



# RADIOWORLD

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## Connectivity Is CE Buzzword

### Automakers, receiver manufacturers and carriers chase the "mobile hotspot"

BY LESLIE STIMSON

If radio broadcasters think the dashboard is crowded now, just wait.

Three trends are combining to increase the importance of the "connected car." Everyone, it seems, has digital devices. Second, young people don't get as excited to drive and buy cars as in the past. And many consumers say using Facebook is more critical than meeting people face-to-face.

Those factors are cited by Thilo Koslowski, an in-car electronics analyst for research firm Gartner, which finds that infotainment remains a hot topic for automakers. Forty-seven percent of consumers want to use mobile apps while driving, according to the company, though 89 percent also say they're concerned about distracted driving.

Radio in numerous formats is part of infotainment in cars "connected" to the digital world through embedded modems or smartphones. Automakers are employing myriad technologies and user interfaces to connect drivers and passengers to entertainment sources even more in future.

Meanwhile, in another trend that will affect how consumers act behind the wheel, car manufacturers are exploring "assisted" driving technology on three levels: automated, autonomous and driverless. This too is a reflection of connectivity.

"Most of us will experience this in the future," Koslowski says. Gartner predicts premium car brands will have such capabilities in 2014, volume brands in 2016 and all vehicles by 2020. The research firm says that theoretically, automated vehicles could start taking

over for city drivers by 2025.

Why are automakers, receiver manufacturers and wireless carriers chasing the connected vehicle? To sell you stuff. As the radio industry knows, Americans are a captive audience on their commute: U.S. residents spend an average of 48 minutes a day in their vehicles.

Voxx Electronics President Tom Malone says companies like Roku, Slingbox and Zulu are in your home now and want to get into your car. The "enabler" is the hotspot in the vehicle.

Here are some of the developments at the recent International Consumer Electronics Show of interest to radio managers and engineers. Our coverage

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Kenwood USA is all about updated car infotainment with its slogan: "Live Connected. Drive Connected."

Photo by Leslie Stimson

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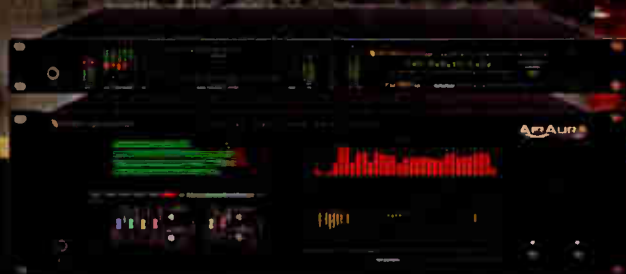
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ADVERTISING COORDINATOR Caroline Freeland

#### CIRCULATION

GROUP DIRECTOR, AUDIENCE DEVELOPMENT Meg Estevez  
CIRCULATION MANAGER Kwentin Keenan  
ASSOCIATE CIRCULATION MANAGER Michele Fonville

#### SUBSCRIPTIONS

Radio World, P.O. Box 282, Lowell, MA 01853  
TELEPHONE: 888-266-5828 (USA only 8:30 a.m.–5 p.m. EST)  
978-667-0352 (Outside the US) FAX: 978-671-0460  
WEBSITE: [www.myRWNews.com](http://www.myRWNews.com)  
EMAIL: [newbay@computerfulfillment.com](mailto:newbay@computerfulfillment.com)

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CHIEF FINANCIAL OFFICER Paul Mastronardi  
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EXECUTIVE VICE PRESIDENT Carmel King  
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#### ADVERTISING SALES REPRESENTATIVES

US REGIONAL: John Casey, [jcasey@nbmedia.com](mailto:jcasey@nbmedia.com)  
T: 212-378-0400, ext. 512 | F: 330-247-1288  
US REGIONAL: Michele Inderrieden, [minderrieden@nbmedia.com](mailto:minderrieden@nbmedia.com)  
T: 212-378-0400, ext. 523 | F: 301-234-6303  
EUROPE, AFRICA & MIDDLE EAST:  
Raffaella Calabrese, [rcalabrese@broadcast.it](mailto:rcalabrese@broadcast.it)  
T: +39-02-9288-4940 | F: +39-02-7004-36999  
LATIN AMERICA: Susana Saibene, [susana.saibene@gmail.com](mailto:susana.saibene@gmail.com)  
T: +34-607-31-40-71  
JAPAN: Eiji Yoshikawa, [calls@world.odn.ne.jp](mailto:calls@world.odn.ne.jp)  
T: +81-3-3327-5759 | F: +81-3-3322-7933  
ASIA-PACIFIC: Wengong Wang, [wng@imaschina.com](mailto:wng@imaschina.com)  
T: +86-755-83862930/40/50 | F: +86-755-83862920  
CLASSIFIEDS: Michele Inderrieden, [minderrieden@nbmedia.com](mailto:minderrieden@nbmedia.com)  
T: 212-378-0400, ext. 523 | F: 301-234-6303  
LIST RENTAL: 914-925-2449, [danny.grubert@lakegroupmedia.com](mailto:danny.grubert@lakegroupmedia.com)

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# Automakers Speed HD Radio Adoption

## iBiquity Digital says 50+ digital models are coming in 2014

BY LESLIE STIMSON

Approximately 50 new HD Radio receivers are coming out this year, roughly 30 of which will be aftermarket car models.

Kenwood and Pioneer will expand their lines, and many of those models support HD Radio, according to technology developer iBiquity Digital Corp. Alpine, JVC, Clarion and Sony also plan HD Radio receivers in 2014.

All major automakers will include factory-installed HD Radio this year, according to iBiquity. Company President/CEO Bob Struble says the technology is available in nearly a third of new cars and will be installed on half in 2014. More than 200 vehicle brands will include HD Radio this year, half as standard equipment.

To date, about 17.5 million HD Radio receivers have been sold, iBiquity says, with 15 million installed in vehicles. It predicts 7.5 million receivers will be sold in calendar 2014.

Home audio receivers with HD Radio are planned from Denon, Marantz, Yamaha and McIntosh. The Audiovox and Insignia brands are releasing HD Radio tabletops and portables.

Some in the industry who comment on the RW website about stories about HD Radio have questioned statistics from iBiquity. For example, in reaction to the reported 17.5 million, reader "Sam G" wrote: "I don't know where iBiquity is getting their numbers on existing HD receivers," which he says are "way, way off. The actual figure is less than 10 million. In addition, I can't find one HD receiver for sale in my city (top 50 market)." iBiquity has consistently defended its figures.

#### MORE DATA

Asked whether automaker interest in HD Radio has waned, Struble says to the contrary: "No automaker is cutting back on HD."

Thirty-three automotive brands offer HD Radio audio, traffic or data features. Now that all major automakers have incorporated the technology for the digital AM and FM audio features, Struble says, five OEMs — including Toyota, Lexus, Honda, Mazda and Mitsubishi — are now using digital broadcasts to deliver traffic, weather or fuel information as well.

Honda, Dodge, Jeep, and Infiniti have launched HD Radio since January 2013, as an option or standard. Some of these brands plan launch additional integrations, according to iBiquity.

Struble says automakers see the ben-



## No automaker is cutting back on HD.

— Bob Struble, iBiquity Digital

efits of integrating HD Radio into their telematics strategies, which helps iBiquity drive the transition of over-the-air broadcasting to what it hopes will be an all-digital future.

Two service providers, Clear Channel and Nokia's Here, have built nationwide networks to broadcast real-time traffic and data information using the HD Radio system. Here has partnered with the Broadcaster Traffic Consortium; Clear Channel uses its own radio stations to support its Total Traffic Network.

It has long been part of iBiquity's pitch to the market that "connected cars" will be common and that broadcasters must not take radio's historical dominance in the dash for granted. Now automakers are developing embedded Internet modems in vehicles, further making the case for HD conversion, Struble believes.

New data elements of HD Radio like Artist Experience and digital traffic data services "make radio more competitive in the dash," said Struble. Lately that focus falls on medium- to smaller-market stations. That type of

station owner, he feels, is looking for immediate return on investment from the digital conversion.

Struble says more consumer electronics devices are being built without AM/FM radio at all, because that's what manufacturers believe buyers want. "Everything's an app now," and that's how people want to interact with their devices, he said.

HD Radio implementation is part of a larger trend in which automakers and aftermarket receiver manufacturers are adding services like satellite radio and personalized Internet streams, hoping to sell more cars and electronics.

Mazda, for example, offers HD Radio technology and Clear Channel's Total Traffic Network to provide free traffic flow Images via digital FM broadcasting on the 2014 Mazda3. Mazda North American Operations President/CEO Jim O'Sullivan said this fall the Mazda3 is the brand's best-selling vehicle, making the launch of the vehicle's third generation "that much more important."

In the redesign, O'Sullivan said, Mazda added in-car technology, including a human-machine-interface system called Mazda Connect, "which offers a slew of audio and connectivity features not expected in the compact car segment." Partnerships with companies like iBiquity Digital will help Mazda's success, O'Sullivan said.

iBiquity exhibited at the 2014 International CES. Broadcasters will see elements of iBiquity's new, larger booth at the spring NAB Show, also in Las Vegas. The booth is modular, and more open, giving the tech developer more flexibility in arranging it.

# How to Improve Ambient Noise

The SBE sets out recommendations for the FCC regarding the AM noise problem



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*Radio World has focused a great deal lately on the needs of the U.S. AM band, as we cover the industry debate over how — and whether — the FCC should help “revitalize” AM. You’ll find plenty of interesting material at [radioworld.com/amcomments](http://radioworld.com/amcomments).*

*Among thoughtful insights are the following, filed with the commission by the Society of Broadcast Engineers. I reproduce them because I find this section of SBE’s comments — almost a sidebar to its main points — a helpful addition to the many suggestions floating around regarding translators, MDCL, efficiency standards and so forth. (I’ve added some paragraph breaks for ease of reading.)*

*SBE wrote:*

AM revitalization, in SBE’s view, is not entirely a deregulatory exercise. Some existing regulations should be better enforced, and some new regulations will be required in order to improve ambient noise conditions in the existing AM band. It is obvious that any interference management plan for the AM band has to be based on rules [that] limit RF noise before it becomes an issue, not *post hoc*, and those rules have to be enforced.

As but a few examples:

**A.** Radiated emission limits below 30 MHz in FCC Part 15 rules for unintentional emitters such as plasma television receivers should be enacted.

[At present there] are no radiated emission limits below 30 MHz for most unintentional emitters. Only conducted limits exist now. This has become a short-range problem with respect to interference from some emitters, such as cellular telephones (especially in charge mode) and plasma television receivers. Direct radiation from ... plasma display[s] can be problematic for AM receivers and difficult to remedy.

The commission should consider establishing limits on the amount of noise that can be radiated directly from such devices.

FROM THE  
**EDITOR**



Paul McLane

**B.** Lower limits in Part 15 for LED light bulbs should be enacted [that] are harmonized with the lower limits for fluorescent bulbs in the current Part 18 rules.

Part 18 rules govern fluorescent bulbs. Those Part 18 limits are lower than the Part 15 limits [that] govern LED bulbs. The Part 15 LED bulbs typically operate at levels 12 dB higher than Part 18 fluorescent bulbs. All of the reasons that caused the commission to establish reasonably low limits for fluorescent bulbs exist for LED bulbs.

There are apparently very few, if any, interference reports involving fluorescent bulbs that meet Part 18 consumer limits. There are, however, substantial numbers of complaints of harmful interference to amateur radio stations from LED light bulbs on an annual basis. This is a good example of an RF management problem that must be addressed *before* the devices are marketed.

There could be dozens, if not hundreds, of RF light bulbs in range of a typical AM broadcast receiver in a typical residential neighborhood. If harmful interference occurs and is reported, there is no practical, *post hoc* solution. Filtering of the bulb is not an option. They couldn’t all be found, even if adequate commission resources were available to investigate such instances. Even if they were to be found, the user of an RF light bulb that contributed to AM receiver interference would not likely be ordered by the commission to stop using it.

