



RADIO WORLD

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THE WONDERFUL WORLD OF IPAD

• Workbench helps you plug in with your tablet. — Page 16

ON THE ROAD AGAIN

• How you can take advantage of listener commutes, with transportation-themed promos. — Page 24



Photo by Felix Manuel Burgos-Trujillo

EXPERIMENTS IN SOUND



Photo by Jim Peck

• In his Vegas engineering keynote, Kevin Gage updated listeners on the work at NAB Labs. — Page 38

Dashboard Has Become a 'Wild West'

'Connected car' experts predict HD, Internet in-car receiver penetration

BY LESLIE STIMSON

Rising cellphone use in cars, longer commute times and the introduction of newer tech in the dashboard are creating a "wild, wild west" atmosphere that's hard even for automakers to navigate, according to consumer electronics and auto experts.

"We've seen more change in the vehicle dash in the last five years than in the previous 20," said Connected Vehicle Trade Association Vice President of Industry Programs Valerie Shuman at the recent NAB Show.

The convergence of such disruptive forces is both a challenge and an opportunity for radio, experts agree.

Addressing industry talk about radio's future in the car dashboard, Lincoln Financial Vice President of Engineering Barry Thomas said it's not so much that radio would be left out of the dash as that the medium could get "lost in the shuffle" by busy consumers, given the proliferating competing technologies in the car and those to come.

The smartphone has had a tremendous impact in the connected car, said Shuman. She said no one is thinking

of taking radio out of the car, but that the so-called "center stack" is becoming more like a big-screen computing platform.

At the same time, drivers are spending an average of 16.5 hours a week in the car. Sixty-seven percent of drivers own a smartphone and 70 percent of

cellphone use takes place in the car, according to Jon Bucci, an automotive consultant who recently retired from Toyota's connected vehicle division.

The big push regarding connected cars is in the area of safety.

"We kill 33,000 people a year on our roads," Bucci said. (continued on page 3)

Who are RW's 2013 'Cool Stuff' Award winners?



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World Radio History

DASHBOARD

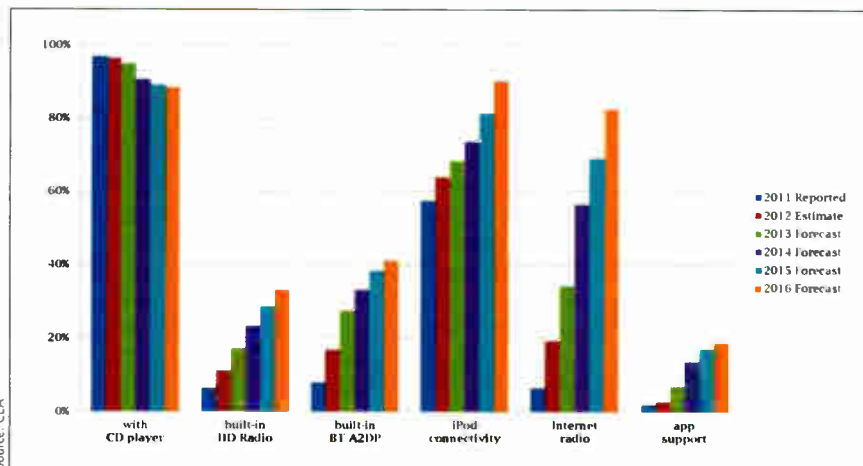
(continued from page 1)

roads.” Shuman said, adding that automakers are developing vehicles to operate more efficiently in stop-and-go traffic. Under development are cars “that can hit the brake and the gas for you” as well as keep a good distance between your vehicle and the one ahead of you, freeing up some of a driver’s time.

Changes coming to the car dashboard are huge, and local radio’s competition isn’t limited to other stations. Lots of people want to make money from that transformation, Shuman said, including automakers, their suppliers and the telecom industry.

SAFETY VS. CONSUMERS WANTS

Building a new car platform typically takes three to five years. Connected car services cause disruption in the car industry because those changes are happening more quickly, according to Bucci, now executive vice president of strategic planning for Concannon Business Consulting.



While broadcasters improve their audio and in-dash displays, the penetration of Internet radio in the car could grow significantly over the next few years. In the third column from the left, 'BT' indicates Bluetooth capability.

he continued, they can't have that, for safety reasons. "All it's going to take is one celebrity to wrap their car around a tree, and the car company didn't disable something to prevent that activity."

In developing Entune, Toyota looked at factors such as "task time" and menu depth" when determining which con-

CD PLAYERS ON THE WANE

What of trends for the physical radios still found in the dash?

RW has reported that the in-dash CD player is on the wane. CEA Senior Director of Technology & Standards Mike Bergman confirms that trend in the aftermarket product world.

May Is Microphone Mania Month at BSW!

If the "other guys" hadn't taken me to the cleaners, I'd be soaking up BSW's great deals!



Toyota introduced its Entune infotainment system in 2011 after only 17 months of development. At the time, "that was unheard of," Bucci said.

He agrees with Shuman that automakers have their eye on safety. Young buyers are eco-conscious. They want to stay connected while driving, to decompress or stay productive. "Customers are saying, 'Why can't I just plug in my device directly?'"

"Customers want their content, when they want it on the device," Bucci said, and potential car buyers want a full browsing experience in the dash; but,

nectivity features to offer in the vehicle. For safety reasons, Bucci said, the automaker must determine "how far do you let them go before the screen locks?"

Circling back to how dashboard disruption affects radio, Bucci advised broadcasters to create "a simple environment."

"We're too overloaded." Listeners still appreciate air personalities and speak to automakers about the surprise and delight of discovering new music from radio. "We still think content is king," said Bucci, speaking of automakers in general.

The average aftermarket receiver purchaser is a young male age 18 to 34. The average car is 11 years old. In general, purchasers want more features than are found in the original in-dash receiver, so they're buying replacement equipment. Some aftermarket purchasers include families with kids who want to purchase more capable navigation systems, Bergman said.

He uses the new Pioneer AppRadio as an example of an in-dash aftermarket receiver with no CD player. "They don't believe it's necessary anymore in that product. It does have a radio," said Bergman; and the radio image on the lower left of the touchscreen "is as close to the driver as you can get." RW featured the Pioneer AppRadio in our post-CES coverage in the Feb. 13 issue.

And what is the impact of all of this dashboard activity on HD Radio?

Shuman says iBiquity Digital has

(continued on page 5)

MORE DASHBOARD

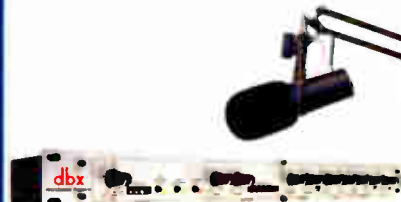
This is one in a series of articles about radio's role and future in the evolving automobile dashboard. To read other articles visit <http://radioworld.com/dashboard>.



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Cool Stuff, Plus Four Good Ideas

Several examples of radio broadcast organizations doing smart things

In this issue we report on recipients of the Radio World "Cool Stuff" Award which, as always, were chosen by a group of real-world broadcast engineers who work in both commercial and public radio.



I welcome your own suggestions for the coolest stuff you saw at the spring show. Write me at radioworld@nbmedia.com.

Meanwhile, here are a few cool items of other sorts that have come across my desk or have been discussed on the Radio World website. If you aren't receiving Radio World NewsBytes each day and visiting radioworld.com regularly, I encourage you to do so, to take full advantage of the free information and resources there. Sign up for our e-newsletter at radioworld.com/subscribe.

Univision Radio recently renamed the WADO(AM) studio in New York City in honor of long-serving Chief Engineer Richard Ross. When's the last time that happened to a CE at a radio station?

The studio is at WADO(AM) in New York. "The dedication of the Richard Ross Studio is in honor of someone who has industriously worked his half century career at Univision Radio," said Felix Perez, general manager of Univision Radio New York. "We truly appreciate his hard work in delivering on our commitment to inform, empower and entertain the New York metro area Hispanic community."

In the past I have complained that radio group owners — quick to send out press releases about their general managers, sales directors or air talent — rarely highlight their engineers. Here's a welcome exception.



Richard Ross of Univision

Another broadcast company acting smart: Premiere Networks, part of Clear

Channel Media & Entertainment, is now a Primary Entry Point "station." This arrangement is with the Federal Emergency Management Agency.

"As part of the cooperative effort, Premiere would use its satellite program receivers in thousands of affiliate radio stations across the country as another tool for delivering national Emergency Alert System (EAS) messages," FEMA stated. Stations will in turn air the emergency messages.

Jeff Littlejohn, Clear Channel's executive vice president of engineering and systems integration, told me that the idea came about after the national EAN test.

"We realized Premiere Networks had an ability to help efficiently distribute the alerts to a majority of broadcasters, so we contacted FEMA about the idea." He said the agency embraced it, and as far as he knows, the arrangement is unique.

He added that reliability is a key requirement here. "Luckily, Premiere already has a lot of disaster recovery solutions in place and we were able to leverage them." He said the system was tested extensively before it was announced.

The power of this deal is in its reach: Premiere Networks reaches some 190 million weekly listeners. (Note that it recently has deemphasized the word "Radio" from its name and logo, as its parent did some time back.)

FEMA positions this agreement as an

FROM THE EDITOR



Paul McLane

example of its efforts to engage the private sector in raising community preparedness. Smart move on both their parts.

I was impressed by creative thinking shown by Hubbard Station WTOP in Washington, being willing to use a multicast channel for program development. And some of that content was provided by an engineer, no less.

WTOP has begun airing an eclectic format called "The Gamut" on its nearby AM 820 kHz signal, WWFD in Frederick, Md. The Gamut format had started earlier on the HD3 multicast channel of WTOP's FM signal at 103.5 MHz.

(continued on page 5)



Dave Kolesar is shown in his home studio, where he does voice work for The Gamut; he told me the format was put together 'after hours, as a labor of love.' He spends a lot of time ripping vinyl. By day, he is a transmitter engineer. The mic is an Electro-Voice 668.



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SBE Chapter 22 distributed scholarships to encourage future talent. Shown are student Aaron Stiles of Cayuga Community College; Christopher Baycura, SBE 22 Chair, of State University of New York-ESF Productions; student Joseph Mungo of Cayuga Community College; Steve Keeler, Cayuga Community College; and student Patrick Callahan of Onondaga Community College.

DASHBOARD

(continued from page 3)

been doing a good job of getting HD Radio receivers into the car; Bucci predicts 100 percent OEM penetration “very soon,” broadly estimating to RW that this could happen in the next two to three years.

However Bucci said quality issues — such as the digital signal sometimes cutting in and out “in what is supposed to be an HD experience” — are a concern. It has taken awhile for automakers to really incorporate HD Radio, he believes, because some carmakers “were confused” initially about what HD Radio is. “Is it HD? Is it these substations?” Carmakers at first “didn’t really know the promise of HD.”

Bergman said iBiquity “did a great job” of telling the HD Radio story to retailers and manufacturers, but said the “consumer pull still isn’t there.” Consumer interest can only be generated by broadcasters, he said, acknowledging that conveying a technology story to consumers “is difficult.”

The execution of HD Radio at the station level has become more complicated, Bergman said; in addition to keeping digital signals on the air, stations need to monitor text displays, streams and features like Artist Experience. “You’re not just looking at an FM modulator anymore.”

He urged broadcasters to apply a “whole product strategy” and to employ best practices regarding dashboard displays. Stations that send no text are, essentially, presenting “dead air” on the display, he said. Static text such as call letters or “become a member of WXXX” equates to “Don’t look at me.” Redundant text such as “now playing” constitutes visual noise and blocks a station’s text message.

While broadcasters improve their audio and in-dash displays, penetration of Internet radio in the car could grow significantly over the next few years, with 8 percent penetration in vehicles in 2011 and a projected 80 percent by 2016, according to CEA estimates.

Bergman said Fortune Magazine projects U.S. smartphone sales to total 120 million in 2013. As smartphone sales rise, so too will Internet radio listening in the car, Bergman predicts, as manufacturers make the mechanics of in-car Internet connectivity easier over time.

The station is based on the music collection of WTOP Engineer Dave Kolesar, with programming help from broadcast consultant Sam Brown. It airs anything from Doris Day and Devo, to Johnny Cash and Boney M, plus local artists. Senior Vice President and General Manager Joel Oxley guesses that with more than 10,000 songs in its library and intended to be played, “We are pretty sure The Gamut has the largest playlist in the country for a local radio station.”

Some in radio programming may find such a wide range of content appalling, but I grew to love that kind of diversity when I was in college, and I find this idea attractive.

The bigger point is that WTOP has always been active in exploring the possibilities of having multiple signals in one market; consider Federal News Radio, a highly targeted format if there ever was one, serving government employees and their professional circle. So The Gamut is not a big surprise. But U.S. radio stations that own HD Radio signals have not, broadly speaking, taken full advantage of the content development possibilities. That is too bad. What better way to experiment with unusual format ideas?

And another good idea comes from Chapter 22 of the Society of Broadcast Engineers, in Central New York. Our contributor Jim Peck, a senior member of SBE, told us the chapter helps develop tomorrow’s talent in broadcasting, especially on the tech side.

“The chapter now annually funds scholarships at four Colleges of The State University of New York in the Upstate Region: Cayuga Community College, Herkimer, Onondaga Community College and Tompkins/Cortland Community College,” Jim wrote in a post on the Radio World website.

He said students enrolled in accredited Broadcast Engineering or Media Production programs at these schools can be nominated by faculty to receive an SBE 22 Scholarship. Funding comes from revenue from the SBE 22 Broadcast and Technology Expo. Five students received scholarships of \$250–\$500 each for the current academic period. Take it from someone with college-age young people in his life: Those kind of checks can help. A lot.

Well done, “22.”

Comment on this or any story. Write to radioworld@nbmedia.com.

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Bureau Advises Second EAS Test

National test report describes poor audio and a lack of consistency among state plans

BY RANDY J. STINE

WASHINGTON — The FCC plans to address shortcomings with the Emergency Alert System, before the agency and FEMA conduct another national test.

