merged with Telos Systems and was later renamed Omnia, the label of its DSP-based audio processors. That's the anniversary the company observes this year.

Radio World spoke with founder and President Frank Foti.

What are you noting this spring?

Ten years ago was our first full-fledged effort into a digital audio processor — NAB1997, when Omnia was first introduced. Over the last 10 years, doing some back-of-hand calculating, it has been the hottest-selling audio processor, bar none.

Which models are you talking about and how do you know the competitive situation?

The more high-level, Omnia-6 and the Omnia-fm. As we look at our sales — and we know what other companies are capable of doing, because they're public or what we hear from the dealer network — those products have outsold all others, in some cases 2-to-1 or 3-to-1.

Total, we've shipped between 7,500 and 10,000 units.

Why do you think you've succeeded in this market?

I'll paraphrase Bill Clinton. I told myself, "It's the sound, stupid." The product, when properly used, sounds better than anything else on the dial.

How much more "blood" is left in the processing turnip? Quality wars might serve the broadcaster better than loud-



Engineering is in his blood: Frank Foti and his 1/8th-scale live steam engine, running at the Lake Shore Live Steamers Club track in Kirtland, Ohio.

ness wars as radio is forced to compete more with Web audio streams.

Great question. Would the next Omnia make you 3 dB louder? No. The challenge, the next frontier has to be in the area of quality.

Frank's always continuing to develop and scheming and thinking. I came in once after not having listened to the radio in a while. I listened to it fresh, asked myself: "What do you not like?"

If we want to give conventional broadcasters another step forward, the goal would be to maintain the same competitive level — "loud," yes; but what can we do to maintain the perceived level in the ear and maintain quality?

It comes down to audio processing magic that, once loaded into a targeted audio device, the audio level remains the same as what people are used to, but the audio quality goes up by one or two steps.

The tools are out there to make anyone's ears bleed with any host of devices; but how good can it sound? We have to use our computer power, DSP and creativity to improve the product.

How low do you see bit rates falling for compression codecs in being able to sustain an acceptable "entertainment-quality" level over the next 5 or 10 years?

Coded audio is in our lives, whether we like it or not. I chuckle when I see people make claims like, "My facility has nothing to do with coded audio." I beg to differ with them.

The tools are out there to make anyone's ears bleed with any host of devices; but how good can it sound?

— Frank Foti

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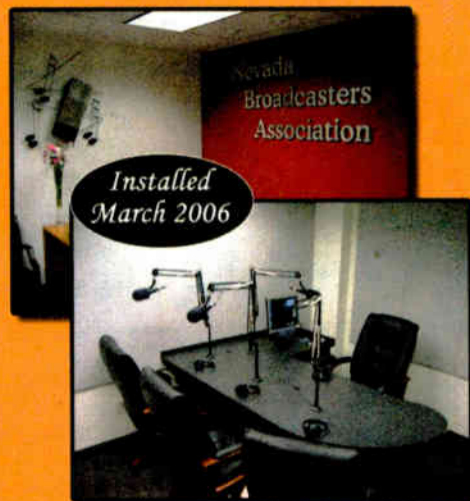
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We deal with bit rates that are going lower and lower almost monthly. How low can it go? I wish I could give you an answer.

I remember in the early '90s when Telos was showing what could be done in stereo at 128 kbps with what became known as Layer III. To think that same type of quality is now available in stereo at bit rates of about half that!

I'd be a fool to shut off whatever activity is out there in the minds of people who do codec work. The core of an HD stereo on AM is 32 kb and the audio quality is not that bad. That's really saying something.

Are all circuits in the new Omnias modeled in software first and then evaluated in simulated or virtual hardware? Or is there still a place for "breadboarding" with actual hardware, as designs are perfected before becoming real?

If something runs on a computer and it works there and it's software, then targeting it to DSP and a piece of firmware, all things will basically run the same.

In the early days of Omnia we had a circuit board with a couple of DSP cards

See OMNIA, page 31 ►

Omnia

► Continued from page 30
from the [Telos] Zephyr. Now we're able to model in simulation and in real time utilizing a computer, then basically take that model and turn it into executable code. The development process has changed quite a bit.

In the early days, when we did have a digital development board, I had a soldering iron on my workbench. I don't even have a soldering iron anymore. We build a development platform and then develop the software.

Seventy-five to 80 percent of the work went into developing the platform, the hardware. Now 20–25 percent goes into that, the rest is all software.

We live in a world where much of the marketplace wants dedicated hardware/firmware, but others want it in the form of applications for Linux or Vista or other target platforms.

What should we expect at NAB?

We'll show Omnia.8X, which is eight individual stereo audio processors running on a dedicated software-based engine. The application is multicasting or networks.

There are always developments in our core area of radio broadcasting, of coded audio. Our industry is pushing as strong as it can for HD Radio and multicasting to grow, and we've spent considerable time addressing that part of the marketplace.

As a "hobby," if you will, we've been involved in supporting and promoting surround utilizing HD Radio. I see one more, if not two more, generations of audio processing with regard to conventional AM and FM radio, and out of that we'll see more devices focused on over-the-air fidelity.

You've been vocal in the surround debate. What is your reaction to the recent report from the NRSC on broadcasting surround via HD Radio?

I think it was their way of showing the results of a year-and-a-half, two years of people getting on the phones every two weeks and debating the merits of their technology.

You don't sound too impressed.

I'm really not. I think what it came down to was no one wanted to stand up and say, "You know what? If you're gonna broadcast surround using HD Radio, you gotta do it carrying forward the best technology as possible."

Stereo has always been carried forward. When stereophonic recording came into being, if the sound deserved to be in the left channel, it stayed in the left, or the right, or mono. That was acceptable

to the consumer.

I find it difficult to believe that the whole listener experience doesn't care, if different material is coming out of five different channels that that's OK. I think that's a response that is convenient.

They're passing along remanufactured technology from the 1970s, the old Quad sound, and a lot of effort isn't being given to honoring the original intent of the artists' material.

Likewise, I have strong concerns that matrixed surround, when you try to pass it through the conventional FM stereo system, that the amount of degradation is considerably more than people on the NRSC are willing to admit.

Now some will say Frank Foti has a vested interest. Yes, we've known the people at Fraunhofer longer than anyone in the United States. But we wanted to do

what was best for radio, that's why we got behind the MPEG surround system.

[The report] was a way that a group of people could publish something. How much it'll educate the market place I don't know.

I contributed to it, actually. My contribution was cut and pasted from numerous papers I've done at NAB. I still carry a fairly strong opinion. I only hope broadcasters — if they choose to adopt the technology to get the "wow factor," that they're giving the best experience for their listeners.

Is surround happening at all?

The average person is saying no, it's dead. But Donald Fagen got the Grammy for the best 5.1 CD audio disk for "Morph the Cat," and the "Love" album, the surround form of it, has sold. Even

some surround critics have said, "This may make me rethink the whole thing."

There's still too much confusion for the consumer. It's not good enough yet to be more mainstream. But if we want to see radio have as strong a chance as any to be a viable medium, someone needs to get behind these ideas and give them the push they deserve.

Thoughts on Omnia turning 10?

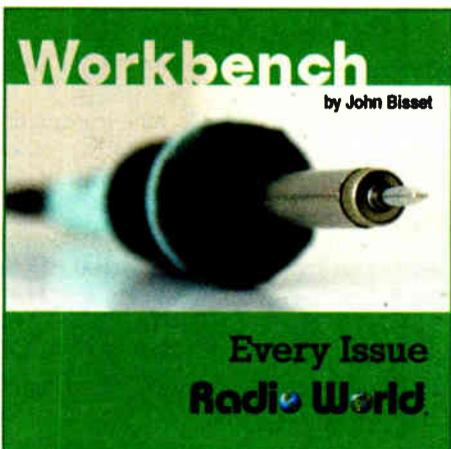
The biggest is more personal and one of gratitude. In 1988 I had a crazy idea and in a fit of total insanity I went into business. I have many people to be grateful towards, one of which is my partner Steve Church. We put our heads together in 1992. Frank Foti is the guy who was hoping people would take a chance on his stuff; and he is very humble and grateful that they did. ●

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RevenueSuite, a source of additional income for radio stations, promises to be even more so in this incarnation as AdSense™ for Audio, thanks to the power of Google technology. And when you combine that with the industry's most innovative station automation products – SS32™ and Maestro™ – you'll understand why hundreds of stations in markets of every size are starting to talk about the future of radio stations with renewed optimism.

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MILE STONES

Child of the Sixties: CCA AM-1000D

Buc Fitch Continues His Reminiscences About 1 kW Transmitters in Radio's Past

by Charles S. Fitch

In the foothills of the Rockies are high desert regions so vast that, even when viewed from 35,000 feet, they sweep from horizon to horizon. On a recent air-line flight I was surprised to see in the rolling desolation below a ribbon of two-lane blacktop tracing its way to a tiny hamlet. The blacktop entered this Xanadu-like berg and ran until the paved route abruptly ended.

The unimproved road continued some distance beyond until it terminated at a communication site with one tower. As the plane flew on, I discerned the classic seven orange and white bands of a typical short AM stick. In this isolated setting, the station most likely was a Class IV (now Class C) 1,000-watt full-timer on one of the local channels.

Physically remote even today, this community must have seemed even more isolated before satellite, Internet and the other instant communications streams we now enjoy.

I reflected that this little station at one time must have been almost the center of

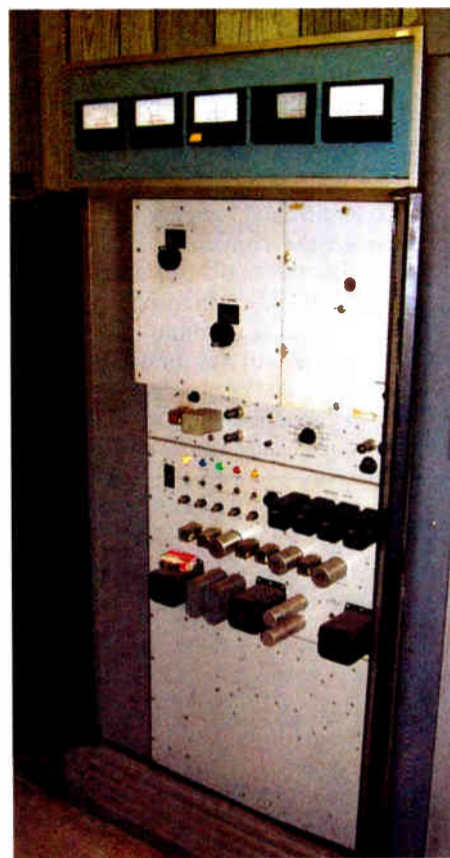
its community, a source of news and entertainment and possibly the only commercial advertising vehicle. It combined the roles of local paper, radio station, public ledger and town crier.

CCA

Most such 1 kW stations possessed but a single transmitter. In recent *Milestone* columns we've been reviewing the ubiqui-



KVIV staff member Jesus Cruz in front of the CCA AM-1000D main (and only) transmitter, still on the air in El Paso.



Auxiliary transmitter at WNEZ(AM), 1480 kHz in Windsor, Conn.

age regulator. This unit stepped down from 240 to 120 volts for input voltage to the filaments, the bias and low-voltage supplies. Three-percent regulation was achieved under severe input line voltage variations. Especially valuable was the stability of the power tube filament voltage. This feature extended the life of these bottles considerably.

Foibles

More modern regulation techniques have replaced these units in present design applications.

The industry vision is that constant voltage, or ferroresonant, transformers are designed to have the core magnetically saturate at a particular voltage and frequency. As the transformer saturates, the output is limited to a relatively constant voltage. Because of the nonlinear nature of a saturating transformer, resonating components are added to prevent the output voltage from becoming too distorted.

These units typically regulate the voltage to within 3 to 5 percent. However they have high impedance; they are noisy, inefficient and sensitive to frequency changes as compared to more modern alternatives.

My view is that many transmitter designers know a lot about electronics but little about electricity. In the CCA — and many contemporary units — we see another example of this.

The return path for all the 120 V control logic is through the frame of the rig. In other words, ground and neutral are the same; but as we know, they are not. Many a transmitter of this vintage has had to be rewired with a separate neutral return for the affected circuits to make it code-compliant in present tense.

Although these 1000Ds had their own foibles (like wires falling out of crimp connectors), they ran well and many still do.

One bug-a-boo was the drive sensor that would not put bias on the final tubes until the RF drive level was high enough. This drive sense circuit essentially was an RF path to ground through a relay coil and some current limiting, metering and load resistors. This was a sensible safety device that saved a lot of power tubes; but it kept many rigs off the air at the worst possible times when components in the sense path opened or failed.

I encountered a unit that had run for years in a damp pumphouse sitting next to a well. About 1,000 feet of coax ran the output up to a tower at the top of the hill (thank goodness for direct power measurement).

Another encounter was a "D" in a pathetic shed sharing its space with a bevy of mice and bugs. The pest control spray was so thick on everything that it actually changed the tuning in the transmitter and ATU.

The 1 kW rigs of this era had characteristic sounds; the Collins had multiple blowers, so it produced a sort of barber-shop harmony sound. The CCA "D" had one big blower in the bottom of these dense rigs. Its sound was mainly the swish of much air moving.

Talking of sound: Do tube transmitters sound better? In this age of NRSC roll-off and now the HD AM 5 kHz roll-off, it's hard to tell.

In the past, flat AM transmitters were those that reproduce audio to 100 percent modulation, +/-2 dB, from below 50 Hz to above 10 kHz, where the speakers start to roll off on the mod monitor. When A/B'ing between two such rigs it would be hard to tell from response which one

See CCA, page 33 ▶

tous, classic units of the tube age that worked so well for so long in such settings. (See our *Milestones* archive, radioworld.com.)

One manufacturer, Communications Corporation of America, brought its AM-1000D 1 kW to market in 1967. Like the Bauer 707 covered in Radio World last summer, its power tubes were 4-400 tetrodes. It was built like the proverbial tank, with a large, 7-1/2-square-foot footprint, compared to the more modest 6 square feet of the Bauer and Gates.

The CCA had a separate interior enclosure for just the RF output components. All of these rigs had essentially "pi" outputs networks. However, this one used adjustable coils — viewed by some as slug tuning — to tune the RF output circuit as opposed to capacitors found in most competitive rigs of the period.

This precipitated a unique feature and circumstance, a coil "turn counter" that was part of the adjustment handle assembly. Two of these adorned the front and often were set to zero once the optimal tuning had been achieved. This setting made it easy to observe out-of-normal operation and to return to the original setting when need be.

The rigs had a choice of two crystals with switch selection. The Bauer and Gates normally used crystals without heaters. Some CCAs did, some didn't; this probably was a function of customer preference.

An interesting side note is that as long as there has been an AM frequency stability standard, it has been 20 Hz (or just 20 cycles, in the Dark Ages). Why? Because an error of 20 Hz or less is below audible as far as carrier beat is concerned. If you hear a "growl" or whistle on an AM channel, the carrier difference is way more than 20 Hz. Many worried if the crystals weren't heated that the "rocks" would not be able to reliably maintain that +/- 20 Hz spec.

Like the Bauer 707, the CCA utilized a Superior Electric Stabiline constant volt-

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Radio World.

NAB 2007

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PRODUCT PREVIEW GUIDE



April 11, 2007

A Supplement to Radio World Newspaper

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As a radio technology manager or buyer, you do the above — and more — all year long; but you only have a few days to cram in a great deal of research about it while you're at NAB2007.

Our Product Preview Guide is intended to help you “open the NAB package” and get the most from your time on the exhibit floor. Put us in your briefcase and take us to Las Vegas.

This advertising supplement to Radio World includes the following packing list of features:

- Product Previews from industry-leading vendors who provide an advance look at their offerings including IP audio codecs and products; smarter and more powerful transmitters and RF products; metadata and new media management solutions; digital studios, talk show gear and furniture; studio problem-solvers; new air processors; surround sound; alert and messaging products; documentation; and more.
- Contacts and booth information for each supplier.
- A color-coded map of the Radio/Audio Hall, even more important this year with a new location and layout in the Las Vegas Convention Center. Colors on each profile page correspond to sections of that map.

Unpack the most information you can from your NAB experience. Bring the Product Preview Guide with you.



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IP Audio Codecs and More.

Phoenix IP Audio Codec and COURSE Multi-Codec

The PHOENIX is an IP audio codec that has two slots for inserting optional communication modules. Initially POTS will be the first available module, but ISDN, X21, V35 and GSM are coming soon. Indeed the modular approach of the PHOENIX means that future modules can be easily developed depending upon market preferences.

The PHOENIX is available in two formats:

- PHOENIX MOBILE for portable use, with a digital mixer with four analog inputs, internal Li-Ion battery and 12V DC power supply/charger
- PHOENIX STUDIO, Standard 1U rackmounted case with stereo analog and digital inputs and outputs and universal power supply (90-250V AC)

The PHOENIX can simultaneously provide a backup (or coordination) channel utilizing the optional communication modules.

Incorporating the most popular encoding modes to ensure the interoperability with other manufacturers' equipment, the PHOENIX also incorporates other proprietary encoding modes such as AEQ LD Extend, AEQ POTS and the AEQ telephone hybrid with frequency extension.

In addition, where many communication circuits need to be terminated in one location, AEQ has developed new boards for the software-controlled, rack-mounted COURSE multi-codec, that now not only communicates using ISDN and X21/V35, but now with IP and telephone hybrid connections.

AEQ Bravo Analog Audio Mixer for Radio Broadcasting

Designed to work 24x7 and at an affordable price suitable for small and medium-sized radio stations. A stereo console with two program busses, four mic/line channels, eight dual stereo line inputs,

dual telephone channel with integrated telephone hybrids, CUE bus with integral loudspeakers and headphone outputs and an amplified monitor output. With its compact and robust design, the BRAVO is everything you need to make radio and more.

Other Interesting Products Launched in 2006:

- ARENA Digital Console for Radio and TV
- PAW 120 Digital Field Recorder
- LIVE and ARROW series, for Outside Broadcasts and remote links via VHF and UHF
- LISTENER 8 Channel Multiple AM/FM Radio Receiver for recording and monitoring.

We Also Introduce:

- Portable and rackmounted audio codecs for ISDN AEQ Eagle, AEQ TLE-02 D, AEQ Swing and AEQ MPAC-02, digital telephone hybrid AEQ TH 02
- Digital audio routers AEQ BC 2000 D and AEQ IMPACT
- ON AIR analog consoles AEQ BC 300, AEQ BC 500 and AEQ BC 2500

PRODUCT PREVIEW



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NAB2007 Booth N6326
Color-keyed map pages 16 & 17



APT

IP STLs and IP Options for HD Radio.

APT's WorldNet and WorldCast audio codecs offer professional, reliable and cost-effective broadcast solutions for studio transmitter links, studio networking and remotes. At the forefront of high-quality audio delivery, APT codecs enable the transport of AM, FM, HD Radio and multiple channel content over IP, T1/E1, Leased Line, Satellite, Microwave and ISDN networks worldwide.

IP STLs for Mission-Critical Applications

At NAB2007, APT will unveil the new WorldCast range of Audio Codecs, specifically designed to deliver optimum audio performance and

reliability over IP and there are several key features that enable them to achieve this:

- Support for SIP and SDP protocols enabling easy connection to all compliant IP codecs
- Designed around a DSP-based architecture avoiding the instability associated with PC-based hardware
- Supplied with Enhanced 16 & 24-bit apt-X[®] algorithms offering exceptionally low latency and exceptional acoustic properties
- Supplied with intuitive and sophisticated Codec Management System (CMS) Software offering extensive remote control and configuration capabilities over multiple units throughout a network

Other IP audio codecs making their NAB debut are the WorldCast Horizon offering broadcast-grade audio quality over IP and the WorldCast Meridian, a multi-algorithm audio codec with both IP and X.21/V.35 interfaces.

New IP Options for HD Radio

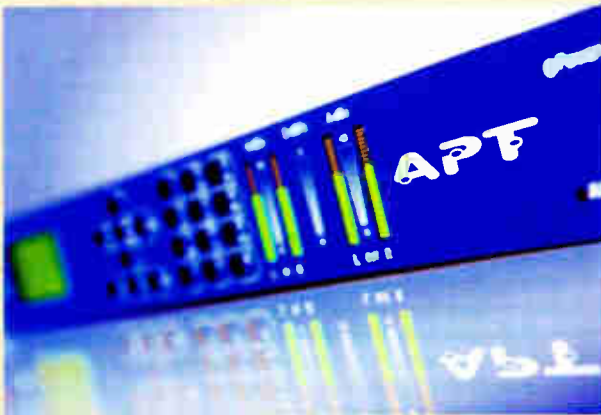
APT will also be highlighting several new features on the WorldNet Oslo, their flagship product for HD Radio and multiple channel STL applications. A new dual port IP card will open up a wealth of options to the broadcaster enabling greater flexibility, security and control. The audio capabilities have also been greatly expanded with the ability to send uncompressed linear audio for pure PCM quality, to compress the audio using MPEG 1/2 Layer II or to utilize com-

panding techniques such as J.57 and J.41. These capabilities supplement the core Enhanced apt-X coding technology which offers cascade-resilient, near-lossless audio quality with under 2ms delay.

New Coding Technology for Live Performance

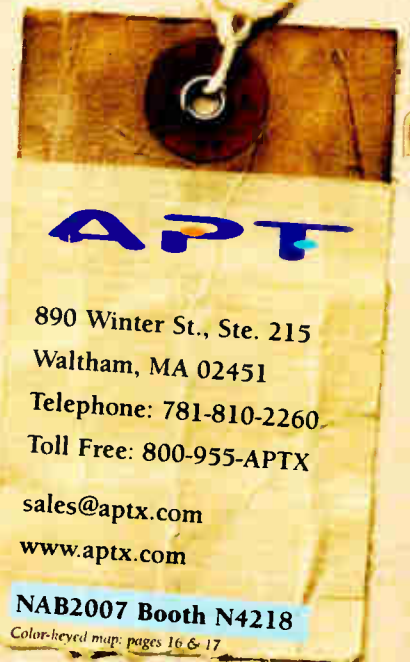
Also at NAB, APT will introduce their new coding technology apt-X Live[®] to U.S. broadcasters.

APT's current compression algorithms, Standard and Enhanced apt-X are highly acclaimed throughout the broadcast market and are regarded as the de facto standard for high-quality audio delivery. Now, with apt-X Live, APT can deliver compression of up to 8:1 while retaining the same exceptional acoustics and exceptionally low delay synonymous with the apt-X brand.



reliability over IP networks. At the heart of the new range is the new WorldCast Eclipse, which offers a professional platform for 24/7/365 mission-critical audio delivery. The WorldCast Eclipse offers Ethernet, X.21/V.35 and ISDN interfaces providing access to a wide range of networks and a selection of major coding algorithms such as Standard and Enhanced apt-X, MPEG 1/2 Layer II/III, MPEG 4 AAC, G.711 and G.722.

All products in the WorldCast codec range have been designed to deliver optimum audio performance and reliability



PRODUCT PREVIEW

Radio World

Axia Audio

The Fastest-Growing Brand in Broadcasting.

With over 500 studios now on the air using Axia IP-Audio networking technology, Axia Audio has become the fastest-growing brand in broadcasting.

With Axia broadcasters can build audio networks and routing switcher applications using standard Ethernet to connect a few rooms or an entire facility, reducing much of the cost associated with wiring labor and infrastructure. An Axia audio network can carry hundreds of digital stereo (or nearly a hundred surround) audio channels over a standard CAT-6 cable — over 10,000 streams per system!

Because IP-Audio networks are modular and scalable, broadcasters have found lots of ways to use them.

ble architecture can be switched between stereo and surround mixing, and its info-rich user display, built-in router control, and integrated phone and codec support simplify the most complex shows.

Clients love their Axia networks.



“With our Axia system, we can quickly change the routing, enabling all of the talent to hear one another, hear the right mix minus, be able to take phone calls, and have the correct mixes to callers,” says Mike Elliott, general manager of Husker Sports Network. “The ease of use is terrific ... Axia’s networked audio system solves a lot of common audio headaches.”

According to Terence Dupuis, chief of broadcast operations at the University of Missouri, St. Louis, “Axia represents great value. Constructing the entire system with standard Ethernet cable is a huge cost savings compared to conventional wiring. Ethernet is already the most common method of transferring digital audio in a broadcast environment, so it makes perfect sense to run the entire system this way.”