**C.** Better external labeling on packaging for Part 18 fluorescent bulbs and ballasts should be ordered.

Part 18 rules have separate limits for consumer and commercial fluorescent devices. A number of box stores and large hardware and consumer retailers, including some well-known nationwide chains, are openly selling commercial fluorescent bulbs and ballasts to residential consumer users. [At present] there is no information on the outside of the packaging for these devices indicating that they are not legal to use in residential environments. These same big box stores are all selling Class A industrial lighting ballasts.

There is material in the Office of Engineering and Technology’s “Knowledge Database” (KDB) clarifying that such marketing is not legal and that the labeling, or even signage

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**NEWSROUNDUP**

**RBDS:** A report for FEMA supports using Radio Broadcast Data System technology to deliver emergency alerts to people. This could help radio's push for FM chips in cellphones, which could act as RBDS receivers. The report was prepared in 2010 but was only recently posted on FEMA's website.

FEMA is evaluating how RBDS could be used with the Integrated Public Alert and Warning System for CAP EAS to improve the alerting distribution infrastructure. Northrop Grumman prepared the report based on testing. FEMA IPAWS published the report with a caveat that the findings shouldn't be considered an endorsement. Northrop Grumman said the study validates the usefulness of RBDS to deliver alerts.

If RBDS were to be incorporated more fully into the IPAWS architecture, Northrop Grumman says possible steps to explore include enabling cell phones to act as RBDS receivers; improving RBDS message dissemination; originating CAP messages in RBDS; and encouraging or requiring electronics companies to include FM chips in mobile devices. The report treats these as starting points for discussion rather than firm recommendations.

There was no explanation about why this report appeared when it did, though FEMA is part of the Department of Homeland Security and its regulators treat certain aspects of their alerting work as sensitive. A note on the report, which features a DHS logo, states: "The supplemental data files provided with this report are to be considered as *Not for Public Release* and should be handled as sensitive information not to be disclosed."

**ITUNES RADIO:** When Apple's iTunes Radio launched in the fall, artists and labels hoped it would spur more music sales. But that's not happening much yet, according to research firm Music Forecasting. In a report titled "They're Not Buying It: Why iTunes Radio Isn't Selling Music," the authors noted that Apple doesn't share data on how many direct sales iTunes Radio has generated. But they concluded that digital sales do not appear to have increased substantially during the rollout. When consumers listen to streaming music, they want to relax and enjoy it, not necessarily

buy it then, wrote Music Forecasting EVP Sam Milkman. To be fair, the firm says these are "early days" for Apple's iTunes Radio and that the service will likely attract more users as time goes on. Milkman notes that iTunes Radio developed a sizeable user base in its first three months in the streaming radio business, with 20 million active users.

**FM CHIP:** BlackBerry users who download the 10.2.1 software update for Z30, Q10 and Q5 models will unlock FM capabilities. "You can listen to local FM stations, which does not require any network connection," the company stated. A BlackBerry spokeswoman told RW that FM is "a great feature, especially for markets where data plans are more limited and customers want the ability to get access to content." Previous BlackBerry models in the United States have featured FM. The update is available now to customers in U.S., Europe, Canada, the Middle East, Africa, Asia Pacific and Latin America.



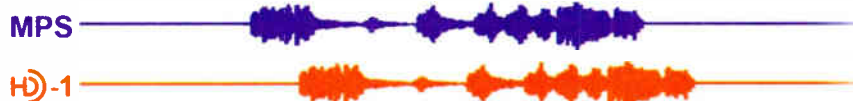
**PREC2014:** Registration is open for the 2014 Public Radio Engineering Conference. The event, organized by the Association of Public Radio Engineers, will be held April 3-4 at Caesars Palace in Las Vegas, concurrent with the PBS Tech-Con sessions and preceding the 2014 NAB Show. The theme is "Engineering in an increasingly IP environment." Discounted NAB registration is available as part of a package with PREC for employees of NAB member stations, courtesy of NAB and PBS. That offer expires Feb. 21. Discounted rooms are available at Caesars Palace for PREC and the NAB convention starting at \$189/night. Reservations must be made by Feb. 26.



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## CONNECTIVITY

(continued from page 1)

gives a flavor of how consumer electronics and car companies are approaching the question of audio entertainment, and infotainment, in the vehicle. Also see page 3; and news about NextRadio will appear next.

### ALPINE UPDATES TUNEIT SMARTPHONE APP

Features customers most want in an aftermarket radio are connectivity and phone apps, Alpine Electronics tells RW.

TuneIt 2.0, the next version of Alpine's sound tuning app for smartphones, includes compatibility with more Alpine source units. Alpine also plans to release what the manufacturer says is the aftermarket's first 9-inch navigation system.



The CDE-154BT Bluetooth CD receiver is one of three new radios compatible with TuneIt 2.0, the next version of Alpine's sound tuning app for smartphones.

TuneIt debuted in 2013; it's a sound tuning app that also offers Facebook notifications. Users download the free app onto their iPhone or Android smartphone and create a user profile with information about themselves, their vehicle and their Alpine sound system. They can follow the instructions to adjust sound settings (like Time Correction, Parametric EQ and Crossover) for their specific vehicle, or choose from the pre-made settings in the database.

Users are notified of incoming activity on their Facebook wall through an audible alert and a blinking blue button on the receiver. If the driver chooses to accept the notification, TuneIt 2.0 will read the message back via text-to-speech.

With TuneIt, the user can mix media sources; the application works in the car like an app does on a phone, Alpine tells RW, giving the driver the ability to make shortcuts to get to AM/FM, Facebook or the phone, for example.



Three new receivers are compatible with the updated TuneIt app: the CDE-154BT and CDE-153BT advanced Bluetooth CD receivers and UTE-152BT advanced Bluetooth digital media receiver.

### "LIVE CONNECTED. DRIVE CONNECTED"

Kenwood will introduce 56 new products this year. Of those, 19 support HD Radio, 30 support satellite radio and 31 support iHeartRadio.

The company's marketing slogan for new aftermarket receivers is "Live Connected. Drive Connected," according to Scott Caswell, Kenwood USA senior marketing manager.

Bluetooth is a popular feature; consumers really want it so they can stream audio in the car, he tells RW.

The aftermarket radio manufacturer has updated its flagship infotainment receiver, introduced last year. A new feature of the DNN991HD is a touchscreen for smoother operation and better graphics. The unit, which comes out in March, also includes WiFi capability.

Kenwood connection capabilities for iPhone and Android smartphones make it possible through what the manufacturer calls "AppMode" to access iTunes, Pandora, iHeartRadio, Garmin, HD Radio and Kenwood's Route Collector, in addition to accessing apps on the user's smartphone.

### PIONEER CONNECTS RECEIVERS TO THE CLOUD

Pioneer is rolling out a user interface that controls a combination of features with connected services. Five receivers will be featured in the Networked Entertainment Experience, or NEX series.

Consumers want to connect their phones to their cars; so the five NEX models (four navigation and one audio video receiver) are designed to accommodate smartphone use. Along with NEX connectivity and the enhanced user interface, the models feature a large touchscreen display. The flagship AVIC-8000NEX and the AVIC-7000NEX feature 7-inch screens.



Pioneer is rolling out a user interface that controls a combination of features with connected services. Five receivers will be featured in what the manufacturer is calling the Networked Entertainment Experience, or NEX series. Shown is the flagship AVIC-8000NEX.

Probably the most significant feature is AppRadio Mode, which allows Android and iPhone users to access and control apps from the touchscreen display when connected to a smartphone.

The next generation of network connected in-dash receivers bridges the gap between smartphone-tethered products like AppRadio and traditional multimedia products like navigation and DVD receivers, according to Ted Cardenas, vice president of marketing for the Car Electronics Division of Pioneer Electronics USA. "By leveraging the connectivity of the smartphone, we are able to augment and update many of the built-in features with dynamic cloud-based content."

Additional features include iDataLink Maestro support, which enables consumers to retain many of the original features found or tied with the stock radio; Bluetooth; and HD Radio technology including Artist Experience. The receivers are SiriusXM-ready with a separate tuner.

NEX receivers allow users to create Pandora radio stations on connected smartphones and control Harman's Aha Radio's smartphone app. The receivers will be available in Q1.

### LIVIO SUPPORTS IN-VEHICLE INFOTAINMENT STANDARD

Livio says its integration with new parent Ford is going well, giving the software developer access to more technical expertise and funding than if it had remained on its own.

Livio became a wholly owned subsidiary of Ford Motor Company in 2013, as we reported.

Now, Livio says the company will support SmartDeviceLink as the industry standard for in-vehicle infotainment

and offer software code and support for suppliers, OEM partners and app developers in 2014.

Ford contributed the AppLink in-vehicle connectivity platform to the open-source SmartDeviceLink project in 2013 so automakers, suppliers and developers can create compatible infotainment systems.

Livio founder and CEO Jake Sigal says it's time for such a standard. "Livio is helping apps get safely into cars, increasing quality and reducing costs for app developers and automotive suppliers."

Livio demonstrated its Livio Connect technology with partners DENSO, KPIT Technologies, Humax Automotive and Pioneer Electronics. Other hardware partners include Visteon and Voxx Electronics Corp.

### AUDI, AT&T OFFER 4G LTE

Audi and AT&T are offering U.S. Audi drivers an in-vehicle 4G LTE data connection with the introduction of the 2015 A3 line this year.

Audi of America President Scott Keogh calls the 4G LTE connection "the fastest in-vehicle connection available" and says that will "significantly enhance the infotainment experience." The A3 family will feature updated Audi Connect including navigation, "read-aloud" news headlines, Facebook and Twitter alerts; access to 7,000 Web radio stations and personalized RSS news feeds.

The high-speed connectivity will provide faster downloads and high-definition video streaming for up to eight devices used by passengers over the in-vehicle Wi-Fi hotspot, according to the companies.

(continued on page 8)



Photo: Vera Carrion

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## CONNECTIVITY

(continued from page 6)

The automaker will offer a Mobile Share data plan option to AT&T wireless customers who would like to add their vehicle to their existing smartphone or tablet data plan.

Eventually the advanced connectivity capability will go beyond the A3 as Audi plans to roll it out across its vehicle lineup as new or refreshed models come to market.

### VOLVO'S CONNECTIVITY "AS EASY AS FM"

In-car technology "isn't about offering a thousand apps; it's about giving you precisely what you need, before you even knew you needed it," says David Holecek, connectivity brand manager at Volvo Cars.

That's what Volvo intends to do this May when the automaker plans to roll out its updated Sensus Connect infotainment and navigation system, built on Ericsson's Connected Vehicle Cloud. The onboard experience will combine connected services, infotainment, navigation and audio.

Drivers will be able to stream Pandora Internet audio via a data connection provided by the built-in modem or a smartphone. Drivers can control Pandora using their head unit, "making access to personalized radio in the car is as easy as FM radio," according to the automaker.

Rdio, TuneIn and Stitcher Internet audio services are also compatible with Sensus Connect.

Among other features, the new in-car experience will give drivers the ability to enter a car that is pre-heated or pre-cooled via remote-start functionality from a smartphone.

"There is no point in filling a car with technology if it comes off as overwhelming, so our main focus is always to give our customers the best experience available and make it easy to digest," says Holecek. Sensus "allows drivers to turn the entire car into a Wi-Fi hotspot for all of their connected devices," he adds.

### PURE DELIVERS SIRIUSXM OVER INTERNET RADIOS

Pure has integrated SiriusXM into its Internet radio receivers to give subscribers access to satellite radio programming. Subscribers can listen to SiriusXM on the Evoke F4, One Flow and Sensia 200D Connect.

Pure is a U.K.-based company that formed 10 years ago and opened a West Coast sales office for the U.S. last year. Now Pure sells broadcast and Internet receivers as well as wireless audio systems in Europe, Australia and North America.

The company plans to add SiriusXM content to other Pure platforms during 2014.

### NPR, GM TEAM UP ON APP

NPR says it has developed a dedicated NPR-branded news app for General Motors.

The automaker will offer the Chevrolet and Opel in its in-car AppShop, available this summer in certain Chevrolets with MyLink technology. In Europe the New News app will be available to drivers of the Opel Insignia sedan.

The NPR News app is the first app dedicated to news that Chevrolet plans to offer, according to the broadcaster and automaker. Drivers will be able to download the app by accessing the AppShop through an on-screen icon.