A report from the commission's Public Safety and Homeland Security Bureau identified steps that it believes are necessary to improve alerting. This follows the first national EAS test, conducted in November of 2011. Overall, a large majority of EAS participants successfully received the Emergency Action Notification, the live code for the national EAS, the bureau report noted. "The test demonstrated that the national EAS distribution architecture is basically sound."

At least some EAS observers sounded encouraged by the report's recommendations.

Gary Timm is broadcast chair of the Wisconsin State EAS Committee and an alerting subject matter expert for SRA International in Washington. Timm said the greatest value of the report is the PSHSB urging the commission to move forward with new rules to improve EAS.

"This expected resolution of the many items deferred for ruling in the EAS Fifth Report and Order will allow states to finally complete their revised EAS plans, and the recommended rules to improve [Emergency Action Notification] performance will pave the way for an even more successful next nationwide EAS test," Timm said.

Asking the states to revise their EAS test plans to update monitoring assignments is important; the FCC found that many stations did not know which stations to monitor to receive the alert. In the report, the bureau said a lack of consistency among state plans made it difficult for the commission and FEMA to create a national propagation map after the test.

TEST RESULTS

The FCC analyzed test data from more than 16,000 EAS participants and held discussions with EAS stakeholders to dissect the results. It acknowledged widespread poor audio quality of the test and the inability of some EAS participants to receive or transmit the Emergency Action Notification message, the live message that a president would use to address the nation in times of crisis.

"The type of national emergency that would justify a presidential EAS alert would be a catastrophic event, where access to electrical power and communications systems may be significantly degraded or even eliminated," the bureau states in the report.

"Under such conditions, the one communications media platform likely to continue operating is broad-

cast radio, accessible from battery powered consumer receiver sets and other means, such as car radios and hand-cranked radios."

In addition, the bureau found that a decision by federal planners to shorten the EAS test length — from around two minutes to 30 seconds — meant that some broadcast stations and cable systems were unable to deliver the EAN.

The report did conclude that "a large majority" of broadcasters and other EAS participants reported receiving the EAN.

However, not all reaction from EAS stakeholders was congratulatory in tone.

"The FCC was under a lot of pressure to say something," Washington State SECC Chair Clay Freinwald told Radio World. He believes the report is "short on what went wrong" with the first test.

EAS Designation	Stations		Receipt of EAN			
	Total Stations	%	Success	%	Failure	%
Broadcasters						
National Primary (PEP)	62	0.43%	59	95%	3	5%
State Primary	94	1%	79	84%	15	16%
State Relay	724	5%	606	84%	118	16%
Local Primary 1 (LP1)	916	7%	756	83%	160	17%
Local Primary 2 (LP2)	720	5%	580	81%	140	19%
Participating National	10,753	78%	9,026	84%	1,727	16%
Non-Participating National	301	2%	219	73%	82	27%
Unidentified	217	2%	176	81%	41	19%
Total Broadcasters	13,787		11,501	83%	2,286	17%
Cable Operators	Headends					
Participating National	2,944		2,160	73%	784	27%
All Total	16,731		13,661	82%	3,070	18%

Source: FCC

This table lists EAS participants' receipt of the EAN based on EAS designation.

"There also needs to be better ongoing communication with all the stakeholders."

IMPROVEMENT LIST

On the FCC's list of improvements is a call for a rulemaking on proposed changes to EAS equipment rules to ensure that alert encoders/decoders operate in a consistent manner.

"We now have some encouragement from the FCC

'POSSIBLE FURTHER ACTION'

What about stations or cable systems that didn't turn in EAS national test results? A "significant number" of stations appear not to have filed, according to the FCC.

A bureau warning was buried in Footnote 22 of the PSHSB report:

"Although the commission received thousands of reports from EAS participants, many entities did not submit the required filings. The deadline for filing these reports was Dec. 27, 2011. Since that time, the bureau has reached out, primarily through industry organizations including the National Association of Broadcasters, the National Cable and Telecommunications Association, and the American Cable Association, to encourage those EAS participants that had not filed their mandatory reports to do so. As a result of this effort, PSHSB received numerous additional filings in November 2012. However, there are a significant number of EAS participants that still appear not to have filed the required reports. Accordingly, the bureau plans to confirm cases of continued non-filers and refer them to the Enforcement Bureau for possible further action."

FCC LISTS NATIONAL EAS TEST FAULTS

The PSHSB said in its report on the first national EAS test that it uncovered several problems that impeded the ability of some EAS participants to receive and/or retransmit the Emergency Alert Notification.

These included:

- Widespread poor audio quality nationwide;
- Lack of a Primary Entry Point (PEP) station in the area to provide a direct connection to FEMA;
- Use of alternatives to PEP-based EAN distribution;
- Short test length;
- Anomalies in EAS equipment programming and operation.

that they will conduct conformance testing beyond the extensive IPAWS OPEN testing that FEMA conducted to make sure all authorized EAS devices will play nice together when it counts," said Richard Rudman, core member of the Broadcast Warning Working Group. IPAWS is FEMA's Integrated Public Alert and Warning System platform.

Rudman would like to see standardized feature sets and behaviors for all authorized EAS equipment, but "since enhanced EAS equipment has already been put into service," that may not be possible.

Nevada EAS Chair Adrienne Abbott said the FCC report revealed nothing new, "at least nothing that EAS state chairs hadn't figured out."

"However, at least we now have the information officially from the FCC and FEMA and we can only wonder why it took them so long to

put out the report," Abbott said.

The bureau gave no explanation for the amount of time it took to issue its report, though it did note the delay by some participants in filing mandatory reports (see box below).

And it recommends that the commission consider requesting that the White House reconvene the federal EAS Test Working Group to address issues raised by the test and plan the next nationwide EAS action.



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Dan Jackson, engineer for 92.9 FM in Perth, Australia was faced with a unique challenge. Breakfast hosts Paul Hogan and Lisa Fernandez would be cycling for hours in strong winds and pouring rain as part of the 92.9 Kids Appeal for Telethon.

The unique solution was to equip Dan's bike as a mobile production facility. The talent wore wireless mics AND in-the-ear monitors which communicated with receivers and transmitters in a rack bag on Dan's bike.



on-air feed as the trio traversed the winding roads of Perth. How did it all work out? Absolutely flawlessly – the show went on without as much as a speed bump!

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Product: Logitek JetStream With ENCO Inside
Companies: Logitek Electronic Systems & ENCO

What do you get when you put an audio playout/automation platform into a microprocessor-based AoIP router system? "A full radio studio within a single two-rack-unit box."

So says Logitek, excited to offer ENCO Inside within its JetStream platform. Logitek President Tag Borland: "Comprehensive audio management and playout are now combined with the mixing, processing and audio distribution capabilities of the JetStream, providing seamless integration between content management and audio management."

The combined offering was shown at both the Logitek and ENCO booths at the NAB Show.

Shown, from left: Patrick Champion of ENCO; Keith Edmondson of Logitek; Aaron Johnson and Ken Frommert of ENCO; and Frank Grundstein of Logitek.

Info: www.logitekaudio.com; www.enco.com

Photo by Jim Peck



Product: Omnia Direct
Companies: Telos Alliance & Nautel

This collaboration by Omnia and Nautel is intended to improve the quality of FM air chains.

The Omnia Direct digital composite interface will be available in the Omnia.11 processor and Nautel NV series transmitters.

As Omnia, part of the Telos Alliance, puts it, "In the past, stations concerned about maximum modulation needed to use an analog composite signal. This was primarily due to the required high sample rate of A/D converters used to create discrete left/right inputs to the digital exciter."

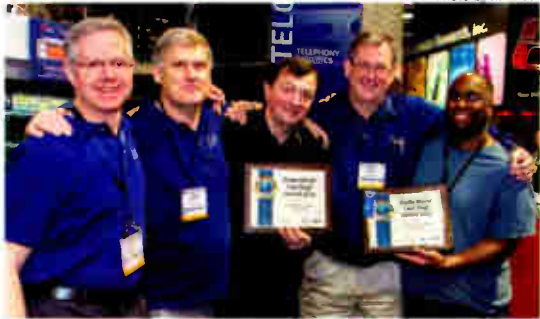
The interface allows an AES-EBU cable between the Omnia.11 and the Nautel NV Series transmitter to carry the baseband signal in digital form. "This 100 percent digital path eliminates the noise and distortion of A/D converters and reduces potential overshoots, while ensuring full FCC mask compliance." Omnia's Frank Foti calls it the digital equivalent of the analog BNC-to-BNC composite connection, taking the output of the audio processor stereo generator and coupling it directly to the modulator of the exciter.

The functionality is available on NV series transmitters from 3.5 kW to 44 kW. New transmitters are shipping with it standard; older ones may be upgraded with a software release due shortly.

Shown, from left: John Whyte and Peter Conlon of Nautel, Frank Foti of Omnia; Chuck Kelly of Nautel; and Cornelius Gould of Omnia.

Info: omniaaudio.com; nautel.com

Photo by Jim Peck

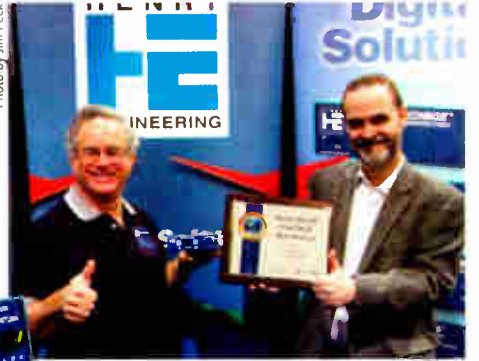


Product: Sports Pod
Company: Henry Engineering

What's bigger in radio these days than sports?

Sports Pod is a talent mic and headphone "mini console," suitable for covering games but also useful in the studio. It is similar to the company's Talent Pod but adds Talkback and

Photo by Jim Peck



Remote Mic Control.

The duplex Talkback (intercom) function allows communication with a producer or engineer. Pressing the Talkback button mutes mic audio from air and sends

it to an isolated Talkback (off-air) output. Check it out:

The Remote Mic Control allows an engineer to turn the talent's mic on or off remotely, in case the talent forgets to do it.

Sports Pod gives an announcer control of headphone audio, and lets the announcer create a custom mix of Local and Return (IFB) audio. Several can be used so that each announcer can control his or her mic and headphone audio mix. The units link via Cat-5 cables.

Shown: Hank Landsberg and Radio World's Brett Moss.

Info: www.henryeng.com

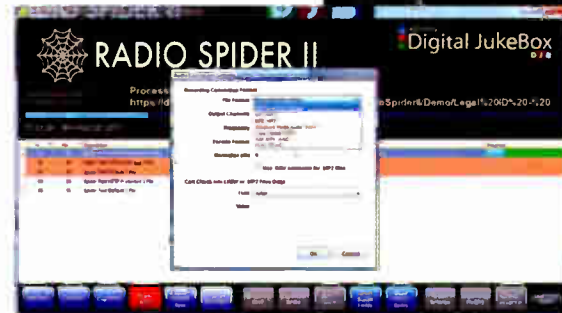


Product: Radio Spider II
Company: Ron Paley's Digital JukeBox

Radio Spider II is a newly developed auto download software engine designed to add a high level of program content gathering efficiency for radio operations. Its design is based on audio file downloading concepts introduced in 2005



Photo by Jim Peck



by Digital JukeBox yet providing access to email attachments and most password-protected host sites for download and processing of audio file-based content.

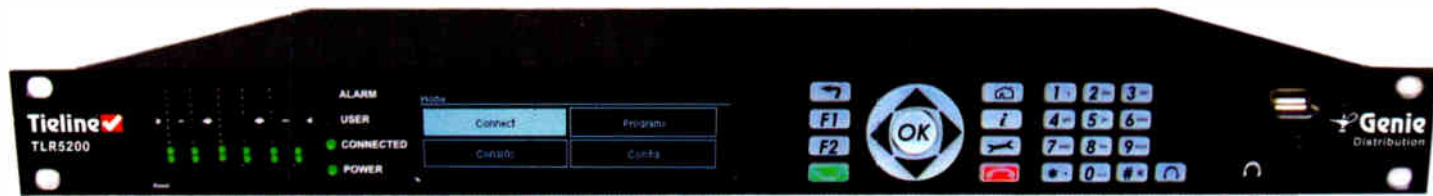
The system can auto download from

FTP, SFTP, HTTP, HTTPS and HTTPS cloud-hosted files. Users can email audio files to Radio Spider for processing, a cool feature for field reporters, news reports, remote recordings, smartphone interviews or agency produced commercials sent in by production houses. Ask about its cool automated file format conversion process and programmable macro system.

Shown: Paul McLane (Radio World), Robert Parsons, Ron Paley and Alexis Hauk (Radio World).

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Photos: Kenton Young/WPIX(TV)

Radio as 'Emergency Infrastructure'

Broadcasters and others assess response after Superstorm Sandy

BY SCOTT FYBUSH

When the weather is at its worst, broadcasters are at their best. That's the message emergency planners for radio and TV have been trying to spread for years, and broadcasters speaking at the NAB Show in Las Vegas say it was borne out in the aftermath of Superstorm Sandy last fall.

"Most broadcasters did a lot of work in New York on storm preparation," said New York State Broadcasters Association President/Executive Director David Donovan, part of a panel on "EAS, Superstorm Sandy and Accessible Emergency Warnings: A Discussion of Broadcasters' Role as First Informers" in the Broadcast Engineering Conference.

Broadcasters had an advantage before Sandy in the form of accurate predictions of the storm's path and timing, according to Donovan. That allowed them to plan for one of their biggest concerns: the availability of fuel to keep generators powered and news vehicles moving after the storm hit.

"New York City is made of islands, and when the bridges and tunnels aren't functioning, you're going to have problems," Donovan said.

Indeed they did. While most of New York's FM and TV stations sailed through the storm with the help of fully fueled generators, "where we ran into problems was AM," Donovan said, "because a lot of towers are in New Jersey in the flood zone, so there was



WABC(TV)

Broadcast news crews interview New York Governor Andrew Cuomo.

some flooding that knocked out power."