And Blake Thompson, producer of the syndicated “Dave Ramsey Show,” says, “Our Element console was easy to learn and Dave loves the look of it. He’s happy that it makes things easier on his team in the control room. I would highly encourage those considering a studio upgrade to talk with the Axia team.”

See Axia in action at the NAB in Las Vegas, Booth N7726 or visit www.AxiaAudio.com.

The Axia system includes a family of “audio nodes” that allow easy interfacing to digital, analog and microphone audio. Just place Axia Audio Nodes next to your audio equipment and it’s on the network. Use CAT-6 cable to connect any studio device to any other, anywhere in your broadcast plant — across the hall, across the building, via fiber or Ethernet radio, even across campus. And Axia IP-Audio networks use Livewire™ for audio and logic connection — a standard that’s been adopted by broadcast equipment manufacturers such as AudioScience, Radio Systems, Telos, IDC, Prophet Systems, Omnia, 25-Seven Systems, ENCO and others.

Axia’s modular Element™ broadcast console offers a wide range of module choices and frame sizes. Element is scalable from two to 40 faders in single or split-frame configurations, so you can order the ideal surface for every studio, whether on-air or production. Element’s abundant outputs and flexi-

PRODUCT PREVIEW

AXIA

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NAB2007 Booth N7726

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400
~~250~~ studios already?

Time flies when you're having fun!

Hard to believe, but we passed the ~~250~~ ⁴⁰⁰ studio mark recently. We're told that it's a major milestone, but we prefer to call it a good start.

In fact, our clients have made Axia the **fastest growing console company** in radio. To you, we say "thanks" for your trust and enthusiasm. And to those of you who aren't yet clients: we're ready when you are.

Okay, back to work now. (Consoles don't build themselves, you know.)



www.AxiaAudio.com

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Comrex

ACCESS Portable: Small, Compact and Powerful Stereo BRIC/IP/POTS Audio Codec.

Broadcasters have long dreamed of complete flexibility and ultimate mobility for remote broadcasts without having to lug around unwieldy



racks of gear or clumsy setups too difficult to configure in the field. ACCESS PORTABLE delivers in a sleek, compact, handheld unit capable of sending mono, stereo or dual mono audio over POTS, DSL, Cable, Wi-Fi, 3G cellular (EVDO/UMTS), satellite — plus some services you may not have even heard of.

ACCESS PORTABLE was designed for fast and easy connections in the field via

a wide variety of data connections regardless of whether in the hands of “non-technical” personnel or seasoned remote “road warriors.” Complete with a seven-hour Lithium-Ion battery with built-in charger and combined with an integrated CardBus slot for wireless IP cards and modems, ACCESS PORTABLE will allow you to connect from virtually anywhere! Your remotes will never be the same.

ACCESS will work on a wide variety of wired and wireless data circuits, including:

- Cable, DSL and POTS
- Wireless Networks-802.11b (Wi-Fi), WiMax



- 3G cellular Data Networks — EVDO, UMTS
- Satellite terminals
- Public Internet — Uses revolutionary BRIC Technology, designed to overcome the innate unreliability of the public Internet

ACCESS is also a full-featured POTS codec:

- Use ACCESS to make a POTS-to-POTS connection. Dial up a Comrex POTS codec (including Matrix, Vector or BlueBox).
- You can deliver 15 kHz Stereo on a

single POTS line when connecting to another ACCESS.

Features and Benefits

- Uses BRIC technology to deliver broadcast audio over the public Internet
- User interface via integrated LCD touch screen for display menus and metering
- Web browser included for connection to Wi-Fi access points that require log-in
- Built-in Ethernet port
- Built-in rechargeable battery supplies 7 hours of talk-time (5 hours with mixer)

- Connection to a wide range of data networks via integral Cardbus slot including:
 - Modem Connections
 - 3G Cellular Links
 - Wi-Fi or Wi-Max Access cards
- ACCESS Portable includes a CardBus-style 802.11b Wi-Fi Card and 56k POTS modem card
- Ethernet port acts as Internet sharing device, allowing use of laptops on circuits utilizing Cardbus cards
- Backward compatibility to Comrex POTS codecs
- Optional MPEG 4/AAC algorithms available for extremely high-quality audio.
- Optional Mixer provides up to six Mono inputs/headphone outputs as well as stereo inputs when connected to ACCESS Portable
- Optional custom cases are available to protect your ACCESS Portable from the rigors of the road

Get the full story by visiting us at www.comrex.com.



PRODUCT PREVIEW



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NAB2007 Booth N5726

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Internet remotes... there's been talk.



➤ Live from 37,000 Feet— No kidding—Live Broadcast from a Lufthansa flight!



... successfully aired his three hour talk show from a commercial airplane [using ACCESS] at 37,000 feet on a regularly scheduled flight between Frankfurt, Germany and New York, US.

Peter Greenberg—Host of the syndicated radio program Travel Today

*For the complete story visit
<http://remotelivebroadcasts.blogspot.com>*

➤ Radio Free Asia—Live from the Himalayas



"The results [with ACCESS] were especially reliable considering that Dharamsala has one of most "problematic" Internet infrastructures that we have come across." —David Baden, Chief Technology Officer Radio Free Asia

*For the complete story visit
<http://remotelivebroadcasts.blogspot.com>*

➤ Ski Mountain Remote



This picture, really demonstrates what ACCESS is about. This product truly has the ability to cut the wires.

*For the complete story visit
<http://remotelivebroadcasts.blogspot.com>*

➤ JAMN 94.5—Walk for Hunger



"ACCESS was used on the air exclusively for JAMN945 at this one. It was all over EVDO with a tremendous amount of active cell phones in the area. The ACCESS was connected to the Verizon wireless Broadband...

*For the complete story visit
<http://remotelivebroadcasts.blogspot.com>*

See Us at NAB Booth # N5726

Put Comrex On The Line.

Radio World

Crown Broadcast

The Best Just Got Better.



Reliable, robust, easy to use, excellent sales and service support, 3-Year Warranty; these are just some of the remarks we hear regarding our product from our customers.

We also have heard that our low-power products do not have: front-panel frequency agility, ability to monitor SWR via remote control; and no way to control output power with the remote. The customers have spoken and we have listened; so we are happy to introduce the latest enhancements to the Crown product line.

At the Show

As of NAB2007, all Crown Broadcast low-power transmitters and exciters will have the following enhancements: front-panel frequency agility out to 10 kHz resolution and the ability to monitor SWR and raise and lower power via remote control.

We have heard one other thing from the field, and that was customers who had to purchase one size bigger transmitter than they really needed in order to compensate for line loss and other factors. As of NAB and in addition to the enhancements above, three of our products have been upsized to help the end user compensate for any loss they will have in their transmission chain. The FM100 will now be the FM150,

the FM250 will now be the FM300 and the FM500 will become the FM600. This gives a power upgrade to 150 watts, 300 watts and 600 watts respectively. As with the above upgrades, the power upgrade will be available at NO additional cost to the end user.

Owners of current Crown Broadcast transmitters also can benefit from these upgrades through our exclusive transmitter renewal plan. The unit(s) can be sent to us where all worn or consumable parts will be changed and all new components will be installed. If requested, the unit will also have all the new features up to and including the increased power output. These renewed units will have a 2-year warranty and will also sport all new color front panels taken from our line of All Hazards Weather Radio transmitters.

Crown will also be happy to show our new HD Translator product at NAB2007. This new product is a collaborative effort between Crown Broadcast and Fantare Electronics and will be able to pass the entire FM envelope without demodulation, thereby allowing broadcasters to use translators for HD without the IBOC license or HD signal generator. We look forward to customer feedback at the show on these and any future upgrades that would be of help to the broadcaster.

PRODUCT PREVIEW

IREC
CROWN BROADCAST

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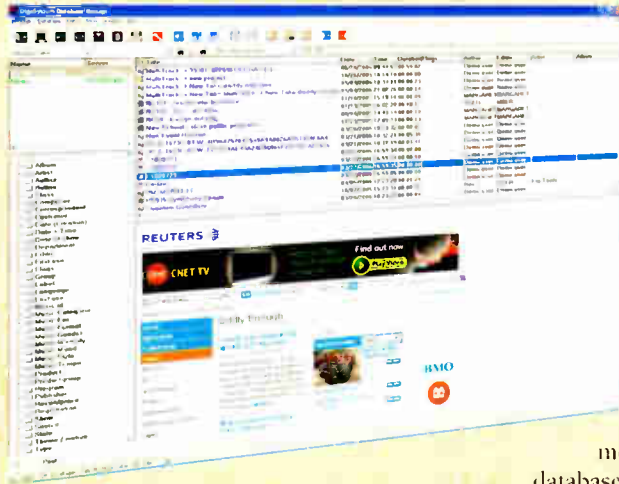
D.A.V.I.D. Systems

Moving Media Across Multiple Platforms.

Under the theme "D.A.V.I.D. Moves Media," D.A.V.I.D.'s booth at NAB2007 will showcase how the company is helping broadcast organizations leverage their established brands and infrastructure to provide content to new distribution channels. By partnering with one of the world's most dominant content management and digital media delivery system providers, many of broadcasting's most prominent organizations rely on D.A.V.I.D. to manage the creation, distribution and coordination of content for on-air play-out, Web sites, HD Radio, podcasting, streaming, RBDS, mobile phones, surround sound receivers and other new media platforms.

Examples of what D.A.V.I.D. will show at NAB2007 include:

- **Video for Radio:** Suitable for such media as HD Radio, Web sites and mobile phones, video content can now be ingested, edited, scheduled and played out to complement audio broadcasts.
- **Web Site Content Coordination:** Playlists, news stories and archived content that comprise the air product can automatically be presented and accessed through the station's Web site.
- **Simplified Podcasting:** Podcasts can be created automatically from a regular program or with just one



click on a finished production.

- **Remote Access to the Database:** Any standard Web browser can be used to provide a bidirectional interface to the station's database, making receiving contributions from reporters and other remote personnel as simple as surfing the Internet.
- **Video and Audio Convergence:** The multimedia landscape can all be managed through one system with powerful editors and comprehensive content management.
- **Surround Sound:** D.A.V.I.D. is pioneering surround sound technology standards, storage and playout in the broadcast world.
- **Extensive Metadata Storage for RBDS, HD Radio, Web sites, Internal Searches, etc.:** Compliant with the Program Associated Data (PAD) and Program Service Data (PSD) standards, hundreds of Metadata fields provide an outstanding resource to operators and listeners alike.

For years, D.A.V.I.D. has provided massive Metadata and mixed media support for the services that DAB has afforded its customers in Europe. The DigaSystem stores

audio, video, graphics and text with hundreds of customizable Metadata fields, vastly improving the asset value of the content. As similar content demands are becoming increasingly common in North America, D.A.V.I.D. is uniquely positioned to actualize the full potential that HD Radio and Internet distribution channels represent in the United States and Canada.

Using open architecture, modular applications, standard databases and non-proprietary hardware, D.A.V.I.D.'s solutions are scalable and integrate with third-party applications that are already in use. D.A.V.I.D. customizes the DigaSystem to fit individual workflows and organizational security needs making tailoring the system as needs change effortless.



DAVID

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NAB2007 Booth N5431

Color-keyed map, pages 16 & 17

Radio World

Electrosys

The Latest Arrivals in the Electrosys Family.

Electrosys renews its participation at the NAB show in Las Vegas, the most important international event in the world of broadcasting.

At this year's convention, the Orvieto-based company is presenting a group of products for those segments of the market where it has a consolidated position (medium- to high-power liquid-cooled analog-digital television transmitters, machines with I.O.T., compact medium-to-high power FM units), together with a series of solutions for the mobile communication market that already have been favourably received: MEX DVB-H chain, encapsulators, encoders.

The convention is also an opportunity for Electrosys to present a series of new special units linked to projects for the development of recently acquired market segments, such as the new FM digital modulator, transmodulator and GAP-Fillers.

Moreover, in view of the strong pres-

ence Electrosys has in the South American market, focus is placed on the newest products, including the new FM digital modulator, the GAP-Fillers and the MEX modulator (analog-digital dual cast) in high-power machinery, products that are in particular demand by broadcasting operators in Latin America.

The convention also provides Electrosys an opportunity to present the technology of its new UHF air modules (W6-210A, 6 pallet-high power stage), the liquid cooled III band amplifier modules (W3-215L), the vertical FM modules as well as its I band modules.

You can visit the Orvieto-based company at NAB at Booth #C3331.

About Electrosys

Electrosys was born in 1961 as Itelco and is a company belonging to the Italian EMICOM Group. For over 40 years Electrosys has designed, developed

and manufactured a wide range of equipment and systems for analog and digital radio and television broadcasting, as well as for space and scientific applications, for physics and innovative solutions for fixed network and mobile telecommunications operators.

Electrosys is a market leader and a familiar, reliable worldwide manufacturer, with more than 15,000 broadcasting and telecommunication systems installations in more than 130 countries all over the world. Through its Research & Development Department, day by day Electrosys introduces innovation into the broadcasting and telecommunication world, by confirming its excellence in product and service quality in the continuous market and technology evolution.



PRODUCT PREVIEW

 electrosys

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electrosys@electrosys.it
www.electrosys.it

NAB2007 Booth C3331

Located in the Central Hall

Global Security Systems

Personal Alerts and New FM Revenue Streams.



ALERT FM

Powered by GSSNet

ALERT FM

Global Security Systems (GSS) has developed a personal alert and messaging system called ALERT FM that enables emergency management officials to create and send digital alert messages, including tornado warnings, homeland security notices, hurricane evacuation instructions and Amber alerts, to first responders, school officials or citizens based on geographic or organizational groupings.

- ALERT FM messages are delivered via GSSNet, our digital network of existing FM transmitters around the United States, to multiple receiving devices.
- Overlapping signals from different FM stations help to ensure that there is always a signal that can be received even when other communi-



- cations systems are disrupted.
- This targeted alert and messaging system sends mass or personalized alerts about an emergency situation to ALERT FM receivers or any device

equipped with a standard FM receiver chip, such as cell phones, iPods, smoke detectors, home alarm systems, or clocks — truly making alert messaging accessible to every household nationwide.

- ALERT FM is the most cost-effective and efficient alert messaging system, capable of reaching 200 million households with a single message in mere seconds.
- Emergency management officials control the message content and are able to send alert messages before, during and after the emergency.
- ALERT FM can target geographic areas like a zip code, county or entire state.

REAL FM



Global Security Systems has developed an exciting new revenue stream for FM broadcasters called REAL FM, a platform that allows broadcasters to publish radio content synchronized with their existing FM broadcasts to multiple receiving devices, including REAL FM receivers or any device equipped with a FM receiver chip, such as cell phones, iPods or other PDAs.

- REAL FM content blast can be synchronized with existing radio spots.
- REAL FM advertisements are delivered via GSSNet, our digital network of existing FM transmitters around the United States.
- REAL FM provides a rich information channel to dramatically enhance the FM broadcast experience.

- REAL FM provides value-added services and real-time interactivity.
- REAL FM content can be easily updated and changed.
- REAL FM uses existing RDS infrastructure.
- Provides new revenue stream for FM broadcasters at point of service.

- Listeners will be able to see information on the song and artist currently playing on the radio, buy the ring tone of the song currently playing, and immediately download the song to their device.



GLOBAL SECURITY SYSTEMS

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NAB2007 Booth N6734

Color-keyed map: pages 16 & 17

Harris

Highlighting Digital Radio Broadcast Studio Workflow.

Harris Corp. will demonstrate a full complement of networked digital radio broadcast studio systems, consoles and supplementary equipment at NAB2007. The Harris Radio Broadcast Systems display will focus on enhancements to existing products and new ancillary tools to improve the live, daily studio workflow at an economical price point.

Harris will feature the VistaMax™ studio audio networking system for larger facilities and VistaMax™ Envoy™ system for small-to-medium and satellite studio facilities. The VistaMax™ platform drives on-air content from multiple sources to multiple studios, while reducing the complexity of engineering associated with traditional routing solutions.

Harris will introduce the VistaMax™ 500-series code for consoles and card-



VistaMax Envoy

frames. The software-based platform features enhanced UDP support for external servers, like computer playback systems, to remotely control VistaMax™ devices and to receive real-time system status messages. Incorporation of SNTP for real-time synchronization, automatic reverse logic routing for sources with two-way logic (microphones, associated control panels), expanded macro support, intercom applications and enhanced support for complex link topologies are among the benefits.

The company will show enhancements to its NetWave™ digital on-air console. The range of consoles was introduced at NAB2006 as a compact and feature-rich console built for small-to-medium markets in need of a cost-efficient, digital on-air board. Harris will showcase the NetWave™, with its increased mix-minus capabilities, from two to six channels, to enable more sophisticated remote interaction with listeners. This feature is especially useful for broadcasters with demanding talk shows and other remote applications. The NetWave digital on-air console is

designed especially for networkable configurations when bundled with VistaMax™ Envoy™ for audio management and source sharing.

At NAB2007, Harris also will introduce the 4X-A2D, a low-cost analog to digital converter that is an ideal companion for the NetWave. Rackmountable or in a 1RU case, the 4X-A2D features four analog inputs that convert signals to AES digital en route to the NetWave™ or other digital console. The converter may be especially useful for stations broadcasting in HD Radio™ that are incrementally converting to a completely digital studio infrastructure.

Harris also plans to show its RMXdigital™ on-air console, a premier digital console for medium-to-large markets. Harris will introduce a companion, the RMXd8-HL, a rackmount self-contained mix-engine or “headless” RMXdigital™ that provides a cost-effective solution to controlling and automating content output, especially on auxiliary delivery channels like the Internet, HD-2 and HD-3 multicast channels, and WiMax feeds.

The RMXd8-HL can be remotely controlled by an automation system or, as on standard RMXdigital™ consoles, it can be controlled using standard VistaMax™ session and macro files. It has eight independently controlled outputs (four analog, four digital) and five mix-bus outputs that are fed by the built-in, eight-channel virtual mixer. The “Optical Link” option allows the RMXd8-HL to be located up to 2 km from the main studios so a transmitter or auxiliary studio location may cost-effectively tie into the main VistaMax™ system.

HD Radio™ is a trademark of iBiquity Digital Corp.

PRODUCT PREVIEW

HARRIS

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www.harris.com

NAB2007 Booth N2502

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Henry Engineering

Introducing the USB-AES Matchbox.

Henry Engineering adds another product to its series of USB interfaces with the new USB-AES Matchbox. The USB-AES Matchbox is a professional digital audio interface and digital-to-analog converter. The unit provides

AES/EBU input and output are balanced and transformer-isolated, providing galvanic isolation to eliminate any chance of hum or noise caused by ground loops. Auxiliary S/PDIF unbalanced digital I/O allows use with con-

sure via the Mute port. The steel chassis provides effective RF and EMI shielding. The unit is compliant with the most recent AES grounding standard.

Henry Engineering will also introduce MultiPhones II, an updated version of the original MultiPhones multi-user headphones system. MultiPhones II now has three "Talkback Zone" outputs, for use with up to 12 "Guest Pod" listening stations. The Guest Pods can be divided into three separate groups, e.g., Host, A-Guests and B-Guests. A Producer or Call Screener can communicate with each group individually, using the selective Talkback pushbuttons on the MultiPhones II front panel.



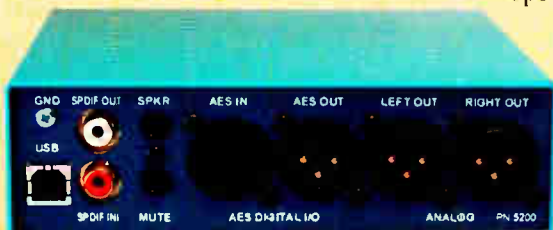
AES/EBU digital audio input and output from any computer that supports USB. The USB-AES Matchbox is ideal for broadcast stations, commercial sound and any application where AES/EBU digital audio needs to interface with a computer. The USB-AES Matchbox is USB-powered.

The USB-AES Matchbox connects to the computer via a USB port. Any O/S that supports USB 1.1 or higher can be used; no special driver or software is needed. The unit provides AES/EBU professional digital audio input and output via XLR connectors. Sample rates of 48.0, 44.1 and 32.0 kHz are supported with 16 bit resolution. The

sumer digital equipment.

The USB-AES Matchbox also provides professional analog line-level outputs on XLR connectors. The analog output, utilizing a Burr-Brown 8X oversampled D/A converter and advanced filtering technology, produces stellar performance that outperforms virtually any sound card and often surpasses the audio quality of many 24 bit systems. The analog output levels are adjustable with Output Level trimmers recessed behind the front panel. The internal switch-mode 30-volt supply ensures 20 dB of headroom above normal operating level.

Other useful features include Output Confirm LEDs that indicate the presence of output audio, and a Speaker output for use with amplified monitor speakers. The Speaker output can be muted with an external contact clo-



PRODUCT PREVIEW



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FLOOR MAP

Radio World

Holophone

Surround Sound Microphone Systems.

H4 SuperMINI: Capture 5.1 surround and deliver in stereo

Holophone Surround Sound Microphone Systems is a leader in 5.1, 6.1 and 7.1 discrete channel surround sound capture. Setting the industry standard with the award-winning and patented H2-PRO, Holophone has introduced the H4 SuperMINI Surround Sound Microphone System. Delivering expansive 5.1 channel audio field capture in a super compact package, the H4 SuperMINI is compatible with any portable stereo recorder.

The system offers an integrated multi-channel pre-amplifier, virtual surround headphone monitor and matrix surround encoder allowing truly professional results for six-channel processing of live audio from the concert hall and sports stadium to fast-paced ENG applications. The H4 is ideally

suitable for all live-event radio broadcasters and those who are interested in real-time surround audio for delivery to an ever-increasing home theater audience.

The microphone has six independ-

ent microphone elements that are output through either a matrix surround encoded stereo analog output or six line-level analog outputs (L, R, C, LFE, LS, RS) available through three stereo mini-plug jacks. The SuperMINI has

additional capabilities that include an input for an external, center-channel placed shotgun or lavalier microphone to enhance sonic opportunity options and features a zoom button that increases the forward bias of the pick-up pattern. It also includes Virtual Surround Monitoring on headphones for real-time 3-D audio monitoring of the surround field.

The Holophone H4 SuperMINI Surround Sound Microphone System finally puts the power of high-quality surround sound production in the hands of the radio professionals and enthusiasts at any level. When used in conjunction with the 5.1 channel, full-sized H3-D and the Sidewinder-6 six-channel adapter, the SuperMINI becomes a portable surround sound recording device with full-scale capabilities.

The H4 SuperMINI's on-board matrix encoder outputs a stereo signal that can be broadcast through the standard radio infrastructure. When the signal is run through any Dolby Pro Logic II home theatre receiver, the encoded material is instantly decoded back into six discrete and intact channels. When no home theatre decoder is present, the signal will be received and output in traditional stereo.

The Holophone H4 SuperMINI provides an unprecedented opportunity to capture and distribute true surround sound without any additional system upgrades or software. It is a cost-efficient and simple tool that yields substantial advances in content capture for the radio industry.



ent microphone elements that are output through either a matrix surround encoded stereo analog output or six line-level analog outputs (L, R, C, LFE, LS, RS) available through three stereo mini-plug jacks. The SuperMINI has additional capabilities that include an input for an external, center-channel placed shotgun or lavalier microphone to enhance sonic opportunity options and features a zoom button that increases the forward bias of the pick-up pattern. It also includes Virtual Surround Monitoring on headphones for real-time 3-D audio monitoring of the surround field.

The Holophone H4 SuperMINI Surround

PRODUCT PREVIEW



HOLOPHONE®

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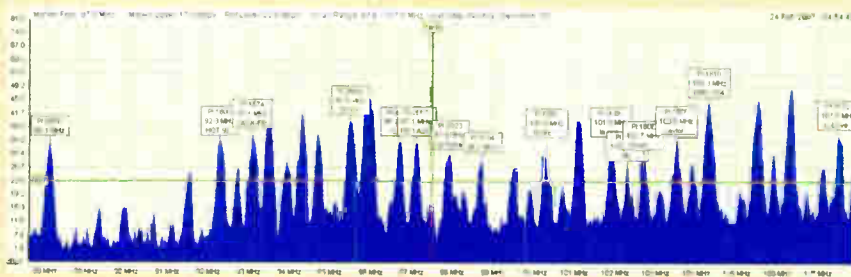
Colorized map: pages 16 & 17

Inovonics

FM Receiver Scans for Data.