The dedicated app for General Motors is the latest step in NPR's effort to make content accessible for audiences across multiple platforms. The NPR News app is already compatible with Ford's SYNC AppLink system, and NPR content is being integrated into in-car systems by Aha Radio, CloudCar, Livio Radio and OpenCar.

### PANDORA ROLLS OUT AUTO ADS

Pandora has launched in-car advertising. National brands include BP, Ford Motor Co., State Farm and Taco Bell. The 15- and 30-second ads will run across the 130 vehicle models that integrate Pandora and more than 270 aftermarket automotive devices.

Pandora says it will deliver fewer audio ads to cars than on its other platforms. The Pandora One subscription premium accounts will remain ad-free.

The Internet audio service can connect advertisers "with a more targeted audience than traditional radio can provide," according to Chief Marketing Officer Simon Fleming-Wood. The company claims an 8.6 percent share of total U.S. radio listening; some broadcast radio executives have disputed the number.

### PATENT TROLLS GAIN FTC ATTENTION

Julie Brill, a commissioner with the Federal Trade Commission, says so-called "patent trolls" threatened more than 100,000 companies in 2012 alone. "Trivial" patent infringement lawsuits can undermine competition and deter innovation, she says.



A troll highlights CEA's "Club the Trolls" campaign against patent trolls.

World Radio History

That's why the FTC has proposed patent reforms.

Congress is considering several bills aimed at so-called "patent assertion entities" who sue companies to get "unjustifiable settlements," according to the regulator. Bills being considered by lawmakers would require plaintiffs to be more transparent and spell out more clearly what technology patents are allegedly being violated.

The issue is of interest to radio, with stations facing patent lawsuits from companies over the use of HD Radio technology and music automation and storage technology, as we've reported.

Though the FTC is still studying the patent reform issue, Congress shouldn't wait on the FTC but should act with "deliberate speed," Brill says.

### NRSC HONORS THREE

The National Radio Systems Committee has honored three members who are making career transitions: Robert Briskman, Mike Starling and Dave Wilson.



CEA's Dave Wilson received a plaque to honor his 20 years of working as a staff liaison to the NRSC.

Robert Briskman is retiring from SiriusXM. He was a co-founder and technical executive for the company originally called Satellite CD Radio, established in 1990.

Mike Starling, vice president at the network and executive director of NPR Labs, retired from the broadcaster in January, as we've reported.

Dave Wilson spent a total of 20 years as a staff manager of the NRSC, first while working at NAB, and then for CEA. Wilson moves on to new duties at CEA and Mike Bergman, formerly of Kenwood USA, has stepped into that role.

Briskman, Starling and Wilson were honored in January for their years of NRSC participation and contributions to industry debates on important technical topics as well as to recommended best practices and standards, according to NRSC Chair Milford Smith.

"While we, the NRSC membership, debate and eventually come to consensus agreement on issues," its CEA's Dave Wilson and NAB's David Layer "who transform those deliberations into cogent documents, recommended practices, minutes and standards. They are the engine that drives the NRSC," Smith tells Radio World.



# SIX REMOTES IN EVERY BOX



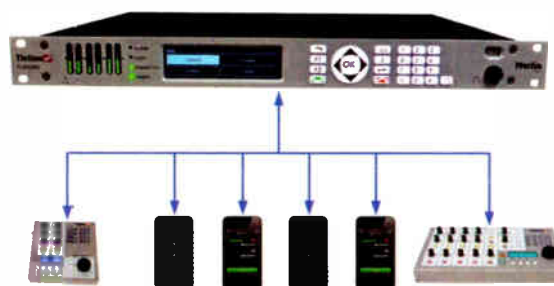
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# What's in Your Tool Box?

Also, we offer another unique solution to thwart troublesome mice

## WORKBENCH

by John Bisset

Read more Workbench articles online at [radioworld.com](http://radioworld.com)

**D**uring a recent workshop at which I appeared, conversation turned to the best things to carry in your tool box.

More than one engineer told me he could buy a stocked Xcelite brand tool kit yet not use many of the tools it contained. That's a big kit to lug around if you only need a handful of tools. I've seen engineers repurpose metal

Speaking of failing eyesight, how about a desktop magnifier for your workbench? These are also sold in small handheld versions.

Keep a variety of hardware — nuts, bolts, washers and screws — at hand. This will save time when the nut you need falls into the bottom of the rack or is missing. Use small pill cases, prescription bottles or — if you can find them — 35 mm film cases to keep hardware sorted.

Although it may take awhile to scan, how about a thumb drive with critical

else would you include in your ideal tool kit? Email suggestions to me at [johnpbisset@gmail.com](mailto:johnpbisset@gmail.com).

**K**evin Reski is owner/operator of Great Plains Tower. He has also served two terms on the board of NATE, the National Association of Tower Erectors.

In a recent LinkedIn post, Kevin wrote about the effects of cold weather on machinery and diesel engines. Based in North Dakota, Kevin knows cold — and he knows that fuel and block heaters attract mice.

I found one of his solutions interesting. Kevin and his crew learned that mice can be repelled not only by moth balls, but by placing strong-smelling, pine-scented urinal cakes all over the heated machinery. These odors keep the mice away. Kevin and his crew also toss the cakes and moth balls into the bottoms of rope barrels to keep mice from entering and nesting there. The cakes are a small price to protect against pests that might chew up a 2,000-foot rope at precisely the halfway spot.

manuals and schematics? I've also heard of engineers keeping the INI files for the hard drive system on a thumb drive. In addition to alcohol for cleaning, how about stocking a bottle of Formula 409, Scrubbing Bubbles or other brand of cleaner, plus a box of rags?

Google "clean T-shirt material" for a number of companies that sell recycled clean white cotton cloth. They are cheap and ideal for cleaning.

So have I started you thinking? What

## How about a thumb drive with critical manuals and schematics?

microphone boxes or canvas tool bags to lighten the load.

What kind of things do you really need to stock?

For an engineer of a certain age, how about bright LED flashlights to aid with weaker vision? Amazon offers a variety of hats and clip-on devices with the LEDs in the brim, or other similar headgear that light up the workspace. We've pointed you to these clever hats before.



**Fig. 1:** A YouTube image from Discovery's "Dirty Jobs" episode shows host Mike Rowe going up. The episode about a tower erection by Great Plains Tower aired in 2011.

Great Plains Towers had the honor of hosting Mike Rowe and Discovery's "Dirty Jobs" while erecting a 330-foot tower a couple of years ago. They attached an antenna in the rain and Rowe and his camera crew were a part of it. You can see the video clip at Great Plains Towers' website: [www.gptowers.com/dirty-jobs/](http://www.gptowers.com/dirty-jobs/).

**M**ike Payne does some tower climbing of his own. Fig. 2 shows him heading up a tower to perform some maintenance.

Aware that hunters might aim at tower legs, Mike's are solid rather than hollow and can with-



**Fig. 2:** Mike Payne is ready for some tower maintenance.

stand such insanity. However, guy lines and egg insulators are certainly prey to this nonsense too. In Idaho, where Mike does a lot of work, most folks own at least a 30.06 rifle; and a heavy-load .44 will generate just as much havoc.

Fortunately, most folks don't pass their time aiming at guy lines and insulators.

Mike went up on a tower recently;

(continued on page 12)



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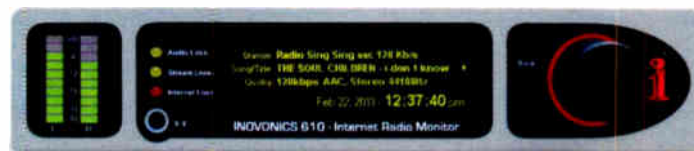
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[www.inovonicsbroadcast.com/model/610](http://www.inovonicsbroadcast.com/model/610)



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- ✓ MP3, AAC and Ogg decoding.
- ✓ Audio Loss, Stream Loss & Internet Loss Alarms.
- ✓ iOS, Android remote control.
- ✓ Email/Text message alerting.
- ✓ SNMP control & monitoring.



**PEOPLENEWS**

**Barix** made changes in sales and marketing structures and personnel. Head of Technical Sales **Domenico Gambino** has been promoted to vice president of sales, while **Barbara Haller-Rietschel** transitions to vice president of marketing communications. Gambino's appointment will result in merging channel sales, technical sales and technical support into a single organization.



**Domenico Gambino**

**DK-Technologies** appointed California-based Dedicated Marketing as its sales and support representative in the U.S. Under the direction of President **Ed Simeone**, the firm will handle the DK range of audio and video monitoring and metering products. Simeone is known within the broadcast and pro audio industries as founder and former CEO/chairman of TC Electronics U.S.



**Ed Simeone**

Independent national syndicator **Sports USA** appointed **Brandon Randazzo** as director of social media.

**CC Media Holdings** announced that Clear Channel Media and Entertainment Chairman/CEO **John Hogan** was retiring and that the arm of the company he was overseeing, which includes radio, will now report directly to Bob Pittman.

**Andreas Loges**, former finance director of **Rohde**

**& Schwarz DVS GmbH**, was named CEO of the company Dec. 15, 2013. He succeeds **Dr. Peter Spoer** and **Dr. Hans-Ulrich Weidenbruch**.

The San Francisco Bay Area's **KGMZ(FM)**, an Entercom property, launched the "Mid-Morning Show," reuniting two high school friends, **Guy Haberman** and **John Middlekauff**. Haberman is a vet of the station, formerly doing an evening show, also doing pre- and post-game shows for Oakland Athletics games. Middlekauff recently joined the station after spending the last few years in various front office and scouting jobs with the Philadelphia Eagles.

**Entravision** appointed **Jose Vil-lafañe** to executive vice president of Entravision Solutions and Entravision Radio Network. In this role, he will assume responsibility for all national spot and network goals for Entravision owned and operated and partner radio stations. He was previously senior vice president of National Sales

for the company. He will be based in New York. Send information about new hires, career changes, awards and other People News to radioworld@nbmedia.com.

**WORKBENCH**

(continued from page 10)

halfway up he saw damage similar to what we described, which can be hard to see from below. He went back down and told the owner that he was done. Of course, he was never invited back.

Even if you don't do the climbing yourself, routine inspection and maintenance is a must: so hire a tower service.

Mike Payne can be reached at [mike.w0lvj@gmail.com](mailto:mike.w0lvj@gmail.com).

**B**roadcast engineer and fellow RW contributor **Dan Slentz** offered software tips in our previous *Workbench*. He's back with a really neat educational site.

It is called SkillShare.com, and it offers a variety of free educational classes. One that Dan thought readers would like is an introduction to 3D printing. I also found an introduction to Photoshop and modules on increasing your productivity. Classes are free.

Here's the link: [www.skillshare.com/classes/design](http://www.skillshare.com/classes/design). Email Dan Slentz at [dan\\_slentz@yahoo.com](mailto:dan_slentz@yahoo.com).

Contribute to *Workbench*. You'll help your fellow engineers and qualify for SBE recertification credit. Send tips to [johnpbisset@gmail.com](mailto: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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## AM NOISE

(continued from page 4)

and warning, is not enough. If this policy (it is *not* a specific rule) were to be enforced, the big box store would claim that they can sell commercial environment ballasts because they also sell them to buyers for that market, but the devices are on display and the general public is not informed of the proper environment in which to deploy them.

**D.** Specific radiated and/or conducted emission limits for incidental emitters such as motors or power lines should be enacted.

Under present commission rules, there are no specific emission limits for incidental emitters such as power lines and non-pulsed motors. There are requirements for manufacturers of incidental emitters to use good engineering practice and a requirement that the operator of an incidental emitter use them in a way that does not cause harmful interference to licensed users of spectrum. Those rules are neither enforced, however, nor practically enforceable.

Specific emission limits would set an upper level on the worst of the power-line noise cases and would require manufacturers to pay at least minimal attention to design and utilities to evaluate their entire systems at least sporadically, assuming that they perceive that there is a risk of actual commission enforcement. Although conducted-emission limits could be established for motors and similar 120- or 240-volt devices, only radiated limits would be practical for medium-voltage or high-voltage power lines.