Preparation worked there, too, though: Donovan said partnerships among AM, FM and TV stations kept content flowing even as specific transmission paths were knocked out. WINS(AM) moved its programming to sister FMs in the CBS Radio family, while WOR(AM) began carrying WNBC(TV) audio after losing power in its own lower Manhattan studio.

Donovan said the value of all that preparation quickly became clear as other communication paths began to fail. Without power in the worst of the storm-ravaged areas, including lower Manhattan and much of Long Island's south shore, television, Internet and phone service all went down within hours of Sandy's arrival.

"New York City saw a 70 percent increase in radio listenership that night," Donovan said. "Radio was the key to keeping the people informed that night."

He says broadcasters, especially radio stations, had some big structural advantages over competing communications channels. With transmitters capable of being powered by generators even if the power grid went down, "our architecture

is a wide-area architecture covering 30, 40 or 50 miles out," he said. "We are not prone to trees destroying our system" in the same way that a wind-blown tree can take down power, phone and internet service to a neighborhood.

BIGGEST PROBLEM

But the biggest problem, Donovan said, still turned out to be a fuel-related issue: getting access to gasoline for the news vehicles trying to cover the storm's aftermath.

"The port of New York was closed, and the gas stations that still had fuel didn't have working pumps, so getting access to federal fuel depots was critical," he recalled. Before the storm hit, FEMA had already approved access to fuel for broadcasters' generators, but not for news trucks. That's where a series of late-night phone calls to the FCC came in.

"The commission was phenomenal," Donovan said. He specifically mentioned Ken Moran, senior deputy chief and chief preparedness officer of the FCC's Public Safety & Homeland Security Bureau.

"Ken Moran worked through FEMA and we were able to get approval for our news trucks. So our guys went to the

depots and showed the letter, and the guy with the gun said, 'Get out of here! Anybody can fake a letter.'"

That's a lesson that's been learned far from New York. Mike O'Hare, deputy director of the Alaska Division of Homeland Security and Emergency Management, was also on the panel, discussing the importance of government cooperation with broadcasters. "States need to recognize that broadcasters are emergency infrastructure, and if we can't provide fuel for you guys to broadcast and get that information out, we're all dead in the water."

In addition to better securing fuel availability, one post-Sandy lesson in New York is finding more ways to communicate with broadcasters at the height of an emergency. "For a period of time, I couldn't reach my stations because the phone system was gone, so we need to work out a better way of communicating with them," said Donovan.

While the federal budget sequester prevented them from traveling to Las Vegas, several FCC and FEMA officials took part in the session via

In addition to better securing fuel availability, one post-Sandy lesson is finding more ways to communicate with broadcasters at the height of an emergency.

video, including Wade Witmer, deputy director of FEMA's IPAWS division. Broadcasters are doing a good job of incorporating IPAWS-generated alerts into their emergency communication, but Witmer said radio stations can do a better job of cooperating with wireless carriers who now deliver emergency messages directly to customers' phones and other handheld devices.

"I've heard from stations that will not talk about wireless emergency alerts on the air, because that's the competition," Witmer said. "But you should be educating listeners about what that ugly tone is that's on their phones, and reminding them that when they hear those tones, they should tune to your station."

Witmer also reminded stations to be assertive about being part of local governments' emergency plans.

"If your station has power backup and you intend to stay on the air during disasters, that's something your local emergency officials should know."



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World Radio History

NPR Ops Center Move Called 'Smooth'

Personnel built new NOC, then tested, disassembled, moved and rebuilt system

BY **LESLIE STIMSON**

WASHINGTON — One of the first groups of staffers to move into NPR's new \$201 million headquarters nine blocks north of the Capitol were those of its Distribution Division, which manages the Public Radio Satellite System.

The new headquarters was designed to accommodate NPR's evolution from a radio broadcaster to a multimedia operation, according to the organization. Key features include a two-story newsroom where news, music and digital staff work together, and a 250-seat performance studio. Studios were designed with public viewing areas.

More than three and a half years of planning went into the Distribution Division move. The PRSS disseminates programming to approximately 1,600 public radio stations; its ContentDepot distribution system streamlines how public radio producers deliver their programming and how stations receive it.

ContentDepot uses satellite technology for its primary delivery platform; it replaces real-time audio feeds of programs to stations with Internet protocol streams and file transfer of pre-recorded programs. The ContentDepot also uses the Internet to deliver pre-recorded program files to stations that are unable to receive programming via satellite. Its Web-based program subscription service and enhanced automation give stations more flexibility in the ways they receive programs from the PRSS, according to NPR.

Distribution Director of Operations & Engineering Dick Kohles said the transition of the PRSS Network Operations Center from 635 Massachusetts Avenue to the new location at 1111 North Capitol Street went smoothly. "In general, it was a very good transition. We planned carefully and had a great many people involved."

He said roughly 50 technical people at NPR worked 12 hours a day, including weekends for many of them, for six weeks to ensure that stations served by the PRSS continued to receive their satellite- and Internet-distributed programming.

The NOC is the heart of the PRSS. The new NOC includes Axia head-ends and other computer equipment for monitoring the system. It also features a video wall — a dashboard showing the status of key system functions.

Another unique feature of the new NOC is the "egg chair." A NOC tech seated in the chair is able to moni-

tor incoming programming from an acoustically-isolated environment while at the same time keep track of what's happening on the video wall.

The rest of the PRSS equipment is on the second floor of the former C&P warehouse portion as part of a "tech core" located behind the NOC. The PRSS shares this room with NPR IT and Audio Engineering. It contains the PRSS' satellite uplinking and downlinking gear, encoders and ContentDepot servers.

Placing much of the equipment in what NPR thinks of as a huge data center allows the AC environment to be controlled more economically, Kohles said.

NPR Distribution engineers built the first iteration of the new NOC in the annex of the old Massachusetts Avenue



NPR Distribution Director of Operations & Engineering Dick Kohles delivers last-minute instructions to NOC operators moments before the ContentDepot live streams carrier was uplinked for the first time from the new PRSS NOC at 1111 North Capitol Street NE in Washington.

tor building. They made sure it was functional. They then tested the equipment, disassembled it and shipped the equipment to the new location a few blocks away in October. There, the Distribution team rebuilt and reassembled the system, including integrating other services, finally locating the system in its new location.

They activated the North Capitol Street satellite uplink on Monday, April 1, beginning with the ContentDepot program file carrier, at 12:40 p.m. Eastern, followed by the ContentDepot live program streams carrier, at 12:59 p.m. Eastern. NPR President/CEO Gary

Knell threw the symbolic switch to transmit live broadcast programming from the new location, beginning with the top-of-the-hour NPR newscast.

The PRSS has one satellite uplink in Washington and a backup in St. Paul.

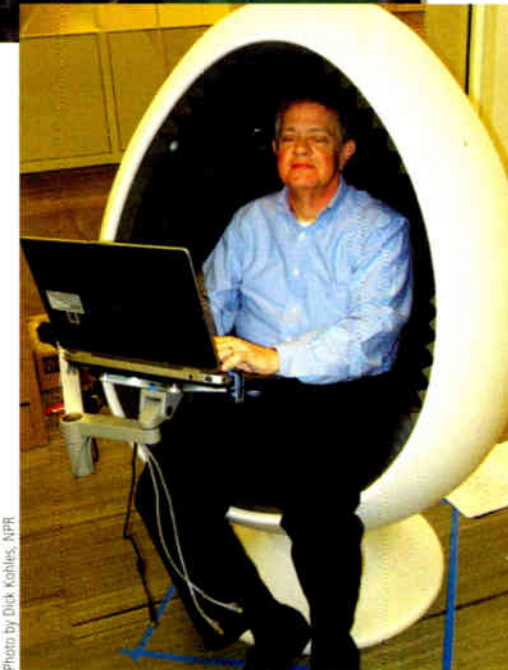
The team had installed circuits

PRSS satellite dishes are on the roof of the old four-floor warehouse, Kohles said, to shield them from interference, among other reasons.

To coincide with the move, PRSS customers, including NPR member stations, migrated last fall from legacy IDC SR2000pro satellite receivers (for streams) and SFX2100 receivers (for files) to new IDC SFX 4104 Pro Audio



NPR Distribution Engineer Phil Mein uplinks the ContentDepot files carrier from the new PRSS NOC, moments after the files carrier uplinked from the old NOC at nearby 635 Massachusetts Avenue was shut down.



Ralph Woods, NPR Distribution, sits in the 'egg' chair, where NOC techs can monitor incoming programming from an acoustically isolated environment while keeping track of what's happening on the video wall.

receivers. The new receivers combine a four-port stream decoder with a file receiver in one unit.

One good thing about the new location, Kohles said, that is now all Distribution employees can be in the same location; previously they were in NPR's former headquarters and another nearby building. "This way we get to work together physically," he said, without needing to arrange formal meetings.

between the old and new buildings. If there were problems, the fallback plan was to continue to originate programming from Massachusetts Avenue, and a third option was to go to the PRSS backup NOC at Minnesota Public Radio in St. Paul, Minn. Neither was necessary, according to Kohles.

A HUGE DATA CENTER

The new NPR headquarters totals 440,000 square feet of space.

In its new location, NPR "married" a former C&P Telephone warehouse that has a historic designation to a new, attached seven-floor building. The

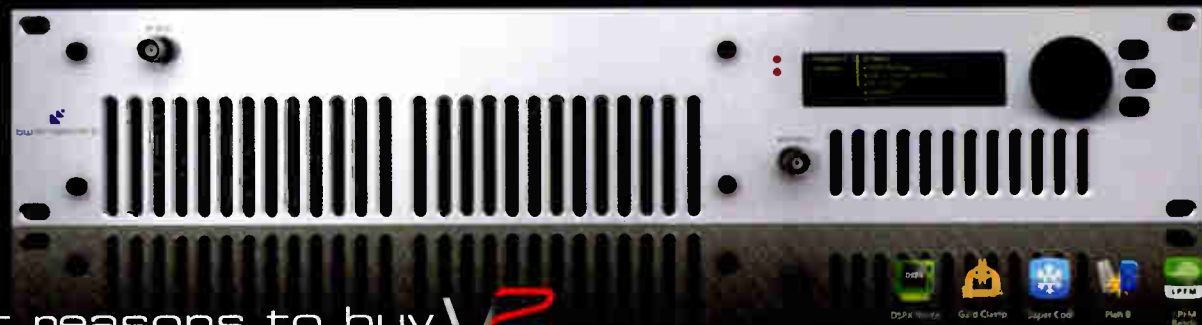
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NEWSROUNDUP

FCC NOMINEES: President Obama said he planned to nominate former telecom and cable industry lobbyist Tom Wheeler as the next FCC chairman. He also named Commissioner Mignon Clyburn as interim chair. Clyburn was set to become the first woman to head the agency; replacing Chairman Julius Genachowski, who expected to step down May 17. Clyburn may be in that role for several months, depending on how long it takes the Senate to act on the Wheeler nomination. The president had yet to indicate a Republican nominee for another open seat as of early May.

NAB and CEA praised both choices. House Energy and Commerce Committee Chairman and Michigan Republican Fred Upton and Communications and Technology Subcommittee Chairman and Oregon Republican Greg Walden congratulated Wheeler but expressed concern that his views on merger conditions "can be misused to affect whole industries, not just those seeking merger approval." Senate Commerce and Energy Chair Sen. Jay Rockefeller said that he respected the president's decision to nominate Wheeler to head the commission; the West Virginia Democrat had supported his former aide, Jessica Rosenworcel, who is currently an FCC commissioner, to chair the agency.

ONLINE SALES: By a 69-27 vote, the Senate approved an Internet sales tax proposal, paving the way for shoppers to pay sales tax on most online purchases. But the bill now moves to the House, where it faces an uncertain future. Under current law, states can only collect sales taxes from retailers that have a physical presence there. The Marketplace Fairness Act would empower states to tax out-of-state, online retailers.

TECHSURVEY9: More than half of all respondents to Jacobs Media Techsurvey9 say that most of their radio listening takes place in cars. Now, 11 percent of say they drive a vehicle equipped with a "digital dash." Another key finding is that radio's transition to digital listening continues. When asked to recall their



last week's listening to the station that sent them the survey, 14 percent of respondents say they had tuned in on computer and mobile streams and other digital sources. The survey focuses on the habits of "core" radio listeners.


PERFORMANCE ROYALTY: NAB is thinking ahead to the next round of performance royalty negotiations. The trade group confirms it has formed a committee to begin preliminary discussions on the topic; the industry's current deal with SoundExchange expires at the end of 2015. Beasley Broadcast

Chief Financial Officer Caroline Beasley heads the group. Beasley was involved in previous negotiations in 2010 when she chaired the NAB Radio Board.

EAS: FEMA has been installing satellite receivers at Primary Entry Point stations, intending to use satellite delivery of emergency alerts as an alternative distribution method. Now FEMA says it will add Premiere Networks as a PEP station. Formerly Premiere Radio Networks, Premiere is a subsidiary of Clear Channel. The agency plans to introduce satellite connectivity to back up the Public Switched Telephone

Network-based connection that FEMA uses to send the Emergency Action Notification, the code used to activate the national EAS, to the PEPs.

EAS II: The FCC's Public Safety & Homeland Security Bureau is urging state emergency communications committees to ensure that their EAS plans are current. The bureau says those plans should include a data table, showing monitoring assignments as well as the specific primary and backup path for emergency action notification messages that are formatted in the EAS Protocol, from the PEP to each station.



Product: IP Meters GUI
Company: Wheatstone


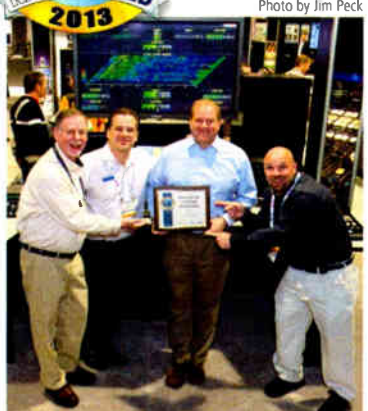



Photo by Jim Peck



Here's a product with real visual "bang." Wheatstone's IP Meters GUI for the WheatNet-IP network provides metering of parameters like audio levels, signal density and FFT readings, but in a way you ain't seen before. The app puts a "wall of meters" on your computer screen for monitoring of audio peak levels and average levels at selected points on your network. Included is a separate FFT meter for spectral readings, plus visual alerts in case a channel goes dark.