In spite of signal congestion and what would appear to be total market saturation, the FM broadcast band remains a dynamic, growing thing; there seems always to be room for just one more carrier. But whether it's a new station lighting up or a format change among existing market companions and competitors, keeping track of what's happening on the dial can be a real chore.

Inovonics' BandScanner is a simple, low-cost FM scanning receiver with a number of useful features for the FM broadcaster. It plugs into the USB port of any PC, and with the supplied Windows® software it sweeps the FM band and logs every signal it comes across. An easy-to-read spectrum display shows carrier level vs. frequency, and stations with



an RBDS presence may be analyzed in additional detail.

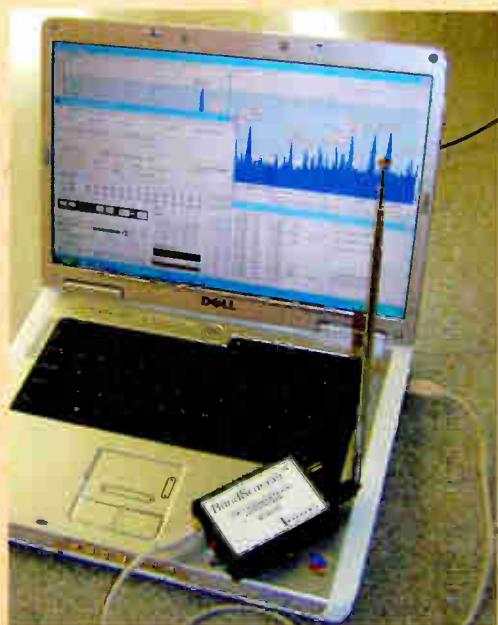
Once an initial scan has automatically completed, the BandScanner comes up with a station list in tabular form. The receiver may then be manually tuned, either by direct frequency entry or simply by double-clicking on the spectrum plot or on the station list. The selected station can be heard with headphones, and all RBDS groups may be decoded and logged.

Scrolling-PS and RadioText messages pop up on the screen, and statistics of each RBDS data group can be individually analyzed to determine data throughput efficiency. In many cases this information is helpful in optimizing the RBDS encoder to send dynamic messaging for a more reliable presentation on the listener's radio. Routine RBDS "house-keeping" functions can often be set to transmit at less frequent intervals with no ill effect.

The BandScanner is powered through its USB connection, so a laptop turns it into a portable and useful field tool. At any given location the signal strength of a station is shown

graphically with respect to adjacent carriers, and spectrum plots can be saved as JPG files with a mouse click. Multipath effects are reflected as RBDS decoding errors, which are visible in their own special window.

As broadcasting technology becomes more complex, our ears no longer tell us everything we need to know about the signal that we transmit. Instrumentation is increasingly important as radio brings more and more data along for the ride.



PRODUCT PREVIEW

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NAB2007 Booth N8226
Color-keyed map pages 16 & 17

Radio World.

Jampro

Making Life Easier for Engineers.



New JTS Test Section

Making life easier for engineers is Jampro's mission, hence the new compact replacement for the bulky tuned elbow complex. The JTS Test Section allows access to either the antenna or the coax system without the need for a tuned elbow complex. It's available for Band I (Low-Band TV), Band II (FM), Band III (Hi-Band TV) and Band IV (UHF TV). It comes with fixed bullets for Input and Output, plus one "O" ring, hardware set, pass-through connection and test turn. Port closure maintains impedance for normal operation.

New RCPU Patch Panel

The RCPU is a low-effort, quick-release patch panel with rock-solid connections and low insertion loss. A positive lock mechanism assures quick and easy re-directions of RF signal paths. Ideal for patching RF feeds to emergency antenna, alternate main/auxiliary transmitters, filter bypass, master station combiner routes and test point insertions. No tools required to make patches. The RCPU comes in several sizes, with an optional signal-flow indicator panel, dual-line power splitter or power measuring VSWR.



PRODUCT PREVIEW



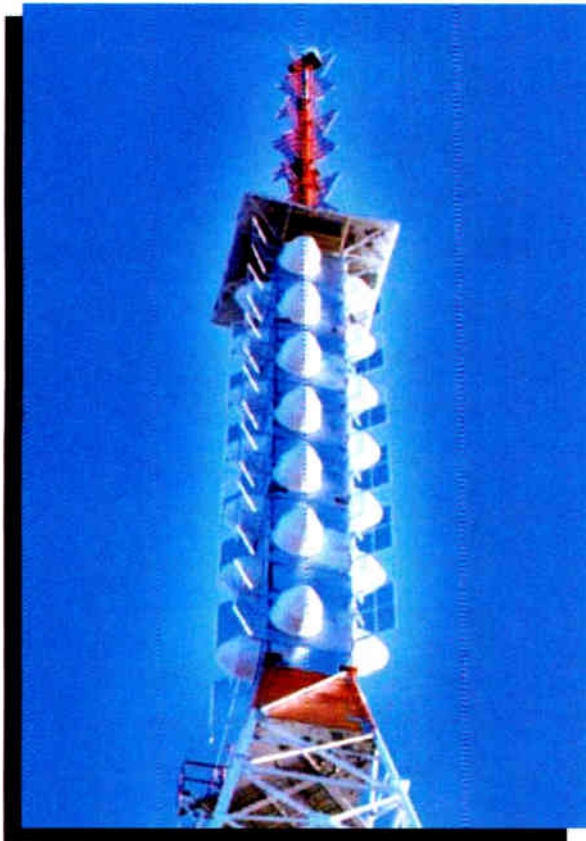
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HIGH LEVEL
HD INJECTOR**



Your Partner for HD Radio Solutions

Radio World

Omnia Audio

Lock in Your Listeners.



Broadcasters require significant flexibility in an audio processor. Transmission systems now exist in many different form-factors, and your processor must have the tools to meet those needs. Omnia.ONE provides these with innovative firmware, thereby meeting the challenges of HD Radio, DAB, DRM, Multicasting, Podcasting, Netcasting, Satcasting, and any other form of "casting" you can think of. Plenty of power inside its little frame, so don't let the size fool you!

Also... It is the first audio processor to incorporate LiveWire connectivity, thereby enabling linear audio over dedicated networks. LiveWire is the hottest 'interconnect' technology in the professional audio industry today...bar none!

What's the secret? Well, we can't give away all the good stuff, but we can tell you the key is the platform that Omnia.ONE is designed around. The core as we call it. Think about what makes a great PC...it's the platform. You wouldn't buy a PC that does not utilize, or enable the latest - greatest software...right? The same holds true here. An audio processor's platform must offer power, flexibility, and capability, or it's not worth the digits inside! Omnia takes it One step ahead...of all others!

HD Radio, DAB, and DRM are well suited. The SENSUS™ algorithms, designed to enhance quality and improve coded audio, are embedded

in the firmware. Omnia.ONE can be configured in various means to optimize all coded applications.

Omnia.ONE contains multiband AGC, multiband limiting, bass/voice enhancements, final limiting, and codec conditioning. These are just the start. As more processing advancements occur, Omnia.ONE goes along for the ride, through the flexibility of the firmware platform.

See the Omnia.ONE at the NAB in Las Vegas, Booth N7726 or visit OmniaAudio.com.

Omnia ONE Multicast Digital Audio Processor:

- Wideband AGC with four-band AGC Compression, four-band limiting, and look-ahead final limiting
- Internal resolution of 24 to 56 bits
- Easily integrates with any Importer/Exporter via Livewire connectivity
- Digital AES3 and analog I/O
- AES3 sync input
- Adjustable AES2 output sample rate syncable to 32-96 kHz
- RS-232 serial port, GPIO port, Ethernet ports for remote control and Livewire I/O on board
- Time aligned, dynamically flat, perfect reconstruction crossovers
- Input failover on loss of audio
- Familiar Omnia "one-knob" front-panel user interface

PRODUCT PREVIEW



Radio World

Omnirax

Broadcast Furniture With Style and Functionality.

The Engineer's Choice

What differentiates Omnirax from other furniture manufacturers are a uniquely balanced blend of style, functionality and ergonomics, excellent collaborative custom design ability and fanatical attention to detail.

We work directly with chief engineers, program directors, architects and station owners to provide intuitive and custom solutions at near-production prices.

Why Omnirax?

Some of the reasons top project engineers in the radio industry have chosen Omnirax as their furniture solution:

Our customer responsiveness: To us, you're special. We are committed to giving you — the engineer — and your personnel whatever you need to perform your job in a user-friendly environment.

No cookie-cutter production drawings dropped into your floor plan. At Omnirax, we listen! We recognize that everyone has their own specific needs and custom requirements — and we collaborate with you to address them. When your rooms are finished, they're unmistakably your rooms.

Our size: We are small enough to give every job the personal touch, yet large enough to outfit a complete facility.

Our integrity: We say what we mean, and we mean what we say. You can count on us. We always deliver.

Our philosophy: To provide a high quality product at a price you can afford, and back it up with 100 percent guaranteed satisfaction.

At Omnirax our products and services speak for themselves. We let our customers do the talking.

"Our furniture from you not only fit into our budget and timeline, it was very well constructed and looked beautiful. I expect to be outfitting many more facilities with Omnirax..." *

"... The Omnirax design makes these



Westwood One, Culver City, CA



Faith Alper at KKIQ, Pleasanton, CA

studios incredible for talent and operators on both sides of the console." *

"... I was impressed with the exceptional care given packaging for shipment. A few very large and potentially fragile components made it cross-country completely unscathed." *

"I'm blown away."

— Dave Williams,
Director of Engineering,
Clear Channel San Francisco

"... Ease of installation is important and we got that with Omnirax. Customer service was superior to almost any other vendor we deal with."

— Conrad Trautman,
SVP Engineering and Technology,
Westwood One, Inc.

"... I wholeheartedly recommend Omnirax to everyone."

— John Buckham, Project Engineer,
Entravision Communications Radio
Division

*References available upon request.

See us at Booth N5415 NAB, Las Vegas



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NAB2007 Booth N5415

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PRODUCT PREVIEW

Sierra Automated Systems

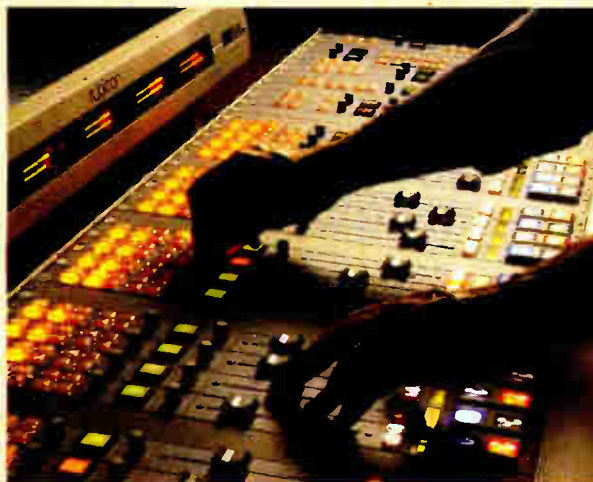
The SAS Connected Digital Network Continues to Expand in Features, Functionality and Hardware.

SAS ICM-24 Intercom Panel

For intensive all-news, network, and program production operations.

SAS has always been a leader in communications for radio, with intercom, IFB and paging fully integrated into the Rubicon series of digital console control surfaces and the 32KD Digital Router/Mixer. Our work in designing facilities for major news networks and all-news radio stations led to the development of a new intercom panel that merges the best features of traditional television-style com systems with the needs of radio broadcast facilities.

Features: 2U rack-mount. Built-in flush or gooseneck mic, speaker, front-panel XLR for two-channel headset, 1/8-inch jack for two-channel headphones; 24 spring-loaded up/down listen/talk channels, two lines/16 characters of text per channel. Up to listen, quick up to latch, longer to hold, hold and turn rotary encoder to adjust individual chan-



nel listen level; listen to multiple channels at one time. Multiple group calls. Answer last call. Multiple panel setups easily recalled. Dial-up of listen/talk of any channel not programmed on one of the 24 keys. On-the-fly assigning of a talk/listen channel to a key.

32KD-based, the ICM-24 connects via traditional four-wire+serial, via LAN IP or via TCP/IP over the Internet. Intercoms on multiple 32KD systems in different cities can be linked for seamless communication.

Expanded features of the Rubicon series of Console Control Surfaces

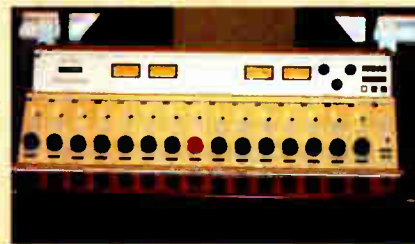
Radio is in many ways as much or more about control than about audio. Visit SAS at NAB to learn more about the many ways the SAS Connected Digital Network can integrate your station's audio and control functionality.

Managing of mix-minus always has been a challenge. SAS introduced automatic mix-minus in the first version of

Rubicon, providing an unlimited number of mix-minus outputs on a console. The automatic mix-minus capability is greatly expanded to include mix-minus devices shared across multiple studios. This allows the station to save the cost of providing codecs in each studio, without requiring a run to TOC to control their mix-minus feed.

Dees Digital

SAS was commissioned by radio DJ legend Rick Dees to manufacture a digital console control surface that looks and feels like the analog rotary fader consoles of old, but with all of the features and capabilities of today's network router-based systems. The original will be on display at the SAS NAB booth.



SAS Moved to New Larger Facilities

SAS has moved, just a few blocks from our previous plant. Double the space, double the manufacturing capacity for even faster turn-around on large systems.

PRODUCT PREVIEW

SAS

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NAB2007 Booth N4413
Color-keyed map: pages 16 & 17



Yo Rick! You Rock!



Hey, when Rick talks, we listen.

Rick Dees has always liked the look and feel of the traditional 50s- and 60s-style rotary fader consoles. For his new studio complex, SAS custom designed and built the **Dees Digital Rubicon**, a true Rubicon digital console control surface in the traditional style.

See it at NAB 2007, SAS booth N-4413.



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of Fame**.

Superior Electric

Prevent Downtime With STABILINE®.

The preferred choice of broadcasters worldwide, from the name you trust in power protection.

Lighting strikes, line disturbances and uneven loads cause disabling transients, spikes, sags and surges. Left unregulated, these conditions will degrade — even destroy — sensitive broadcast electronics in receiving stations, studios, mobile production vehicles and transmitter sites.

Avoid catastrophic equipment failure, software damage, reduced power tube life and poor signal quality with STABILINE TVSS Surge Suppressors, True On-Line Uninterruptible Power Supplies and Automatic Voltage Regulators.

Your best defense against transients, voltage sags and surges and brownout/blackout problems.

PT1 Series — Transient Voltage Surge Suppressors, Parallel-connected Design

Models deliver worry-free performance with an innovative and proven technology design. The tested single-pulse surge current capacity (per mode) meets NEMA recommendations. Sand-packed MOV arrays equally share current to suppress transients before they reach sensitive loads while

capacitors filter out high-frequency noise and low-level transients. The PT1 Series is designed and tested to withstand

surge currents in accordance with ANSI/IEEE recommendations. They respond immediately and reliably to repeated high-current lightning incidents and other transient voltage surges. The NEMA 4X fiber-glass-reinforced polyester (FRP) housing features a non-removable cover. LEDs for all phases illuminate to clearly indicate protection is active.

SEG Series — True On-Line Uninterruptible Power Supplies

True regenerative On-Line design provides the highest level of protection against a broader spectrum of power problems. This is accomplished through converting the incoming AC utility voltage to a regulated DC voltage. From the DC voltage, a new AC voltage is regenerated, providing a clean, tightly regulated power source to your equipment. This solid-state generation function sets the true regenerative On-Line UPS apart from all other line-interactive and off-line designs. If your equipment operation is mission-critical, you need the STABILINE SEG Series!

All SEG Series models support the addition of optional EBBs (Extended Battery Banks). Whether your applica-



SEG-Series

tion requires a few additional minutes or hours, the SEG Series is ready. With the addition of an external input transformer, models can be configured for use as international voltage and frequency converters. This makes the SEG Series UPS an ideal choice for worldwide power applications.

Your best defense against transients, voltage sags and surges and blackout problems.

WHR Series — Automatic Voltage Regulators

The WHR Series of Automatic Voltage Regulators automatically and continuously feed sensitive broadcast equipment a constant voltage level even when power line input voltage varies as low as 30% while holding the output voltage to within $\pm 1\%$. The variable transformer design adds no waveform distortion, has



WHR Series

very high overload capacity, the lowest added impedance and is 99% efficient. Units are available for single- and three-phase applications for AC systems up to and including 600VAC. Over 25 add on options are available for customization for specific power quality needs.

PRODUCT PREVIEW



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www.superiorelectric.com

NAB2007 Booth N8308
Color-keyed map pages 15 & 17

ALDENA Telecomunicazioni

Professional Antennas & Accessories.

ALDENA is located in Cusago, near Milan, Italy. From its founding in 1979, on the basis of experience dating back as far as the 1950s, ALDENA has been producing professional antennas and accessories for radio and television broadcasting, and has reached its current position of international recognition for the excellence of its products and the integrity with which we perform our services both before and after the sale.

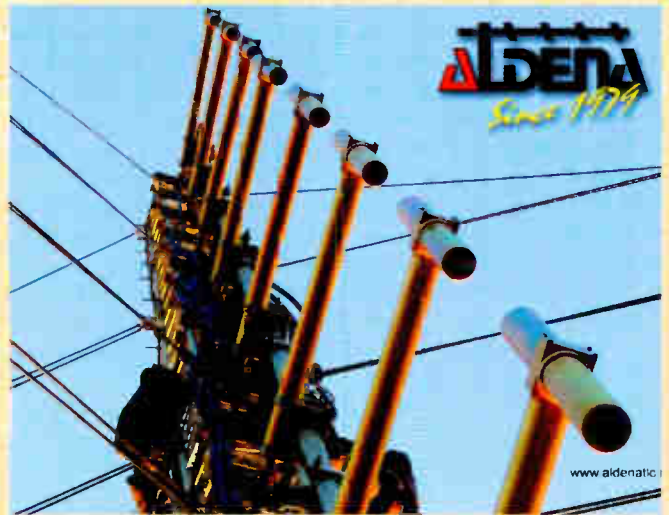
Our production portfolio ranges from professional antennas to complex radiant systems and dedicated software, supported by technical consultancy and assistance services. ALDENA radiant systems and software are in operation all over the world: thousands of Italian and international radio and television broadcasters can boast their "on air" presence thanks to ALDENA antennas.

In the same way, hundreds of telecommunications technicians and consultants are able to design radiating systems, evaluate electromagnetic impact and predict the area coverage thanks to the calculation software programs distributed by ALDENA worldwide. Distribution is handled by specialized dealers who receive

constant assistance from our company to ensure that end users get the professional service they need, year after year. ALDENA is present with authorized dealers on all five continents.

High professionalism, optimal technical performance of products, limited costs, efficient pre- and after-sales assistance, precise calculation and supervision services are all the main prerogatives of ALDENA products, which the company staff set as their main goals to achieve year after year. To complete the product range: professional antennas for point-to-point connections on frequencies from 40 to 28,000 MHz, highly directional antennas and systems, and dish diameters from 60 to 300 cm.

Among radio frequency accessories we offer a wide range of balanced or unbalanced power splitters, combiners and band-pass filters for VHF and UHF bands. All this is completed by a series of professional services for design, calculation, forecasting, installation, supervision and testing. As well as supplying all information on production, the



ALDENA Web site www.aldenatl.it provides users with upgrades of company software programs, antenna radiation diagrams and a series of free utilities for technical operators.



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www.aldenatl.it
NAB2007 Booth N6819
color-keyed map: pages 16 & 17

PRODUCT PREVIEW

Telos

The Next Step in Talkshow Systems.

We'd like to introduce you to Nx12, the latest in the world-famous line of Telos talkshow systems.

Nx12 is our most powerful per-

ter than ever, no matter how high or low the caller's gain is. In addition to hybrid cancellation, there's also echo cancellation to handle those tricky



former ever, with the very latest advances in hybrid technology and support for both ISDN and POTS phone lines, including caller ID. This self-contained system contains four advanced Telos hybrids, which can be used in single or dual studio configurations.

Nx12 comes equipped with analog or AES inputs/outputs and native support for Axia Livewire IP-Audio networks as well. When analog outputs are used, the callers are mixed down to two separate analog feeds, while still making use of all four hybrids to produce fantastic audio quality while squeezing the best-ever trans-hybrid loss out of your POTS or ISDN lines. When AES or Livewire I/O is selected, the hybrid outputs are discrete.

There's a lot of advanced DSP packed into Nx12. To ensure that caller audio sounds its best, each of Nx12's four hybrids is equipped with its own Omnia AGC and noise gate, using the latest DSP algorithms to make caller-to-caller consistency bet-

ter than ever, no matter how high or low the caller's gain is.

Nx12 includes the special features producers and talent rely on to make their lives easier, like our exclusive Status Symbols™ visual call management system, remote control keys for profanity delay and record devices, an adaptive feedback canceller for open speaker situations, and full caller ID support for POTS and ISDN. And of course, show producers can control Nx12 using Telos Assistant Producer call screening software via Ethernet.

One Nx12 can easily handle two phones for two stations, thanks to dual Program-on-Hold inputs and out-of-the-box support for up to four Telos Desktop Director, Call Controller or Console Director control surfaces (expandable to eight). And Nx12 works seamlessly with Axia Element studio control surfaces, providing direct hybrid control right from the console and native Livewire audio I/O.

Nx12. The next step in broadcast phones.

PRODUCT PREVIEW

Telos

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Fax: 216-241-4103

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www.Telos-Systems.com

NAB2007 Booth N7726

Color-keyed map: pages 16 & 17

TRANSRADIO

TRAM Transmitters: Reliability Made in Germany.

TRAM AM-transmitters from TRANSRADIO are well introduced in the market and have a proven track record of high quality. With the TRAM family, broadcasters have the ability to reduce

able solution for broadcasters, ensures the easy availability of spare parts and guarantees a straightforward operating of the system.

The layout in standard 19-inch racks allows for easy and comfortable accessibility to all components and modules and gives an exceptionally low space requirement for any of the available power classes.

The power amplifier stage offers true modular redundancy by use of standardized 1 kW amplifier modules. Each individual module is equipped with an on-board PDM modulator and therefore no quantization problems occur like with digital concepts.

option via SNMP and HTML.

Uniquely, TRANSRADIO offers a 100% complete documentation for maintenance, service and operation of the transmitter and 20 years of after-sales service to ensure a maximum lifespan of their products.

Turnkey-ready solution

TRANSRADIO delivers their well-known German reliability as a custom-tailored solution for the needs of customers. Professional services range from the delivery of the transmitter to the management of turnkey-ready projects including all facilities to operate a broadcasting transmitter.

Contact

If you'd like to schedule a meeting or demo at the NAB, please stop by our booth at the LVCC North Hall, booth N9611 or contact us at j.huber@tsb-ag.de.



the cost base for delivering existing AM services as well as to provide innovative new digital services. TRAM transmitters cover the entire power range from 5 kW to 2000 kW and are available as MW, LW and VLF versions. A typical overall efficiency of 86 percent provides significant savings of power consumption. TRANSRADIO's activities around the world, for example Switzerland, Norway, Swaziland, Malaysia, Algeria and Egypt, have verified the ability to deliver transmitters for all environments.

The Modular System

The modular and robust core-concept of the air-cooled solid-state transmitters, free of DSPs, EPLD, computers and any software, has proven to be the most reli-

Ready for the future

In the case of modern AM broadcast transmitters, a high positive peak modulation is required. TRAM transmitters offer a positive peak modulation of 125%. Upgrading the system with a digital exciter enables the broadcaster to provide digital broadcasting like IBOC and DRM. TRAM transmitters are designed for analog and digital transmissions and offer an exceptional linearity. Consequently, TRANSRADIO has established itself as the world's leading DRM provider.