**E.** Conducted emission limits on pulse-width motor controllers used in appliances should be enacted.

Under Part 15 rules, "digital devices" used in appliances are exempt from specific emission limits. There are instances of interference to AM receivers from pulse-width motor controllers in washing machines, air conditioners and pool pumps. If pulse-width motor controllers are digital devices, then these 500- to 1,500-watt digital devices would be exempt. Most digital devices that are used in appliances are very low power display units, microprocessor control circuitry and similar devices [that] have a much lower interference potential than 1,500-watt motor controllers.

**F.** The commission should substantially increase, and increase the visibility of, enforcement in power line interference cases.

There are numerous complaints from amateur radio operators of severe interference from power line noise annually.

Power line radiation in the HF and MF amateur allocations will in most cases directly translate to preclusive noise in the AM broadcast band.

The commission has relied completely on the good-faith efforts of electric utilities to resolve these. In some cases, those efforts have been successful. However, more often, utilities do not have available to them and are not willing to retain persons skilled in RF interference resolution and the cases at FCC are allowed to languish unresolved for years, and in some cases more than a decade, without any enforcement action at all. ...

AM radio interference inevitably goes unreported by listeners. A few visible enforcement actions by the commission would create some incentive on the part of electric utilities industry and perhaps lead to the development of effective industry programs to address the burgeoning power line interference problem.

Improvement in the noise environment in the AM broadcast band will, over time, contribute substantially to the revitalization of AM broadcasting. The commission should commence this longer-term initiative without delay.

## MORE ONLINE

This was just a portion of SBE's comments, which included several specific important recommendations. Read the rest at [radioworld.com/amcomments](http://radioworld.com/amcomments).

Also look for more coverage in coming issues.

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# At NRB Show, Social Takes Spotlight

Convention delves into building presence as well as questions of censorship



## SAMPLE EXHIBITORS

*This is a list of selected equipment suppliers. For full exhibit list visit [nrbconvention.org](http://nrbconvention.org).*

Armstrong Transmitter/  
Sine Systems  
Broadcast Electronics/Commotion  
Broadcast Software International  
Broadcast Supply Worldwide  
Broadcasters General Store  
Clear Channel Satellite  
Comark Communications  
Comrex Corp.  
Dalet Digital Media Systems  
Electronics Research Inc. (ERI)  
Harris Broadcast  
Ka You Communications  
Netia/Globecast Group  
Propagation Systems Inc. (PSI)  
RCS  
RF Specialties Group  
Rohde & Schwarz USA  
RRset Global Communications  
Network  
SCMS Inc.  
Shively Labs  
Superior Broadcast  
WideOrbit  
WorldCast Systems

BY PAUL McLANE

The NRB International Christian Media Convention this month in Nashville will be the first with Jerry Johnson as NRB president and CEO.

Networking, discovery and advancement are themes of the convention. NRB is an association that represents Christian broadcasters and communicators.

Johnson was named unanimously by the NRB board after a search process last fall. He succeeded Frank Wright, who led the organization for a decade.

NRB Board Chairman Rich Bott touched on the role of technology when he hailed the hiring of Johnson: "With today's technologies, there are amazing opportunities to advance God's Word worldwide," he stated in the announcement. "We have chosen an outstanding leader who is rooted in Scripture and motivated by the Great Commission, using the tools of today." The Great Commission refers to Jesus' instruction to his disciples that they spread his

teachings.

Johnson is former president of Criswell College in Dallas, where he oversaw major-market Christian station KCBI(FM). He also has played a leadership role in the Southern Baptist Convention. One supporter described him as a leading institution-builder in American Christianity.

In the announcement, Johnson was quoted speaking about NRB's three-fold mission: "advancing biblical truth, promoting media excellence and defending free speech. ... If Christians want to be heard by the current generation, they will have to communicate the gospel in their 'media language' with excellence."

## POLICY QUESTIONS

Show conversation is likely to include policy themes in which NRB has been active.

For one, the association has expressed concern over what it calls "performance tax" legislation. It says royalties — still being pushed by musicians and the music label industry — would be a "crushing blow to many Christian radio

## IF YOU GO



**When:** Feb. 22-25

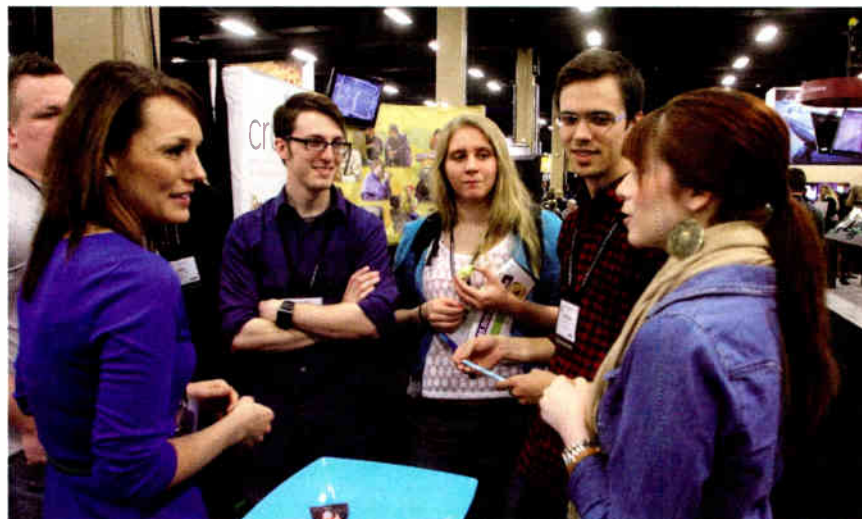
**Where:** Gaylord Opryland Resort & Convention Center, Nashville

**Who:** "Christian communicators, from program producers to authors, pastors to engineers, directors to vendors"

**How:** [nrbconvention.org](http://nrbconvention.org)

**How much:** Members \$675, others \$775 (full registration)

Discrimination Act, which would spell out employment rights for individuals based on sexual orientation or gender identity, unless Congress resolves what NRB views as First Amendment problems. Religious broadcasters feel the bill would place a chill on employers that are "committed to honoring the



stations." The issue continues to be fought over on Capitol Hill.

NRB also has backed an FCC rule change that would allow noncom broadcasters to hold on-air fundraising for the benefit of third-party non-profits. Association Senior Vice President and General Counsel Craig Parshall has stated, "The result would be compelling: the non-profit resources in America will be more directly and comprehensively applied to the myriad problems facing today's communities, while non-commercial broadcasters will be encouraged to perform the highest form of public service." The FCC had not taken final action on this as of late January.

The association also has opposed approval of the Employment Non-

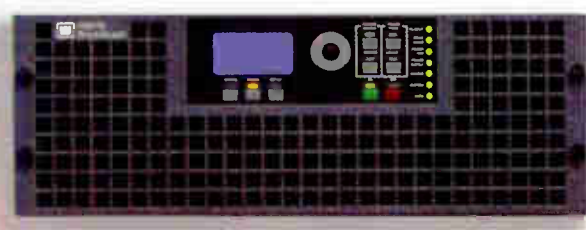
tenets of their faith in the workplace."

Also likely to be discussed are questions about free speech, press and religion on Web platforms like Facebook, Google and other new media systems. The NRB's John Milton Project for Free Speech draws attention to this question, monitoring what NRB sees as threats of viewpoint censorship on the Internet.

"New media tech companies like Facebook, Google and Apple have enjoyed a Goliath-like dominance over the digital information world. Yet we have documented how they continue to censor viewpoints on their sites that promote traditional values, conservative ideas or Christian orthodoxy," Parshall stated in the fall.

*(continued on page 18)*

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Flexiva is designed for low- and high-power requirements, up to 80 kW, while utilizing the most compact design on the market today.

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BASIS NETWORKED  
PRODUCTION CONSOLE



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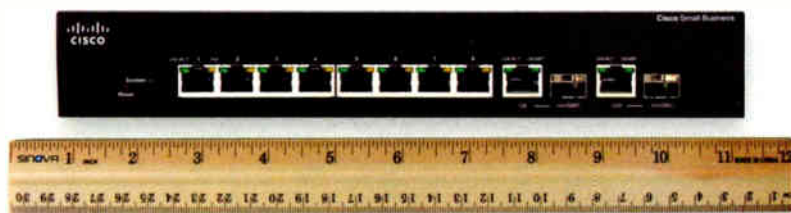
Designed with next-generation studio demands in mind, Flexiva Oasis allows facilities to cost-effectively and easily migrate from analog to digital whenever they're ready. In addition, Flexiva Oasis provides both analog and digital outputs that enable facilities to connect to modern STLs and studio infrastructures.

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**You might have been told in the past to go with the biggest switch you can afford for your audio over IP network. But you might not have to...**

...so why spend extra for something you don't need? A lot of older AoIP system designs don't manage the multicast streams, and actually keep the pathway open for them, which takes up valuable, expensive resources in the switch. But because the WheatNet-IP system continually responds to IGMP queries checking for usable source groupings on the network, any unneeded multicast streams are pruned as a result.

Read the rest of the story here: [INN7.wheatstone.com](http://INN7.wheatstone.com)

### Processing for PPM

**Does audio processing have an affect on PPM ratings? You bet it does...**

...according to Wheatstone audio engineer Mike Erickson. "The biggest issue is making sure that audio levels don't fall below a certain threshold," he said. PPM encoders will stop encoding audio, as many have found out, if they are not fed a steady diet of audio. "When the encoder stops, the PPM (encoded) signals can no longer be 'heard' and detected by PPM devices that track listenership," he explained.

An easy out is to put an AGC in front of the encoder, and any Wheatstone audio processor will be able handle that with ease (our stuff can actually adapt to external processors without any user adjustment). For other processors that are not self-adjusting or even for ours that are, Mike suggests broadcasters establish a standard set of reference levels for audio sources as a guideline for board operators who load music, imaging and spots into the automation system.

Read the rest of the story here: [INN7.wheatstone.com](http://INN7.wheatstone.com)







## Introducing the Audioarts IP-16

**Audioarts' WheatNet-IP console gets a bigger sibling with a brand new 16-fader version**

We just added four channels to our popular IP-12 console frame to give our broadcast customers a bigger, 16-channel console at a price they can afford. Each of its 16 input modules is equipped with an LED source name display and an A/B source selector; sources can be set via a rotary encoder in the master section. Each input module has access to four program busses and has cue and talkback switches. A 100mm long-throw fader and lighted channel ON/OFF switches round out the module. Best of all, the IP-16 has access to all your sources wherever they live on your WheatNet-IP network.

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[Click here to learn more: INN7.wheatstone.com](http://INN7.wheatstone.com)



*AIR-1 is a perfect console for an LPFM station*

## BLADE HONING 101

### What's Inside A BLADE...part 1

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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 the WheatNet-IP system's 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.

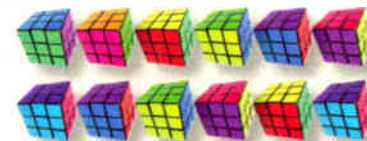


### Two 8x2 Stereo Virtual Utility Mixers

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.

### Flexible GPI Logic

12 universal logic ports, programmable as inputs or outputs, routable throughout the entire system



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Any system source to any destination on that BLADE



### ACI (Automation Control Interface)

An embedded interface for complete external control over IP for both the BLADE itself and its Utility Mixers

**There's a LOT more in each BLADE and next month we'll continue the tour. In the meantime, visit us on the web to learn more! [INN7.wheatstone.com](http://INN7.wheatstone.com)**



Ever wonder why 'standard' isn't good enough for Wheatstone?

Wheatstone's madmen talk about HOW and WHY they are so driven to perfection.

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'Mr. T' is fated to deal forever with various plumbing fixtures

## TECHTIPS

BY TOM ADAMS

I just came back from Harbor Freight Tools after picking up a necessary item — yet another aluminum-clad tool case — and also made a stop at Dick's Sporting Goods to grab one more slab of closed-cell foam plastic archery target.

An interesting simile has raised its ugly head: I'm seemingly fated to deal forever with various types of plumbing fixtures.

Whatever I do, I have to move a product from Point A to Point B without it leaking all over the place.