The GUI is customizable and lets you display just about any array of metering and analysis on the monitor of any computer connected to a WheatNet-IP Intelligent Network. Meters have silence detection, so you can see if an audio stream has gone down, and where. Each meter or cell can be set up as a horizontal, vertical or eyebrow bargraph meter. You can set up two, 20, 60 or more cells in a "wall." You determine where and what to meter: console inputs, mic outputs, the satellite receiver, studios, Web streams. A separate analysis window allows you to view one audio stream in a variety of ways including FFT, 3D plot, oscilloscope, energy vs. frequency and spectral dynamic range.

Ask about all the ways the display can be customized. The app is, well, cool.
Shown: Phil Owens, Jay Tyler, Kelly Parker and Darin Paley.
Info: www.wheatstone.com



Product: M4DDC HD Radio Diversity Delay Control
Company: DaySequerra





Photo by Jim Peck



DaySequerra's M4DDC maintains time alignment of the HD Radio main program signal (MPS) analog and HD-1 digital audio automatically. The company says this unique product solves a "nagging, real-world" problem.

"After initial alignment, Ethernet timing, changes in audio processing and synchronization issues can cause drift or sudden shifts in a previously perfectly aligned HD Radio installation," it states. The 1 RU box features an algorithm, TimeLock, to maintain that alignment, with promised accuracy to one sample.

The controller will send email alerts for loss of TimeLock, LevelLock (optional), program audio, carrier or OFDM HD Radio lock. There are five alarm tallies on the rear. A Web server is built in. Optional Eclipse Level Control is available to maintain average audio loudness differences between the HD Radio main program signal (MPS) and HD-1 digital audio to less than 2 dB. Lookahead gain correction makes adjustments that are described as transparent to the listener.

Shown: David Day, center, accepts the award from Radio World's Brett Moss, left, and Paul McLane.
Info: www.daysequerra.com

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RADIO AUTOMATION SOFTWARE

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This tweak helps Forever Broadcasting get the most out of its iPad remotes

WORKBENCH

by John Bisset

Read more Workbench articles online at radioworld.com

Last issue we offered a few tips for inclusion during routine inspection of your transmitter building. Consulting Engineer R. Morgan Burrow, P. E., mentions a few more:

Make sure your fire extinguisher is fully charged.

Do you have emergency lighting — or at the very least, a flashlight mounted inside the entrance, complete with fresh batteries?

Sounds can signify pending doom. With the monitors turned down, just listen as you walk around the room. A high-pitched squealing could be blower bearings or air-conditioning belts that need attention.

Outside, check the tower light photocell to make sure the lights are operational, and transmitting their status to the remote control. A towel thrown over the photocell should trigger the lights “on” after a short period of time. Do remember: Many AM towers are hot and insulated from ground; so if your tower photocell is mounted on the tower, turn the AM off while you conduct this test. No sense in getting

an RF burn, or worse.

Check the building temperature and the operation of all air conditioning and/or louvers, vents and exhaust fans. This includes the dummy load cooling fan, seen in Fig. 1.

Finally, make a note of your findings, to simplify next month’s inspection.



Fig. 1: Here, our perspective is turned up to look at the ceiling, where the fan has been mounted to blow upwards.

Michael Heim is the chief engineer of Forever Broadcasting in New Castle, Pa. His stations have been using iPads for remote broadcasts.

Michael selected one of the popular instant messaging programs with voice capability to send audio back to the studio; he reports that the audio quality is better than that delivered over a cellphone connection.

The one problem is that the internal mic is so sensitive, it will pick up a buzzing fly at 100 yards! OK, a slight

exaggeration; but the mic has been known to pick up ambient sounds, so he needed to wire an external mic for better operation.

In his application, Michael does not use the earphone connection, but there is no reason an ear bud couldn’t be used. The wiring for the ear buds is straightforward with no special accommodation required. The microphone, on the other hand, is a different story. Online, Michael learned that the mic input wants to “see” 800 ohms across the mic terminals to mute the internal mic and switch over to the external terminals.

Table 1 — Proper Pinout for Adding External Mic

Connector Tip	Left ear bud audio
First ring	Right ear bud audio
Second ring	Ground
Shell or sleeve	Mic +

Sounds can signify pending doom ... A high-pitched squealing could be blower bearings or air-conditioning belts that need attention.

As a test, Michael used a Shure SM58 mic. Measuring across the mic element with an ohmmeter, he saw about 500 ohms. Michael added a 330-ohm resistor in series, after which the operation was intermittent. He replaced the resistor with 470 ohms and it worked perfectly every time. There appears to be no upper limit for the resistance, and placing roughly 1,000 ohms across the terminals works well.

He constructed his cable using a four-conductor phone plug on one end and an XLR on the other. He hid the 1/4-watt resistor inside the XLR connector.

He was unable to find a four-conductor phone plug to fit the iPad so he bought a combination ear bud and mic assembly at a discount department store and wired the mic in with a piece of extension wire. The wiring diagram for the cable is shown in Table 1.

(continued on page 19)

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Product: STAC VIP
Company: Comrex



Comrex is very excited about its VoIP Call Management System and the promise it makes to help migrate your on-air tele-phones to "dramatically clearer" wideband audio quality.

The company calls this a new way to manage telephone calls for talk shows, interviews and contests. STAC VIP integrates legacy POTS lines with VoIP technology. It can accept traditional POTS calls but it also handles calls from "HD Voice"-capable telephones and smartphone apps as well as high-quality calls from Skype users. It includes a STAC IP Call Screening and Control Interface and integrates with your VoIP PBX system.

Shown: Kelly Clark, Chris Crump, Blair Lazuka and Tom Hartnett.

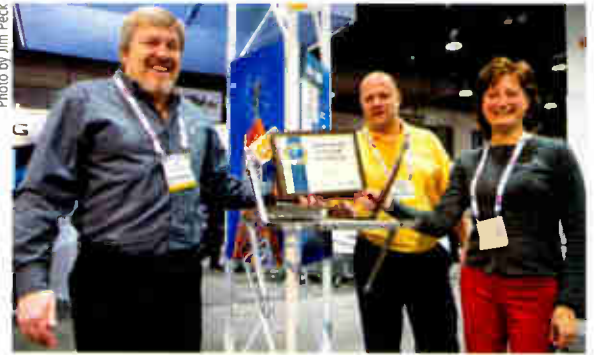
Info: www.comrex.com

Photo by Jim Peck



Product: Versa2une FM Antenna
Company: Shively Labs

Photo by Jim Peck



The Versa2une low-power FM antenna targets broadcasters who need a versatile, tunable solution to get on the air effectively and fast. Primarily available as a two-bay, 5 kW package

(inclusive of power divider and cables), it is suitable for lower-power stations that contemplate a later frequency move, or for a group that wants a quick standby solution. It is also a "get on the air" antenna system that can be included with transmitters as a packaged system for use at up to 5 kW. It packs in a small, flat box for easy shipping.

Versa2une can be tuned in the field without special skill or test equipment. The process consists of setting the basic radiator dimension for high-band (98–108 MHz) or low-band (87.5–98 MHz) operation, and then fine-tuning the radiator to frequency by adjusting the threaded tuning stubs (four in total, and all the same) to length using an included tuning chart.

Pricing ranges from \$1,200 to \$6,000, including power divider, depending on number of bays.

Shown: Dale Ladner, Jonathan Clark and Angela Gillespie.

Info: www.shively.com



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Product: Model 610 Internet Radio Monitor
Company: Inovonics

Bringing its monitoring expertise to a new industry segment, Inovonics offers this professional hardware solution for uninterrupted monitoring of streaming online radio performance.

Connections are balanced analog and AES digital line outs. The monitor decodes and displays live metadata for MP3, Ogg Vorbis and AAC formats. Local alarm tallies plus self-logging alarms watch

for audio loss, stream loss and Internet loss. Alerts can also be sent to personnel via email and/or text messages.

A remote Web interface is provided. You can set up and control the unit from your PC, tablet or smartphone. Price: \$990.

Shown: Paul McLane of Radio World, Ben Barber and Lukas Hurwitz.

Info: www.inovonicsbroadcast.com



WORKBENCH

(continued from page 16)

Michael put it all together and tried it with a variety of microphones — the SM58, EV 635, even an RE20. The cable worked every time. It should work with any quality dynamic low-impedance microphone. The series resistor has little or no effect on the audio level, and the iPad provides plenty of gain.

Of course, the iPad mic input is unbalanced, so you will need to short Pins 1 and 3 inside the XLR plug. Then wire the 470 ohm resistor on Pin 2 in series with the cord.

Forever Broadcasting has found the iPad to be an easy and portable way to improve remote broadcast quality. Thanks, Michael, for a great tip.

Reach Michael Heim at kd0ar@sbcglobal.net.

Engineering Consultant Frank Hertel of Newman-Kees needed to refer to the newest published FCC Broadcast Rules and Regulations. He admits to having a tough time locating them.

Frank finally located the link. The content can be found at www.ecfr.gov, but we've posted a direct link to the Part 74 portion for you at radioworld.com/links.

There you'll find all the various broadcast rules, listed on clickable headings. Definitely something to save in your favorites list. Thanks, Frank, for helping to keep everyone legal.

Reach Frank Hertel at nkeng@insightbb.com.

Contribute to Workbench. You'll help your fellow engineers and qualify for SBE recertification credit. Send Workbench tips to johnpbisset@gmail.com. Fax to (603) 472-4944.

Author John Bisset has spent 44 years in the broadcasting industry and is still learning. He handles West Coast sales for the Telos Alliance. He is SBE certified and is a past recipient of the SBE's Educator of the Year Award.

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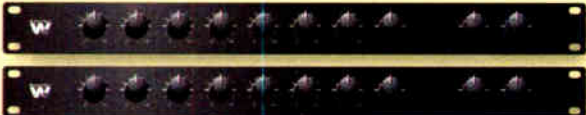














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SPORTS-1 SAT-2 NETWORK NEWS-1 NEWS DIS



ain't got no distractions

 <p>Two 8x2 Stereo Virtual Utility Mixers These can be used for a wide range of applications; for example, using Wheatstone's ACI Automation Control Interface, your automation system can control the mix for satellite or local insertion switching.</p>		<p>StudioHub® Compatible RJ45 Interconnects Plus there are connections unique to each BLADE such as XLR jacks, etc.</p>	
 <p>Gigabit Ethernet 100/1000 Mbs permits robust operation and allows for exceptional expansion capabilities</p>	 <p>Built-in Web Server so you can configure and control locally or remotely without having to run dedicated software</p>	 <p>Silent — No Fans Can safely be located in a studio with live mics</p>	 <p>Intelligent Operation Programming a BLADE is easy. Scripting enables decisions about what to do and how to do it. Kind of like "If/Then" on steroids.</p>
 <p>True Mono Channels No need to tie up stereo pairs</p>	 <p>Selectable Sample Rate 44.1 or 48 kHz</p>	 <p>ACI (Automation Control Interface) An embedded interface for complete external control over IP for both the BLADE itself and its Utility Mixers</p>	 <p>DNA of the Entire Network Stored in Every BLADE Every setting for every network device is stored inside every BLADE. Handy, if you ever need to replace a BLADE. Just plug it in and it learns from the network!</p>
 <p>Front Panel Headphone Jack with source select and level control — monitor any system source</p>	 <p>Front Panel Bar Graph Meters Switchable to display source input level or destination output level after gain trim</p>	 <p>Front Panel Routing Control Any system source to any destination on that BLADE</p>	 <p>Silence Detection Each output can trigger alarms or make a routing change</p>
		 <p>SNMP Messaging for alerts</p>	 <p>Flexible GPI Logic 12 universal logic ports, programmable as inputs or outputs, routable throughout the entire system</p>

*Each BLADE on the Intelligent Network is exceptionally powerful...
but do you know about the incredible functionality inside **EVERY** BLADE?*

By now, it's a good bet you're aware of the WheatNet-IP Intelligent Network. You know about its advantages - how it's obsessively compulsive about redundancy. How it can repair itself, configure itself, run rings around the competition while still having much greater bandwidth (due to its Gigabit Ethernet throughput) - enough, in fact, to not only handle our increased functionality today, but well into the future.

So we figured it's time to let you know a little more about those boxes you plug into the Intelligent Network. The ones that contribute to its intelligence. They're called BLADES and from inception have been far more advanced than any boxes on any other networks out there.

Take a look and consider how you'd put all that to work in YOUR WheatNet-IP system.



WHEATNET-IP: THE INTELLIGENT NETWORK

 **Wheatstone**

phone 1.252.638-7000 | wheatstone.com | sales@wheatstone.com

World Radio History



Prevent Transistor Failures With Science

I build these for clients and you can too

TECHTIPS

BY MARK PERSONS

Ever wonder what causes a solid-state RF amplifier to fail? One answer is heat; the other major contributor is transient voltages. Most of us know to keep equipment cool, but few understand that voltage spike-induced transistor failures can be prevented with pure science.

Tube arc-overs create voltage spikes in transmitters. Because of that, I highly recommend a shorted quarter-wave stub after any solid-state amplifier feeding a tube input. They normally go at a 50-ohm point in the system and provide a DC short to voltage spikes, while passing RF with little or no loss.

Continental Electronics has long suggested these for its FM exciters. I build them for clients and you can, too. (Just contact me via my website if you have questions.)

RF theory and practice tell us that a quarter-wavelength of transmission line will ignore the frequency of interest if it is on a T adapter in the RF path and is shorted at the far end.