In today's highly competitive market, unmanned transmitters need to be controlled from any place of the world. Therefore the TRAM transmitters are accessible with the remote control



PRODUCT PREVIEW

Radio World

WireCAD

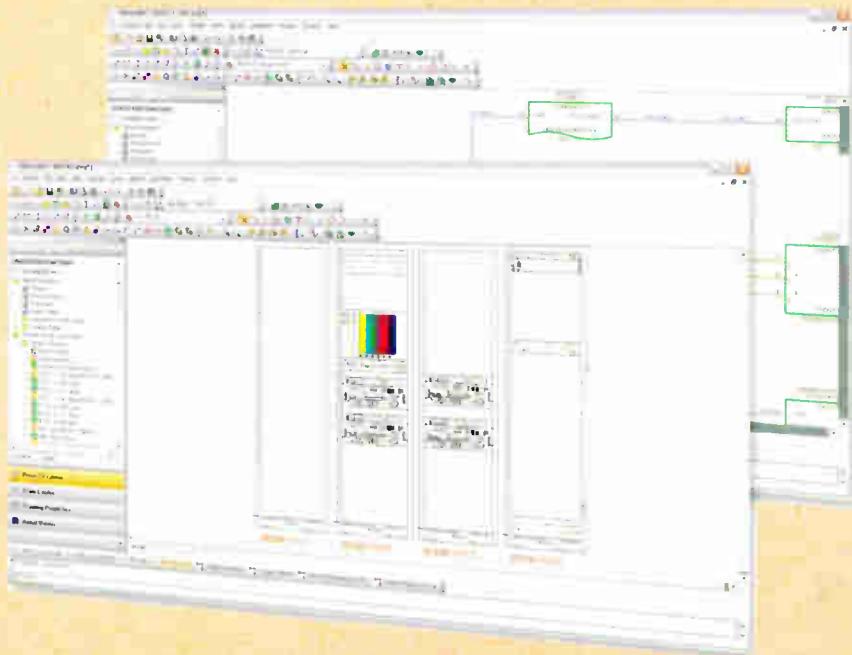
Because Genius Ain't Easy!

So a while back I was out walking my dog Hiccup when the thought occurred to me that what the planet really needed was a way to avoid the tedious, time-consuming, mind-numbing, error-prone process of single-line documentation and all of the associated reports that need to accompany it. I thought there must be a better way than the manual data entry I was doing and having to maintain synchronization between changes I made in the drawings and those in the databases. It occurred to me that we needed to make documentation so easy that it actually got done!

Silly thought, I know, but that is what we set out to do.

WireCAD is the result of years of focus on the problem of creating accurate, detailed documentation without having to learn drafting.

We use a data-driven approach. What that means to you is that you don't have to learn how to draw functional blocks



in a CAD program, you just describe the equipment, who made it, what's it called and what I/O does it have. WireCAD does all the heavy lifting for you. And now with version 5 you can share in the work with our new Community Server.

Upload and download equipment definitions to share with your peers.

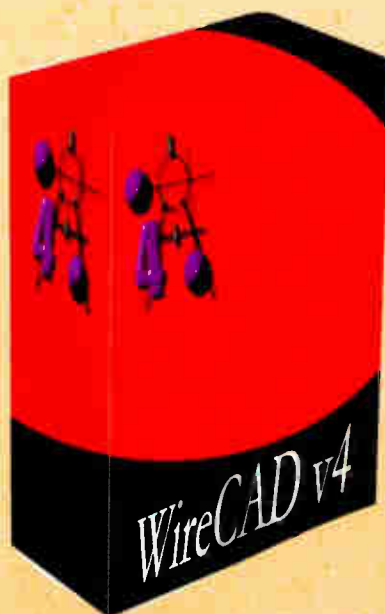
We automatically assign cable numbers, do error checking and print all the reports you might need, like cable labels, run sheets, bill of materials and power consumption and heat-load reports. We automatically create your rack layouts and jackfield designation strips too!

And let's talk about support. We know that WireCAD is a tool that you use and depend on: so support is key. We are not just saying that. We mean it! Whether you just need online chat, e-mail or a full remote diagnostic session, we are here to help.

Anyway this is a really long way of saying: Come see me at the NAB show booth N2138 and tell me the name of my dog, and I'll give you 10 percent off the really cool show specials that we will be running there.

Thanks for taking the time to read this whole thing.

— Christian Holbrook
President



PRODUCT PREVIEW

**WIRE
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NAB2007 Booth N2138

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Radio/Audio Exhibitors

Selected exhibitors of interest to radio attendees. Check on-site program for changes. Booths preceded by N are North Hall of the LVCC, C indicates Central, SL is South Lower, SU is South Upper, OE is Outdoor, R is RTNDA at Hilton.

25-Seven Systems Inc.	N7834	D.A.V.I.D. Systems Inc.	N5431	Lawo AG	N7030	RIZ-Transmitters Co.	N5222
360 Systems	SU9120	(See Product Preview, Page 11)		Lawson & Assoc. Architects	N4138	Rohde & Schwarz	C2927
615 Music	R121 SL8324	DAWNeo	C7841	LBA Technology Inc.	N9130	Roland Systems Group	SL8208
Acorn RF	C1309	DaySequerra/ATI Group	N7323	LEA International	N3716	Rosendahl Studioteknik	C8431-11
Acoustical Solutions Inc.	SU5020	DB Elettronica N6031		Leadman Electronics	C11813	RTW Radio-Technische	N3216
ADC	N721	Delta Meccanica Srl	N6819	Lectrosomics Inc.	N8116	RVR Elettronica	N8606
Adobe Systems Inc.	SL3220	Denon & Marantz Professional	N1831	Linear Equipamentos	C1324	RYMSA	C2520A
AIQ S.A.	N6326	Devlin Design Group	R117	Logitek Electronic Systems Inc.	N6521	Sabre Towers & Poles	N6435
(See Product Preview, Page 4)		Dialight Corp.	N8025	LP Technologies Inc.	C1112	Salzbrenner Staeteger	N4018
AKG	N7715	Dielectric Communications	C1907	Mackay Communications	C4643	sbs	N5128
ALDENA Telecomunicazioni	N6819	Digigram	N6518	Mackie	SL9208	Scientific Atlanta	SU9613
(See Product Preview, Page 27)		DK-Technologies America	N1835	Magnum Towers Inc.	N5122	Sennheiser Electronic Corp.	N7117
Altronic Research	N5126	Dolby Laboratories	N2513	Manhattan Production Music	SL9520	Seratel	N9620
American Tower Corp.	N6028	Dorrough Electronics	C5213	Marantz Professional	N1831	Shively Labs	N7026
Anchor Audio	N6313	DPA Microphones	N2227	Marshall Electronics Inc.	SU1926	Shure	N6921
Andrew Corp.	C4946	DSI RF Systems Inc.	C1336	Masterclock Inc.	N3213	Siel Television Srl	N8306
ANT Group Srl	C2936	IBS	N6031	Mayah Communications	C8828B	Sierra Automated Systems	N4413
Aphex Systems	N6506	Eddystone Broadcast	N5128	MCI Inc.	C4741	(See Product Preview, Page 24)	
APM Music	SL8727	Etron Computerized Studios	N9608	Media Monitors	N8119	Signex	N4926
API	N4218	Eiber Srl	C1628	Merging Technologies	SL4014	Skytec Inc.	N6434
(See Product Preview, Page 5)		Electronics Research Inc./ERI	N1119	MGL UPS Systems	C6822	Solid State Logic	N2526
APWMayville	SU7220	Electrorack Enclosure Products	C1939	Micro Communications Inc.	N6129,	Solutions Radio BV	N8634
Armstrong Transmitter	N7034	Electrosys	C3334	Middle Atlantic Products	SU7826	Sonifex Ltd.	N928
Arrakis Systems	N5421	(See Product Preview, Page 12)		Minnemoka Audio Software	N3215	Sound Devices LLC	N9314
ATA Audio	N5528	Elenos	N8319	Modulation Sciences	C1131	Soundcraft USA	N7715
Audemat-Aztec	N8614	Elettronika Srl	N7337	Moseley Associates Inc.	N7711	Soundman OKM	N4926
Audio Precision	N6917	ENCO Systems Inc.	N6217	Motorola	SU1920	Soundminer	SL7723
AudioScience	N7331	Energy-Onix	N6213	MultiDyne Video/Fiber Optic	N3119	Specialty Data Systems Inc.	N2135
Audio-Technica U.S. Inc.	N4526	ESI	C1836	MUSICAM USA	N5418	Spinner GmbH	C8828A
Avlex Corp.	N4631	Eventide	N6909	Myat Inc.	C2220	SRS Labs Inc.	N402
AVI	C8828E	E-V Microphones	N9611	Myers Information Systems	N3219	Staco Engineering Products Co.	N3813
Axel Technology Srl	N3121, N5426	EZ Quest Inc.	N1833	Nada-Chair	C6526	Stainless/Doty Moore	C1133
Axia Audio	N7726	E-Z Up	N9726	Nagra USA Inc.	N2226	Stantron/APW Mayville	SU7220
(See Product Preview, Page 6)		Fairlight	SL4010	Natl Assn. of Tower Erectors	C1633	Stackmusic.net	SL9622
AzEP (Arizona Engineered)	C8523	FirstCom Music	SL9820	National Weather Service	N6806	Studer USA	N7715
B&H Photo-Video-Pro Audio	SU3006	Flash Technology	N7421	Nautel Ltd.	N8111	Superior Broadcast Products	C1312
Backbone Networks Corp.	SL6709	Fostex America	N8734	Nemal Electronics Int'l	C2642	Superior Electric	N8308
Barix AG	N8034	Fraunhofer	SU6830	Netia	N5721	(See Product Preview, Page 26)	
Beat The Traffic	R135	Genelec Inc.	SL11215	Network Electronics US	SU10605	Sure Shot Transmissions	C4641
Belar Electronics Labs	N7722	Gepco	C7525	Neutrik USA	N8526	Switchcraft Inc.	C7507
Belden	C9441	Global Security Systems LLC	N6734	NKK Switches	N1326	TASCAM	SL4016
Bext Inc.	N5731	(See Product Preview, Page 13)		Non-Stop Music	SL9220, R206	TC Electronic	N1931
beyerdynamic	N9014	Google	N6121	NPR Satellite Services	C7541	TLAC America Inc.	SL13910
BIA Financial/Dataworld	N6817	Greatway Technology	N3835	Ohor Digital	N6730	Tektronix Inc.	N2519
Bid4Spots	N9231	Groove Addicts	SL7823	Octopus Newsroom Trading	N413	Telex Communications Inc.	C5329
Bird Technologies Group	N5738	Hamlet	N419	OMB	C3324	Telmeec Broadcasting Srl	C1114
Bosc Corp.	C11629	Harris Broadcast	N2502	Omnia Audio	N7726	Telos Systems	N7726
Bridge Digital Inc.	N705	(See Product Preview, Page 14)		(See Product Preview, Page 22)		(See Product Preview, Page 28)	
Broadcast Electronics	N7106	Harrison Consoles	N8122	Omnimusic	SL9620	Teracom Components	C1309
Broadcasters General Store	N8322	Heil Sound	N9420	Omnirax	N5415	TextCaster	C2844
Broadcast Microwave Services	C1607	Henry Engineering	N7432	(See Product Preview, Page 23)		TIT Inc.	N6508
Broadcast Software Int'l	N8621	(See Product Preview, Page 15)		OMT Technologies	N9011	Thales Components Corp.	C5943
Broadcast Store	SU2820	HHB Communications Ltd.	N7117	Opticom	N2931	Tieline Technology	N9311
Broadcast Tools Inc.	N6908	Holophone	N6034	Overly Door Co.	N9612	Tower Innovations	C1119
Broadcast Warehouse	N7328	(See Product Preview, Page 18)		PatchAmp	N1226	TransAn Tech Sound	N4931
Burk Technology	N8611	IABM	C8847	Patriot Antenna Systems	C4103	TRANSRADIO SenderSysteme	N9611
Burle Industries Inc.	C4907	illbruck acoustic inc./SONEX	N6919	Phillystran Inc.	N5131	(See Product Preview, Page 29)	
Burli Software Inc.	N6028	IMAS Publishing	N6827	plus24/Sanken Microphones	N8826	Utah Scientific	N4321
BW Broadcast	N7330	Independent Audio	N4926	Potomac Instruments Inc.	N6826	Valcom Manufacturing	N7734
Calrec Audio Ltd.	N8529	Infosys	SL14108	Power Module Technology	N8134	VCS Engineering	N3415
Cedar Audio USA	N4926	lunes Corp.	N7735	Prime Image	N4517	Vocality International	C6949
Clark Wire & Cable	C7025	Inovonics Inc.	N8226	Pristine Systems/Summit Traffic	N7334	V-Soft Communications	N6026
Clear Channel Satellite	OE320	(See Product Preview, Page 19)		Production Intercom Inc.	N2235	Ward-Beech Systems Ltd.	SU9211
Coast to Coast Tower	C1614	International Datacasting Corp.	C5541	Professional Sound Corp.	N9322	Wegener	SU7915
Coaxial Dynamics	N6315	IRTE SpA	C3320	Propagation Systems Inc. (PSI)	C1920	Wheatstone Corp.	N7111
Coles	N4926	Jampro Antennas Inc.	C2515	Prophet Systems	N6511	Whirlwind	C8128
Comet North America	N8406	(See Product Preview, Page 20)		PIEK	N6126	WhiteBlox	C1059
Comrex Corp.	N5726	JBL Professional	N7715	QEI Corp.	N8408	Will-Burt Co.	C8423
(See Product Preview, Page 8)		JK Audio	N9426	QuStream	N3418	WINRADIO Communications	N5514
Continental Electronics Corp.	N7706	JL Cooper Electronics	N3114	Radio Frequency Systems	C1913	Winsted Corp.	SU3316
CPI/Einnac	N7426, C2511	Junger Audio	N3815	Radio Systems	N8231	WireCAD	N2138
Crown Broadcast	N6906	Kathrein Inc., Scala Division	C2213	RadioTraffic.com	N5221, N5429	(See Product Preview, Page 30)	
(See Product Preview, Page 10)		Kintronic Laboratories	N5113	Radio World/IMAS Publishing	N6827	WireReady	N6808
Cte International Srl	N9020	Klotz Digital	N5728	RCS	N6511, R204	Wireworks Corp.	C7617
Dalet	SL4305	KLZ Innovations Ltd.	N5435	RDL	N4413	Wohler Technologies	N3426
Dan Dugan Sound Design	N5517	KOWA Co. Ltd.	N5231	RF MW Ltd.	N8134	Yamaha	SL5710
Davicom/Comlab Inc.	N5413	KPFI Consulting Engineers	C1616	Richardson Electronics	C1714	Zaxcom Inc.	N9017
		Larcas USA	C1916	Richland Towers	C2534		

PRODUCT PREVIEW

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stations
100
countries

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Visit Us at NAB Booth #N6511

Three Snapshots From the New Frontier

The Revolution May Not Be Televised After All. Instead It May Be Webcast

by Ty Ford

With the many exciting possibilities that HD Radio offers, its success depends on more than whether consumers will buy new hardware and what they expect of the reception quality.

Content trumps hardware. Cell phone technology has begun diverting attention from radio by allowing users to download and watch or listen to entertainment.

Lawsuits aside, the street buzz about the Wi-Fi and EDGE-based Apple iPhone is fairly intense. The iPhone, or whatever it eventually will be called after the Cisco/Comwave/Apple shakeout, is the "gadget of the future" as envisioned by the NAB last year, with one critical exception: It doesn't have an AM or FM tuner. AM and FM are getting squeezed out.

If terrestrial-based radio is to survive, broadcasters will certainly need to do more than rebroadcast their regular programming on the first HD channel, and likely they need to step up quickly.

From here to there

Predicting what type of programming may be compelling is difficult, but WAMU(FM) in Washington and WTMD (FM) in Baltimore have taken an inventive step.

WAMU is rebroadcasting WTMD's AAA format over WAMU's second digital channel. WAMU General Manager Caryn Mathes says the partnership works because there is no AAA station in Washington.

WAMU uses its third HD channel to air custom programming created for them by www.bluegrasscountry.org and local bluegrass legend Ray Davis. WTMD has yet to add HD broadcasting but plans to do so.

According to WAMU Director of Engineering John Holt, WAMU receives a 125 kbps MP3 stream encoded from a board feed at WTMD. That 125 kbps stereo feed travels from WTMD to WAMU over the public Internet. WAMU decodes it, redigitizes it and forwards to the WAMU transmitter via a DSL connection. At the transmitter the DSL audio is reconverted to analog and fed to the

WAMU transmitter.

Holt tells a cautionary tale for any broadcaster not convinced that sweeping changes are occurring. Along major interstates, Wi-Fi and EDGE-based Web access already are allowing travelers to listen to Webcasts instead of car radios. Holt

live radio, I don't have that capability so I voice track."

Good distribution is vital. At present, CowboyCulturalSociety.com streams 128 kbps stereo to about 600 connections via Shoutcast; 300 at 128 kbps, 332 at 24 kbps. Hopper had a friend at iTunes and as a result, CCS streams 128 kbps as one of 23 Americana selections currently provided by iTunes. The listenership continues to grow and with that

yodel for a commercial." In 2002, Gustafson sued Yahoo! Inc for \$5 million after Yahoo kept using his trademark yodel in other commercials. With the profits from the out-of-court settlement, Hopper says Gustafson is building an indoor roping arena.

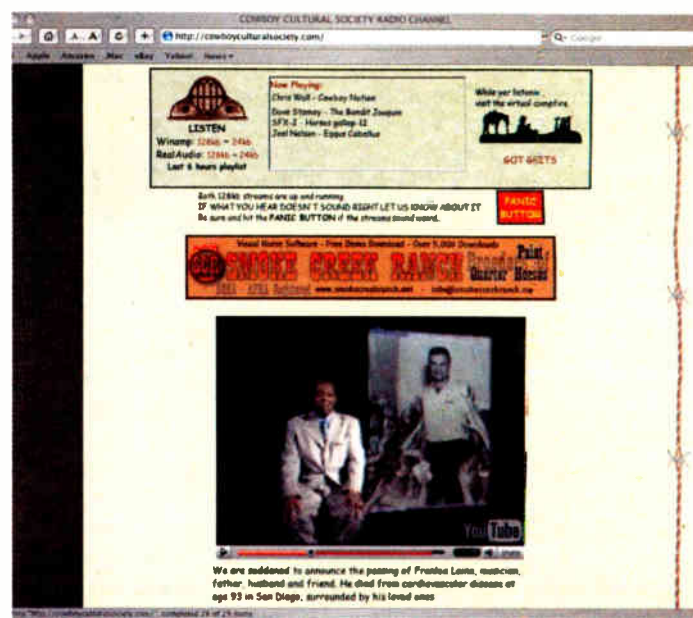
Pandora.com

Tim Westergren founded Pandora.com seven years ago as a result of his experience as a musician and film composer.

"I was spending a lot of time finding my clients' music taste so I could write



Pandora.com offers an interactive database that allows users to enter the name of a group, musician or song and let the database create a personal 'radio channel' or playlist of similar music.



Cowboy Cultural Society

and others feel the message is clear: HD Radio can expect head-on competition with Internet radio.

As GPS data begins to include traffic conditions, local AM and FM broadcasters and even satellite radio will lose another finger of their grip on listeners to wireless broadband.

Cowboy Cultural Society

As AM, FM and satellite radio continue to try to make sense of the New Frontier, more inventive and compelling programming by Internet radio stations continues to peck away at available listeners. Internet radio is not moving in big waves or creating predictable trends. Instead there are many wavelets that may (or may not) combine in expected ways.

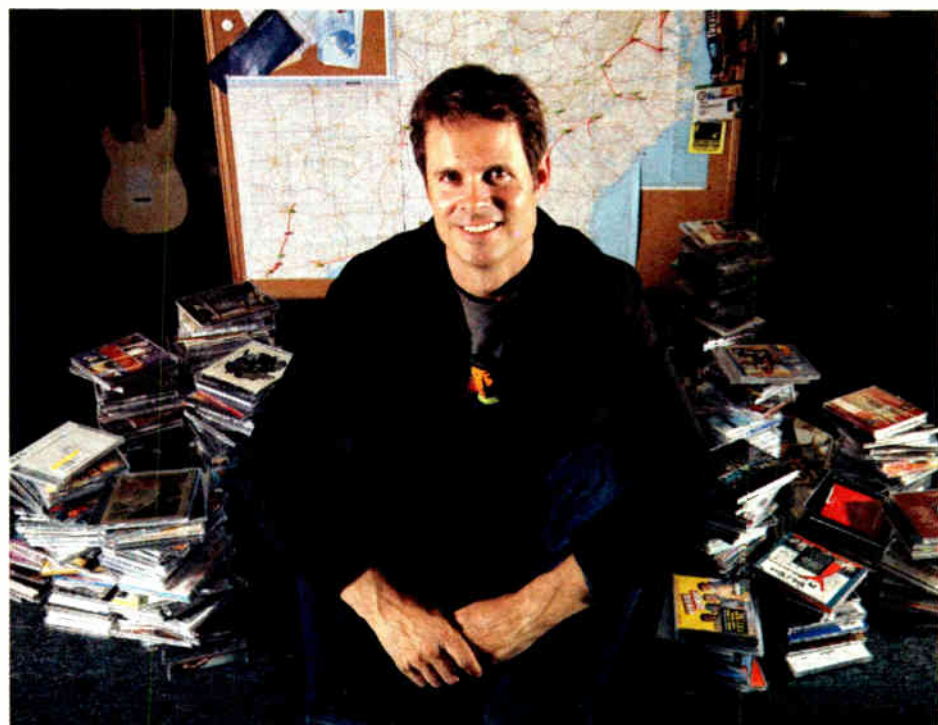
Two Internet radio programmers who seem to be onto something are www.cowboyculturalsociety.com and www.pandora.com. Although each enters the market differently, both provide much that AM and FM doesn't.

CowboyCulturalSociety.com, or CCS, is the brain child (or love child) of KPIG Program Director Laura Hopper.

KPIG(FM) is a Class A FM licensed to Freedom, Calif., between Santa Cruz and Monterey. KPIG is part of Mapleton Communications LLC in Monterey, which includes several other stations.

Hopper started her career at KDNA in St. Louis. "KDNA was a commune. The station was on the first floor. The commune occupied the second and third floors. I was a runaway and they had a free washer and dryer. That was the connection." Hopper's first radio task was editing the F-word out of an Eldridge Cleaver tape.

Fast-forward almost 40 years and a collection of 2,000 songs and cowboy poems. Hopper began Webcasting CCS in 2002 with the help of engineer friend Bill Goldsmith. "Bill invented the programming software, which we call 'Hal.' I'm the only voice and although I prefer



Tim Westergren founded Pandora.com a result of his experience as a musician and film composer.

has come more new material for her library. Ellen pays minimum license fees to ASCAP, BMI and SESAC, ranging from \$89 to \$200 a year.

Continuing to work as PD and air talent at KPIG, Hopper has plans for developing her out-of-pocket solo effort.

"I want to run ads on the CCS site, not commercials in the stream. That revenue will allow me to start doing contest like sending listeners off to different CCS-style gatherings."

With her vault of rich material and down-home presentation, Hopper could license the CCS stream to HD FM country stations looking to supplement their programming.

One never knows what might happen on the New Frontier. As Hopper tells the story, "Wiley Gustafson is a cowboy yodeler. Yahoo contacted him to do a

for them. After a while I got pretty good at zeroing in on what they wanted. The thought occurred to me that if I could 'bottle it' and create an effective interface, I could do something with it."

What Westergren has bottled is a complex, highly interactive database that allows users to enter the name of a group, musician or song they like and let the database create a personal "radio channel" or playlist of similar music — by name, The Music Genome Project.

As the pieces of music are served up, the listener gets to choose whether those pieces stay in rotation, aren't heard as often or are deleted. Listeners can also click on the selections and be routed to Amazon, where they can buy CDs, or to iTunes, where they can purchase individual cuts.

See INTERNET, page 34

CCA

Continued from page 32

was on the air. However, dynamically a tube rig does "color" the sound, especially when modulating at high levels. Soft clipping is not a figment of the imagination but a function of the surge impedance of the power transformers and the loss of peak emission as the power tubes age. In egregious cases, that coloring would identify the rig on air.

Some loved the "warm tube sound" of these rigs and miss it in the narrow band of today.

Soon we'll look inside the Collins 20V2.

Charles S. Fitch, W2IPI, is a registered professional consultant engineer, member of the AFCCE, senior member of the SBE, lifetime CPBE with AMD, licensed electrical contractor, former station owner and former director of engineering of WTIC(TV) in Hartford, Conn., and WSHS(TV) in Marlborough, Mass.