This all began with radio and electronics, coaxial cable and its various fittings. The SO-239 connector was a familiar gadget by middle school; and as time went on, the myriad gadgets that bear said connectors worked their way into my world.

From there we moved on to a higher class, a more *professional* kind of plumbing connector (read: "more expensive, and harder to work with"), meaning Type N and the BNC series military connectors.

### SIMPLE WISDOM

When I became a broadcaster I heard a simple bit of wisdom: "A professional consultant is a guy who has enough coax adaptors to hook all of his equipment together."

When you come down to it, broadcast technicians are nothing more than plumbers who endlessly hook together black boxes, with what amounts to plumbing fittings and black coaxial pipes with numbers that usually begin with RG, in an infinite number of permutations as the situation demands.

My obsession reached its peak with my introduction to the Bird RF Wattmeter. My masterpiece of plumbing came to a head when I assembled the *ultimate* Bird field kit. Two wattmeters, a *lotta* power and frequency range plugins, a small dummy load and a bunch of *plumbing fittings* that adapt the wattmeter sampling lines to various kinds of other coaxial pipes ...

At one point, I became fascinated as a hobbyist with microwave equipment. The plumbing simile went a step further. Welcome to the "Wonderful World of Waveguide," hollow pipes that carry energy from place to place.

Every basic microwave textbook mentions the concept of radio waves of such short wavelength that they can

be squirted through pipes like water; and it's common to refer to waveguide systems as "plumbing." So again, it was time to get out the monkey wrench and have at it.

Having moved on to photography, then to astronomy, guess what? The plumbing fittings have tagged along too!

and another accessory case has become a necessity.

The Celestron threaded ring has to be mated to standard astronomy eyepiece fittings (.965-inch, 1.25-inch and 2-inch standards; I'm "not even gonna go there" with European/Asian metric eyepiece gadgets unless I really have to).



Only this time, instead of pumping little tiny radio waves through pipes, we're doing it with the photons that make up light.

### CUT TO SIZE

My "new" Celestron telescope has an unusual thread on its back to mate with the outside world, and it has become necessary to obtain various adaptors that mate the threaded ring to other kinds of plumbing. The adaptor fittings are beginning to pile up here,

cal optical standard.

On both of the above cases, the fitted inserts are fashioned from closed-cell polyurethane foam plastic and cut to size with a bandsaw. Oddly shaped openings are cut with a coping saw. Round eyepiece holes are drilled with a Forstner drill bit of appropriate diameter.

The basic material is shipping foam rescued from the dumpster at work (for thin stuff of maybe 1 inch thickness) or, more typically, foam archery targets

approximately 3 inches thick. It cuts cleanly with a Forstner bit; the foam is stiff and offers adequate resistance to be cut safely when you apply the drill press.

Now, I'm beginning to accumulate 2-inch eyepieces, in addition to lens adaptors that go from a photographic T-ring to C-ring (photo lens to either a movie camera or a video camera), T-ring to camera body (in my case, Minolta MD mount or Minolta Alpha mount), and connecting them all to 2- or 1.25-



I've already had to yell "uncle" with 1.25-inch eyepieces, the most popular American astronomi-

cal astronomical eyepieces and their fittings.

It's all just more plumbing fixtures. These expensive little buggers need someplace to live ... so yet another cheap, Chinese-made aluminum-sheathed case enters my world.

It's beginning to look like the *whole world* is being held together by plumbing of one kind or another. Remember the infamous politician's explanation of the Internet as being just a bunch of pipes? Yea verily ... the plumbers shall indeed inherit the earth!

Tom Adams, "Mr. T," is staff engineer for Wisconsin Public Broadcasting. Comment on this or any story; write to radioworld@nbmedia.com.

## NRB SHOW

(continued from page 14)

### HIGHLIGHTS

Social media takes a high profile at this convention.

The NRB Digital Media Summit on Feb. 21 is an educational event covering best practices for an effective social media presence. Speakers will be on hand from Facebook, Twitter, Google, CircleBuilder, WISE Group, Akamai, Christmas Toy Drive, Moody Radio and Jesus Daily.

Separately, Saturday's keynote will feature Chris Larson, COO of Ligonier Ministries; Claire Diaz-Ortiz, who works in social innovation at Twitter; and Katie Harbath, manager for policy at Facebook.

Another show highlight is the International Keynote Session. Speakers include Lauren Libby, president and CEO of TWR International; Wayne Pederson, president of HCJB Global; and Wayne Shepherd, owner and president of Wayne

Shepherd Communications.

The 2014 NRB Media Awards will honor outstanding ministries, facilities and programs/producers. Among radio awards are "Parenting Today's Teens With Mark Gregston" from the Heartlight Foundation, honored as Radio Program of the Year; KSBJ(FM) in Houston, the Radio Station of the Year; and Ambassador Advertising Agency with the Impact Award. Top International Radio Ministry is Radio 7 in Albania and Kosovo.

The award for Best Website goes to *boundless.org* run by Focus on the Family, and the Best Multichannel Initiative is the Salem Web Network of Salem Communications Corp.

The NRB Hall of Fame Award will be given to Dr. Jack W. Hayford of The King's University/Jack Hayford Ministries; and the Billy Graham Award for Excellence in Christian Communications goes to In Touch Ministries. The late Frank Pastore of KKLA(FM) in Los Angeles will be honored posthumously with the William Ward Ayer Award for Distinguished Service.

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# Henry Sports Pod Solves the Problem

Engineer finds the mic/headphone control box he's been looking for

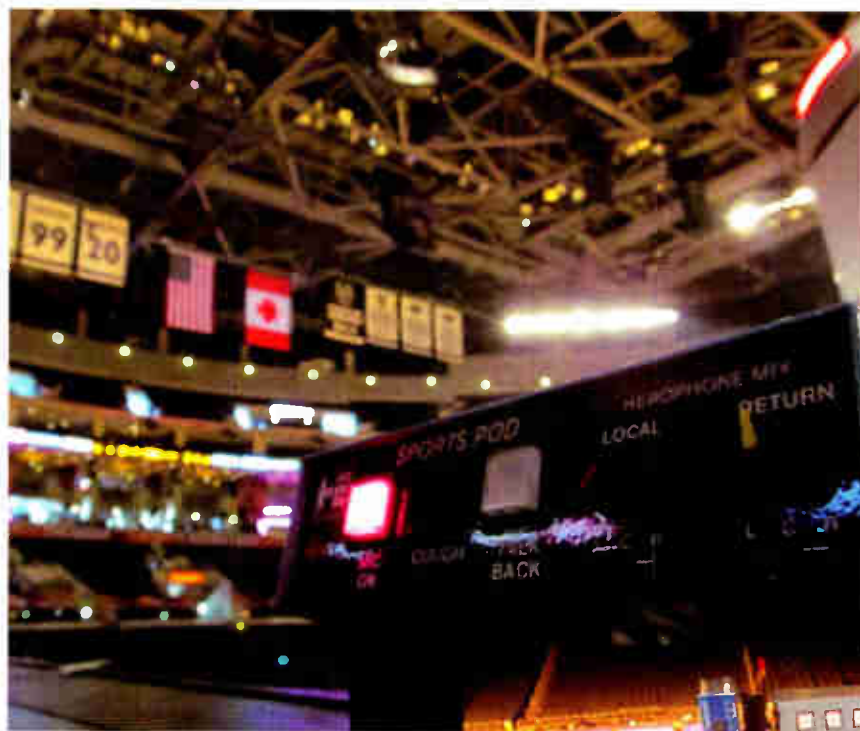
## USERREPORT

BY MIKE DOOLEY  
Broadcast Engineer  
Los Angeles Lakers

**LOS ANGELES** — I've worked as an engineer for the home radio broadcasts of the Los Angeles Lakers for 10 years. Almost every season starts with me building, or trying to improve, my "home-brew" announcer microphone and headphone control boxes.

I started with a basic "cough" button, and have tried to improve upon that with mild success. This year I discovered Henry Engineering's Sports Pod system.

Each Sports Pod is a complete "sports announcers station" that has a microphone on/off button, as well as a cough (momentary off) button, and an additional button for a talkback system. There are two volume knobs for controlling configurable "local" and "return"



by-play, stats and a guest spot. A single wall-wart could power all of my pods, but I chose to use the Henry Engineering Multiphones II unit for power and audio distribution via Cat-5 cables. Power outlets at the broadcast table are few, so not having a wall-wart at each position really helps save space. The Multiphones II master unit also provides a three-zone talkback system that I may use in the future.

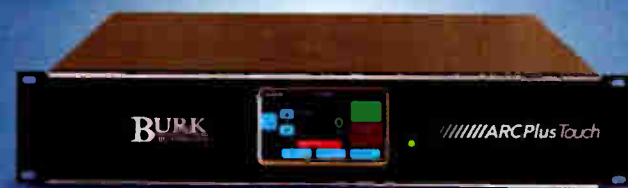
Each announcer position is able to control a local mix of their own microphone with a feed of return audio from my mixer that provides a mix of all the announce positions, station audio and audio from inside the Staples Center such as court effects and the house P.A.

However, the play-by-play announcer prefers to hear his microphone isolated on one volume control (post-processor from a compressor/limiter), so I send him that audio on his local input as well as a mix-minus of everything else on his "Remote" input, allowing him to truly create his own mix.

He is in the middle of the announce



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audio, two switches for left/center/right configuration, and a host of options for inputs and outputs.

Power only needs to be supplied to the first in a chain of pods, the rest are powered via daisy-chained Cat-5 cables, which can also carry up to two separate audio feeds.

All of the inputs and outputs are on the rear of the units, providing a clean appearance at the front. I use Sennheiser headsets, so it's nice to have the microphone and headphone connection next to each other.

### CONFIGURATION

In operation are five Sports Pods, used by a producer, color analyst, play-

positions, but I was able to custom configure his box (through the use of jumpers inside the Sports Pod) to bypass the audio everyone else receives on the Cat-5 cables, and feed his personalized channels directly to his box, without disturbing audio on the boxes down the line from him. It's convenient and a very cool feature.

Other onboard jumper settings determine output levels, mono/stereo setting, and configure the talkback system.

The Sports Pods also have a remote microphone switch and tally option on a stereo 3.5 mm jack, that allows me to see which microphones are on or off and control them if needed. I built a

(continued on page 22)



Broadcast Software International

# Streaming Made Simple! With Simian 2.2 Pro & Lite

By Paul Anderson & David Bowman of KOUU



Paul Anderson at KOUU in Pocatello, Idaho

Idaho Wireless Corp is a small market group in Pocatello, Idaho, and we're the only independently owned and managed radio group left in our market. As technology evolves we evaluate the costs and benefits of each change, and streaming was one of those projects.

When we changed the format January 1st on our 50,000 watt AM KOUU to Country Classics the response was immediately positive, but our audience wanted to listen in their offices and on their smart phones. We had considered streaming KOUU in the past, but the expense and complexity meant it was always a project that got pushed back to "later".

In 2009 we installed our first Simian system, replacing a beloved but tired Scott Studios system. We were ready for the benefits of a Windows based system that had more features, and we found that Simian is easy to use, powerful, and installation was a breeze. Since then we've converted all of our stations from Scott to Simian.

Simian offers many options to set up streaming. Country KOUU audio streaming is being outsourced to a third party (Crystal Media Networks) using data provided by Simian. Using the Metadata tab in Program options is where all the set up takes place. Crystal Media Networks required certain parameters to interface with their streaming player. The majority of the setup is all contained in an .xml file.

To create an .xml file, use Notepad and type in the syntax for each parameter required by the streamer (Syntax for Artist is <artist><![CDATA[%ARTIST%]]></artist>). Simian support can help with this, or a template is pictured in the Simian Pro Manual. In the case of KOUU, Artist, Title, Filename, Category, and Length of each piece of audio was provided to Crystal Media Networks. This file becomes the Template File.

Some final setup is required. The template file is loaded in the Metadata tab in Program Options in Simian. The IP Address corresponds to the computer that will be accessed by the streaming software. This computer needs to be networked to the on air Simian computer. The port and TCP/UDP address is set up with information provided by the streaming company (in the case of KOUU, Crystal Media provided this information).