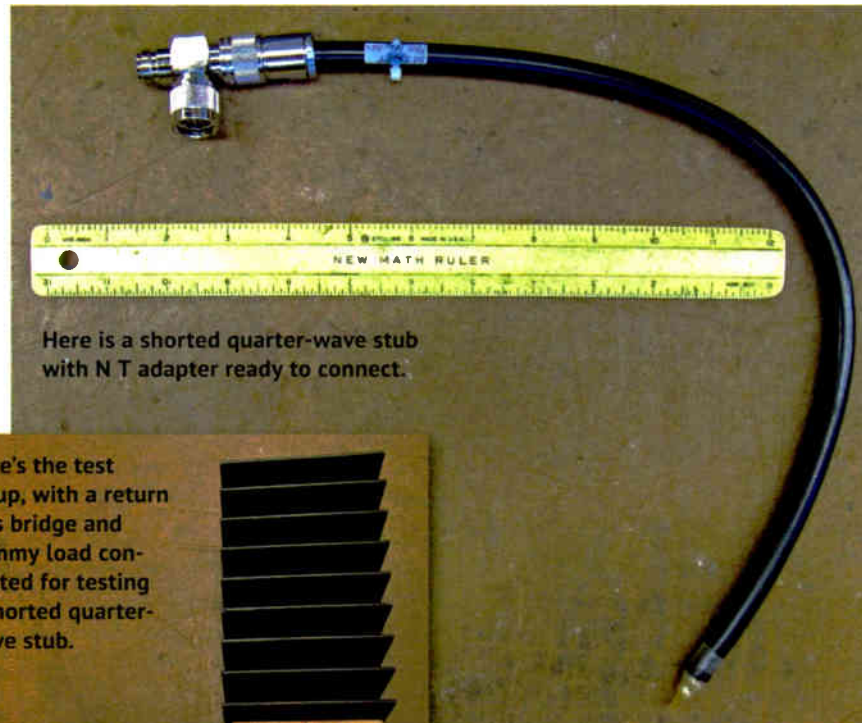
That's right — you short the center conductor to the outer conductor at the end of the cable. The short will be what DC or transient voltage spikes will see. The trap will short everything but the frequency of interest.

In the case of an 88 to 108 MHz FM system, a 50 ohm RG-58, RG-8, RG-213 or similar coaxial cable is just fine for the use. The important part is that the cable needs to be sized in length for the frequency you want to pass.

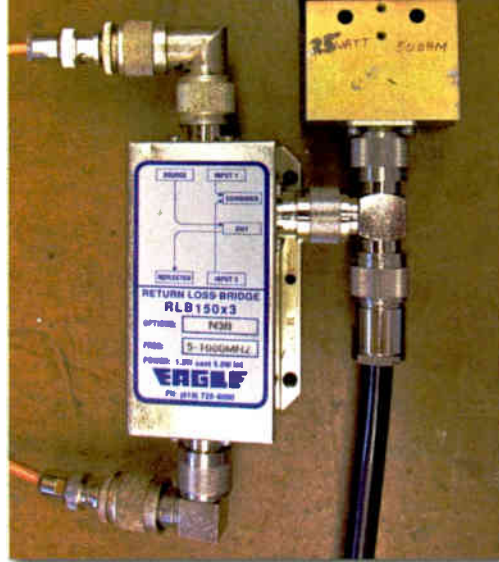
As you know, each coaxial cable type has a VF (velocity factor). So a quarter wavelength of line would not be the same physical length as a quarter wavelength in free space. Let's say you are operating at 98.1 MHz. A wavelength at that frequency is 120.4 inches (about 10 feet). A quarter of that is 30.1 inches.

RF travels much *slower* when going

through a transmission line. A typical example is Belden 8259 RG-58A/U. Its velocity factor is 66 percent. To achieve an electrical quarter wavelength at 98.1 MHz, that line needs to be 66 percent shorter, which turns out to be 19.87 inches.



Here's the test setup, with a return loss bridge and dummy load connected for testing a shorted quarter-wave stub.



Making one of these will require a connector on one of the cables. I wrote an article about that subject in Radio World last year ("Installing Connectors the Right Way," Oct. 10; see radioworld.com/article/installing-connectors-the-right-way/215926).

Hopefully that will help. You can do fairly well by calculating the line length for a particular frequency, but there is the length of the T adapter to contend with. I use a return loss bridge to trim the cable length experimentally so that it is exactly on frequency.

THE SETUP

Put a 50 ohm dummy load on a return loss bridge connected to a spectrum analyzer with tracking generator. Then sweep the frequency of interest. Your test arrangement should show 30 dB or more of return loss when the dummy load is attached.

the line shorter by maybe 1/8 inch. The frequency should go up.

When you get close to the desired frequency, cut through the cable entirely. Then carefully bare the center conductor near the cable end and twist the outer braid onto it.

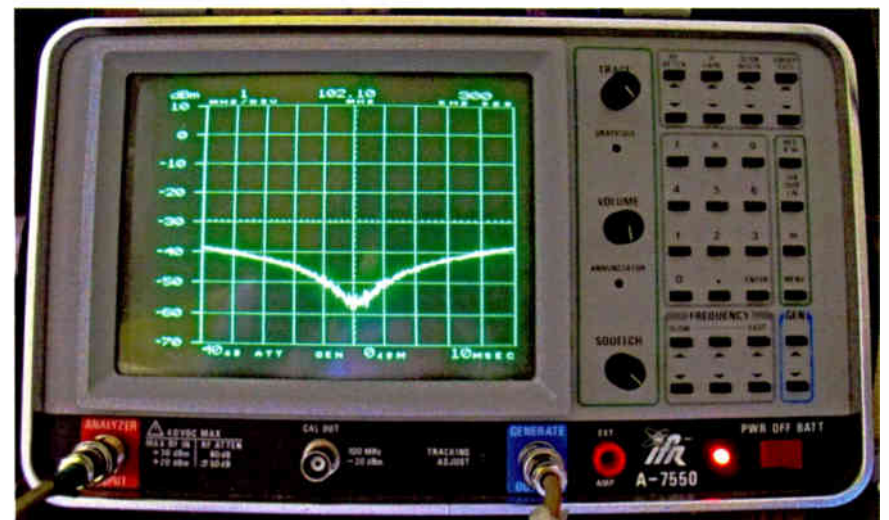
Experimenting, keep trimming just a bit at a time until you are on frequency. Then whip out your soldering iron and solder the end of the center conductor to the outer conductor at that point. Verify that the best return loss happens at the desired frequency. If the frequency is too high, throw the cable away and start over. If it is too low, just keep trimming the cable shorter.

When you are done, you can confidently install the shorted quarter wave stub trap with T adapter in a transmitter or on the back of an exciter. There should be no change in VSWR.

When I build these traps, I usually use RG-58 or RG-8 type cable. You will more or less be pushed into one of those two cable sizes because the equipment will have a BNC connector for up to 250 watts or an N connector for up to 1000 watts.

I even built one for a 10 kW FM transmitter, using 1-5/8 inch rigid transmission line. In that case, the shorted quarter-wave stub trap was used for attenuating the first harmonic (twice the carrier frequency), which is sometimes misnamed as the second harmonic.

Another was built for 950 MHz, but it



A spectrum analyzer displays return loss at and near the frequency of interest.

Install a T adapter in series with the dummy load and the result should be the same. Connect a piece of coaxial cable to the open port on the T, and your return loss will become terrible. Use wire cutters to cut into (but not through) the line, at a length longer than you calculated or think it will take to make the trap.

Cut through just enough to short the center and outer conductors together. The spectrum analyzer should show a return loss dip at a frequency lower than the desired one. Then cut again making

was less than two inches long. The goal was to protect an STL receiver from lightning surges.

In conclusion, I'd like to say that the more we know about basic theory, the more we can use it to make stations better.

Mark Persons, WQMH, is a professional broadcast engineer, certified by the Society of Broadcast Engineers. He has more than 30 years' experience and has written numerous articles for industry publications over the years. His website is www.mwpersons.com.



Delivery systems from dozens of partners like ENCO, RCS and BSI are Livewire-ready. One RJ, multiple channels. Sweet!

Livewire nodes from Axia partners let you extend your network's capabilities. Import MADI signals, log audio streams, or take hardware-based control of network routing (like this Paravel iRoute does).

Who's got time these days? You do, with Livewire-connected time management from 25-Seven.

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Livewire in Omnia audio processors ensures a clean, all-digital signal path.

Livewire in Nautel transmitters and IDC satellite receivers means you're covered inbound and outbound.

xSwitch: world's first Ethernet switch designed for IP-Audio. 8 Livewire ports, 2 Gigabit ports with SFP, - zero configuration.

Telos family of IP and ISDN codecs are ready to plug in.

Fanless xNodes with PoE pack lots of I/O into a tiny space.

Every family's got a big talker. Here's ours: the world's first broadcast IP Intercom that lets you take full-bandwidth audio to air.

Only Axia builds a network switch into the console engine. Plug in your sources and start broadcasting.

Pro sound cards and audio processors-on-a-card from AudioScience and Sound4 bring Livewire connectivity to your PC.

Now that Livewire and RAVENNA are partners, speakers and mics have a direct connection to your network, too.

XY panels, routing controllers, programmable button panels - you're in total control of your network.

8-fader Radius has 4 mixing buses, auto mix-minus, voice EQ — just like its big brothers.

Consoles? Oh, yeah, we've got 'em, big, small and in-between. This is an Element: over 4,000 raving fans worldwide (so far). Sizes from 4 to 40 faders.

DESQ packs lots of power into a small package. (Like your Aunt Louise's rum balls.) Just 18" square.

iQ: a mid-sized console that can grow from 8 to 24 faders. Powerful, expandable... now, that's smart.

Ooh, shiny! Studio control panels give your talent the power they crave.

Looks small, performs big. RAQ console puts giant-size capabilities into just 4RU.

Hello, it's for you. Telos phone systems work seamlessly with Axia networks (of course).

AXIA MAKES THE NET WORK.

Choosing an IP-Audio network? Some companies treat AoIP as if it were an RCA jack — nothing more than a way to get audio into a console. But Axia fans know that the network's real value comes when devices truly communicate.

Axia Livewire™ networks are much more than glorified punchblocks. Axia consoles integrate with a big family of more than 70 broadcast products, from 45 partners, to intelligently share audio, data and control between studio devices with the click of an Ethernet cable.

Phones, codecs, delivery systems, audio processors, profanity delays, pro audio cards and more, all form a sophisticated ecosystem. So phone and codec callers receive automatic mix-minus. Satellite feeds record unattended. Broadcast-quality intercoms can go straight to air. Shows are smoother and more error-free. And Axia is a charter supporting member of the AES X192 standards project, so your investment is future-proof.

So when you choose your IP-Audio network, choose the one with all the connections. Axia: we make the net work.

AxiaAudio.com



Don't Miss That Connection!

Reach listeners on-the-go across multiple modes of transport

"We can't give away gas cards to our listeners!" an impassioned program director told the sales manager, in no uncertain terms.

"But these are \$100 gift cards!" exclaimed the man who keeps the station solvent, wondering why on earth he was hearing this.

"I don't care," said the PD. "Our listeners are environmentalists and not only won't they want free gas, they'll be angry at us for giving it away. No way are we doing that."

Having sat down between them minutes earlier, I looked forward to the pleasure of being their moderator. The sales manager looked at me. I asked, "How much money is on the line?"

"It's a \$30,000 buy! But only if we do the promotion to give away the gift cards."

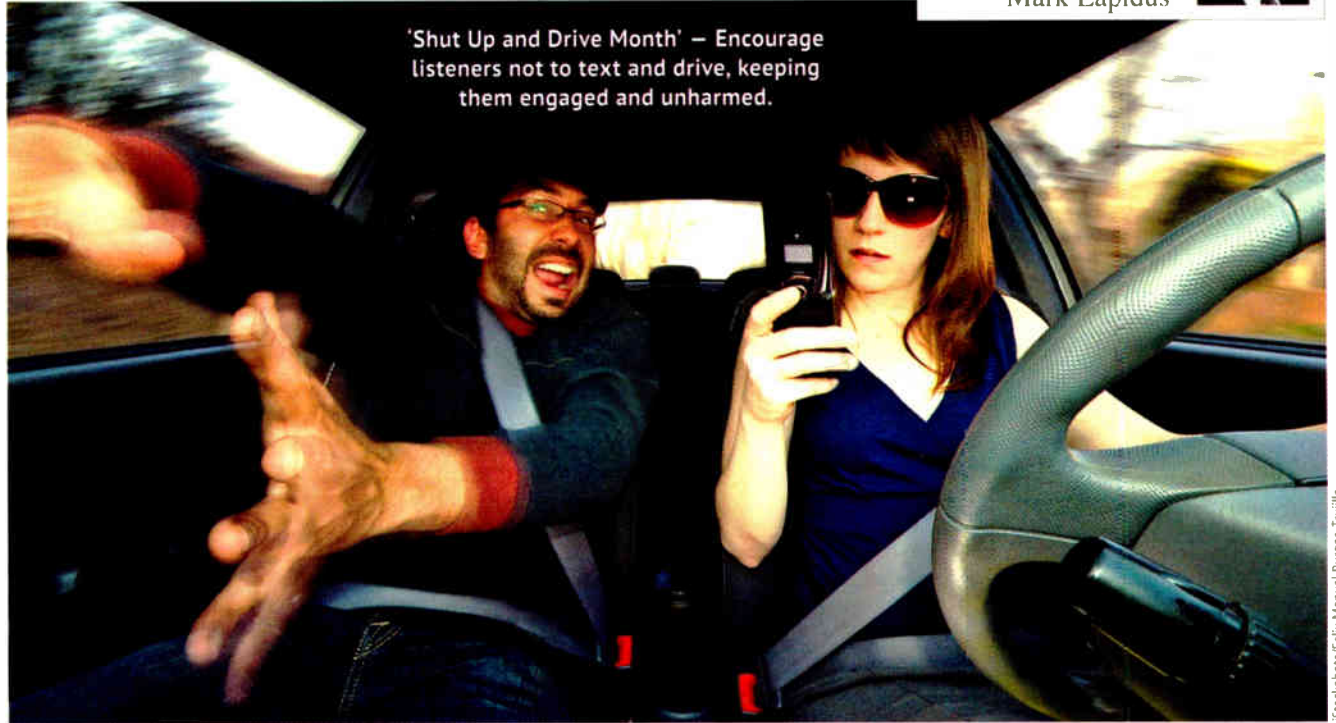
I had asked the question to see if this would sway the PD. It didn't. Instead, he became even more obstinate when I asked to see the research indicating that the station's listeners either didn't drive cars or didn't want free gas. His response: "I don't need any research to tell me what I know is fact."