PRODUCT EVALUATION

Small Connector, Nice Payoff

With Neutrik EMC XLR Microphone Connectors, Cellphones and XLR Mics Can Coexist Again

by Paul Kaminski

If you've ever had a recording, performance or broadcast degraded by RF static from a cell phone, you've likely tried to figure out how to prevent that from happening again. Murphy's Law suggests that the static usually hits when the "money quote" is spoken in those circumstances.

The Audio Engineering Society Standards Committee has been thinking for years about such a solution; Neutrik USA introduced its answer to this problem at last year's NAB with the NC3 M/FXX-EMC line of audio connectors.

Product Applications Manager Fred Besnoff said, "Microphones used in an event, conference room, public address system, etc. are prone to static when a cell phone or similar device is activated." The EMC-XLR series is designed to provide better RF screening for critical audio applications like these.

Construction and fabrication

Pins 2 and 3 (2 is positive and 3 negative in relation to phase) are soldered and connected in a similar manner to other XLR connectors.

The EMC series design provides a continuous RF shield connection from the cable to the chassis connector housing via a circular capacitor around the cable shield. There's an EMI suppression ferrite bead between pin 1 (shield) and the cable screen to provide a low-pass filter for RF rejection. Two metal pieces receive the shield wire; the shield wire is normally fanned out and soldered over both pieces, or in the case of foil shields or single stranded wire, point soldered on one of those metal pieces.



Those pieces fit into slots on a small circuit board, which locate the shield sub-assembly when the connector is assembled. Neutrik says the EMC-XLR connector needs to be connected to both ends of a microphone cable for the maximum rejection of RF, and that the chassis connector for the destination equipment (mixer, etc.) ought to be a metal version with a good contact for the shield connector.

Testing

I have had recordings degraded when cell phones rang, and the RF overpowered the audio. I normally have but one chance to get the audio in a fluid field news situation where there is little to no control over the audio environment, so you can understand my interest in removing that obstacle to a good recording.

I constructed a nominal 30-inch microphone cord (balanced XLR) with a male and female NC3-EMC-XLR connector at both ends of Belden 1804a microphone cable. I then connected the cord to an Audio-Technica AT-897 shotgun microphone and a Shure SM-77

dynamic microphone, both of which were connected in turn to a Marantz PMD660 recorder in record pause, so I could hear the audio.

I used a T-Mobile Nokia 6010 cell phone to make a call. I held the Nokia phone approximately 2 inches from the female EMC connector, and listened for interference by RF static. I heard none.

I then repeated the test with one of my standard 30-inch 1804a microphone cords and a studio-grade star quad cord with conventional XLR connectors. You could hear the RF static from the telephone with the standard 30-inch 1804a cord and the studio-grade Star Quad cord when the phone was held next to those connectors.

This rather unscientific test duplicated what I heard at the Neutrik USA booth last spring. The push-to-talk cell phones (Nextel, etc.) are noted for their RF interference when they operate. If you produce audio in an environment where there are a lot of Nextel phones, the EMC-XLR connectors can eliminate that issue for sound engineers and radio news people.

Not a digital bullet

While the increased RF rejection is a good thing, Besnoff reiterated that the EMC-XLR series connector is a applica-

tion-specific connector.

It's not a replacement for AES-EBU, Toslink or S/PDIF digital connectors, which Besnoff says are "inductance dependent (110 ohm or 75 ohm) and are serial interfaces for transferring digital audio." If you are connecting a phantom-powered microphone to equipment, there should be no problems; the EMC-XLR series acts strictly as a band-pass filter and phantom power should not be affected. Again, the ground at the equipment side is key to deriving the maximum benefit from the EMC-XLR connector system.

Cost

An informal survey of suppliers suggests that the EMC-XLR series will cost a bit more per piece than the standard NC3FX or FXX series three-pin XLR connector. If, however, the audio you produce and process is of such importance that no interference from a cell phone can be tolerated (and with hundreds of millions of cell phones in the field, you are sure to find one when you don't want to), the extra cost is justified. Depending on the situation, it can save a recording, broadcast or job.

Paul Kaminski is a Radio World contributor, news director for the Motor Sports Radio Network and contributor for CBS News Radio. Contact him by e-mail at motorsportsradio@msrpk.com.

Internet

► Continued from page 33

Westergren says a song or a group's popularity is not a criterion. "Relevance is the only thing that drives us, relevance for each individual listener. Right now each listener can have 100 different stations and the more they curate them, the more personalized they become."

Creating such a database is not an easy feat. The Pandora library holds about 420,000 pieces of music and has been adding nearly 15,000 every month. Pandora employs 48 trained music analysts. Having a music degree is a requirement. Each analyst must take 150 hours of training to prepare for the task; that takes place at the Oakland headquarters.

After training, Westergren says, analysts may spend 20 to 30 minutes categorizing each piece of music. The result is that each song has a 400-point, DNA-like database profile that is used to predict what songs a listener might like.

Last year Pandora caught the attention of Microsoft and an ad revenue sharing deal quickly was made. For now and in the foreseeable future, Westergren says ads will be visible on the page, but not audible. Now, with 5 million subscribers, Westergren has opened offices in London and Tokyo to take the project international, where the company is making performance rights deals with organizations in other countries.

According to the WiMax Forum, you can deploy a WiMax system and get throughput up to 40 megabits per second for upload and download per channel, for a range of 3 to 10 kilometers. The revolution may not be televised after all. Instead it may be Webcast.

Ty Ford has been writing for Radio World since 1986. Reach him at www.tyford.com.

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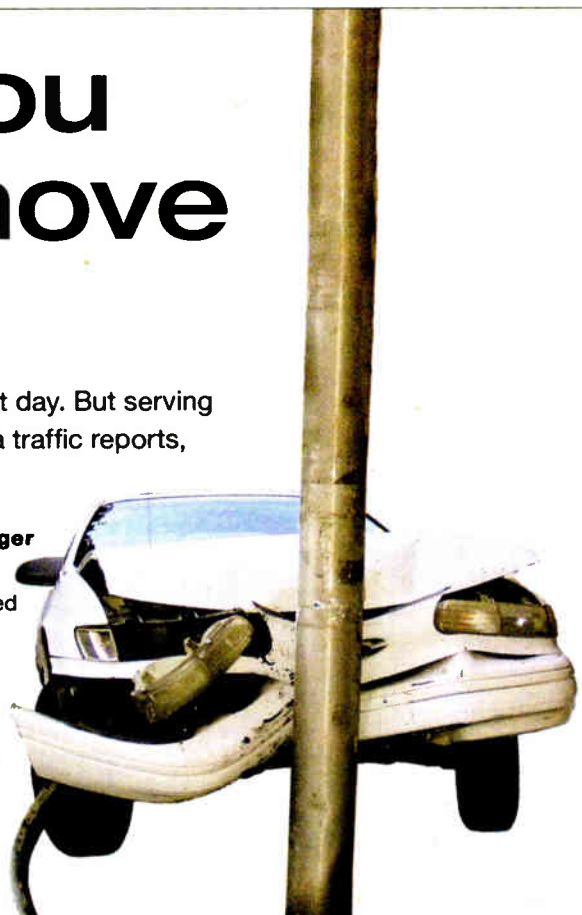
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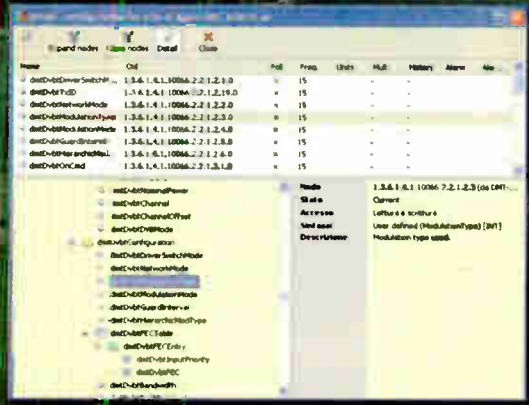


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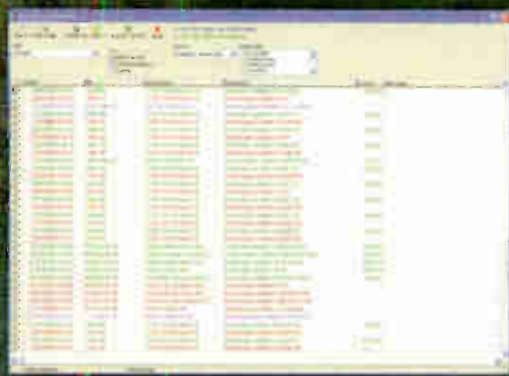
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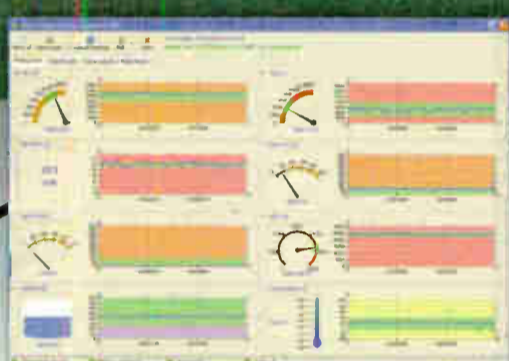
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PRODUCT EVALUATION

Latest HD-R Tabletop Is From Directed

\$250 Unit Boasts Two Detachable Speakers, Alarm Clock Among Its Features

by Aaron Read

BOSTON One big missing component of the HD Radio tuner rollout has been the HD equivalent of ubiquitous alarm clock radios. For a while we've had only the Boston Acoustics Receptor Radio HD; now we also have the Directed HD Table Top receiver (DHHD-1000) from Directed Electronics.

The unit features a large backlit multi-line display, with two detachable ported speakers plus an alarm clock. It's pretty good, overall.

Whoever put this together has been listening to engineers' early laments about a lack of good antennas; a well-built AM loop and FM dipole antenna were included, as well as two outboard speakers that are nearly as big as the radio themselves. Rounding things out were a headphone jack and aux input on the back, along with a mysterious "Service Only" S-Video jack, a "wall wart" power supply and an instruction manual.

Being a typical engineer, I put aside the manual for the moment since I wanted to see how intuitive everything was. For the basic setup, it was easy to get the unit powered on and listening to HD Radio.

There is a menu button, but for most day-to-day functions you'll be using the other six buttons: power, band, tune up, tune down, preset, memory (labeled "memo") and the volume knob. Push in the volume knob to switch to the "Aux" input.

Plugging in headphones mutes the speakers. The radio automatically switches to the HD signal if it detects one strong enough to lock onto. Lacking

live barely two miles from 1,000 watt WZBC(FM) on 90.3 MHz, so I tried tuning in WICN(FM) — an 8,000 watt

directional on 90.5 MHz over 30 miles away on roughly the same azimuth.

Surprisingly, WICN was there. There was a fair amount of static, more than I'd consider "listenable" for any length of time, but there was no crosstalk from WZBC.

Next test is on the AM band. We only have three stations in Boston proper running HD-R on AM: WBZ, WMKI and WXKS.

All three blended to HD-R within a few seconds of tuning and the improvement in audio quality is dramatic: much more high end, and all stereo. Some minor audible artifacts, but overall I'd say it's much better than regular AM.

An added treat showed up when I tuned to WJIB; this radio continues the trend of HD tuners decoding C-Quam AM Stereo. I wouldn't quite call it as good as HD, but it's not bad.

Finally, after warning my wife, I cranked up the volume on a few stations to see what the supplied amplifier could do. I wouldn't say it "goes to eleven," but it's more than loud enough for most any domestic situation.

Of course, there's also the nice consistency to an HD signal. There's no static, pops, fades, clicks or hiss; it's just steady

See DIRECTED, page 38 ▶



Removing eight screws from the rear reveals a sparse interior. Most of the electronics are packed along the front, bottom and one side.

Photo by Aaron Read

HD, it'll show RDS PAD if that signal is present.

This quickly led to the first treat of this radio. You can set the display to "program guide," meaning that if a multicast channel is detected, it'll show the PAD from that multicast stream, and the PAD from the main channel at the same time. So you can listen to one channel, and if you spy something you want to hear on the other channel, it's a simple matter to tune one spot over.

The sensitivity of the radio quickly became apparent when I moved to the NCE band, a place where the Boston metro has more than a dozen college stations all crammed next to each other. I



Overall the Directed HD Table Top receiver (DHHD-1000) from Directed Electronics is pretty good, and out of the box its supplied FM dipole is superior to the BA-supplied 'rat tail.'

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Radio World's HD Radio™ Scoreboard

The HD Radio Scoreboard is compiled by Radio World using information supplied by iBiquity Digital Corp., the HD Digital Radio Alliance and other sources. The data shown reflect best information as of mid-March. This page is sponsored by Broadcast Electronics. HD Radio is a trademark of iBiquity Digital Corp.

On the Air in 49 and 50 ALASKA

There are seven stations in Alaska broadcasting eight HD Radio channels, as reported by the HD Digital Radio Alliance.

Market	Freq.	Station	Format	Licensee
Anchorage	650	KENI-HD	News/Talk	Clear Channel
Anchorage	101.3	KGOT-HD1	CHR	Clear Channel
Juneau	104.3	KT00-HD1	Variety	Capital Comm ty Broadcasting
Juneau	104.3-2	KT00-HD2	Groove Salad	Capital Comm ty Broadcasting
Ketchikan	105.3	KRBD-HD1	Public	Rainbird Comm ty Broadcasting
Petersburg	100.9	KFSK-HD1	Eclectic	Narrows Broadcasting
Sitka	104.7	KCAW-HD1	Eclectic	Raven Radio Foundation
Wrangell	101.7	KSTK-HD1	Nws/Tlk/AC	Wrangell Radio Group

HAWAII

There are no HD Radio stations in Hawaii, according to the alliance. The following are listed as coming soon.

Market	Freq.	Station	Format	Licensee
Honolulu	98.5	*KDNN-HD1	CHR/Hawaiian	Clear Channel
Honolulu	98.5-2	*KDNN-HD2	Mainstream Country	Clear Channel
Honolulu	93.9	*KIKI-HD1	CHR/Rhythmic	Clear Channel
Honolulu	93.9-2	*KIKI-HD2	Old School Hip Hop	Clear Channel
Honolulu	92.3	*KSSK-HD1	AC	Clear Channel
Honolulu	92.3-2	*KSSK-HD2	Smooth Jazz	Clear Channel
Honolulu	101.9	*KUCD-HD1	Alternative Rock	Clear Channel
Honolulu	101.9-2	*KUCD-HD2	Metal Rock	Clear Channel

(* stations are listed as coming soon.)

The HD Radio Bottom Line
Total Licensed On the Air

1,691

1,218

Last Month

Total Licensed

On the Air

1,685

1,183

Market Penetration
United States

13,837 AM & FM Stations
(excludes LPFMs)



Number of
FM Stations
Multicasting:

561

Last Month:

519

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Directed

► Continued from page 36

sound. You don't even really notice it until it goes away — then you wonder how you lived without HD.

The next morning I was able to test the unit's two alarm clocks. Either clock can be set to any time, and set to buzz or play the radio. An added bonus: you can even set the volume of the buzzer or radio.

Programming the alarm is a little tricky, but the buzzer sounds disturbingly like a modern office building's fire alarm, which really gets ya out of bed, I can assure you. There's also a snooze/sleep button.

Removing eight screws from the rear reveals a sparse interior. Most of the electronics are packed along the front, bottom and one side; there's a lot of empty space for something so remarkably small to begin with, although the unit still draws 1.5 A at 12 VDC ... quite a bit.

The not-so-good stuff

So far, I've been pretty impressed with this little unit. Now we come to the downsides.

First is audio quality. The supplied speakers are fairly small, and despite attempts at bass ports in the back, there's just not much "oomph" on the low end at all. There's also no EQ or even bass/treble "tone" controls.

I tried hooking up my trusty set of Technics LX-50 home stereo speakers, and the lack of bass was noticeable even on those. Ditto for headphones. Using the Aux port with my iPod set to "bass booster" there was better sound, but I had to turn up the gain very high just to get normal listening volume ... high enough that some minor distortion was evident. I think there's just no way to get a silk purse out of this sow's ear, but hey — it's a table radio.

While the radio can hold 30 presets, programming them is a somewhat tedious process. Nor can you program a multicast channel to be a preset, or even tune to a multicast channel while in preset tuning mode. The radio *does* hold on to your presets though, and the clock, during a power outage.

I also noticed that receiver sensitivity for FM drops dramatically depending on how the antenna is oriented. Many non-savvy listeners just ball up the antenna wire, and doing that on this radio makes it pretty "deaf." Also, there's no mention of how to properly orient a dipole antenna in the documentation.

Speaking of which, the documentation — or should I say, the lack of it — is fairly damning. There's a small and

Product Capsule:

**Directed HD Tabletop
DHHD-1000**

Thumbs Up

- ✓ Compact size
- ✓ Good to excellent sensitivity
- ✓ Good alarm clock
- ✓ HD-R/RBDS PAD display
- ✓ Aux input and headphones jack

Thumbs Down

- ✓ Mediocre sound (weak bass)
- ✓ Poor documentation
- ✓ Ultra-bright display
- ✓ Inability to set multicast channels to presets
- ✓ No "professional" features

PRICE: \$250

Web site: www.directed.com

sparse booklet that's filled with confusing yet repetitive info; most of it in badly-translated English. Fortunately, most of the radio is pretty intuitive, but the lack of good documentation could be a deal-killer for non-technical folks.

My eyes! My eyes!

Another major gripe I have is the ultra-bright blue backlight display. It's comparable to that searingly bright neon from Kramer's apartment in "Seinfeld."

Even with the 10-stage dimmer at its lowest setting, it's still pretty bright for a dark bedroom. Clearly this radio is designed for bedroom alarm clock use, so the display issue seems a major oversight.

With an MSRP of \$250, the DHHD1000 would seem to be in direct competition with the Boston Acoustics Receptor Radio HD tabletop clock radio. Unfortunately, the BA sounds better, looks better and has better features, all for the same price. In addition, when using the same antennas, putting the tuners head-to-head yielded roughly the same receiver sensitivity.

This isn't to say the DHHD is a bad radio. Overall it's pretty good, and out of the box its supplied FM dipole is superior to the BA-supplied "rat tail," giving it a distinct edge to the non-technical user.

And if the price follows a typical pattern of dropping over time as R&D costs are recouped, then I would consider it a worthy contender in the tabletop radio market.

Aaron Read is a staff engineer for Broadcast Signal Lab, technical director for public radio's "The Infinite Mind" and a self-described professional jack of all trades. See www.friedbags.com/blog.

DIGITAL NEWS

Wal-Mart Carries HD Radio

BENTONVILLE, Ark. Some HD Radios are coming down in price, and Wal-Mart is the newest retailer to begun stocking the products.

Wal-Mart is carrying the JVC HD-W10 Mobile HD Radio receiver in approximately 2,000 stores in 85 markets. The radio retails for around \$190.

HD Digital Radio Alliance President/CEO Peter Ferrara said the retailer represents a new level of reach for HD Radio and underscores that IBOC is "is now within easy reach of millions of consumers."

Wal-Mart joins national retailers Tweeter, RadioShack, Circuit City and The Sharper Image in selling HD Radios.

The move is being promoted in an advertising campaign on alliance member radio stations.

Ibiquity Rolls Out Fee Cap

COLUMBIA, Md. Ibiquity Digital launched a new incentive program it says will give small station operators a break on licensing fees for the HD Radio technology.

Under the incentive program, radio owners could cap their one-time license fees at \$10,000 per station. Fees are otherwise due to rise to \$15,000 this July and to \$25,000 next July.

To qualify, licensees must make certain commitments and pay a deposit by September.

Ibiquity says the program is well suited to owners of small groups and independent station owners; it allows participating groups to lock in the license fee on future station acquisitions.

Per the terms of the program, any radio group not currently licensed under a previous Ibiquity conversion incentive would have their primary audio license fees capped at \$10K per station.

Ibiquity's use of the term "group" includes single-station owners.

"We talked to some small-market broadcasters about what sort of program it would take to get them to enter into the program." They gave the company feedback "about what it would take to move groups" to convert to HD Radio, said Scott Stull, Ibiquity vice president of broadcast business development.

"We're looking for a multi-year commitment and in return we're willing to lock in this year's price."

In 2004, Ibiquity offered its first incentive program on licensing fees. Groups that signed up at that time locked in a \$5,000 per-station price. That price is still good as long as groups meet their conversion targets. The same is true with the new incentive, according to Stull.

The largest 20 radio groups own just 20 percent of the AM and FM stations in the U.S., which means the majority of the

Licensing Deadline	Main Channel Licensing Fee	Digital Conversion Deadline
June 30, 2007	\$10,000	Dec. 31, 2007
June 30, 2008	\$15,000	Dec. 31, 2008
Subsequent	\$25,000	None

Source: Ibiquity Digital HD Radio Broadcaster Licensing Fact Sheet

nation's stations are owned by small group owners and independents, according to Ron Davis, chairman of the Small Market Operators Caucus, who endorsed the program in Ibiquity's announcement. He believes the program is a good fit for small, independent broadcasters, as it will help

them accelerate their IBOC transitions.

Qualifying groups, be they multi-station or single-station owners, will commit to license and convert stations under the following terms:

- All group stations already licensed

with Ibiquity Digital must be converted under the existing license terms;

- At least one group station not converted must be by Dec. 31 of this year;

- 50 percent of all group stations with revenues in excess of \$300,000 must be converted by Dec. 31, 2010 based on a schedule outlined in the License Commitment Agreement;

- \$2,000 of the \$10,000 license fee for each station committed under the incentive is due by Sept. 30, 2007. The remaining \$8,000 for each station is due at the time the station is licensed.

The discount applies to all group stations, pending the execution of a 2007 License Commitment Agreement between the group owner and Ibiquity by Sept. 30.

— Leslie Stimson



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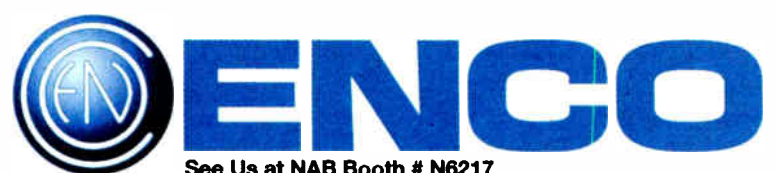
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DIGITAL NEWS

Dice Introduces HD-R Car Converter

LAKE TAHOE, Nev. DICE Electronics says its HD Dice car converter with integrated iPod connection port now supports text display on certain models from Honda and Acura. DICE stands for Digital In Car Entertainment.

The Honda- and Acura-compatible HD Dice also receives satellite radio signals and associated text displays.

Like the vehicle-specific iPod integration kits from Dice Electronics, HD Dice connects and integrates with the vehicle's factory entertainment system and does not need an external controller. Track buttons allow the user to tune among HD Radio stations or to control the iPod.

The HD Dice is now available for some models from Toyota, Lexus, Scion, BMW, Mini Cooper, Buick, Cadillac, Chevrolet, GMC, Hummer, Oldsmobile, Pontiac, Honda and Acura with iPod integration and AUX input.

The HD Dice lists for \$199; an iPod interface cable can be added for \$39.

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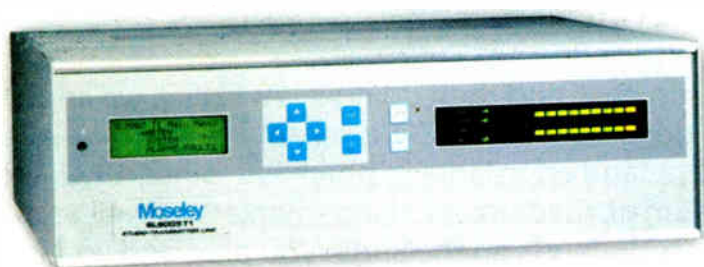


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Where Ideas Turn Into 'Blinks'

Creative Services Group Produces Custom Work for Clear Channel Clients

by Ken R. Deutsch

When the HD Digital Radio Alliance last year introduced edgy radio spots for the new digital technology, using the tag line "Are You Def Yet," the spots came from a relatively low-profile arm of Clear Channel called the Creative Services Group.

Formed in 2004, this entity is a kind of "mini agency" in Atlanta that produces custom commercial work for advertisers on Clear Channel stations in its top 25 markets. The production facility provides services such as audio branding, customized musical underscoring and full-blown jingles.