All of the programming for KOUU is played by the Simian Pro system. In order to stream with more than one source (i.e. switching from local audio to network audio like a satellite receiver) Data Repeater-available from BSI-can handle multiple metadata sources and destinations.

Our streaming project for KOUU was easier than we imagined. The support team from BSI and the streaming features of Simian made it simple.

*Paul Anderson is the General Manager of KOUU, KZBQ and KORR. David Bowman is the Operations Manager. KOUU uses Simian Pro, though the metadata output features of Simian Pro are also available in Simian Lite. Simian Pro & Lite contain built in metadata output templates for Windows Media Encoder, ShowCast, IceCast, SAM Cast, Live365, Urban Optimod, and Omnia A/XE. Metadata output in Simian Pro & Lite is template based, so most stream encoders not listed are compatible.*

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# Radio One Houston Picks Comrex

On land, at sea, Access codecs impress



**BY DAVID AINSLIE**  
Engineering & I.T. Manager  
Radio One Houston

**HOUSTON** — About six years ago, Radio One Houston was looking for a way to improve remotes. It seemed that the process of getting ISDN or POTS lines was becoming nearly impossible and costs were certainly a factor as well.

Our primary FM stations, KBXX (FM), 97.9 The Boxx and KMJQ(FM), Majic 102.1, were constantly out on the street covering community events and doing revenue-generating remotes and we needed a more effective way of getting a remote setup on short notice. Two or three weeks of lead time to get a circuit installed just wasn't cutting it anymore.

IP codecs were making a strong case of ease of operation so we took a careful look at what was out there and Comrex stood out as the best choice for us. We started out with four Comrex Access rack units and four Comrex Access Portables mainly using (at the time) Verizon 3G Air cards or Cat-5 hardline Internet connections where available.

There were certainly challenges in the beginning to get air staff and promotions up to speed but after several successful remotes, doing an event without an Access was not even an option.

On a few occasions, we have used Access codecs for what we considered to be rather challenging remotes. We were asked by Radio One corporate to provide support for the broadcasts of two nationally-syndicated shows aboard a cruise ship while out to sea.

I would have to say the most challenging seemed to be the cruise ship broadcasts of the syndicated four-hour "Yolanda Adams Morning Show" and the CoCo Brother syndicated evening show. Each day of the cruise we were broadcasting live for eight hours with hundreds of people at the live shows on the ship listening to the return audio/music and not one hiccup. The thing

that initially made me nervous about the broadcasts was the fact that the IP-connectivity being provided by the cruise line was coming from a connection via the ship's satellite communications system.

Talking with Comrex before the remotes about my concerns, I learned that the devices had been optimized to work over several types of data circuits and satellite was one of those. Since then, Access has been used on five other Radio One syndicated live broadcasts from cruise ships with 128 kbps dedicated bandwidth without one hiccup in either direction.

Using the Access portable on the ship was great due to the built-in battery backup and the optional mixer that we could plug into the main unit giving us five additional mic/line-level inputs and headphone inputs (for a total of six each). It really simplified the setup onboard and reduced the amount of gear we had to take with us.

We now have a news station, KROI(FM), News 92FM, and purchased five more Access Rack units and five more Access Portables for field reporters to go live from the scene. The addition of Verizon 4G LTE modems, which are plug-and-play, into one of the two USB ports of the Access has improved the performance, reliability

and mobility for our reporters.

The 4G service in the Houston area is robust and we seldom have issues. We tend to use the AAC-ELD mono codec that comes included on Access for remotes because it offers high quality (about 15 kHz) for voice with about on 50 ms of encode delay at a low bitrate around 48 kbps.

We also utilize 16 iPads with the Luci Live Lite soft codec app to go live on the air. Comrex has built-in support for this inexpensive app and our reporters find it easy to use. Without the use of these tools our field reporting and remote broadcasts would be much more cumbersome and much less reliable. We have grown to rely and trust the consistent quality and user friendliness of the Comrex Access family and associated products.

The ease of setup, ruggedness and flawless performance allow us as engineers to not worry about the on-air quality or performance that will be delivered from the Access.

As I write, I'm about to buy a pair of Access Racks to be my codec for the KMJQ STL. As an aside, Radio One also uses Comrex BRIC-Links (which replace satellite delivery) for syndication distribution to a dozen affiliates across the U.S. on a daily basis, without one issue.

**For information, contact Chris Crump at Comrex in Massachusetts at (800) 237-1776 or visit [www.comrex.com](http://www.comrex.com).**

## HENRY

(continued from page 20)

simple switch box for that purpose. The jacks on both sides need to be isolated because the circuit uses all three connections separate from all other connectivity. The tally circuit carries about +12 V giving you many options for tally lamps or LEDs.

I went with some switches I picked up on eBay, with internal 12 V lamps for the tallies. It's great to be able to not only see which microphones are on, but also be able to turn off mics that shouldn't be on. The tally follows the cough switch, and is off when the cough switch is engaged. This is a feature I've always wanted since I have so many positions to deal with but in the past could not easily see which microphones were on or off.

I don't need to use them, but the left/center/right switches under the volume pots can be used to isolate that particular audio on separate headphone channels. The switches don't seem like they can take much abuse, but probably wouldn't need to be used that often, depending on your announcer preferences.

The microphone preamp output levels are strong and clean, providing great headroom at the mixer input. I chose to go with mic level outputs, but I may explore using line level. The headphone amps on each box provide more than enough level, even for the most "seasoned" announcers. I don't think I ever see their volume knobs at more than 50 percent. The microphone switch circuitry is absolutely silent. I would have preferred buttons that didn't "click" on action, but I know some users like the tactile feel of the "click" on switches.

The boxes are built well, and have an available desk-mount stand, which I chose to go with to raise them up off the table, hopefully preventing beverage spillage problems and accidental button presses, plus it gives them a nicer viewing angle.

After so many years of trying to create my own boxes, I'm excited to be using a system that has everything I've wanted (and more) and is much more affordable than other options.

**For information, contact Hank Landsberg at Henry Engineering in California at (562) 493-3589 or visit [www.henryeng.com](http://www.henryeng.com).**



**TECHUPDATES**

**DIGIGRAM OFFERS MOBILE AUDIO CONTRIBUTION FOR SMARTPHONES**

Digigram says its Iqoya \*Mobile and Q-Mic products together enable field reporters to use smartphones and tablets to deliver full-duplex live audio contributions to a newsroom or a production studio.

The Iqoya \*Mobile app (iOS and Android) facilitates remote audio over IP field contribution, with the Q-Mic preamp assuring that the input has the high-quality boost essential for professional production, the company says.

Digigram says that with this solution, journalists no longer require bulky, expensive equipment to record and transmit professional-quality audio reports on the spot. All that is required is an Internet connection (3G/4G or Wi-Fi).

It says Iqoya \*Mobile transforms a smartphone or tablet into a high-quality recorder/editor and AAC, G.722 and MPEG L2 IP codec. This allows journalists to record audio, edit and send to the studio live over IP or via FTP.

When Iqoya \*Mobile is associated on the studio side with Iqoya \*Call/LE, \*Call or V\*Call AoIP codecs, Digigram's FluidIP decoding technology provides packet reordering, replacement of missing packets, error concealment and smart clock synchronization.

The company says set-up and use of Iqoya\*Mobile is intuitive, with two-button operation and smart file editing and FTP publication functions. The app itself calls the newsroom or studio on a single public IP address, using NAT traversal and full-duplex RTP/UDP low-delay streaming to send live microphone audio or prerecorded audio files.

The Q-Mic preamp is housed in a light and ruggedized casing with professional connectors; Digigram says it provides low noise and high gain (up to + 24 dB) demanded of professional dynamic microphones. Low power consumption (less than 600  $\mu$ A) enables long recording sessions and on-air interviews.

For information, contact Digigram/Point Source Audio in California at (415) 226-1122 or visit [www.digigram.com](http://www.digigram.com).



**ENCO UPDATES IDAD MOBILE APP FOR IDEVICES**

The iDAD from ENCO Systems is a mobile app that offers remote audio production and control from any Internet-capable iDevice. Audio can be recorded in the field and delivered to the main facility's automation system via the Internet.

Additionally, the iDAD application can remotely control several functions of ENCO's DAD software allowing the remote user to do things such as start breaks, switch remote broadcasts to air, record feeds or initiate emergency off-air procedures.

The latest version of ENCO's iDAD app for iPhone and iPad now includes an audio editor and support for iOS7. iDAD requires ENCO's Interchange software to be installed at the main facility to act as a bridge between the outside world and the DAD automation network.

iDAD is free and available through the Apple App Store. Interchange is licensed on a per-site basis.

For information, contact ENCO Systems in Michigan at (248) 827-4440 or visit [www.enco.com](http://www.enco.com).



**STEINBERG HAS NEW INTERFACE**

Steinberg's UR44, a six-in, four-out audio interface, extends the UR range of USB 2.0 interfaces. It promises up to 192 kHz and 24-bit audio quality, MIDI input/output, Class A D-PRE microphone preamps and class-compliant mode for iPad use; the company calls it a portable production studio with connectivity choices.

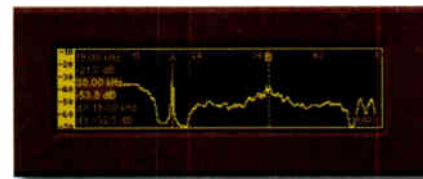
The UR44 offers latency-free monitoring with the DSP-powered REV-X reverb and the Sweet Spot Morphing Channel Strip in Cubase, or any other DAW software via the included dspMixFx application.

Four Neutrik combo inputs use D-PRE microphone preamps and phantom power, hi-Z attenuation on inputs 1 and 2 and line attenuation on inputs 3 and 4, and two headphone jacks plus two additional balanced line inputs on the rear panel. Also available on the back are four balanced line outputs alongside two main outputs, MIDI I/O and a switch to class-compliant mode.

For information, contact Steinberg in California at (714) 522-9011 or visit [www.steinberg.net](http://www.steinberg.net).



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# AIR Likes ALCO Pro Reporter

All India Radio finds ATC Labs' product simplifies remote acquisition

## USERREPORT

BY ARUN KUMAR  
OB In-Charge  
All India Radio

**NEW DELHI** — ATC Labs ALCO Professional Reporter is an IP-based software codec that has added flexibility to All India Radio's field reporting/remote capabilities and reduced our dependency and requirement on fixed lines for remote broadcasts.

Now we feel confident that our team can set up to cover any event in a short time through ALCO. We have found that it is easy to set up in 10 minutes.

ALCO Professional can be installed in any desktop/laptop computer at the studio side and in a laptop or tablet with the reporter or remote team. A 2G/3G dongle sends the live field reporting to the studio for on-air use. With the use of the text messaging tool users can be in



touch with the studio or remote crew for any information exchange.

From the studio side, all parameters

for the remote reporters like bitrate selection, volume, buffering, etc., can be controlled. If for some reason a reliable and stable Internet signal is unavailable at the remote location, ALCO

Professional allows for offline reporting that can be saved for later uploading.

It provides dual inputs. Input 1 is for a live feed and Input 2 is for playing saved audio files, a playlist or reports.

ALCO Professional has a choice of variable codecs like 32, 64 and 128 kbps bitrates; 32 and 64 kbps are mono codecs and 128 is a stereo codec equivalent to CD quality. You can also play internal saved audio files from your laptop or tab through the playlist manager and users can configure the start and stop time of the audio.

There is a 2G/3G mobile signal booster supplied along with ALCO Professional that is useful for boosting the RF strength of the wireless dongle for indoor broadcasting or where there is an issue of Internet strength.

We have found that ATC Labs' ALCO Professional Reporter is a great innovation for remote broadcasting use. It has proven to be simple to use and cost-effective in comparison to our old, bulky hardware setups. We at the AIR OB team are now using ALCO Professional Reporter for all of our field reporting.

For information, contact Mike Lyons at ATC Labs in New Jersey at (973) 624-1116 or visit [www.atc-labs.com](http://www.atc-labs.com).



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## TECHUPDATE

### JK AUDIO ADDS HD VOICE TO REMOTEMIXES



JK Audio said its RemoteMix 3.5 and RemoteMix 4 broadcast field mixers now offer improved sound quality using Bluetooth HD Voice wireless technology.