You know how this ends. Of course the station gave away the gift cards and got the \$30K advertising buy from the agency. I later asked if they received any reaction from the audience. Yes, they had each received calls from the typical 20-something listeners anxious to know when the next gas card giveaway would be.

I took away several lessons from the episode.

First, program directors may be great at picking music but should not jump to behavior conclusions about a target audience without evidence.

Second, when there's a lot of money on the line, a sales department almost



PROMO POWER



Mark Lapidus

always has the final say.

There are many fun things to promote around the very subject of transportation. Here are a few idea starters you may use for promotions and, if you're smart, you'll also make money with them.

'LOVELY RITA, METER MAID'

Blow the dust off this gem, which I heard the first time thanks to the father of classic rock, Fred Jacobs.

The first thing you'll need is something that looks like a parking ticket. But instead, it's the exact opposite. It tells the car's driver that Lovely Rita from Classic Rock 103 noticed that their meter had expired and so paid for more time, hop-

ing to save them from a real ticket.

"Rita" places your station's ticket on the windshield of every car to which she contributed a few quarters for a meter. The sponsor gets its logo on the ticket (with a coupon if the client opts for it), coupled with all the on-air promotional announcements:

"Lovely Rita, the Rock 103 Meter Maid, saved a bunch of people downtown from getting stuck with parking tickets yesterday. If you see Rita on the street, be sure to honk and say hello! Brought to you by [for example, Citizens Bank], where your hard-earned change grows with interest that's five times the national average."

In you deal with the client, be sure to build the cost of the meter change into the sales package, so the client picks up the expense. You'll be surprised how many cars you can "save" for just \$30 a day.

Cute uniforms are optional but encouraged if you happen to hire the right interns!

"City Guides" Metro systems often have print budgets to produce brochures promoting city events like street festivals, foot races and parades. It's up to you to figure out what content would be interesting for the guide — at a minimum, the brochure should contain schedules and locations of the events, and how to get to them via Metro.

Putting FM first for 50 years

...looking forward to the next 50 years, thanks to you.

Check out our new products at www.shively.com ~The award-winning Versa2une, the new 6828 high power broadband, and the 6025 Log Periodic antenna

Shively Labs® How can we help you?



You could also include links to website resources, event history and pictures from previous years. Promote pick-up locations for these guides on your radio station(s). You may also want to make space for coupons from the sponsors of the event and other clients you bring to the program.

Find the right contact at your metro system and you might be able to pull this off several times a year. It's also great exposure for the station.

'PARTY BUS #22'

If you're in a place where concerts and sporting events are difficult to reach, it's a safe bet that you can sell at least one or two bus trips to listeners who want to get there and not worry about driving. Partner with a local travel agency who already has a list of active customers interested in entertainment.

Always reserve a few seats to give away on-air so you have an easy excuse to promote the ticket sales. You may be able to get a group rate on the tickets when you buy 30 at a time from the promoter or stadium.

Each bus can be sponsored. Always send a "host." Let people bring their own beverages.

Get testimonials from your first few trips to prime the pump for the next ones. Eventually you get a group of regulars who like to travel to together on the Party Bus.

'SHUT UP AND DRIVE MONTH'

Encourage listeners not to text while driving by having them sign a pledge on your website. Or have listeners text the word "pledge" to your station's SMS system (not while driving, obviously!). Everyone who "signs" the pledge becomes eligible to win a new smartphone from the mobile phone provider (or retailer) who sponsored the pledge drive.

Because everyone is on the go, there are countless ways for you to engage your audience and actually become part of their lives beyond the airwaves. With a little imagination, you can take your station places it has not been before.

Mark Lapidus is president of Lapidus Media. Reach him at marklapidus@verizon.net.



Product: **Genie Distribution**
Company: **Tieline**

It's a codec on steroids, an IP multipoint audio distribution system with dual Gigabit Ethernet ports, dual redundant power supplies and audio silence detection.

The box is designed for reliable operation over critical audio paths using LANs, WANs, the Internet, satellite IP and wireless networks. Use it for distributing up to six channels of audio between two points; stereo IP audio distribution to up to 50 individual multi-unicast endpoints; or IP multicasting to unlimited endpoints over compatible IP networks.

It is capable of 24 bit/96 kHz linear PCM audio with low latency. It comes with the low-delay E-aptX algorithm as well as LC-AAC, HE-AAC, Opus and numerous others. Features include Java-based Web browser GUI and optional WheatNet-IP interoperability.

You can stream simultaneous redundant data streams from both Ethernet ports and enjoy redundancy by switching back and forth without loss of audio if one fails and then recovers.

Shown: Mary Ann Seidler of Tieline, Paul McLane of Radio World, Charlie Gawley of Tieline, Alexis Hauk of Radio World, and Anthony Sizer and John Lackness of Tieline.

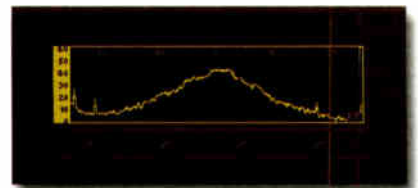
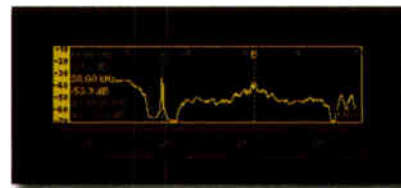
Info: www.tieline.com



Photo by Jim Peck



DB4004 Modulation Monitor
Product with no equal in the industry
... it's Simply the BEST !!!



Price: \$2700

Fully Digital DSP-Based IF Filter • iPhone, iPad & Android Compatible
Built-in Audio Streamer for Remote Listening • Easy to use WEB interface • FTP Server
Alarm dispatch via E-mail, SMS, SNMP and GPO • Built-in 50 channels Data Logger



Available in the US from SCMS, Inc. Call: 800-438-6040
www.scmsinc.com





Product: **BluePack Wireless Interview Tool**
Company: **JK Audio**

BluePack, already a cool device, now offers improved 7 kHz voice bandwidth using Bluetooth HD Voice wireless technology. JK Audio notes that HD Voice is available on many third-party headsets and cellphones, offering "wireless freedom with improved speech quality."

This interview tool combines Bluetooth with pro audio electronics in a belt-pack. It allows live man-on-the-street interviews through a cellphone equipped with Bluetooth, pairing to your phone like a Bluetooth wireless headset; it incorporates a microphone preamp and headphone amplifier. A 3.5 mm stereo line input jack allows recordings to be mixed into the broadcast. The 3.5 mm stereo line output jack provides your microphone signal on the left channel and Bluetooth audio on the right.

It also pairs to Bluetooth-equipped sound cards and music players in full-bandwidth stereo A2DP mode.



Shown: Alberto Colin, Alexis Hauk (Radio World), Eric Klinger, Linda Klinger, Gary Eiklor, Joe Klinger, Wayne Reed and Brett Moss (Radio World).

Info: jkaudio.com



Photo: by Jim Peck



Product: **DB4004 FM Monitoring Receiver**
Company: **Deva Broadcast**

Deva Broadcast, based in Bulgaria, is a relatively recent discovery for many U.S. engineers, but the DB4004 is actually its second-generation digital FM Radio Modulation Analyzer. It is a feature-rich, DSP-heavy RF tool.

Highlights include dual antenna ports with RF attenuator; up to 100 dB μ V direct RF antenna input; selectable wide-range IF filter bandwidth; bright bargraph LED metering of modulation and pilot



Photo by Jim Peck



levels; total and independent Positive and Negative deviation bar graph; and Left, Right, L+R, L-R bar graph LED audio level meters. A built-in oscilloscope represents observed signal change over time and helps you visualize what's going on. A complementary spectrum analyzer allows further useful analysis.

The box also offers levels measurement with data history; selectable e-emphasis (off, 50 μ s and 75 μ s); stereo decoder; real-time audio program streaming; 50-channel data logger; and a bunch more including Apple and Android device support. The OLED display is easy to read; the menu is simple to navigate.

Shown: Todor Ivanov and Radio World's Paul McLane.

Info: www.devabroadcast.com

PEOPLE NEWS

Entercom has promoted **Weezie Kramer** to station group president, a new position. Kramer had been a regional president since 2005; now, she will oversee the operations of the 121-radio station group.

Five new members have been elected to the **NAB Radio Board**. They are: **Mike Boen**, managing partner of BL Broadcasting; **Ed Henson**, president and owner of Henson Media; **Jessica Marventano**, senior vice president, Government Affairs, for Clear Channel Media & Entertainment; **Frank Osborn**, president of Quantum Communications; and **Paul Tinkle**, president of Thunderbolt Broadcasting. Journal Broadcast Group EVP **Steve Wexler** joins the NAB TV Board. Their two-year terms begin this month. Seven current board members were reelected: Team Radio Owner **Bill Coleman**; Cox Media Group Jacksonville VP/Marketing Manager **Bill Hendrich**; and Lenawee Broadcasting President **Julie Koehn**. EMF President/CEO **Mike Novak**, Alpha Broadcasting President/COO **Bob Proffitt**, Greater Media VP Corporate Communications **Heidi Raphael** and Dana Communications President **Dana Withers** were also reelected.

The **Georgia Radio Hall of Fame** has announced its 2013 Legacy Inductees class. The Class of 2013 is: **Palmyra Braswell**, pioneering black female disk

jockey. **WBML(AM)**, Macon, Ga.; **George Crumbley**, sales manager at **WSB(AM)**, Atlanta and father of the "Chick-fil-A Bowl," formerly the Peach Bowl; **Jimmy Dunaway**, farm director and news anchor, **WSB(AM)**, Atlanta; **Al Evans, Jr.**, DJ, owner, **WVLD(AM)**, Valdosta, Ga.; **John Holliman**, reporter and Peabody Award recipient, **WSB(AM)**, Atlanta; **Don Kordecki**, owner, **WKRW(AM)**, Cartersville, Ga.; **Royal Marshall**, talk show host and producer, **WSB(AM)**, Atlanta; **Leonard Postero**, creator and voice of "Leonard's Losers" football prognostication program; **Annie Lee Small**, co-owner, **WYTH(AM)**, Madison, Ga. and Atlanta's first female announcer.



Jim Bailey

Jim Bailey is joining audio processor maker **Aphex** as general manager.

Dial Global announced that **Greg Clancy**, vice president of creative for **TM Studios**, has been named the new general manager for the Dallas-based imaging and music company. **TM Studios** is a subsidiary of the radio content and services company.

International Datacasting Corp. has chosen **Doug Lowther** as its new CEO. Lowther was execu-



Brian Kaminsky

tive vice president at **Irdeto**, a media delivery, security and management technology company.

Clear Channel Media and Entertainment has added digital media executive **Brian Kaminsky** to the company's digital division as executive vice president of operations. **Clear Channel Austin** has chosen **JT Bosch** as the program director of **KASE(FM)** and **KVET(FM)**. Austin's heritage country stations. **Jeff Wyatt** has been named **Clear Channel Charlotte's** new operations manager. Down in Florida, **Clear Channel Melbourne** has named **Tom Davis** vice president and market manager.

Another seat was vacated on the **Broadcasting Board of Governors**. Member **Dennis Mulhaupt** sent a resignation letter to the White House. A release said Mulhaupt was alternate presiding governor, chair of the **BBG Governance Committee** and chair of the board of **Radio Free Europe/Radio**



Joanna Douglas

Liberty.

Media research firm **Coleman Insights** has hired **Joanna Douglas** as a vice president. Douglas joins **Coleman Insights** with strong research and media experience, including 13 years at **Arbitron**, where she helped roll out the **Portable People Meter**.

Julius Genachowski was to become fellow at the **Aspen Institute** after he stepped down as **FCC** chairman, according to the Institute.

IP. It's the new ISDN.

Meet Z/IP ONE: The "Z" stands for Zephyr.



It's the question on everyone's lips: "What comes after ISDN?" The answer: Z/IP ONE, the Telos Zephyr for IP connections. Broadcasters fell in love with the original Zephyr for its rock-solid reliability and superb audio; Z/IP ONE brings those same qualities to IP remotes.

Is IP reliable? TV networks say so - they use it for HD video backhaul. And Z/IP ONE is packed with IP-codec "smarts" to ensure reliability, even over the public Internet. Agile Connection Technology adapts to network conditions, delivering audio quality as good or better than ISDN despite packet loss and jitter. Genuine, high-performance MPEG codecs from Fraunhofer for exceptional fidelity — no lame knock-off codecs. No latency build-up, re-negotiation or fiddly adjustments: Z/IP ONE just works.

There's more: Z/IP ONE incorporates SIP, N/ACIP, and IPv6 standards. The worldwide Z/IP Server connection service helps traverse NAT routers and tricky firewalls. And now, you can do great-sounding handheld remotes using LUCI® LIVE smartphone and tablet apps. All of which makes Z/IP ONE perfect for live remote broadcasts, whether concerts, talk show remotes, off-site talent — even full-time STL links or RPU backhauls.

Experience the convenience and flexibility of IP.
Z/IP ONE: the best way to hear from there.™

High-quality remotes are right in your pocket.
Z/IP ONE now connects to LUCI LIVE smartphone
apps for wideband audio on-the-go.



New Technology Benefits Sales Too

At NAB Show, DBC and RAB talk new marketing products

BY SCOTT FYBUSH

When it's time to focus on rolling out expensive new technology in a typical radio station, it's usually the on-air studios, the production department and the IT crew that get all the attention.

But a fairly modest investment in technology can pay big rewards if it's applied down the hall in the sales department, say experts who spoke on that topic at the NAB Show in Las Vegas.