CSG Studio Gear List

Wheatstone Generation 4 Digital Consoles (3)
Wheatstone SR-9, 5.1 Surround Mix Console

Each room is equipped with the following:

Manley Vox Box Mic Preamps (2)
Neumann TLM-103 Microphones (2)
Kurzweil K-2600 XS Keyboard
Tascam MD-350 MiniDisc recorder
Marantz CD Player
Telos Zephyr XStream
Pro Tools HD 192 I/O
Pro Tools MIDI Interface

Computer Systems:
Dell Dimension 9150: 3 gigs of ram, 300 gig hard drive
Macintosh Quad Processor G5:
3 gigs of ram, 200 gig hard drive, Pro Tools HD 3 system
20-Inch Dell LCD Monitors (3)

Audio Monitors:
Genelec 4-Inch Nearfield Monitors (2)
JBL 4410 A Studio Monitors (2)

Software and Plug-ins:
Pro Tools HD 7.2, Final Cut Pro, Adobe Audition 2.0, Waves Diamond Bundle TDM, Waves SSL Bundle TDM, Sony Oxford TDM, Sound Toys, Antares Autotune 5, Reason 3.0, Vokator, Grm Tools, Reverb One, B.F.D., Drums On Demand, Bombfactory Plugin Suite

Various gear shared between rooms:
Mesaboogie Dual Rectifier
POD Pro
MicroKorg
Korg R.A.D.I.A.S.
Korg Toneworks Tuner
AKAI MPC 1000 Sampler

Four senior producers and 10 other employees are involved in brainstorming, writing and producing concepts for Clear Channel clients; ideas are shared with other stations in the group via the Internet for local adaptation.

Clear Channel production directors can download scripts and finished audio elements

such as music and effects from a private Web site via a process known as SpotShare.

The company aims CSG services at clients with healthy budgets who are willing to accept non-traditional advertising — such as the one- or two-second radio spots Clear Channel dubbed "blinks," and "adlets," which run five seconds.

Though the industry trend seems to be away from traditional :60s, Forrest Martin, a senior producer with the group,

acknowledges that the really-short-spot concept may seem odd to the uninitiated, but says they work well for a certain type of client, "someone with a national brand that can be recognized. For McDonald's we demonstrated how we could make a 1-second blink of their famous 'ba dop ba bah...' theme." Clear Channel officials say it created the short ad concept to help extend established, national brands.

Martin feels many traditional :60s are boring, with messages that could easily be tightened to 30 seconds. The company emphasizes that short spots work best when used in conjunction with other

See CSG, page 42 ▶



Jason Phelps, Vito Gorinas, Forrest Martin and J.J. Foxx



Jason Phelps

Do not take a BRICK to the NEXT PRESS CONFERENCE ... nor your mp3 player

AEQ

Take the AEQ PAW 120 PROFESSIONAL RECORDER

Like mobile telephones, the latest AEQ digital recorder fits comfortable in your hand and in your pocket! The PAW 120 is the ultimate digital recorder for journalists who value comfort and quality!

PAW 120's main features:

- Record, play and edit Linear PCM and MPEG compressed audio Built-in speaker.
- Built-in microphone and XLR adapter, with connections for mono or stereo external dynamic or condenser microphone, including phantom power.
- Stereo or Mono Line Input and Output. Appears as USB removable external device compatible with both Windows and Mac OS.
- Support of BWF file format, allowing for easy integration with radio automation systems.
- Uses two AA dry cells or rechargeable batteries.

AEQ also offers excellent communication and audio equipment:

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- The latest in RPU Technology
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PRODUCT EVALUATION

Powerful Processing in One Rack Space

Vorsis HD-P3 Provides Clean Sound From Any Networked PC

by Rich Rarey

Once in a while a piece of broadcast equipment is so complex, so powerful, that to expose its entire control surface, one would have to have a whole rack of knobs, buttons and indicators.

The Wheatstone Vorsis HD-P3 digital multiband signal processor is smarter than that. It's a snazzy 1 RU device with only level metering and gain-reduction metering on the front — the control surface for which is contained and displayed within the realm of TCP/IP data — making it powerful yet controllable from any networked Windows-based computer. I was not expecting such complexity in an audio processor, yet audio easily flowed through it upon power up, even without connecting its rear-panel RJ45 jack to a data network.

The HD-P3 boasts a comprehensive set

of audio processing tools in that single rack unit: filters; EQ; de-esser; expander-gate; AGC; compressor; multiband limiter; output limiter; M-S matrix; pre-and-de



emphasis; AM bandwidth filter; and HD delay. It is well designed for AM and FM broadcast transmission, and suitable for professional sound applications.

First things first

To begin to explore the HD-P3 features, one must first install the Windows-based control application and connect the HD-P3 to a data network or use a data

crossover cable to connect directly to the controlling computer. Once running, the Vorsis control software presents the user with a pretty interface, and the opportunity to locate and control the HD-P3.

Normally I cringe when equipment has no physical controls. Devices seem to get "lost" easily in the ocean of IP addresses

when changing from the factory default. But the HD-P3 software incorporates the Media Access Control address of the HD-P3 network card, as well as its IP address, and I had little trouble configuring it from its factory default address.

Once located in the network, the physical HD-P3 can be brought online, and the software's dynamic display comfortably fills your 1024 x 768 screen with a

Product Capsule:

**Wheatstone Vorsis HD-P3
Digital Multiband Signal Processor**

Thumbs Up

- ✓ 1 RU size
- ✓ AES and analog I/O
- ✓ Integral delay on AES outputs for synchronizing HD channels to the main analog transmission
- ✓ Pretty GUI interface
- ✓ Fast display response
- ✓ More than three-dozen factory-provided presets
- ✓ Good for AM/FM/HD transmission processing

Thumbs Down

- ✓ Lots of controls; spend the time to program it for your sound
- ✓ Controlling software requires a registration key after seven-day free period
- ✓ Windows computer is required for configuration
- ✓ Must use HD-P3 MAC address to set up controlling software

PRICE: \$1,995

CONTACT: Wheatstone in North Carolina at (252) 638-7000 or www.wheatstone.com.

single window with four integral areas: control, virtual metering and frequency-domain graphs, a title bar and what I'd

See VORSIS, page 44 ▶

CSG

▶ Continued from page 41

lengths. Vice President/General Manager Bob Case says, "Advertisers today are much more interested in shorter length, they recognize that time is precious. We do get calls for :60s every once in a while as well as even longer spots and full sponsored content. It all depends on the strategy and the objective of each individual advertiser."

CSG sometimes produces pieces that run as long as two minutes, more like songs than commercials.

"Whether we're creating a really short spot or a 30-second spot, the key is that we must connect emotionally with the listener," said Martin. "We're not the right guy for clients that want to have a phone number mentioned four times in each spot. We are more useful to advertisers interested in branding their businesses."

Search engine

Here is a sentence from the CSG policy book that you will never hear uttered by a local sales manager: There is a 10-day turnaround policy on all projects.

"Each spot must be approved twice, once in script form and again when the final audio is completed," Martin said. "Liz Smith, our creative director, is responsible for that."

When the written spot is approved, CSG producers have many tools at their disposal including almost every music and effects library from Canadian supplier Sound Ideas. These tracks come with national licenses so the resulting spots can air in any market.

"The search engine makes the choices less overwhelming," said producer J.J. Foxx. "If I can't find what I'm looking for in our libraries, I will go to www.sound-dogs.com and buy it. Sometimes I make my own sound effects using a portable recorder. I have had several interesting conversations with managers of home improvement stores as to why I was shaking paint cans, tossing items on the floor and banging on buckets. I end up buying



J.J. Foxx at work

the items that can give me the sound I'm looking for."

Then there is the Voice Bank.

"This was developed especially for us by Joe Lomonaco, a great production guy in Rochester," said Martin. CSG staff use it to find the right voice for a spot; the access the "bank" online via password. "I can get online and search for just the right voice for any spot by gender, age, name or voice description."

"Some of our talents work for Clear Channel, some go through an agency and some are independent announcers. A lot of them have home studios, but even if they don't, we can usually get them into one of our studios in Los Angeles or wherever they are."

Music Director Jason Phelps is called in when library music isn't enough. With a background that includes a stint backing up pop star Shakira, his own certified No. 2 song on Billboard and videos on MTV, he is more than qualified. Phelps has his own specially equipped, spacious studio capable of accommodating an entire band. But one has to wonder why he would give up the life of a pop star to write music for car dealers.

"I wanted to get out of the artist side of

the business because my wife and I had a baby girl in 2004," said Phelps. "It became difficult for me to hit the road because I missed them tremendously. [Clear Channel's] Jim Cook asked me to move to Atlanta so I could make music for him and I was given the task of re-inventing the radio jingle. No more singing the name of the business. No more singing the phone number. We connect with audiences just like a song."

Phelps regularly hires freelance musicians and singers to contribute to his projects. But all the producers use musical tools to create underscores and effects. Each studio is equipped with a Kurzweil 2600XS keyboard, an 88-note synthesizer/sampler.

"I'm not a musician but I find ways to use that and a number of 'soft synths' [software versions of synthesizers] that are plug-ins for our Pro Tools system," said Martin. "We just did some effects for Disney and I was creating Tinkerbell sounds where in the past I would have tried to pull a something off a library."

Other gadgets favored by Martin include Vokator, a high-resolution vocoder/synth by Native Instruments, and BFD from Expansion, which is a MIDI program

for creating drum tracks. Those letters almost stand for "Big Freakin' Drums."

Help on the way

When CSG's dance card is filled they call in extra troops.

"We have a SWAT team," said Martin. "These are outside producers we trust who help us when we get slammed, but the same approval process is involved on every project."

Creative Services Group may be working on as many as 40 projects at once. Keeping it all straight falls to continuity director Karen Shiflett.

"She is the keeper of the Bonkers List," said Martin. "That's a list of the status of every project we're working on. D.J. Williams is director of client services. You might call him "The Firewall."

"D.J. acts as an agent for us," said Martin. "Sales people from the radio stations are not allowed to contact the producers directly; they must go through D.J." Other members of the team include producer Vito Gorinas, a former jock and station imaging expert; copy writer and research director Summer Mullins; Bob Case, the general manager, who was one of the founders of CSG; and Gabe Warren, director of technology.

In a twist on a familiar industry expression, producer Gorinas likes to say he creates "theater of the blind," which he defines as "painting audio pictures with colors you've never heard before."

Gorinas marvels at the tools available to him.

"I've never had so many creative weapons at my disposal, from HD Pro Tools rigs to plug-ins to music gear. Now on the imaginary front, have they come out with a plug to make me sound like Don LaFontaine yet? That would be sweet."

Radio World asked Forrest Martin to share a tip or two for production directors.

"Never hesitate to ask questions," he said. "And build a network of people. That is really the most important tool you have."

Examples of CSG's work are at <http://beterradio.net>.

Ken R. Deutsch is a former jingle producer and is now enrolled in college at age 55. 🌐



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PRODUCT EVALUATION

Koss Pro4AAT Gets a Grip

Its Latest Generation of Headphones Add Titanium Maintain Grip, Sound-Blocking Cushions of Original

by Paul Kaminski

The most basic signal monitoring for any radio broadcast or production, whether in studio or on remote, is through a set of headphones. Most of us have a favorite set of headphones that we have once used and aspire to own so we can have that special "sound" wherever we go, whether it's on the road or in a studio. For me, that set of headphones was the Koss Pro4.

History

The Koss Pro4 was introduced in 1962. Even in a college radio station environment in the late 1960s, with little to no experience, I could tell the difference in the sound that came from a set of Koss Pro4s and that sound from a set of standard no-name headphones. The Pro4s gripped your head, the squishy cushions blocked out sound, and when driven properly, they had a very nice sound.

The Pro4s even had a fitting so a quality broadcast boom microphone (rare in those days) could be attached without making modifications to the earcup like opening one up and drilling a hole for the microphone mounting hardware.

The model was discontinued in 1967. In 1970, the Pro4AA was introduced and continues in production to this day. In the 1970s, Koss Pro4s went on display at the Smithsonian Institution.

Today

The third-generation Koss Pro4AAT has a titanium-coated diaphragm. It also

has the now-standard 1/8th TRS plug, with a screw adapter so it can mate with 1/4-inch stereo jacks. It has an eight-foot coiled cord, which exits the left earpiece. We tested it in our small studio environment with our Dell Latitude laptop computer and a Peavey PV-10 mixer.

Like its legendary ancestor, the Pro4AAT's headband still has a firm grip, the cushions mold around your ears to provide a seal between the sound and the background, and the system gives you an accurate representation of what's being sent through the mixer or computer. It does not, however, have the mount for a boom microphone like the still available Pro4AA. Going inside the earcup to drill a hole for such a mount would more than likely void the lifetime warranty.

Koss also later introduced a fourth generation, Pro4AAAT.

Nuts and bolts

Koss' published number for frequency response for the Pro4AAT is 10–25 kHz. The impedance is 250 ohms so it might like a headphone amp better than the input from a sound card. The sensitivity is 96 dB SPL/1 mW. Distortion is less than 0.1 percent.

There's a lot to be said for an accurate signal at a reasonable level in your headphones. That's what we found when we used them in our small studio environ-



ment. The ear cushions do a remarkable job of sealing out ambient noise. They also will work to block out noise that can cause feedback, which can occur when you work a sensitive microphone somewhat closely.

We'd expect that they'd handle anything we could throw at them on the road, except for getting lost or stolen. However, for those who like their sound loud, the headphone amplifiers in most studio setups will drive the Pro4AATs to the point where hearing damage can occur.

The Pro4AATs are made (just like Harley Davidsons) in Milwaukee. They have a lifetime "No Questions Asked" warranty.

The manufacturer's suggested retail price on the company Web site is \$99.99.

Product Capsule:

Koss Pro4-AAT Headphones

Thumbs Up



- ✓ Headband grip; won't fall off your head
- ✓ Cushions work well in locking out ambient sound
- ✓ 10 Hz-25 kHz frequency response
- ✓ Low distortion, high sensitivity
- ✓ Screw-style 1/8-inch TRS to 1/4-inch adapter



Thumbs Down

- ✓ No fitting for a boom microphone

PRICE: MSRP \$99.99

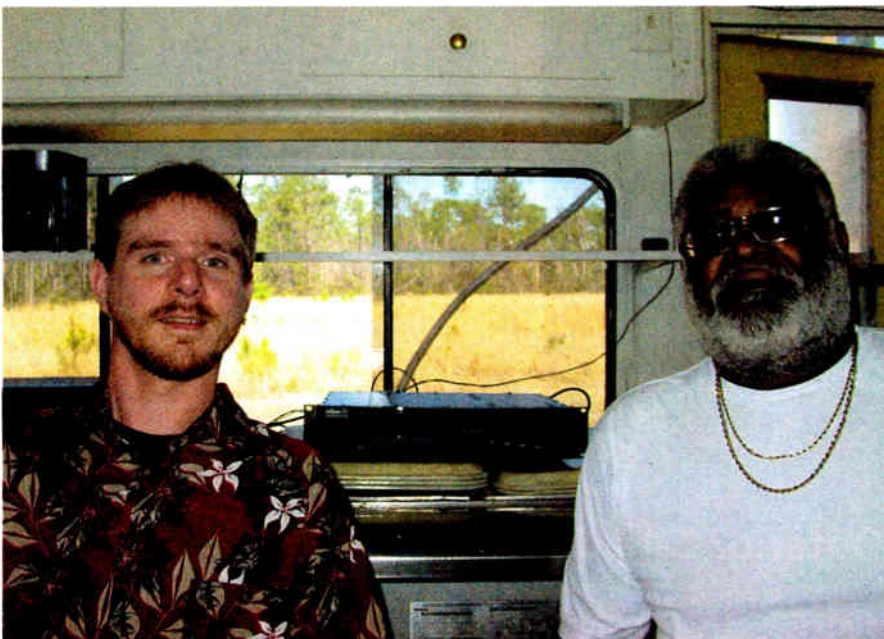
CONTACT: Koss Corp. in Milwaukee at (800) USA-KOSS (872-5667) or visit www.koss.com.

You may be able to find these headphones at a lower price.

You can buy cheaper headphones, and replace them more frequently. There are still Pro4 headphones at work today. Frugality dictates that one would rather buy a single durable set with a strong warranty and pay a bit more, than replace a less capable set that costs less in two to three years or sooner. If you work in a small studio environment and have a substantial investment in computer power and microphones, you need an accurate set of headphones to complement your speakers.

Paul Kaminski is a frequent Radio World contributor, and news director for the Motor Sports Radio Network. His e-mail is motorsportsradio@msrpk.com.

Orban Donates Equipment To Katrina-Ravaged WBSL



As part of its Katrina Relief Program, broadcast equipment manufacturer Orban/CRL donated a refurbished Optimod-AM 9200 to WBSL(AM) in Bay St. Louis, Miss., which recently returned to normal operation after being devastated by Hurricane Katrina in August 2005.

The blues, gospel and talk station is back to full power at 5,000 watts. Chief Engineer Thomas Bradley and General Manager Ira Hatchett are shown with the 9200 in the WBSL temporary studios.

Vorsis

► Continued from page 42 call a "housekeeping" area.

Eight buttons near the top of the window logically illustrate the signal flow from Input to Filter to Expander to De-esser to Compressor/MB Limiter to Parametric EQ and finally, Output. Clicking on one of these eight buttons displays the controls for that section.

For instance, clicking MB Limiter displays the 22 virtual knobs that control the Multi-Band Limiter section. Overall, the eight sections expose more than 50 control knobs and sliders, and over 40 toggle "buttons." It clearly shows why a virtual control panel is better than a physical control panel.

A fine companion to the knobs is a text box immediately below the control that not only shows the current numeric value of the setting but allows the user to type in a numeric value to change that control's setting quickly. The software enforces minimum and maximum values, so you won't wind up with an odd but inaccurate setting.

Always visible and critically important is the frequency-domain graph and the virtual level and processing meters on the software window. The waveform display response is impressively fast, prettily showing audio waveform and three-band dynamic gain reduction. Adjacent to the display are virtual bargraph input and output level meters and limiter gain reduction.

The display speed over a network connection was a concern, but I saw the same near-instantaneous display response when my computer connected to the HD-P3 from home on a VPN tunnel over Fios, as I did when connected to the HD-P3 at work in the same corporate network.

A nice feature is when a particular section is selected, the waveform display graphically depicts that section's settings in distinct easily seen lines and color.

A good read

There's no question the HD-P3 is complex and good documentation absolutely is required.

The Vorsis software does not come with online help but with a well-written technical manual. This is a bonus for two reasons: the computer screen is busy enough without trying to resize and use a Help window; and second, the manual is one of the clearest, friendliest works of professional documentation that has come across my desk.

The manual's wit is wry; in discussing Mid-Side width, it advises against making the image too wide because "an inadvertent excess added by your dainty hand can sound horrible." Its clear explanations and apt comparisons between HD-P3 performance and well-known compressors/limiters made it an easy, pleasant read, enjoyable in a quiet setting so the details and complexity can be appreciated. All HD-P3 features, controls, windows and physical connections are documented and well illustrated.

See VORSIS, page 45 ►

Vorsis

► Continued from page 44

After reading the technical manual, the focus of the HD-P3 became clearer. It has extensive processing capability for preparing audio for AM/FM/HD transmission. For FM, the HD-P3 offers selectable pre-and-de-emphasis for inserting the device into the transmission chain, as well as generating separate L+R and L-R signals for multiplex encoding. The HD-P3 includes AES outputs that have configurable delay for synchronizing main channel audio to an HD channel.

For AM transmission, the HD-P3 has a set of tools to make the AM legal and loud, starting with the Brick Wall filter, emphasis for boosting the "high end" for AM receivers and an asymmetric output peak limiter for controlling positive and negative peaks. The manual states that "the look-ahead output limiter in conjunction with its zero-attack-time 'clipper,' ensure zero overshoot, and allow one to get close to sender linear modulation extremes with confidence." The HD-P3 provides a mono sum output, if desired.

While the HD-P3 is meant to make audio loud and transparent, the manual includes sensible remarks about making the transmission path loud to the detriment of long-term listenability.

In actual use, I initially chose to exercise the HD-P3 by processing a 64 kilobit MP2 program service coming into our plant. The manual cautions repeatedly about heavily compressing low bit rate audio, and processing lossy formats like MP3. (Caution to stations that play MP3 files on the air: Excessive processing will break the audio.)

Find your preset

Because there are so many knobs to play with, I chose to start listening to the more than three dozen factory-provided presets that configure the HD-P3 to a variety of sounds. I found none of the presets exactly made the kind of sound I was after; in fact, the rock 'n' roll presets applied to this low bit rate audio made for poor distorted audio. I finally settled on the Deutsche preset, because it made the signal louder and crisper, with mild compression without artifacts.

I then switched the input to one of our music program services (high bit rate MP3 playbacks, made for HD) and enjoyed playing with the AM_5K setting because it accurately created an AM receiver sound; and the Vocals setting illustrated the HD-P3's power at quick compression. Here, with music, the Rock and Urban presets made a pleasing, listenable intensity with distinctly punchier bass lines, and that smooth and sleek processed sound.

A nice feature of the controlling software is the control and management of the HD-P3 presets. They're easily called up and modified, and the software indicates when you've modified and saved them. Best of all, you can easily compare the original preset against your modification in text form, or click the Compare button to hear the difference. This makes it easy to use a preset as a starting point and develop your preferred sound.

My only complaint about the HD-P3? After dialing around the pleasing presets, returning to an old flat, unprocessed signal is just too boring.

Rich Rarey is master control supervisor for National Public Radio.

PMD660 Powers Blog at 30,000 Feet

Marantz Professional says its PMD660 compact digital recorder powers the airborne audio blog, "Betty in the Sky With a Suitcase." The podcast regularly originates from 30,000 feet. Its host, "Flight Attendant Betty," is a flight attendant for a major airline who records her podcast while flying across the country. She keeps her last name and the airline's name secret.

The handheld PMD660 features portable, battery-powered operation. It offers a choice of recording uncompressed WAV files at 44.1 or 48 kHz, as well as 64 kbps mono or 128 kbps stereo in MP3 format. An optional 1 GB flash card holds more than an hour of stereo or three hours of mono of uncompressed audio, while the unit itself can operate for up to four hours running on four standard AA batteries.

Additionally, the PMD660 has stereo microphones, XLR connectors with +48 V phantom power and is compatible with an optional RC600 wired remote that attaches to most microphones to supply record/pause control, track marking and peak metering from the mic position.

For more information, including pricing, contact D&M Professional in Illinois at (630) 741-0330 or visit www.d-mpro.com.



'Flight Attendant Betty' shares a laugh with a pilot while recording for her audio blog.

ZFR800 Digital Recording Handheld Microphone



CAMOUFLAGED KEYPAD

With the ZFR800, Zaxcom has combined the best of both worlds...

looks and functionality.

The ZFR800 gives you the professional look you deserve with an ergonomic camouflaged keypad for one-handed operation of all recording functions.

The ZFR is all you need on the go, it records on instantly removable memory cards so your audio can get where it needs to be in a flash.

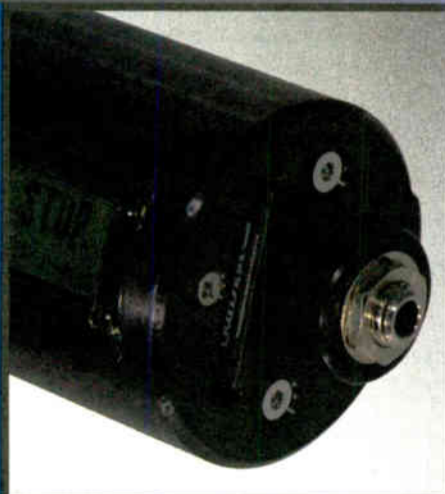
With Zaxcom's fault tolerant operating system files are always recorded uncompressed, the file type and quality are selected later using ZaxConvert software. Format options include .WAV files in 16 or 24 bit resolution with a sample rate of 32, 44.1, 48 or 48.048 kHz or .ZTF (Zaxcom Transcription Format). .ZTF files have a compression ratio of approximately 20 to 1 for quick delivery to transcription houses over the internet.

Multiple ZFR's can be synched together through the optional internal time code receiver.

additional features

- Record up to 8 hours of uncompressed audio on a 2GB miniSD card
- Utilize any Shure® screw-on capsule
- Headphone monitor output for quality control

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Microphones & Audio Monitors

April 11, 2007

USER REPORT

Gizmo Likes Closed-Ear Aspect of 7509HDs

Sonys Hold Their Own in Noisy Rooms; Editors Now 'Trust What they Are Hearing'

by Brian Mackewich
VP Post Supervisor
Gizmo Enterprises Inc.