HD Voice, also referred to as Wide-Band Speech, is available on some cellphones, offering wireless freedom with better speech quality, the company says.

While standard phone calls (G.711, AMR-NB, PSTN or POTS) are limited to 300 Hz–3.4 kHz bandwidth, this technology supports calls made on G.722 and AMR-WB and delivers 50 Hz–7 kHz bandwidth. (G.722, AMR-WB) 50 Hz–7 kHz bandwidth. The extra 1.5 octaves of low-frequency energy provides a richer, more natural sound, while the extra octave of high-frequency information improves clarity and intelligibility dramatically, according to JK Audio. It adds that the extra bandwidth is half the picture, because voices sound more natural and less raspy or mechanical, while background noise is reduced or eliminated.

To take advantage of this extended voice bandwidth, both phones on the call must support HD Voice, and both must be on the same carrier, in coverage areas that support the technology. While wireless carriers use speech-based codecs to squeeze more calls through the network, the Bluetooth portion of the call uses a waveform codec. This allows music and non-speech sound to pass through unharmed, offers improvement in quality, especially when using third-party codecs that take advantage of the added bandwidth.

Bluetooth HD Voice is shipping on RemoteMix 3.5 and 4 as well as other JK Audio products.

For information, contact JK Audio in Illinois at (815) 786-2929 or visit [www.jkaudio.com](http://www.jkaudio.com).



**TECHUPDATES**

**YAMAHA MG MIXER LINE IS REDESIGNED**

Yamaha says its redesigned MG Mixer Series provides compact, cost-effective solutions for installed, recording or live applications. According to the company, 10 models incorporate technologies that were first developed for high-end professional mixers, including studio-quality preamps, powerful digital signal processing and rugged construction.

MG models come with discrete Class A D-PRE microphone preamps that Yamaha says provide more power, deliver lower impedance and supply a wide frequency range.

The new series includes four XU models that feature an upgraded version of the SPX effects processor, including a suite of 24 effects that add polish to a mix. New XU models offer digital connectivity and software that streamlines the recording process. USB 2.0 is supported so that compliant tablets and other devices can be used without installing drivers.

Models in the XU line are compatible with Apple's Camera Connection Kit or Lighting-to-USB Camera Adapter for recording and playback of digital audio content to and from an iPad or iPhone.

MG mixers also feature three-band channel EQ and high-pass filters; models with more than 10 inputs are equipped with newly-upgraded, single-knob compressors that add optimized compression to a variety of input sources with the touch of a control.

For information, contact Yamaha in California at 714-522-9011 or visit [http://usa.yamaha.com/products/live\\_sound](http://usa.yamaha.com/products/live_sound)



**AETA UPGRADES SCOOPFONE LINE**

ScoopFone, AETA's latest mobile phone codec line, operates over 2G and 3G networks in voice mode, carrying out transmission in GSM mode, and especially HD Voice. The company says ScoopFone is compact and rugged, and you can plug in any microphone for optimal audio quality. It has a seven-hour online operating range and two antennae in diversity mode for the best wireless connection.



The newest ScoopFone is the ScoopFone HD, shown. It is especially suitable for voice transmission in the field such as news reports and wireless intercom, because HD Voice technology provides up to 7 kHz of audio bandwidth. There is also the ScoopFone Rack, a rackmountable version that fits the studio or mobile equipment such as remote vans.

For live transmission, the Scoopy+ range offers a selection including wired lines such as IP, ISDN or POTS, and wireless transmission such as GSM, HD Voice, IP audio over 3G and 4G, as well as Inmarsat BGAN over satellite. Scoopy+ is convenient on a tabletop for a sports commentary, or on a shoulder for a report "on the go," the company says.

For information, contact AETA in France at 011-33-141-361-200 or visit [www.aeta-audio.com](http://www.aeta-audio.com).



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# Syracuse Journalists Adopt Report-IT

Instructor feels Tieline tools are what students need for professional experience

## USERREPORT

**BY RANDY WENNER**  
Broadcast and Digital Journalism  
Instructor  
Newhouse School of Public  
Communications  
Syracuse University

**SYRACUSE, N.Y.** — The bottom-line problem most academic institutions have is — the bottom line.

The desire to provide students with the latest technology to educate them in real-world skills has to be balanced with the reality of tightening academic budgets. Syracuse University's Broadcast and Digital Journalism has been wrestling with this, as we adapt our curriculum to embrace more cutting-edge technology.

### CAPABILITIES

We have never owned expensive high-end professional radio live-reporting equipment, in part because radio journalism had been a small part of the curriculum, and the hardware expense of most broadcast codecs was high. But as the curriculum evolved to incorporate more radio news training, the desire to allow students to broadcast live intensified.

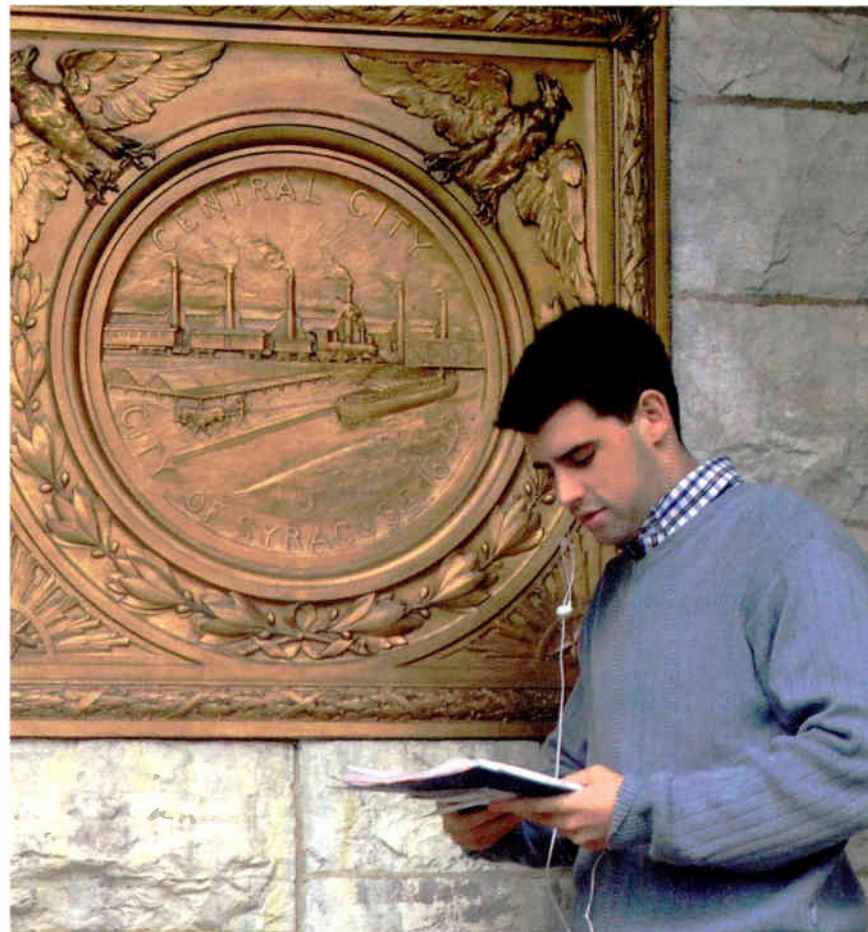
The easy first step for us beyond using cellphones was Skype, essentially a no-cost solution that provided better-than-phone quality reports. But Skype for us was not a perfect solution, dependent on broadband signal strength and simultaneous competition for bandwidth from other broadband users (not to mention PC-based issues of other programs using up PC resources, forced reboots from updates, etc.). We

frequently lost reports from dropout, or faced stuttering/buffering issues, or at best had the somewhat tinny-sounding Skype audio quality.

After experimenting with several alternative broadband-based live reporting options, our department chose to partner with Tieline. We managed to fit the Report-IT/Bridge-IT solution within our academic budget.

It's surprisingly easy to set-up the Report-IT app so that when students log in, it automatically contains a one-touch button that allows students to FTP audio directly to the studio without worrying about entering FTP server addresses, log-ins, etc. There is a bit of technical setup to install the receiver and configure the accounts, but the online documentation is excellent and the Tieline support staff has been helpful.

We have really only just begun to take advantage of all the capabilities



Syracuse University broadcast and digital journalism student Jay Alter reports live during a radio newscast from Syracuse City Hall using Report-IT on an iPad, within 15 minutes of the conclusion of a news conference with the state comptroller.

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Having a dedicated hardware receiver that focused on optimizing audio quality made a great deal of sense, and the sound of live reports was unquestionably clearer. Students now use either their own smartphones or iPads provided by the department, along with the Report-IT app.

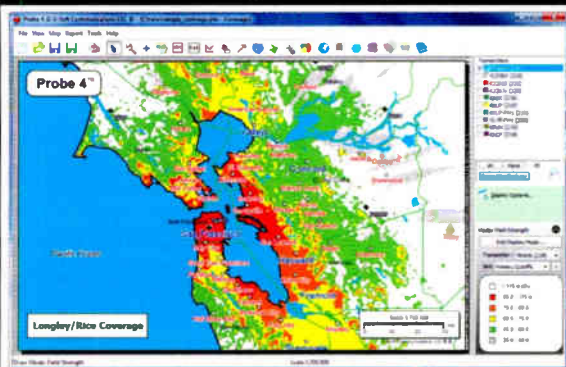
The app itself is impressive and allows us to accomplish everything we'd like: audio recording in the field; sound bite isolation in the field (and now, integration with the TwistedWave multitrack audio editing app); live reporting from the field; live reporting incorporating sound bites, triggered from the field by the reporter; feeding back of raw interviews from the field; even use by interviewees, who can send back clean audio of an interview conducted remotely.

that Report-IT offers, and are excited about encouraging students to do more with the app in the field as we continue to explore the Tieline technology. Students have broadcast live from all over the Central New York region using Report-IT.

We feel like we are doing what we should be doing as a professional communications school: offering students a chance to use contemporary technology embraced by many professional radio news organizations, which will prepare them for success in the field by allowing them to understand and develop skills in the technology, and incorporate those skills into their developing overall communications skillset.

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#### WANT TO BUY

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I'm looking for San Francisco radio recordings from the 1920's through the 1980's. For example newscast, talk shows, music shows, live band remotes, etc. Stations like KGO, KFRC, KSFO, KTAB, KDIA, KWBR, KSFX, KOBY, KCBS, KQW, KRE, KTAM, KYA, etc, I will pay for copies... Feel free to call me at 925-284-5428 or you can email me at ronwtamm@yahoo.com.

Looking for a broadcast excerpt of a San Francisco Giant's taped off of KSFO radio from 1959, interviews with Willie Mays, Dusty Rhodes & some play by play excerpts, also features a homerun by Willie Mays and Felipe Alou stealing second base, running 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.

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**WANTED:** Engineer w/good background in analog (NTSC) TV, associated studio equipment, microwave (7GHz), cameras, FM stereo, etc. This will be a volunteer position for a mission in the country of Haiti. We have a Larcam solid state TV transmitter, 30KW on Ch 6 and a McMartin 3.5KW FM on 107.1. 3 Ikegami studio cameras, Grass 100 switcher and a "home entertainment" switcher. 2 stereo boards, one TV, the other FM. A bunch of DVC Pro decks (yet to be shipped) teleprompter, uA microwave to be replaced this year with a newer Harris 7GHz. 80KW diesel, prime power

at the transmitter site (new in 2012), ERI 6 bay roto-tiller antenna and an RCA TF-6BM batwing, 6 bay for TV, no null fill on either. A stand-by transmitter, RCA TT-6, mostly tubes. The next trip should be in late Feb. The main purpose will be to finish repairs on the TV antenna, paint it with primer and then a second coat of aviation orange. The tower crew will be there for a week and I'll be there for probably 3 weeks. The last two for me will be to finish the camera install and set up, replace the microwave TX and RX, teach the Haitians how to run it all and what to expect from the

equipment. If interested, you will need a valid US passport and a good Christian ethic. Then contact me [wb0cmc@cox.net](mailto:wb0cmc@cox.net) and I'll be happy to fill in any questions you may have. It has been rewarding for me to be able to put my faith to work in an occupation I love and seeing how it changes lives. My tower guy says the same thing. The pastor puts us up while there and provides transportation, translation and meals. We buy our own air fare. I can also be reached @ 402 932 3443 here in Omaha. We're ecumenical though owned by the Lutheran church of Haiti.