At Delmarva Broadcasting Company (DBC) in Wilmington, Del., General Manager Mike Reath says his stations, including flagships WDEL(AM) and WSTW(FM), are in the midst of a huge change in the technology available to their sales staffs.

"Historically, all of the things that we've had to sell in radio have been done on paper," Reath said.

It's not just the usual pile of coverage maps and testimonials and rate cards that are printed out and bound together to leave with clients. Reath says DBC's salespeople have become accustomed to generating ad copy on paper, showing layouts of banner ads on paper and even presenting mockups of mobile websites on paper.

ULTRABOOKS FOR SALES

To replace all that paper, DBC has invested in the creation of custom software that will put a wealth of tools right at the fingertips of its sales people, who've all been outfitted with Lenovo Yoga "ultrabook" computers, which are a flip-over hybrid of a tablet and a small laptop.

"We looked hard at going with iPads, but they don't work with Arbitron or



The DBC tablet gets put to use by Delmarva General Sales Manager Ruth Gilbert and Account Manager Todd Waldbuesser. The computer of choice for Delmarva now is the **Lenovo: Thinkpad Twist - 12.5 HD Multitouch - Intel Core i5-3317u**, a change from the initial spec of a **Lenovo Yoga Ultra Book**, according to General Manager Mike Reath, who adds that the "Twist has a larger hard drive and better touch screen interface."

our traffic and billing software," Reath says. "We also looked at the Samsung Galaxy Tab, but it has a weird version of Android that doesn't work well with PowerPoint."

DBC's sales force now sells much more than just airtime on the company's radio signals. Reath says a typical buy can include everything from streaming ads to texting campaigns to custom-built mobile websites, and even to a DBC service that provides online reputation management for clients.

Until now, it has been hard for sales representatives to explain everything in the DBC portfolio, but Reath says the new software will allow those reps

to build entire campaigns on the computer, right in front of the client.

While the software wasn't finished in time for the NAB Show, Reath was able to show off many of the features he'd specified. In addition to convenient on-screen display of sales materials, ratings comparisons and customer data, the software includes access to an audio library of successful campaigns to play for clients.

It then allows DBC's 10 Wilmington-based sales reps to craft mock ad schedules and create pricing for clients — and to immediately provide a polished PDF to leave with the client as well.

Even in unfinished form, Reath says the software is showing its value. A recent client visit, he says, came right on the heels of another sales call from a competing cluster.

The client "had a schedule coming to them from the competitor that was free, and we were asking them for a \$60,000 buy."

After walking the client through all of DBC's offerings with the help of the software, Reath says they got the buy — and a big compliment from the client, who told them, "I didn't think radio could do



Product: **StreamOn Appliance**
Company: **StreamOn**

Internet radio solutions provider StreamOn was created by a broadcaster, the OK Radio Group. Its services to stations include audio encoding, stream delivery, advertising tools and reporting.

A key component is the StreamOn Appliance, a solid-state "plug and play" device that encodes audio into formats such as AAC+ and Ogg Vorbis. You provide the power, Internet and audio.

The Appliance is intended to run without worries about viruses, security updates or system reboots. It operates on Unix and is housed in a passively cooled case; there are no fans or hard drives to fail. The box comes with audio processing from Omnia Audio built in.

HTTP Live Streaming divides audio into five-second chunks that are pushed to a listener throughout the listening session. Among other benefits, this helps in-car and mobile listeners who are moving between cellphone towers.

"Stitchable" audio can be used to create podcasts automatically in real time. Listeners can hear content again right after it airs. The listener can share audio on social media with friends who can then tune in with one click.

The Appliance also addresses a problem in which replacement ads for Internet streams cut in at the wrong times due to varying metadata cues from station automation. StreamOn's Smooth Spots Technology scans waveform audio looking for suitable transition points.

Shown: Radio World's Alexis Hauk, center, with Randy Liedtke, left, and Jamie Moffat.

Info: www.streamon.fm



STATION SERVICES

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Photo by Jim Peck

all this. You've come a long way."

Reath says DBC developed the software for its own internal use, but he's open to the possibility of working with other independent broadcasters to modify the package for their use as well.

NO CHEESY SPEAKERS

Broadcasters at the session also heard from Dave Casper, senior vice president for internet services at the Radio Advertising Bureau.

He presented an overview of the existing technology choices available for sales managers hoping to better outfit their troops in the field. Those resources include RAB's own mobile website, www.rab.com/mobile, which includes access to decades of RAB's

If the technology prevents them from feeling comfortable when they're making their presentation, that's going to be reflected in the presentation and it's going to affect their closing ratio.

- Dave Casper

own research, Gold Digger prospecting reports and, for inspiration, more than two decades of Radio Mercury Award finalists in MP3 format.

But Casper also says that, especially for sales veterans who've become accustomed to selling in lower-tech ways, the value of a shiny new iPad may be limited.

"If the technology prevents them from feeling comfortable when they're making their presentation, that's going to be reflected in the presentation and it's going to affect their closing ratio," he said.

If new technology is the right choice for a sales force, though, Casper offered some tips from his own experience, including the importance of a top-quality set of external speakers for account executives who'll be playing demo spots in clients' offices.

"This is radio," he said. "It's got to sound great."

Scott Fybus is a longtime contributor.

PEOPLENEWS

Alvin Pritchard has been tapped to fill the opening of **Journal Broadcast Group Milwaukee's** new vice president of finance.

The nonprofit **Association for International Broadcasting** has elected its new executive committee, which comprises: **John Maguire**, Audiovisuel Exterior de France's director of international development; **Mark Bunting**, BBC Global News's head of strategy and policy; **Lindsey Oliver**, Bloomberg Television's international commercial director; **Klaus Bergmann**, Deutsche Welle's director of international relations; **Margarita Simonyan**, RT Channel's editor-in-

chief; **Abubakar Jijiwa**, Voice of Nigeria's director-general.

The **National Religious Broadcasters** tallied the votes for its 2013 Executive Committee and Class of 2016 Board of Directors. **Richard (Rich) P. Bott II** has been reelected to a third year as chairman of the board, and First Vice Chairman **Bob Lepine**, Second Vice Chairman **John Fuller** and Secretary **Wes Ward** also won another term. **Ed Cannon** has been added as the NRB Executive Committee's new treasurer, and congratulations go to Members-at-Large **Bill Blount**, **Peggy Campbell**, **Roger Kemp**, **Tom McCabe** and **Janet Parshall**.



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How We Automated With dcsTools

Missouri broadcaster takes less-beaten automation path; has it made a difference?

PRODUCT EVALUATION

BY ART MORRIS

When you choose an automation system for your radio station, you commit to an environment, a framework that affects many aspects of station operation. The system must interface with traffic systems, music software and programming sources coming from numerous locations. And, if the station has been using a particular system for many years, its entire workflow can be built around the functionality of the existing system.

This is the problem I recently encountered when my old friend John Anthony, owner of KTTN(AM/FM) and KGOZ(FM) in Trenton, Mo., wanted to upgrade his automation system. They have been using a legacy Computer Concepts DCS DOS-based system since 1994. Before that, they used carts and reels for audio playback.

REPLACEMENT

Over the years, the station procedures, from logging to on-air to post-air auditing, were built around the functionality of that legacy DCS system.

So, when it came time to talk about

replacing their system, I was concerned about maintaining the familiarity of the systems as much as possible. We looked at several systems in a variety of

for production, log editing, merging, conversion of audio from other formats and automatic recording of network audio.

Habedank says XStudio began as a way to take DCS/Maestro audio files out of the studio. Legacy DCS supported both PCM and aptX data-reduced audio, but because of the cost of hard disk storage at the time,



price ranges. Eventually we set our gaze upon dcsTools.com and contacted Rich Habedank of C-R Media.

The company has a set of programs designed for users of legacy DCS and its Windows-based successor Maestro systems. However, they also offer XStudio, an application that has developed into a full-blown automation system, which uses the same structure as DCS/Maestro systems. This suite of programs includes software

most stations used the aptX compressed audio option. The audio was stored in a proprietary file format called DAF.

Some of the later systems could use MPEG compressed audio. But the DAF file format prevented these files from being used outside of the DCS/Maestro software. XStudio originally was designed to play those files without special hardware. But, as the software matured and features were added, the

PRODUCT CAPSULE

DCSTOOLS

XStudio Automation

Thumbs Up

- + Easy to install and configure
- + Familiar file structure
- + Log-driven
- + Operator-friendly screens
- + Easy multicut carts

Thumbs Down

- An automated ingest function would be helpful

Price: Customization options affect total price but dcsTools says estimated starting figure for an installation is \$1,895.

For information, contact Rich Habedank at C-R Media in Minnesota at (952) 949-9450 or visit www.dcsTools.com.

program became a system of its own.

For the XStudio installation at KTTN/KGOZ, local engineer Randall Mann built a RAID 5-compliant Windows server with mirrored drives and a gigabit switch. We bought five off-the shelf studio Acer machines running Windows 7 in addition to the server. We used M-Audio Delta M-44 audio cards, which feature two physical (balanced) input and output channels, in addition to the virtual channels available in XStudio.

XStudio supports numerous audio switchers so we also purchased three Broadcast Tools ACS8.2 audio switchers and one SS16.4 switcher — all of which are supported. Total cost of hardware was about \$5,000.

From dcsTools.com, we purchased three copies of XStudio Automation, four copies of XChange (the production module) and two copies of ezSuite (the logging, audit and reconciliation module) and a few other sundries. Total software cost, about \$8,000. This puts the comparative cost of the system in the "low-to-mid" range. There are less expensive systems, but none that would maintain the current functionality.

Like its predecessors, XStudio is a log-driven system. The program log appears on the screen, just as it would have appeared on paper. As spots are played, a red check mark appears to show it has played. Program titles and log comments also display just as they do on the paper log. Up to four virtual audio playback decks appear at the top of the screen. Audio may be steered to additional outputs, if they are available.

XStudio brings a lot of new functionality to the table as well. Multiple pages of hot buttons are especially useful. Each can

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be programmed with audio or can be used to call predetermined functions. The air staff quickly learned they could each have their own screens. The news department uses them for actualities, programming the buttons just before their programs.

KTTN(FM) is an old-fashioned full-service station, with live announcers during the day and a satellite format at night. They also carry a heavy schedule of local sports, University of Missouri sports and Kansas City Royals baseball. XStudio handles all of those with ease.

One of the features added at our request was the ability to "remap" incoming relays from satellite receivers. This change can be done manually using a hot button, programmed onto the log, or triggered directly by a relay.

LEGACY

In addition, there were some legacy practices that our new system was able to accommodate. For instance, the staff was accustomed to all audio coming out of a single pot on the console, which was easy to configure in XStudio.

No doubt the biggest benefit of the system is that the dcsTools system uses the same conventions as DCS/Maestro, especially traffic and audit logs, and the multicart system.

In the days of tape cartridges, many stations would put multiple cuts on a

single cart. The original DOS-based DCS system maintained this functionality. In the years since, most systems have abandoned multicuts in favor of allowing the traffic software to handle this job. However many stations, including KTTN/KGOZ, use this feature every day. At least 75 percent of the "carts" in their system are multicut. XStudio (and its production module, XChange) main-

features to the table, including CD and MP3 ripping, direct importation of files from email and Adobe Audition. Remote access works well, too.

I encountered a couple of minor problems during installation. For instance, I had to modify some of the log templates because there are differences "under the hood" with XStudio, as far as how it executes log-driven functions.

After several months of transition, the new installation has worked out well.

tain the ability to handle multiple cut "carts." Up to 99 cuts may be "rotated" on a single cart number. Using a pop-up window in XChange, you can also control which cuts are being used currently, and which is next-to-play.

We also are using dcsTools' XStudio Recorder software, which handles all automatic recording. KTTN/KGOZ delays dozens of audio items each day from four networks. XStudio Recorder handles these automatically, two at a time in many instances.

The new system brought many new

But the biggest issues were human. The staff was accustomed to large, simple DOS-based screens. Some of the staff, especially some with limited computer abilities (and poor eyesight), found the Windows screen presentation "too small." I have to remind myself, even in this day and time, that many everyday users are still not computer-savvy. This is especially true in smaller stations with more mature staffs. I was able to increase the screen and cursor sizes to accommodate some of these concerns.

Given a wish list, I'd like to see a

secondary log. Many systems have a method of loading a secondary log to use for network sports and such. After the event ends, the system returns to the main program log.

I'd also like to see an automated ingest function. Many programs and features are now distributed by FTP sites. I wish the system had a way to auto-download and convert specified files into the system without operator intervention.

Service and support after the sale has been very good. Every time we've had an issue or feature request, dcsTools has been responsive to our needs. The products continue to evolve. The "input relay remap" feature mentioned above was our request. We recently asked for a module that would auto-import files that have been downloaded by FTP. They are working on such a product at our request.

After several months of transition, the new installation has worked out well. We are able to maintain their existing workflow, while bringing modern hardware and software into the mix.

Art Morris is a contract engineer and he also does ABIP "Mock Inspections" for both the Missouri Broadcasters Association and Oklahoma Association of Broadcasters. His career spans more than 40 years, beginning as a teenage disk jockey at KWAK(AM) in Stuttgart, Ark. His personal website is www.artmorris.com.

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MARKET PLACE

SOUND LIBRARIES: Sound library developer Sound Ideas has released two new sound packages — the Mix XIV Broadcast Music Library and a follow-up to the well-known General package, the General HD 2 Sound Effects Library.

The Mix XIV royalty-free music library comes on three DVD-ROMs with all cuts available in 16-bit/48 kHz WAV and 320 kbps MP3 versions. According to a release, the music can be categorized in themes: "corporate, dance & club, rock, sports, extreme rock, children, comedy, easy listening, romantic, wedding and worship, blues, country, drama film scores, New Age, world, patriotic and military."

The entire library has 490 compositions with a total number of versions being 1,400. Files contain metadata and informative PDFs and Excel spreadsheets are included for search purposes. Price: \$495.