NEW YORK Gizmo Enterprises Inc is a full-service production and post-production company in New York City. The types of work we do are quite varied. The company continues to evolve as it enters its 13th year in business. Initially a broadcast video post company, we now are a multi-platform media production company that offers an array of creative and technical services with facility-level expertise.

The last few years have seen Gizmo expand into DVD production services, graphics design, HD finishing and multi-platform encoding. This work has been accompanied by a steady increase in audio production. After seeing a steep decline in advertising in 2001, radio production is up.

Another area that has seen steady growth over 10 years is audiobook production. Gizmo Executive Producer Susan Mackewich oversees between 50 and 70 unabridged productions a year. The recording schedule is grueling and constant. Gizmo's three recording studios see a constant flow of performers who record for as many as six and eight hours a day. This is a long time to sit, record and, of course, wear headphones.

It is not easy to wear headphones for



The Sony MDR 7509HDs ease ear fatigue for Brian Mackewich.



7509HD headphones, our thinking changed.

The 7509HDs are extremely comfortable and offer better isolation from ambient sound. The performers, VO talent and

days on end. Ear fatigue from sharp brittle sound is a huge factor. The Sony MDR 7509HDs ease that fatigue considerably.

Trustworthy sound

Our requirements for purchasing headphones have been simple: disposable, and with reasonable sound quality. Why buy otherwise when they get knocked around, break and are not worth getting repaired? However, when a friend and colleague recently suggested we try the Sony MDR

engineers have commented on the vast difference from the "industry standard" phones we have been using for many years. Working with the 7509HDs has enabled our sound editors to trust what they are hearing in the cans with confidence. Tracks that have been recorded, edited or mixed with the Sony 7509HDs reproduce very well when played back on studio monitors. The wide frequency response and smooth sound is fabulous.

It would be wrong to say it did not

take some time to adjust to the sound. After many years of listening to tinny phones with false bass response, there was a short learning curve. Everyone has been compensating for the inefficiencies of inferior headphones for a long time. Now EQ, compression and gate settings generally do not have to be adjusted during the final mastering process. This translates to a savings in time, money and security. Productivity has increased due to the elimination of the sound editors second-guessing what they have been listening to during production.

In a noisy machine room, the Sony 7509HDs perform beautifully. In a room filled with tape machines, computers, drives, servers and storage area networks, trying to evaluate the audio quality of source tapes or Web or VOD encodes is

It is not easy to wear headphones for days on end. The Sony MDR 7509HDs ease that fatigue considerably.

tough. As industry changes have led to the implementation of enterprise encoding stations with RAID arrays, the racks have been filled with gear with redundant power supplies and lots of fans to cool the newer, faster computer processors.

Every project now requires the final product being encoded for the Web, not only for approvals but for distribution in a variety of formats. The closed ear aspect of these headphones is perfect. This work needs to be done in our machine room as the production rooms are busy and having all the right gear in close proximity is key. Being able to accurately determine the quality of both high and low bit rate encodes with the 7509HDs is great. And we have not broken a pair yet. That itself is truly a bonus.

Whether they are used in our Avid HD suites, DVD encode QC, audio rooms or general usage, the Sony MDR 7509HD headphones have truly altered the way we listen. When you can hear better, you produce better work. No second-guessing, no surprises. You need every advantage you can get when production deadlines are tight and budgets tighter. It starts with great people, but you've got to support that talent with great gear. I only wish the friend who recommended them had mentioned them years ago.

The MSRP for the MDR 7509HD headphones is \$265.

For more information, visit www.sony.com/professional. To find the nearest Sony authorized dealer or service location call (800) 686 SONY (7669).

TECH UPDATE

Zaxcom TRX800 Includes Recorder, RF Tx

Zaxcom's TRX800 handheld wireless microphone with internal recording is suitable for use in broadcast, studio and ENG applications. It is an RF transmitter that provides internal recording capabilities for applications where sound quality and mobility are equally important.

The TRX800 handheld uses digital modulation and produces a time code-referenced recording that serves as a backup, important for live or live-to-tape applications where wireless transmission is affected by interference or limitations in the available frequencies. Where most handheld microphones use a compander or audio processing that colors the audio, Zaxcom says the TRX800 sounds similar to audio on a wired cable.

An internal RF receiver in the TRX800 allows for timecode synchronization or remote control to ease editing. The receiver includes SMPTE timecode, jammed from the internal wireless recorder. Audio files are recorded in full-resolution, full-bandwidth form as .ZAX to a removable mini SD memory card. These files are then imported into a MAC or PC using ZaxConvert software, file types include Broadcast Wave and .ZTF (Zaxcom transcription format) for quickly sending audio over the Internet to transcription houses.

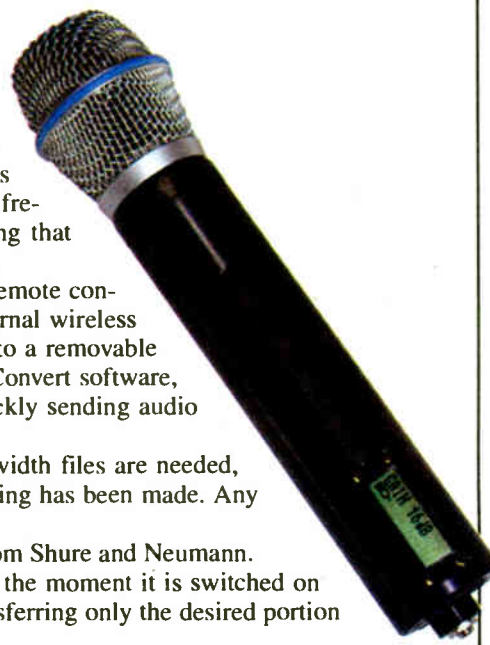
It records full resolution and bandwidth files. If both compressed and full-bandwidth files are needed, the included Windows/Mac OS conversion utility can generate both after the recording has been made. Any supported sample rate can be output from the transfer utility as well.

Use familiar microphone capsules with the TRX800. It accepts screw-on heads from Shure and Neumann.

Additionally, the TRX800 has a continuous loop-record mode, and records from the moment it is switched on for a continuous recording that may be instantly marked and identified to aid in transferring only the desired portion of audio while providing a pre-record buffer.

The TRX800 retails for \$1,895 (capsules sold separately).

For more information, contact Zaxcom in New Jersey at (973) 835-5000 or visit www.zaxcom.com.



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– GREG HEMMINGS
WSLS-TV NEWSCHANNEL 10



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TECH UPDATES

MultiPhones II: Listening Facilities for DJs, Guests

The MultiPhones II multi-user headphones system from Henry Engineering now includes Zoned Talkback. It consists of the Master unit and up to 12 satellite Guest Pods, which are interconnected using CAT-5 cabling.

The Zoned Talkback feature allows the Guest Pods to be divided into three "talkback zones," e.g., Host, A-Guests and B-Guests; or Host, Pro and Con; or just Host and Guests. A producer or call screener can use the Zoned Talkback feature to communicate with Guest Pod listeners in each talkback zone.



The MultiPhones Master unit has inputs for stereo Program audio and Talkback audio. Master Level trimmers for Program and Talkback allow the user to preset maximum levels. The Zoned Talkback function can be controlled remotely. CAT-5 jacks are provided to distribute audio and power to the Guest Pods. Up to 12 Guest Pods can be used, split among the three talkback zones in any combination.

Each Guest Pod contains a stereo headphone amplifier, volume control and headphone jacks. Each Guest Pod has a Cough button, and Mic On LED that can be wired to the user's audio console or other equipment.

The MultiPhones system is optimized for use with contemporary high-efficiency headphones with impedances between 24 and 600 ohms. Because each Guest Pod contains its own amplifier, any combination of headphones can be used.

For more information, contact Henry Engineering in California at (626) 355-3656 or visit www.henryeng.com.

MXL Ships 190, Cube Cardioid Condensers

MXL Microphones is shipping the MXL 190 cardioid condenser mic.

Features include low-noise field-effect transistor design, balanced transformer coupled output, Mogami wiring and a frequency response of 20 Hz–20 kHz. The company says the mic's custom chamber has been tuned to complement the capsule's response for a transparent sound.

The MXL 190 uses a six-micron condenser pressure gradient capsule with a cardioid polar pattern. To ease level matching, the 190 incorporates a 0/–10 dB attenuation switch for adapting to any signal source.

Additional highlights include a champagne-colored finish, a protective metal case for shipping and the inclusion of a high-isolation shock mount for isolation from floor vibrations and resulting noise.

MXL also is shipping the MXL Cube cardioid condenser mic. Features include a gold sputtered diaphragm, and like the 190, FET preamp, Mogami wiring and six-micron pressure gradient capsule.

For more information, including pricing, contact MXL, a division of Marshall Electronics, at (310) 333-0606 or visit www.mxlms.com.



MXL 190

Royer R-122V Combines Ribbon and Tube

The R-122V vacuum tube ribbon microphone from Royer Labs uses the company's active ribbon microphone technology in conjunction with vacuum tube electronics.

The company says the high operating voltage of the vacuum tube provides for headroom that extends beyond what is typical from a standard phantom power supply.

The head amplifier consists of a low-noise, triode-connected military-grade 5840 vacuum tube with excellent transient response and drive capabilities without vacuum tube coloration. The microphone's element is a 2.5 micron aluminum ribbon and uses a Figure-8 polar pattern. Frequency response is 30 Hz–15 kHz +/- 3 dB.

The microphone's triode-configured cathode follower circuitry supports extended cable runs without sonic degradation or high-frequency loss, a capability that is further enhanced by the R-122V's dedicated power supply, which provides ample current to the vacuum tube electronics. Induced noise is eliminated by the microphone's fully balanced output, which is electrically isolated with a Jensen output transformer.

The R-122V is finished in dull satin nickel. Gold or matte black chrome finishes are optional. The system includes a carrying case for the microphone, a microphone sock, power supply, cable, shock mount and documentation.

For more information, contact Royer Labs in California at (818) 847-0121 or visit the company online at www.royerlabs.com.



Holophone H3-D Has Six-Channel Discrete Mic

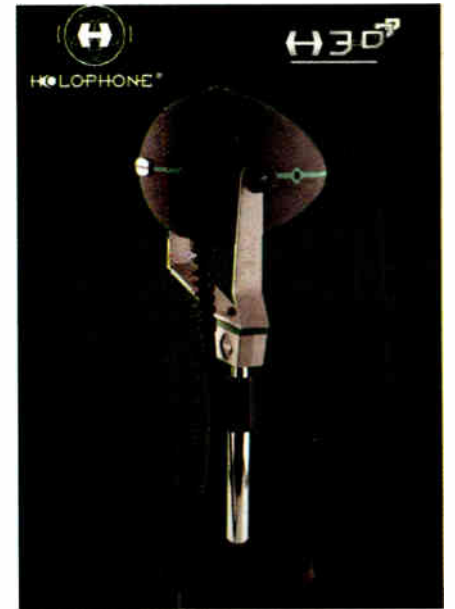
The Holophone H3-D 5.1 multi-channel surround sound mic features five multi-directional full-bandwidth microphone elements and a discrete LFE microphone in an integrated capsule. It offers LED verification of external phantom power for ease of remote setup, and is compatible with standard XLR mic inputs on recording consoles, external preamps and location recorders that provide phantom power.

Features include a six-channel (L, R, C, LFE, LS, RS) discrete microphone, which the company says delivers 5.1 channels without external mixing or signal manipulation; 20 Hz–20 kHz frequency response on five channels (L, R, C, LS, RS); and a multi-directional pickup pattern. The attached 15-foot Monster cable terminates in six Neutrik XLR connectors.

Additionally, it can be mounted on a microphone stand, or flipped over for suspension from a ceiling or truss; and a hand grip and windscreen are available as options. Weight is approximately three pounds.

The Holophone H3-D retails for \$1,695.

For more information, contact Holophone in Toronto at (416) 362-7790 or visit www.holophone.com.



Neumann Adds Digital DSP Models to KM Line

Neumann is expanding its KM series of miniature microphones with three digital models featuring DSP.

The modular KM 183 D, KM 185 D and KM 185 D combine omnidirectional, cardioid and supercardioid capsules with the KM D output stage to offer three directional characteristics. The Neumann A-to-D converter is located next to the capsule. The company says the converter supports a dynamic range that exceeds the capsule, with transparency and no coloration.

Two versions of the digital mini mics are available in classic nickel and black Nextel finish. Standard sampling frequencies, from 44.1 kHz to 192 kHz, are supported.

The integrated DSP functions, including gain, a compressor/limiter with de-esser and a peak limiter, can be configured and controlled remotely via the DMI-2 digital microphone interface and the RCS remote control software. The digital system permits the peak limiter to operate across the available dynamic range in stressful recording situations.

Additionally, Neumann is offering "Connection Kits" to ease connection of the KM mics to S/PDIF and AES/EBU interfaces without the DMI-2.

For more information, including pricing, contact Neumann at (860) 434-5220 or visit www.neumann.com.



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USER REPORT

Heil PR-30, -40 Allow Liberal Processing

by Mike Callaghan
Chief Engineer
KIIS(FM)

Clear Channel Radio — Los Angeles

LOS ANGELES It's rare for something as seemingly benign as a new microphone to generate excitement, but ever since Heil Sound introduced its PR-30 and PR-40 I've seen a steady string of converts who appreciate the exceptional sound they produce and adopt it for themselves.

Bob Heil went back to the basics when he designed these. They have large diaphragms, exceptionally strong magnets for high output and an inherent smoothness that's a pleasure to hear. They work with any preamp and require no phantom power.

Lose the edge

Prior to these being available, many of the Los Angeles Clear Channel stations had standardized on a mic with a certain "brassiness" that seemed to emphasize any "edge" in the upper end. You might say they would make a buzzsaw have more buzz. This accentuation can cause problems in the subsequent processing, especially when it passes through to the Optimod or Omnia that feeds the transmitter.

The Heil microphones don't have this edge. This allows more liberal processing all the way through the chain, and the difference on the air can be dramatic. What typically happens is that one of the Heils replaces the announce mic as an experiment, and within a day or two the program director asks that the others be replaced



Sean Andre, who does afternoons on Clear Channel's KHHT(FM) in L.A., uses the Heil PR-30.

with Heils as well. There's just too much of a contrast between the person on the air and the guest mics.

One thing I have learned is that even a subtle change in the audio coming from a studio seems to be accentuated by the processing that follows. When Rick Dees was at KIIS, he used his legendary RCA BC-7 console, and the germanium transistor mic preamps that came with it. One day, just as an experiment, I tried one of the Doug Fearn vacuum tube mic preamps. The A - B out of the studio wasn't that different, but on the air the difference was astounding. Rick used the Fearn ever since then. And he never used any mic processing at KIIS.

Between the two Heil Models, the PR-40 seems slightly more likely to "pop" on hard syllables than the PR-30. This effect is easily avoided by talking across the diaphragm rather than directly into it. For the most part, the smoothness and warmth of the Heils makes them much more desirable than other microphones common in radio.

They seem especially advantageous on female voices, bringing forth a clarity and voluptuousness that hasn't been heard before.

Heil's pricing makes these excellent-sounding microphones affordable to just about everyone. Even wealthy stations and studios will likely adopt them, because they outperform costlier competitors. One clue to Heil's legacy in amateur radio is that these studio mics were available through ham radio outlets long before they appeared at studio distributors.

Each microphone is packed with a simple mount that accepts the common 5/8-27 thread. More intricate resilient mounts are available as an option. We found these flexible mounts were an advantage, as our talent loves to fondle the mic boom and mount. This vibration, as well as spring noise, can be transmitted to the microphone body and then gets on the air. The rubber mounts avoid this.

The mics are mid-sized and fit well in most studios. Finished in a stylish chrome-satin color, they're light enough to balance on a standard Luxo boom, without needing heavy springs to keep them from drooping.

For more information, including pricing, contact Heil Sound in Illinois at (618) 257-3000 or visit www.heilsound.com.

TECH UPDATES

JBL Subwoofer Has LFE, XLR Inputs

The JBL LSR4312SP Linear Spatial Reference powered subwoofer is based on a 12-inch low-frequency transducer with a neodymium motor structure. It uses a 450-watt amplifier for low-frequency accuracy and dynamic range.

When integrated with LSR4326P and LSR4328P studio monitors, the LSR4312SP subwoofer extends the low frequency of the system, allowing flat reproduction into the 20 Hz range.

The LSR4312SP includes a dedicated LFE (Low Frequency Effects) input and five balanced XLR bass management inputs with selectable crossover for 5.1 surround sound production. Additionally, stereo 24-bit, 96 kHz digital S/PDIF and AES/EBU inputs can be assigned as LFE or stereo bass management inputs.

The subwoofer incorporates an analyzer into the speaker along with JBL's Room Mode Correction, which measures and compensates for low-frequency problems. Calibrate the system by connecting the LSR4300 calibration microphone to a networked LSR4328P or LSR4326P, and pressing a button.

Additionally, the LSR4312SP incorporates the Harman HiQnet protocol to allow networking with LSR4328P and LSR4326P. Configure and control of large surround systems by connecting speakers using supplied Cat-5 network cable.

When networked, the LSR4312SP and the entire system can be controlled from any speaker, wireless remote control or LSR4300 Control Center software.

The LSR4312SP retails for \$1,100.

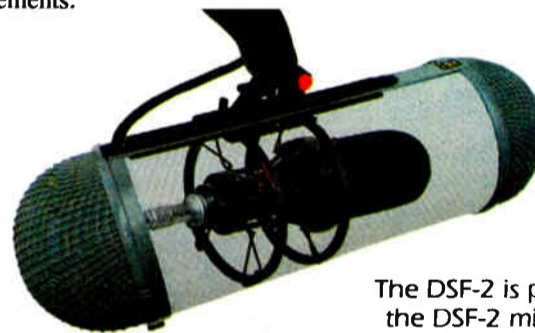
For more information, contact JBL in California at (818) 894-8850 or visit www.jblpro.com.



DSF-2 Provides Surround, Stereo for Remotes

The SoundField DSF-2 broadcast microphone system simultaneously provides the surround and stereo soundscape at large-scale outside broadcast events.

The multichannel audio it generates from a single point source is phase-coherent, which enables a broadcaster to collapse the surround to stereo or mono without loss of information, frequency imbalance or other phase problems associated with spaced microphones or multi-capsule "dummy head" arrangements.



The DSF-2 is pictured with the DSF-2 mic controller.



Processing is in the digital domain, and the 1 RU controller is equipped with digital 750 ohm AES 3-id outputs on BNC connectors capable of driving more than 3,200 feet of coaxial cable, subject to correct cable specification. When used with the 820-foot SoundField mic cable, the microphone head can be situated up to 3/4 of a mile from the DSF-2 controller. The company says this can be a benefit in situations where the remote broadcast vehicles have to be some distance from the venue or performance.

The DSF-2 outputs stereo Left/Right (digital and analog), stereo M/S (digital only) and four channels of SoundField B-Format called W, X, Y and Z (digital only), which is the surround sound information. A lightweight multi-way cable is used to connect the microphone to the DSF-2 controller, which supplies the power to the microphone, allowing use in remote, ENG and studio applications, as well as carrying the individual capsule signals. Microphone parameters can be remotely adjusted from the DSF-2 controller's front panel while monitoring the results on the provided headphone monitoring.

The DSF-2 functions as either a variable pattern single (mono) microphone; a variable pattern, variable width, coincident stereo microphone array; or to generate full surround from the four B-Format outputs, which will then be decoded into 5.1 by the SP451 Surround Processor or Surround Zone software.

For more information, including pricing, contact SoundField distributor TransAudio Group in Las Vegas at (702) 365-5155 or visit www.soundfield.com.

AUDIO PRIMER

Bass Behavior in Control Rooms

by Blažo Guzina

Through years of daily contact with the medium, professional sound operators develop considerable aural expertise.

They spend hours each day listening critically to the nuances of sound that can make the difference between an inadequate production and a satisfactory one.

The best are those who can listen analytically to the operational aspects of the sound signal produced; those who can judge technical equipment independent of content and achieve the ultimate goal of making technique serve content.

Faithful representation

The monitor system should deliver — both through main loudspeakers and the so-called nearfield monitors — a faithful representation of the signal applied to it. Faithful representation means adequate sound level, frequency and phase response, impulse response and harmonic distortion.

When planning control room acoustics, it is important to leave enough room at the mixing console for the sound operator and producer, both of whom need to hear a sound replayed through the monitor system with the highest possible fidelity.

With the studio designer, contractor and equipment supplier, in practice, the future owner of a radio or recording studio may choose between a turnkey contract or a “dust-free” type of contract.

The first scenario means the contract for studio facilities include design, construction and equipping. The final acoustic tests, including the subjective evaluation of the monitoring system, take place with all equipment in place. In addition, a turnkey project may include staff training and a time-limited guarantee for equipment.

The alternative scenario, based on a “dust-free” type of contract, means the studio facilities are designed and built, but are evaluated acoustically with empty rooms, because the installation of technical equipment — by the user or another contractor — will take place later.

From the standpoint of the end user, a sound operator, these two scenarios are completely different, yielding different results and, sometimes, disappointment and anxiety.

Sound experience

In a turnkey project, the owner may regard the result of measurement of the monitoring system response at the sound operator position as the real one, giving a definitive picture of the consequences of the planning of acoustics and, hopefully, the careful positioning of monitoring loudspeakers, mixing consoles, other necessary equipment and the sound operator.

After completion of a dust-free contract, the owner has the results of measurement of the monitoring system response at the position of the sound operator in an empty room.

Following the installation of the mixing console and other equipment, the owner and the sound operators will have a sound experience completely different from the one measured by the contractor immediately after the construction of the studio facilities.

The problem does not concern the high or medium band of frequencies but the lower end. It has always been a challenge for acoustics consultants to get low fre-

quencies under control.

The quality of sound reproduced by a loudspeaker is affected by loudspeaker cabinet construction and the room space within which the reproduction is heard.

In every room where the greatest dimension is less than about 10 meters or

32 feet, the loudspeaker response is almost entirely controlled by the acoustic performance of the room and by the position of the loudspeakers, racks of equipment and mixing console.

Acoustic wave theory

Due to the physical properties of sound, there is no problem with sound frequencies above 300 Hz. It is much harder to keep the response of bass sound, frequencies below 300 Hz, free of the excessive peaks and deeps that inhibit a coherent, solid and tight bass.

Acoustic wave theory explains the phenomenon with a room considered as a complex resonator possessing many normal modes of vibration. The acoustic energy supplied by the source can be considered as residing in the standing waves established in the room.

The characteristic frequencies of vibration of the standing waves depend on the room dimensions and shape. Damping of these waves depends on the boundary conditions — in other words, on the acoustic treatment of the walls, ceiling and floor.

In a rectangular room, a simple relationship exists between the room dimensions and the frequencies of the normal modes of vibration of the room. For non-rectangular rooms, more complex mathematics is involved.

The room, acting as a resonator, responds strongly at the resonant frequencies. The problem arises if — as in rectangular rooms or the worst case, a cube — the normal modes are not distributed evenly across the frequency spectrum.

At low frequencies, in a room with the greatest dimension of 18.8 feet, where the lowest resonant frequency is 30 Hz, there are very few modes, but the number of modes increases rapidly with frequency.

Careful choice

The modes can occur in bunches around a particular frequency. When some of the modes are very close to each other and there is a considerable gap between the other modes, this significantly affects the output of the loudspeakers.

Consequently, every room imposes its own acoustical characteristics on any sound source present.

Careful consideration of the shape and ratio of room dimensions can solve the main problems from the very start of the design process. Otherwise, once a room exhibits resonances and standing waves, it is only possible to more or less dampen them, but not to eliminate them completely.

The influence on bass response of the position, size and shape of equipment is inevitable, forcing one to try to minimize it. A particular problem here is the size of equipment, especially the mixing console.

Luckily, technological developments, especially digitization, are leading to a

It is much harder to keep the response of bass sound, frequencies below 300 Hz, free of the excessive peaks and deeps that inhibit a coherent, solid and tight bass.

miniaturization of some categories of equipment. Contrary to this trend, over the years, there has been a growing demand for increasing numbers of channels, resulting in ever-larger consoles.