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# AM, You Want a Fix? I Got a Fix!

A Big-Market AM Engineer Says Expand Radio Down to 76 MHz

## COMMENTARY

BY SCOTT CLIFTON

*The author is chief engineer of WLS(AM), a 50 kW Class A station in Chicago, and of sister station WLS(FM). Opinions are his own and not necessarily those of his employer.*

In the fall of 1989, I was the assistant chief engineer for KSD(FM) in St. Louis, then owned by Gannett Co. Inc. That year, transmission of digital signals on FM started to become a reality, and I was lucky enough to be one of the first field engineers to work on the project. Our motto was "For the broadcaster, by the broadcaster." As months went by with some positive progress, a consortium of broadcasters joined Gannett in helping to develop the technology.

It's more than 24 years later, and radio is still as archaic as it was then.

I am not writing to go down memory lane but to vent my frustrations as a longtime engineer who is passionate for the work and industry in which I and many others have devoted our lives.

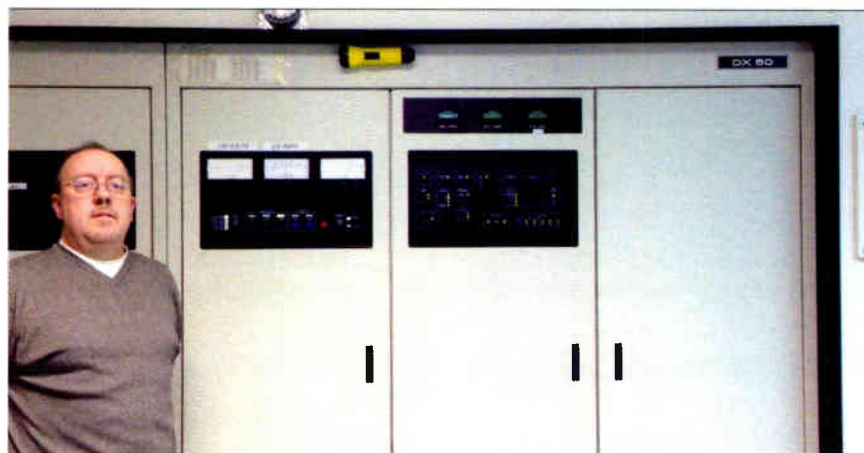
Many will recall the debacle of the FCC choosing a standard for AM stereo; you may not be aware that the commission had the same issues with digital. So the FCC seems a good place to start this conversation and likely a good place to finish.

The fact that the commission failed to create or choose a standard has been the primary issue with regard to the advancement of radio technology. In AM stereo, receiver manufacturers weren't interested in investing in multiple standards — though Sony did build a very nice tuner, the SRF-A100, which as far as I can recall was the only one that supported multiple systems. I still have one.

But receivers were difficult to find, with manufacturers afraid to invest in a technology that might not become a standard. Sound familiar?

Digital radio faced similar issues as those confronting AM stereo; but the technology also required broadcasters to pay a "license fee" in order to participate. This created more of a chicken-and-egg effect than had been the case for AM stereo.

The burdens were piling up, but the development team was still trying to figure out how to put a wide digital carrier in a voice spectrum of narrower-than-optimum amplitude. The commission



The author at work. "Allocation issues, especially at night, were the primary reason IBAC would not work; yet what we call IBOC is, essentially, IBAC and became the standard."

didn't want to talk about radio needing more spectrum; so the project's scope of work was guided by ancient rules and allocations that had not anticipated the needs of today's technology.

### IBAC

For AMs, the thought of being able to transmit digitally and compete with analog FM sound quality was a shot in the arm. This was around the time AM began its big switch to talk programming. Managers felt AM could not compete with FM quality and saw higher-quality digital players hitting the market too. So AM would focus on voice, where audio quality wasn't deemed as important.

That's the environment in which the digital development team was working. But the AM band presents hurdles for digitally transmitting audio. There are many factors: interference, antenna/transmitter bandwidth, directional antenna complications with phasors/antennas and the like, not to mention limitations deriving from AM's 10 kHz allocation.

I recall the AT&T/Lucent IBAC (in-band, adjacent-channel) demo in New Orleans. We on the USA Digital Radio team knew this was not a solution and subsequently hit the NAB Show floor, poo-pooing the whole idea. Uh, do you know how your AM digital transmitter works today? See Page 4 of [www.nrscstandards.org/SG/NRSC-5-B/1082sE.pdf](http://www.nrscstandards.org/SG/NRSC-5-B/1082sE.pdf). Allocation issues, especially at night, were the primary reason IBAC would not work; yet what we call IBOC is, essentially, IBAC and became the standard.

The FM system is basically the same in design in that the digital carriers surround the analog carrier. (A histo-

Digital-to-digital separations are much less tedious and critical compared to analog, especially given our current state of technological evolution.

Many articles have raised attention to "AM revitalization." Peter Gutman and Ted Schober have written intelligently on this topic elsewhere. Clearly there will be no revitalizing of the AM band with any of these proposed ideas. Who does the commission think they are fooling? Why isn't the NAB all over this?

It's time radio gets an opportunity to be fixed! No more "AM or FM."

It's time for the commission to expand the existing FM band, and do it right.

With the new HDTV repack coming, the FCC needs to take the old TV Channels 5 and 6 and expand the radio broadcast band.

Start placing digital-only carriers in the low end of the spectrum and work their way toward the existing FM band, using digital-only separation requirements.

**It's time AM owners are put on a level playing field, not only with FM competitors but with growing sources of mobile and home streaming.**

ry sidebar: The first transmissions of IBOC were truly that. On WILL(FM) in Champaign/Urbana, Ill., the first transmission of four phase-adjusted FSK carriers in 1992 were superimposed on top of the FM signal, not in sidebands. It worked, though not as well as what you hear today.)

FM digital's saving grace was that there was sufficient bandwidth for the added carriers, using the current technology, to be placed in the existing mask. Again, the FMs benefited, while AMs have yet another nail added to their coffin.

### MY IDEA

Now, while AM HD Radio has languished, HDTV has become a de facto household standard, in the same or less time. Why?

For one, you didn't see the FCC constraining TV stations to allocation rule adherences as they did radio. Why does radio continue to be the bastard child? Why hasn't the NAB been a better voice to the FCC for radio?

Actually, temporary relocation and expected repacking likely will make TV operations even better than before by allowing the commission to apply new allocation standards in the repacking.

Move all of the AM stations into the new allocation first, then transition the existing FM analog stations to digital-only, with a plan to shut off the analog carriers.

Further, allocate the existing medium-wave "AM" band to local communities, townships and cities to program public notices and other public information on. Allocate them based on coverage needed — low frequencies for the larger cities, higher frequencies for the smaller.

### LEVEL THE FIELD

No more screwing around. It doesn't take a brain surgeon to fix this problem. The longer we wait to take the initiative to fix the problem, the more death we'll suffer.

The days of costly high-powered AM transmitters, complicated antenna arrays, miles of copper buried in large plots of land and tons of steel to maintain need to go. There are fewer and fewer engineers who can maintain, let alone build, AM arrays; that number will continue to drop.

Broadcast owners have suffered for years due to major change freezes preventing them from improving their properties and the inability to achieve tech-

(continued on page 30)

**READER'S FORUM****BEST CODECS FOR STREAMING?**

John, in the article "NPR Labs Eyes Streaming Technology" [radioworld.com, keyword Kean], I wish that you had also looked at Opus (<http://opus-codec.org/>).

I would love to see how it stacks up against the others at 24 through 48 kbps. The low latency of Opus and its widespread implementation (e.g. Firefox, softphones, patched BUTT and VLC) make this a natural but bleeding-edge codec. Some proponents of Opus are calling it the Swiss Army Knife audio codec because it does everything at least pretty well.

Its open-source implementation (license free), IETF standard approval, low latency and high performance at low data rates make it very interesting for stream distribution (Icecast), high-fidelity VoIP and remote broadcast transport.

I know that Opus is head and shoulders better than MP3 at 24 to 48 kbps, and even sounds nice on voice at 16 kbps; but how does it measure up against the high-performance older codecs?

Edward (Ted) Schober, PE  
Consulting Engineer  
Radiotechniques Engineering  
Haddon Heights, N.J.

John Kean of NPR Labs replies: I am sure the Opus codec would beat AAC+/HE-AAC at 32 kbps and below, but one of the qualifications was that it be natively available in most consumer devices, such as tablets, phones, etc. As good as Opus may be, it didn't meet that requirement, and we were constrained by the number of codecs we could test (xHE-AAC, which beat HE-AAC at low bit rates, was included for its potential as a future codec, and it appears to be increasing in new consumer devices since our test). Some stations continue to stream MP3 with HE-AAC, to mini-

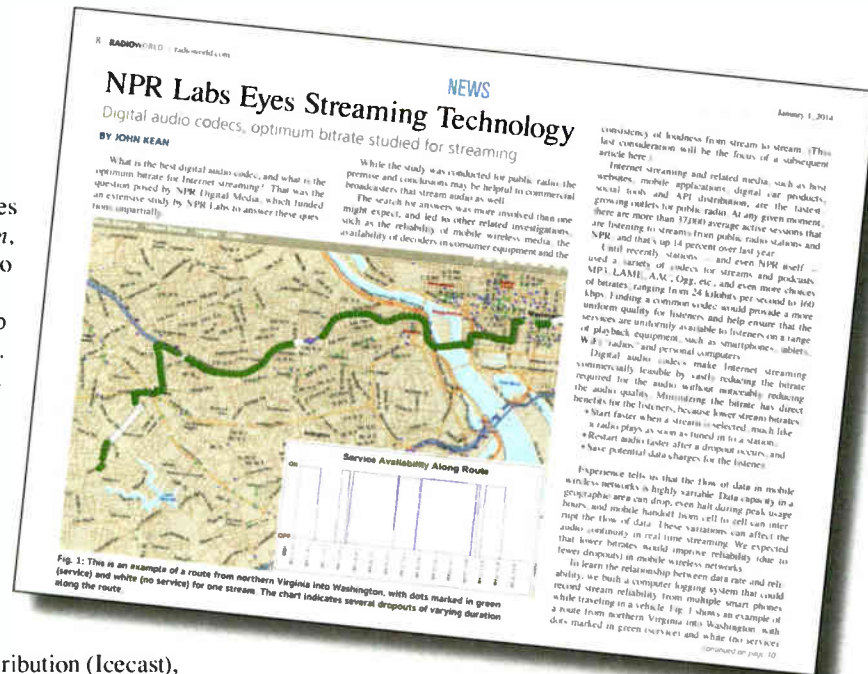


Fig. 1: This is an example of a route from northern Virginia into Washington, with dots marked in green (service) and white (no service) for one stream. The chart indicates several dropouts of varying duration along the route.

imize the chance of disenfranchising some listeners, so availability across all platforms seems to remain an important factor. I'm with you — I'd love to do a test with Opus!

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**EXPANSION**

(continued from page 29)

nological competitiveness. Many realized higher costs of operations for little return and, during the consolidation boom, wound up paying 20+ times cash flow and then saw business opportunities plummet with economic downturns.

It's time AM owners are put on a level playing field, not only with FM competitors but with the growing sources of mobile and home streaming.

You know, there's been a lot of buzz about the FM chip in cellphones. I see it as another nail in AM's coffin. I also question whether this helps the consumer during an emergency. Frankly, few markets have news/talk FMs; and generally speaking, many FMs, in my opinion, don't have the personnel or procedures in place to be much benefit during emergencies. I'd much rather get my information from a seasoned news host than a minimum-wage disk jockey. (I won't even get started on EAS.) And what about HD reception in cellphones? Who's talking about that?

If the commission would react and provide radio broadcasters expansion down to 76 MHz, we could see a great turnaround for the entire industry. Let's stop throwing garbage at the wall to see what will stick and instead get to work on a solid solution.

Comment on this or any story.  
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