The newest General comes on a hard drive and is filled with more than 6,500 royalty-free sound effects that Sound Ideas says are newly recorded and completely fresh. Each effect is available in 24-bit/96 kHz, 24-bit/48 kHz, 16-bit/48 kHz and 16-bit/44.1 kHz BWAV versions. Search software is included.



AIRAURA DEBUTS: Wheatstone has added to its AirAura processor family.

The AirAura X3 Digital Spectral Processor adds or reworks a number of tools.



According to Wheatstone, the X3 offers a new final clipper. There is a new five-band AGC and new algorithms for the 31-band limiter. A new EQ has parametric and Baxandall shelving sections. The new bass manager has enhanced tuning according to the company.

In addition, a new codec artifact reduction algorithm is designed to "tame" encoded stereo source material. The new loudness analyzer is compatible with BS-1770-2 standards. The stereo generator can accommodate single side-band encoding.

Somewhat more mundane are additional security options and storage for up to 160 presets. Naturally the X3 is compatible with WheatNet-IP networks.

Info: wheatstone-processing.com



The General HD 2 has sounds ranging from select car models to exotic "world ambiances." It has public places such as restaurants, playgrounds, forests, hospitals, factories, stadiums and street crowds. It also has specialized sounds such as potato cannons, explosions, jets, rain, wind and lightning. Price: \$995.

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Product: ARC-15 Bluetooth Console
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Shown: Paul McLane of Radio World, Dale DeLaPointe, Melissa Freeman, Ben Palmer, Aaron Palmer, Alexis Hauk of Radio World, Michael Palmer and Allen Harrison.

Info: <http://arrakis-systems.com/arrakis---bluetooth.html>



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Product: Ten-Year Warranty
Company: Eceso/WorldCast Systems

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Coverage applies to FM transmitters that are purchased with at least a year's subscription to the company's Expert Maintenance Reporting service. EMR delivers reports on the status of parameters such as temperature, current and voltage, and on the performance and lifespan of components such as the fan and power supply. Eceso says its logging and trend analysis let EMR identify "slow-burning" problems and issue warnings to allow for corrective action.

Shown: Christophe Poulain, Stéphanie Laffiteau, Tony Peterle and Josue Rodriguez.
 Info: www.ecreso.com



Photo by Jim Peck

WHO'S BUYING WHAT

Ingstad Broadcasting has re-upped with **RadioTraffic.com** for its traffic and billing software lease. The term was 10 years.

Clark Financial Group, producer of financial information programming, aired in the Dallas market through a program on **KAAM(AM)**. They use two **Barix Exstreamer 500 IP** audio devices to facilitate remote contribution and bidirectional streaming.

Logitek Electronic Systems reported orders for its networked console systems and components. **Backyard Broadcasting** expanded a system in Elmira, N.Y., adding a **JetStream** and **ROC-12**. Also expanding were **Colorado Public Radio**, which added **vMix** to a system of four **AE-32** engines and six **Remora** consoles. **KACU(FM)** in Abilene, Texas, also added a pair of **Pilot-12** consoles to a **JetStream** system.

The Caribbean island nation of Aruba has deployed the Android version of **Global Security Systems** and **Weather Decision Technologies'** **Alert FM** app as a part of its first responder notification system.

Adelante Media Group has implemented **Matrix Solutions CRM** and sales analytics software. The radio and television company has 22 stations in nine markets and focuses on emerging Hispanic markets.

Wheatstone reported that **New Hampshire Public Radio** in Concord, N.H., ordered two more **IP Blades** and **WheatNet-IP** audio drivers for its **BE AudioVault** automation system.

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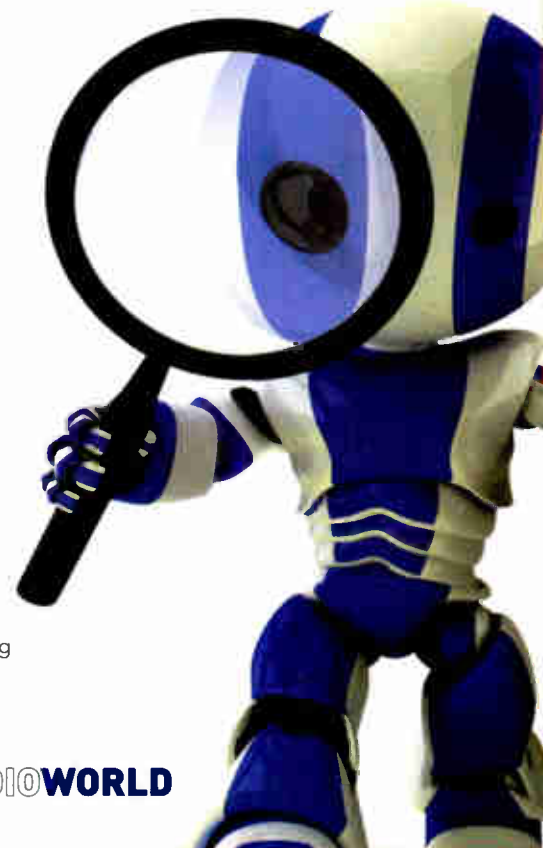
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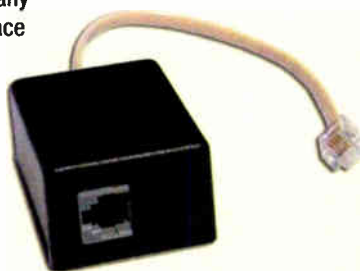
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time is 18:02, also looking for SF Giants games and/or highlights from 1958-1978 also taped off KSFO Radio. Ron, 925-284-5428 or ronwtamm@yahoo.com.

Looking for KFRC signoff radio broadcast from 1930 Andy Potter, running time is 0:22 & also the KLX kitchen the program guest is Susanne Caygill, a discussion of women's affairs with a long promotion for Caygill's appearance at a local store. Anne Truax, Susanne Caygill, running time is 13:44. Ron, 925-284-5428 or email ronwtamm@yahoo.com.

Looking for KTIM FM radio shows from 1981-1984 if possible unscoped. R Tamm, 925-284-5428 or ronwtamm@yahoo.com.

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We Must Elevate Our Innovation

Kevin Gage reports on NAB Labs and its role in a changing tech landscape

NEWSMAKER

Kevin Gage, executive vice president and chief technology officer for the National Association of Broadcasters, addressed the 67th annual Broadcast Engineering Conference during the spring NAB Show. Here are excerpts.

A year ago, I challenged you — the technology leaders of the broadcasting industry — to join me and NAB in transforming our industry.

We are the original “wireless” industry, but we were not perceived to be wireless. We are the original social network of our local communities, but we were not perceived to be that. In the past year, many of you took up my challenge and joined me in leading our transformation.

Last year, we launched NAB Labs as a platform for broadcaster innovation and the NAB Labs technology teams that have lead this transformation. And as we meet here today, in an atmosphere of constant and accelerating change for our industry — one in which the stakes could not be higher — innovation and progress to a changing media technology landscape has become an essential, daily component of broadcasting, and a prerequisite for its continuance as a competitive consumer product.

The NAB Board acknowledged this when they championed the formation of NAB Labs to help drive this process for the industry, and in the past year, we’ve worked tirelessly to build momentum in that direction.

PROJECT REPORT

On both the radio and television sides of the business, NAB Labs has launched projects that we expect to have significant applicable impact on broadcasters’ future. For radio, we are strongly focused on advancing into the digital, handheld age.

One area in which we see strong promise is hybrid radio. We’ve defined and developed the technology, held meetings across the country and the world, brought previously separate communities together, and made investments to help this fledgling technology reach a tipping point.

We’ve also dug deep on the possibilities for AM radio’s revitalization. Again, we’ve studied the options and are taking steps to develop a multi-tiered strategy that will refresh the senior broadcast band and give it new life in the digital age. We’ve run tests on all-digital IBOC for AM, which has never been broadly tested, with promising initial results. More tests are planned on this soon, along with other exploration of possible options for AM broadcasting



Photo by Jim Peck

Kevin Gage. ‘For radio, we are strongly focused on advancing into the digital, handheld age.’

improvements.

On the TV side, where all things are already digital, we’re looking at the next generation of technology that can make television even more compelling, flexible and entertaining. Through the efforts of our members in the NAB Labs Television Technology Committee, we are exploring just what a next-generation broadcast TV platform should include, and taking steps to test these assump-

tions in real-world environments.

We know that television is quickly moving to a connected, multi-platform, multi-screen environment ... and we want to ensure broadcasters’ place in this new world. NAB Labs will leave no stone unturned in that quest, and in fact, we expect to get out ahead of the development curve.

So ... We’ve made some new connections with industry groups that might have seemed unusual in the past, but we feel they are critical today, and will be even more so moving forward. NAB is now a member of W3C — the World Wide Web Consortium, which guides the development of new online applications.

We’ve joined ATIS — the Alliance for Telecommunications Industry Solutions — and through that membership have joined 3GPP, the body that sets standards for wireless telecommunications.

And along with our continuing leadership of ATSC and its ATSC 3.0 standards development, we remain involved on a global scale with FoBTV — the Future of Broadcast Television group.


NAB has also joined DVB, another worldwide digital television standards development organization that is pursuing next-generation solutions as well. Working with all of these bodies, and others we find appropriate in the future, will provide NAB Labs with the broadest possible vision of what’s next for television technology, and what path makes the most sense for broadcasters to pursue.

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GAGE*(continued from page 37)*

Our work in these new spaces will also provide opportunities to forge new partnerships — another key role that NAB Labs has been charged with. We've already worked with our radio members to help enable hybrid radio technology, and one application of those efforts is the recent announcement by Sprint that will result in millions of new FM receivers in smartphones.

We will seek out and explore other new affiliations, unorthodox though they may seem to be at first, as we establish our place within the "new normal" of the broadcasting business.

CONTENT DISCOVERY

A common thread among these emerging venues is the importance of content discovery. How do ever-increasing, fragmented audiences find the programs they want, in the forms and on the devices that they want them?

Traditionally, this was easy. Two knobs were all you needed: tuning and volume.

Today, it's much more complex and competitive and becoming more so every day. We need to ensure that consumers can still find and enjoy broadcast content easily and quickly, on whatever device, or devices, they are using at the moment.

Another key attribute of any new technologies we select is how well they play to broadcasters' strengths. The criterion of robustness and scalability is foremost among these.

We've seen many recent cases of communications systems' failure in times of crisis, with only broadcasting remaining intact, and providing its critical lifeline service to affected users. Any new technologies we adopt will have to not only retain, but improve upon, this level of reliability, effectiveness and expanded emergency alerting capabilities, ensuring that broadcasters will continue to serve our local communities as their first informer in times of crisis.

An increasingly unique element of the service broadcasters provide is its localism.

Again, any new delivery systems we adopt must build upon this essential capability, and allow broadcasters to present both national and local content

to their audiences. In fact, we should explore new technologies for their ability to provide even finer granularity for our services, targeting "hyper-local" audiences within a broadcast market and develop new ways to connect and build upon the trust relationship we have with our local communities.

The audiences we serve are also increasingly mobile, and they want their media content along for the ride. Radio has long been a mobile service, but we can make it even more pervasive with its

we are now challenged to elevate our innovation to the next level, with expansive thinking that confronts traditional assumptions.

Our next-generation broadcast systems will require greater flexibility and agility than in the past, to meet unknown and ever-changing market dynamics and competition. While challenging such fundamental tenets of broadcasting may raise some eyebrows, it is necessary.

It is evolution, and we believe it is good business to revisit these long-held

We will seek out and explore other new affiliations, unorthodox though they may seem to be at first, as we establish our place within the 'new normal' of the broadcasting business.

inclusion on more handheld devices, and its expanded service to vehicles through hybrid radio techniques.

Meanwhile, as the first Mobile TV devices emerge, we are taking the first real steps toward adding mobility to our television services. Many more similar steps must follow.

We've also learned that our audiences are increasingly diverse, and they expect a greater degree of control over their media content. So our next-generation services must offer greater choice and interactivity. Of course, all this technology is worth nothing if we do not also identify and develop the new products and services that our consumers require and *expect* today.

ELEVATE INNOVATION

Personalized interactive services. Mobile services. Higher-quality services. "Service following" and discovery. Today's consumer is more technologically demanding and savvy than any other era, and with our new platforms, we will have a new way to connect with them and meet their requirements and exceed their expectations.

As with HDTV, broadcasters will drive the bulk of innovation on these new areas, and the rest of the industry will follow. So many have said that broadcasters don't innovate, but we know this is patently untrue. Yet

beliefs to see if they still have merit. But to do this, we will need to work together. Over the past year, the leadership assembled in this room has proven they are up to the task.

NAB Labs will continue to be the catalyst for these discussions, and the clearinghouse for your ideas. And when we, or others, make progress, we will share that information with you through the numerous channels of NAB Labs' educational processes.

For over 90 years, NAB has been working with and for broadcasters to keep the industry strong. While none of us will probably be here 90 years from now, we can leave a platform for the next generation technology leadership to thrive on and be proud of.

It is within our power and, in fact, it is our obligation to build upon of work in 2012 and work together to define our own destiny.

We're glad you're here, and we want to continue to hear from you. Engage with us, and help us make NAB Labs a powerful vehicle for our mutual propulsion into the next generation of broadcasting.

Comment on this or any story. Email radioworld@nbmedia.com with Letter to the Editor in the subject field.

Hey readers: Can you spot all the Radio World 'Cool Stuff' 2013 logos contained in this issue? Send an email with your tally to ahauk@nbmedia.com and you have a chance to win a free Radio World t-shirt!

CORRECTION

Contact information for author Gary Begin in the April 24 issue of Radio World ("Be the Morale-Boosting GM"), was listed incorrectly.

Begin works as programming and marketing strategist at radio consulting firm Sound Advantage Media, formerly Identity Programming. He is based in Jackson, Tenn., and can be reached at gbegin@soundadvantagemedia.com or (731) 437-0536. His website is www.soundadvantagemedia.com.

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1900: Phones became fixtures in more well-to-do and steam-punk homes.



1920: Every home is working toward having a telephone!



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