However, digitization has a role in the design of mixing consoles too. The introduction of relatively small consoles that act as a front-end for computer software has a positive role in fixing the bass

response at the position of the sound operator.

Additional improvement

For his or her part, the owner of the studio may at least try to position the mixing console on a table that is completely open below, thus eliminating bass problems due to the console front plate acting as a barrier to the flow of bass.

Furthermore, as additional equipment is often placed behind the sound operator, the sometimes huge dimensions of the racks can constitute a reflective surface that results in bass behavior problems in the ears of the operator.

A simple dividing of the equipment rack into two sections can help in regards to this situation.

Additional improvement is achievable by putting the racks as far off to the side as possible, so there is enough space between them.

Also, careful design of the angle of the rack surface can help eliminate direct sound reflection from reaching the position of the operator. Putting the racks on wheels makes it easier to find the best position.

Blažo Guzina is a senior engineer at Radio Televizija Srbije in Belgrade, Serbia. Contact him via e-mail at blazo_guzina@yahoo.com or visit www.geocities.com/blazo_guzina/.

TECH UPDATES

Denon DJ Headphones Swivel 180 Degrees

Denon DJ offers the DN-HP1000 headphones, featuring soft, padded ear cups able to swivel with dual pivot action design and conform to different head sizes. The headphones deliver 3,500 mW of power to each insulated and hermetically sealed ear cup.

The DN-HP1000s feature 180-degree reinforced swivel joints for flexibility and to protect from common breakage. Features include a dynamic, closed back design; large two-inch speaker drivers to preserve audio fidelity at high volumes with heavy bass; and flexible joints that allow the user to fold the headphones to half their size for travel and protection.

The headphones come equipped with a nickel-plated 1/4-inch adapter, which is secured in place with its screw-on design. Once the adapter is removed, the size becomes 1/8-inch for use with portable media players. Additional features include a semi-coiled soft insulated cord; reinforced cable strain for reliability; leather carrying bag; and optional replaceable ear pads.

The DN-HP1000s are housed in a metallic silver color shell, and branded with the Denon DJ logo in stainless steel on both cups. They retail for \$199.

For more information, contact Denon DJ in Illinois at (630) 741-0330 or visit www.d-mpro.com.



TG-X 48 Barrel Coated With 'Comfortable' Lacquer

The TG-X 48 dynamic microphone from beyerdynamic features a supercardioid polar pattern, high gain before feedback and a barrel coated with a soft lacquer coating the company says makes the mic comfortable to hold in the hand. It is suitable for vocals and the miking of instruments, and can be used as a handheld or used on a stand.

The TG-X 48 also has an integrated pop shield that reduces “pop” noise associated with close vocal miking. It comes with a microphone clamp and pouch, and retails for \$99.

For more information, including pricing, contact beyerdynamic in New York at (631) 293-3200 or visit www.beyerdynamic-usa.com.



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TECH UPDATES

Blue Has Woodpecker Active Ribbon Mic

Blue Microphones debuted the Woodpecker, an active ribbon mic with a wood finish. The company says it combines the low noise of Blue's Class-A electronics with the sound of its aluminum ribbon pressure-gradient transducer. Its frequency response is 20 Hz–20 kHz; its weight is 1.6 pounds.

The Woodpecker includes a solid brass shock-mount and wood storage box. It retails for \$1,299.

Blue also offers the Raven dynamic mic and the Cardinal, a cardioid condenser suitable for capturing the detail of voice and instrument in live sound or studio applications. It employs Class A, discrete ultra-low noise amplifier circuitry.

For more information, contact Blue Microphones in California at (818) 879-5200 or visit www.bluemicro.com.



Adam A7s Feature ART, Carbon Fiber Woofer

Adam Audio is shipping its A7 powered studio monitors, two-way nearfield studio monitors.

They combine the company's Accelerated Ribbon Technology folded ribbon tweeter with a 6.5-inch carbon fiber woofer.

Powered by two 50 W amplifiers, the front features a power switch and detented volume knob. The rear houses controls for tweeter level as well as two shelving filters for high and low frequencies. The A7 also provides both balanced (XLR) and unbalanced (RCA) connectors.

ADAM Audio's A7 monitors retail for \$999 a pair.

For more information, contact Adam Audio USA in California at (818) 991-3800 or visit www.adam-audio.com.



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AKG Headsets Have Closed-Back Ear Cups

The AKG HSC and HSD headsets are suitable for on-air broadcast use. They are based on the AKG Studio headphones and feature closed-back ear cups.

The HSD models combine a gooseneck-mounted dynamic microphone with a hypercardioid pickup pattern for use in loud environments. The HSC models come with a cardioid condenser microphone. Both series come with a choice of on-the-ear (171) or around-the-ear (271) closed-back AKG Studio headphone.

The HSD models feature boom arms that rotate 270 degrees for placement on either side of the user's mouth, plus intelligent mute control that turns off the microphone signal when the mic is moved away from the user's mouth. The models also feature a detachable cable terminated in a locking five-pin mini XLR connector. The circumaural 271 models also feature a switch that mutes the headphone signal when the headset is taken off.

For more information, contact AKG Acoustics in California at (818) 920-3212 or visit www.akg.com/us.



Precision 8Ds Use Dual Concentric Driver

Tannoy's Precision 8D line of active monitors incorporates Tannoy Dual Concentric driver and WideBand technology.

The company says they offer low levels of distortion, smooth response, accurate phase control and high sensitivity levels.

Additionally, they have midband- and high-frequency trim shelving controls, and offer a choice of power and cabinet sizes, and analog and digital input trim facilities.

The Dual Concentric high-frequency drive unit is effectively two merged drivers. It is positioned on the back of the low-frequency driver so that they are on the same axis. As a result, sound energy is propagated from the same point and delivered through the center of the low-frequency cone.

The company says this approach provides a constant time delay over the frequency spectrum, offering better transient performance and sound quality with better harmonic alignment than a displaced source monitor design.

A set of DIP switches on the rear control panel allow the selection of an optimum speaker response for difficult monitoring situations, so that the frequency response at the listener's ears is linear and flat. Optimization can be preset for far-, mid-, near- and close-field situations in combination with free space, half-space, quarter-space and extreme eighth-space corner situations.

For more information, contact Tannoy in Canada at (519) 745-1158 or visit www.tannoy.com.



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TECH UPDATES

REV System Features Remote Monitoring

Electro-Voice says its REV wireless system offers new and different features from its predecessor, the RE-1. The analog audio path was developed with Digital Audio Labs.

REV-Link PC software enables remote monitoring, control and programming over a CAN bus connection through an EV UCC-1 converter or EV Netmax N8000. Factory-set channel groups allow up to 16 systems to operate simultaneously in one frequency band. There are more than 950 possible channels, programmable in 25 kHz steps across 24 MHz operating bandwidth. ClearScan automatic group and channel selection eases setup.

REV offers two handheld options: a metal compact handle for concert and broadcast; and the Presentation Handheld for rental house and other applications. Additionally, it offers four capsule options.

Electro-Voice also offers the PolarChoice Boundary Satellite multi-pattern wireless boundary microphone. Features include selectable polar pattern for adapting to acoustic environments. Choose between omni, cardioid, supercardioid or figure 8. The mute switch can be programmed to operate as either latching on/off or momentary push-to-mute/push-to-talk. Additionally, blue LED displays mic status to the user.

For more information, contact Electro-Voice in Minnesota at (952) 884-4051 or visit www.electrovoice.com.



PROline 550s Offer Speed Switch Ear Pads

Ultrasone says its PROline 550 headphones were designed as an improvement on the HFI-550.

With the same 50 mm Mylar driver, the PROline 550s also have detachable cables and speed switch ear pads. They are suitable for broadcasters and DJs.

The company says the larger, circular ear cups produce a sound that is wider and richer than the HFI-550s, along with better bass response and isolation. PROline headphones also feature 98 percent EMF shielding standard to protect the user's health as well as his/her ears.

The PROline box includes two detachable cables, one coiled and one straight. The straight length is approximately 9 feet; the coiled is greater than 9 feet with gold plated jacks. A 1/4-inch to 1/8-inch gold plated adapter is included, as are a spare pair of speed switch ear pads, a demo CD and a carrying bag.

The PROline 550 retails for \$239, and the PROline 650 retails for \$299.

For more information, contact Ultrasone in Tennessee at (615) 599-4719 or visit www.ultrasone.com.



A-T: ATH-M50s for Monitoring, Mixing

Audio-Technica says its ATH-M50 studio monitor headphones provide accurate response and listening comfort. They are suitable for monitoring and mixing, and feature a collapsible design for portability and storage.

Circumaural earpieces swivel 180 degrees for one-ear monitoring, and padded ear cushions create a seal for isolation. The adjustable headband is padded for comfort during long sessions. A coiled OFC litz wire cable at the left earpiece terminates to a gold-plated 1/8-inch connector with included screw-on 1/4-inch adapter.

Audio-Technica says its driver technology and components deliver power handling and high SPL capabilities while maintaining clarity of sound throughout an extended range, with resonating bass and vocal projection. The headphones feature 45 mm large-aperture drivers with neodymium magnet systems for signal transfer.

The ATH-M50 headphones retail for \$199.

For more information, contact Audio-Technica in Ohio at (330) 686-2600 or visit www.audio-technica.com.



EK 3241 Has 36 MHz Tunable Switching Bandwidth

Sennheiser debuted the lightweight EK 3241 portable receiver, which it says is suitable for location sound recording, and improves upon its predecessor by using a 36 MHz switching bandwidth that is tunable in 5 kHz increments to generate 7,200 frequency options. Features include a redesigned interface.

The EK 3241 can be powered from a camcorder or via a rechargeable battery that delivers between nine and 18 hours of continuous operation. Battery status is displayed in detail.

The unit ships with 32 custom frequencies preprogrammed, and users are free to store an additional 20 frequencies of their choosing in a user memory bank. As an optional feature, the EK 3241 offers a Command Channel function, which opens up a second audio channel to the mixer. Users can switch between the normal audio channel and the command channel, or they can mix the two.

For more information, including pricing, contact Sennheiser in Connecticut at (860) 434-9190 or visit www.sennheiserusa.com.



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◆ READER'S FORUM ◆

NRSC

I read with interest "NRSC Tackles AM Bandwidth Issues" (Feb. 14). When the NRSC tested the 30 receivers to determine optimum audio transmission bandwidth, I wonder if the NRSC subcommittee considered the millions of existing AM receivers, many of which have bandwidths extending to 8 to 12 kHz.

Clear Channel AM broadcasters under the guidance of Jeff Littlejohn have reduced their bandwidth to 5 or 6 kHz to "reduce interference in the band." These Clear Channel stations are quickly discovered upon casual scanning across the AM band, as these stations sound dull and lifeless compared to the full NRSC bandwidth AM stations.

Why would any AM broadcaster using the NRSC mask want to cripple their signal to sound like the Clear Channel stations? Surely these broadcasters will fight any reduction in audio quality and clarity for their listeners.

I find it amazing that AM broadcasters have had audio bandwidth capabilities extending to 10 kHz for over 50 years, yet now at this time with the advent of HD Radio, Jeff Littlejohn

ers all played by the rules, would there be an interference issue? Gee, what was that ancient term we used in the past for overmodulated, over-processed audio ... oh, yes, splatter. It's still around.

Does anyone know how to set up AM processing anymore? What is the reasoning for limiting an AM station's

Why would any AM broadcaster using the NRSC mask want to cripple their signal to sound like the Clear Channel stations?

— Jack Giehl



wants the NRSC to bring to this practice to a halt.

If reduction of interference in the AM band is truly what is driving this decision, then how is it possible that HD (IBOC) transmissions can be promoted and allowed, with the continuous noise interference that occurs to the first- and second-adjacent channels? Doesn't Mr. Littlejohn also consider this as interference?

Maybe all of this is a ploy to have the NRSC convince the FCC to reduce the quality of existing AM stations so that they sound inferior to HD AM transmissions.

And this is called progress?

Jack Giehl
Cincinnati

I am concerned the NRSC seems to have lots of time to be worried over AM bandwidth, as far as interference goes, while no mention of modulation or processing has been addressed.

The AM band was established with the 10 kHz bandwidth to minimize interference to adjacent channels. Then someone comes along and decides to drop AM stations in here and there, reducing channel protection. If the play-

bandwidth? There are still many AMs playing music formats, another reason for keeping radio ownership rules under control and away from corporations who relegate the AM spectrum to the wasteland of "specialized formats."

Curtis Cleland
Carlisle, Pa.

Cat People

As a regular reader and cat lover, I enjoyed James Careless' featured article regarding "Tiger," President Calvin Coolidge's cat ("Radio Rescues President's Cat," Feb. 1).

The fact that Secret Service agent James Hanley stepped up to the WCAP microphone on March 24, 1924 to broadcast a description of the black-striped "orange" feline was not lost on my wife Laura. As she accurately pointed out, the color of the cat could have marked the historical beginnings of what broadcasters now know today as ... the AMBER Alert.

Thanks for the entertaining and informative article.

Frank Grassi
Brooklyn, N.Y.

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GUEST COMMENTARY

It's Lonely at the Mountaintop

The Death of an Engineering Colleague Makes Me Rethink Industry Practices

by Tony Lopez

Doug Wilson and I had a few things in common. These included a transmitter site in Rye, Colo., and a frustration of trying to reach it during winter months. It is one of the hardest transmitters to reach, often inaccessible even with four-wheel drive vehicles and ATVs. Snowstorms dump up to several feet of snow at a time and the ground is something you won't see until spring.

Doug was instrumental in helping me resolve recent issues with my combiner and a new antenna. We ended up spending many late nights in search of solutions for transmitter issues. After collaborating on numerous occasions and sharing many meals, we became good friends.

It seems as quickly as this friendship progressed, it was taken away. Doug Wilson, who worked primarily as a contract engineer and who was well liked by fellow southern Colorado broadcasters, died after reaching a remote transmitter on Badger Mountain near Wilkerson Pass on Jan. 19.

On foot

I spoke with Doug the morning he left to handle the transmitter failure. He also talked with KTLF/KTPL General Manager Karen Veazey. She told him he could take another person with him and that the station would cover the extra cost. He felt he could handle the situation alone.

Doug left his house at about 10 a.m. to respond. Badger Mountain is approximately 9,500 feet tall and extremely steep. The trip is 5.2 miles from the entrance gate to the transmitter site. Doug apparently traveled as far as he could on his six-wheel ATV, making it three miles before getting stuck. After that, he abandoned the vehicle and proceeded on snowshoe to the site. He trav-

eled two miles on foot in record cold and through above-average snow.

Doug was in contact with several people via the ham repeater after getting the transmitter restarted. His last transmission ended in static but no one suspected



This photo of Doug Wilson was taken a week before his death. He and Tony Lopez had attempted to reach the KTPL/KDZA FM transmitter site.

than anything was wrong. But when he didn't return to work the next morning, Doug's employers at the stations contacted search and rescue. Dr. Ronald Johnston, a member of the board, flew in his private plane to look for him. Authorities set up a command post at the bottom of Badger Mountain and sent teams into the field to look for him.

It didn't take those teams long to find Doug in the transmitter building. He had died from massive coronary disease. He was just 53. Contract engineer Harry

Russell, who also works for Light Praise, stayed at the command post until search and rescue brought Doug's body down.

The news was shocking to me. In the time spent with him, I found that Doug was an extremely health-conscious individual. He was thin, and a vegetarian since the age of 18. I would have never expected something like this would happen to someone like him.

Doug was not married. Another sad note is that his mother Betty, age 80, died two weeks after he did. He left no immediate family.

Alone

Doug's death apparently was from health problems. But the circumstances also shed light onto a serious issue of broadcast engineers traveling to remote sites alone.

When we don't have to worry about weather, we often have to think about

attacks from mountain lions and bears, animals commonly seen at many of these sites. Many of us are accustomed to going to such sites alone and we never think that anything will happen to us.

Another broadcast engineer died at a transmitter site not long ago, reportedly electrocuted and not found for two days.

These incidents have opened my eyes to the fact that things can happen. When they do, who is going to be around to help?

I will not snowshoe up to any remote site any more. Motorized vehicles tend to frighten away most animals in forest areas, making the trip safer. If I can't

Doug's death apparently was from health problems. But the circumstances also shed light onto a serious issue of broadcast engineers traveling to remote sites alone.

reach a remote site by motorized vehicle of some sort, I will no longer go.

Some companies won't pay for two people to go to a transmitter site at the same time. Often, it's not even feasible to send two people to a site. In our industry, generally the decision is left up to the engineer. Perhaps broadcast companies should take the call out of engineers' hands and mandate that no engineer can travel to a remote transmitter site alone. Perhaps the industry needs new policies like that. And if an engineer does have to travel to a site alone, how about a requirement that the engineer must be checked on every so often, even if by radio?

I don't know if the presence of another person might have helped in Doug's case. Perhaps if someone had been with him, they might have had a chance to try to save him. Regardless, the industry should debate whether we need policies to ensure help will be close by and our calls for assistance will be heard.

The author is chief engineer for five Clear Channel stations in Pueblo, Colo. Ray Uberecken, chief engineer for Citadel Communications and a friend of Doug and his family for 30 years, was instrumental in providing information regarding this incident. 🌐

◆ READER'S FORUM ◆

Cold Shoulder

Congrats to Radio World for creating an excellent electronic format allowing easy access from anywhere in the world. Thank you.

I read with great interest Skip Pizzi's column "Radio's Royal Family Redux" and the article "Radio Has Been Awakened From a Sleep State," both in the Feb. 1 issue. Skip's article so impressed me I called him immediately to express my excitement and support.

For six years StratosAudio has presented the interactive radio technologies Skip describes in his article to the major players in the radio industry, receiving responses such as "we're focused on HD," "we're focused on streaming," even antagonism and opposition.

In 2001, we offered PAD software at NAB in New Orleans and were laughed

at by visitors from Finland stating RDS was "old technology."

In 2003 we presented a working interactive automotive radio built with Motorola and Hyundai Autonet. That same radio won "Best of Innovations" in 2004 at CES in the Mobile Audio division.

In 2004 we completed our first interactive FM radio cell phone with one of the top four global manufacturers, allowing presentation of dynamic menu systems, video association, voting, real-time acquisition of digital content, all paralleled on an affiliate Web site, presentable in station Web sites, combined with real-time reporting and an excellent advertiser tool for building interactive ad campaigns.

The technology Skip mentions, and more, has existed for years and is available today from StratosAudio. We have

made every effort to work and partner with leaders in the radio industry. dMarc tried the same course and experienced what Mahatma Gandhi described so well: "First they ignore you, then they ridicule you, then they fight you, then you win."

dMarc was left to pursue a disruptive business model in order to achieve their goals, one of which is to help radio.

Why is it that companies so interested in helping radio ultimately get the cold shoulder from a small but powerful group involved in U.S. radio, especially at a time when profits wane, listenership declines and analysts berate?

If my comments make you angry, you're probably part of the problem. If not, give me a call.

Kelly Christensen, CEO
StratosAudio Inc.
New York

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◆ READER'S FORUM ◆

Shotgun Review

Francis J. Hensler said he couldn't find an HD Radio tuner to feed his aux input (*Reader's Forum*, Jan. 17). I just bought this very type of tuner.

It's the Sangean HDT-1 HD radio component tuner. It works nicely but even in New York City, the material on the HD channels ain't nothing to write home to mama about.

*Ernie Nardi
MSG TV Network
New York*

Northern Exposure

Regarding your IBOC in Alaska article ("Alaska Pubcasters Proceed With HD-R Projects," Feb. 14), having had the opportunity to work in Alaska a few years back, it brought back some fond memories, but the pictures you guys took really summed it all up. The picture on the front page (below) is great. Hey Chuck (Lakaytis): Leave the transmitter, send the Evinrude!

On page 5, the shot of the engine cowling open and the mechanic poking around the engine of the DC-6 (right) pretty much sums up the "Alaska Experience" when it comes to getting equipment and sometimes people to and fro.

There was an airline that used to have the slogan, "Nobody Knows Alaska, Like Alaska Knows Alaska." Truer words were never spoken.

*Rick Kemp
Director of Engineering
Journal Broadcast Group
Boise, Idaho*

Blessing In Disguise

Regarding the article "Help! I Have to Train an Engineer!" in the Nov. 22 RW:

Recently I said what was in this article to my supervisors. The response I received from them: My other duties were more important.

For six months I was a promotion director for two radio stations, and voice-tracked a five-hour midday shift. They expected me to complete voice tracking within one hour, and demanded it take no longer than two hours. Having no time for "show prep," I was reduced to "... that was ... I am ... here is ..." And they were satisfied with that.

Thankfully, I was fired.

*"Slick" Mike Edmonds
Tucson, Ariz.*



Rick Kemp identifies with the 'Alaska Experience.'



Radio's Second Golden Age?

Ratings and time spent listening keep slipping for many stations as alternative media and new technology chip away at the audience. Wall Street continues to cast doubt on the long-term growth and value of U.S. terrestrial radio.

But on the other side of the Atlantic, breezes of change are blowing in the opposite direction, especially for radio in the United Kingdom.

A recent edition of the Belfast Telegraph in Northern Ireland reported: "According to figures released yesterday, the digital age has created a new golden age of radio, with the number of listeners in Britain at a record high of more than 45 million every week."

You may ask: With the iPod and Internet explosion sweeping the globe, how could this be possible?

The Telegraph article reveals that the Net itself is actually behind such an implausible development: "The digital revolution and the expansion of new ways of accessing information through the Internet has given a huge boost to one of the older and more traditional forms of electronic media — the radio."

Those who chide our industry for being left behind in the online era may be compelled to rethink its prospects. Radio's impact on the Internet in the United Kingdom is impressive: "The figure for the last three months of 2006 is the highest since Radio Joint Audience Research (Rajar) began compiling records in 1992, and is attributed to growing numbers of people tuning in on the Internet, digital television and mobile phones. Rajar said almost 8 percent of people aged 15 and above listen to the radio on their mobile phones, a 24 percent increase over the same period of 2005. A quarter of 15- to 24-year-olds said they tuned in this way. Listening over the Internet rose by 10 per cent."

Podcasts available for downloading from radio Web sites are also more popular in the UK: "More than 2 million people, the equivalent of 17 percent of all owners of MP3 players, listen to the audio downloads — a rise of 15 percent on the previous three months. The figures are likely to rise as more content is made available as a podcast."

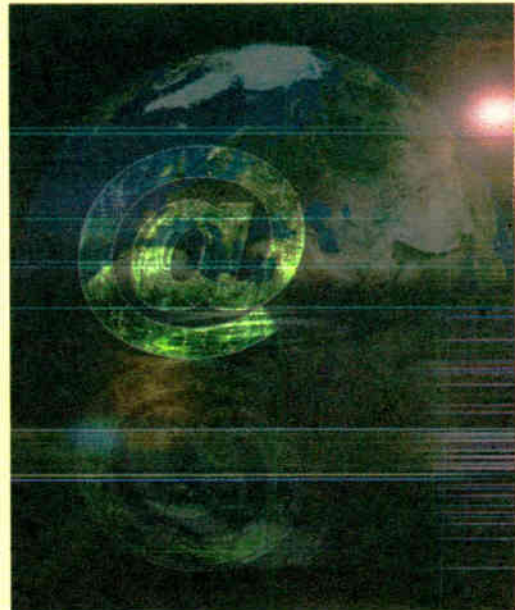
Jenny Abramsky, the BBC's director of audio and music, added to the evidence, telling the Telegraph that radio there has found widespread acceptance and use via the Internet.

"The figures show that early adopters are prepared to embrace what has traditionally been seen as the more fustier of mediums. Radio, as something which is intensely personal, is also a much more suitable medium for podcasting than television ... It's essentially what radio has been doing for a long while anyway." She said radio still plays an incredibly important part in people's lives and, despite the range of new media available, listeners continue to value the close relationship they have with it.

The experience of U.K. broadcasters reinforces what we've been hearing at home: the future of radio and the future of online are entwined. For instance, public station KCRW(FM) in California recently received a three-year, \$600,000 grant from The Annenberg Foundation to develop business models to sustain its Webcasting activities and further develop its online music service.

These reports are promising and herald a new reality for radio everywhere: While content is still king, the Internet is a crucial resource and alternative platform to reach existing and expanding audiences. Stations that embrace this truth and invest accordingly will be much more likely to enjoy long-term viability.

— RW



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